

Cover image - Orion Nebula M42 by Ben Claringbold



# SCORPIUS

THE JOURNAL OF THE  
MORNINGTON PENINSULA ASTRONOMICAL SOCIETY INC.

Reg No: A268 ABN: 34569548751 ISSN: 1445-7032

Vol. XXVIII, No. 2 (March / April) 2023

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

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



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Mornington Peninsula Astronomical Society



# SOCIETY NEWS



**Public viewing Night January 6th & 7th** - Well, the first two PVN's for 2023 are done and dusted and in an unusual twist for PVN's of recent times, we had clear skies for both. Katherine McCoy gave the talk for both nights, ably supported by Dave Rolfe after President Peter had a run in with the tooth fairy, which he lost.

On Friday night, 54 members of the public enjoyed the talk followed by views through the telescopes of Saturn, Jupiter, Mars, a nearly full moon and despite the Moon, reasonably clear views of the Orion Nebula and 47Tuc. This was followed up on Saturday night by a further 83 members of the public enjoying the Katherine/Dave show followed by perhaps even better views of the above mentioned objects. Thanks to the clear weather, I feel that the public certainly got their money's worth.

As is usual for these events, the support of members is invaluable and over the two nights we saw a large number of members in attendance. It was especially pleasing to see a couple of members for the first time in a while. Members helping with the event on either one or both nights were Katherine McCoy, Rohan Baumann, Jamie Pole, Nerida Langcake, Piper Grierson, Mark Stephens, Fred Crump and Bonnie, Jason Heath, Alan Predjak, Ben Claringbold, Simon Hamm, Phil Peters, Gurmeet Jolly and family, Leigh Hornsby, Chris Kostakanellis, Robert and Emily Bowcher, Julie McErlain, Dave, Jamie and Landon Rolfe, Greg Walton, and Robin Broberg. Phew, I have writer's cramp after that. I apologise if anyone was missed and I'll just remind members to sign in the book at the front desk so we can include you in the credits. *Mark Stephens VP*

We found Saturn, Jupiter and Mars after sunset in the twilight just in time as the public emerged from the clubroom around 9pm. We had to wait till 10pm before we could get to view the Orion Nebula, NGC104 globular cluster, NGC4755 Jewel Box, NGC3532 Pin Cushion and 3293 Gem Cluster. We had to stick to the brighter objects because of the full moon. *Greg Walton*



**Public viewing Night January 13th** - The third public night in January was warm and saw 79 visitors and 22 members in attendance at the Briars. The skies had been quite cloudy all day, with it starting to spread further early on in the evening, but had completely cleared by the time the talk by Peter Skilton had finished. Good night-sky viewing then ensued with the telescopes kept busy, and scores of satellites seen. Lots of very happy people that evening. Members present and helping included Nerida Langcake, Piper Grierson on the desk, Fred Crump and Bonnie Cass, Robin Broberg, David Connet, Chris Kostokanellis, Phil Peters, Leigh Hornsby, Ben Claringbold, Jamie Pole, Anders Hamilton, Katerina, Edward & Oliver Mishuda, John Goodall, Tim Fraser, Greg Walton & Pia Pedersen, Sylvie Grandit and Rosemary Shand. *Regards Peter Skilton*

We were very lucky to have another mostly clear public night. The public had good views of Jupiter and Mars. Unfortunately Saturn is now getting a bit lower in the western sky and was hidden in the clouds. Most of the public stayed till quite late and had lots of questions while they enjoyed the viewing through the telescopes. *Greg Walton*

**Society meeting January 18th** - The evening started with Mark's Sky for the Month and Chris' AstroMoPho Photography. The main talk was about the discovery of pulsars (neutron stars) by their discoverer, Jocelyn Bell Burnell. A Nobel Prize was later awarded to two astronomers for this discovery, but very controversially she was not one of them. Not the first time a female scientist's key contribution has been overlooked in the history of the Nobel Prizes, having infamously occurred also with the discovery of DNA.

Those unable to attend, and assuming the recording technology works on the night, can watch it at their leisure at a later date on the MPAS YouTube channel at [www.youtube.com/channel/UCm6XOkIcIfIt4y0XRBXpXuw](http://www.youtube.com/channel/UCm6XOkIcIfIt4y0XRBXpXuw) *Regards, Peter Skilton*



**Members BBQ & Working Bee January 21st –**

Lawns were cut, tree stump cut up and removed from behind club house, paths were zeroed, observatory roof chain drive lubricated with grease, 18 inch telescope (Sky Venture) mirror was washed, the EQ8 mount tested and circuit board found faulty. Telescopes in the observatory were dusted off along with many other small jobs. At 6pm we had our Monthly BBQ while members set up their telescopes on the concrete slabs. At 8pm we ran a training session on operating the telescopes in the observatory for new members.

Big thanks to all who helped out on the day.

*Report by Greg Walton*



*Photo by Dave Rolfe*



*Photo by Dave Rolfe*

**Public Viewing Night January 27th** -The final fourth public night at the Briars for January saw 94 visitors, plus lots of members in attendance with telescopes. A new talk was given indoors to the eager audience by Guido Tack. Sky conditions were completely clear and mild all evening, with a waxing crescent Moon and Jupiter in the west. Lots of deep sky objects were visible all evening, and numerous satellites, with maybe 15 telescopes operating and spread around most of the site. It was certainly a pleasant summer evening, humming with stargazing activity, and the small dome observatory had a long line of those patiently waiting to be shown through it. Nothing like a dome to match the public's expectations of what an observatory should look like. Members in attendance and, helping prepare and run the evening were Mark Stephens, John & Marj Cleverdon, Fred Crump & Bonnie Cass, Anders Hamilton, Jamie Pole, Sylvia Grandit, Rod Brackenridge, Peter Skilton, Kit Penfold, Nerida Langcake, Simon Hamm, Simon Birch, Katherine McCoy, Ben Claringbold, Chris & Nicki Kostokanellis, Phil Peters, Greg Walton, Robin Broberg, Ross Berner, Alan Predjak, Jason Heath, Rohan Baumann, Rosemary Shand, Rebecca, Con & Victoria Karmis, Michelle & Alira Moore and Leigh Hornsby.

*Regards, Peter Skilton*



*Photos by Greg Walton*





**Public viewing Night February 3rd** - Public night at the Briars saw 48 visitors in attendance. The evening started with lots of cloud cover, so Manfred Berger started his talk indoors while we waited for a predicted notch in the cloud to arrive, as predicted by CFN. A report in later from John Cleverdon at Dromana was that they were pelted with hail at the time, so it just shows how a small change in location can have a big change in weather. Halfway through the talk everyone was moved outside to enjoy clear skies through the telescopes for about half an hour, before the cloud returned for the rest of the evening. Manfred's talk then proceeded. Members attending and helping were Phil Peters, Nerida Langcake, Ben Claringbold, Jamie Pole, Peter Skilton, Chris Kostokanellis, Greg Walton, John Goodall, Mark Stephens, David, Jamie & Landon Rolfe, Fred Crump & Bonnie Cass, Stewart Gangell, Simon Hamm, Leigh Hornsby, Guido Tack, Rosemary Shand and Simon Fee. *Regards, Peter Skilton*

The public often arrive early so we set up the telescopes outside and pointed then towards the Moon which was large in the sky, being only a few days before full moon. Then we aligned the telescopes in the observatory, then found Mars and Jupiter. The public were impressed being able to see the planet at sunset before the sky had darkened. Manfred started the talk at 8pm. It was decided to bring the public to look through the telescope at 8:45pm as the sky had cleared, but there was dark clouds approaching from the south. Lucky everyone got to see Jupiter, Mars and the Moon before the clouds covered the sky. Then the public headed back to the clubroom to hear the second half of the talk while rain started to fall with a few claps of thunder. There was a mad dash to pack up the telescopes and close the observatory roof. *Regards Greg Walton*

**Society meeting February 15th** -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 Dr. Cameron Hummells, Astrophysicist, California Institute of Technology, on the topic of "The Green Comet in Context", plus "Simulating the Universe on a Supercomputer", courtesy of CalTech. Also covered is the Assembly of the Artemis rocket. Think the Moon landing was NASA's most watched coverage? Or perhaps one of the Space Shuttle disasters? Well, no. We close with NASA's most-viewed footage ever, by a long margin. 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*

**Members BBQ & Working Bee February 18th** – We had a good turnout for the working bee and members BBQ. Lawns now look the best they have done in a long while. Floor in the lecture theatre was mopped and roller doors cleaned. Cobwebs were cleaned off the outside of all the buildings. The toilet got a good scrubbing. Telescopes in the observatory were dusted off and the 2 Bino-chairs were also cleaned and adjusted. We also finally got around to painting the odd pieces of flashing on the BBQ shelter. Wi-Fi network also got an upgrade. Big thanks to everyone, especially those working in the kitchen. Also thanks to all who brought along salads, cakes and other goodies. We also had the MPAS solar telescope running on the top slab and saw 3 large sun spots and many prominences leaping from the edge of the sun's disc. After the BBQ many members set up their telescopes on the concrete slabs. Some imaged the green comet and deep sky objects while others were happy just being able to hunt down and view deep sky objects under a cloud free sky with no Moon. Guido took many nice photos of the green comet and sent them via Wi-Fi to the projector in the lecture theatre. Yes it did look green. We also opened the observatory and found Mars which is now looking much smaller as it's speeding away from us now. Then we looked at Jupiter with only 3 moons visible, which was almost saying goodbye for another year as it slipped down behind the trees in the west. We then tracked down the green Comet 2022 E3. Visually it didn't look green in the eyepiece on the 350mm Meade telescope. We then went on a sky tour to hunt down some galaxies and nebulae. NGC1566 spiral galaxy, NGC1365 barred Spiral Galaxy, NGC3115 spindle Galaxy, NGC2070 Tarantula Nebula and Hubble variable nebula. Nerida had her smartphone on a post in the paddock below the observatory taking a sequence of photos of the southern sky, the images were then stacked to produce star trails.



*Comet 2022 E3 by Guido Tack*



*Star trails by Nerida Langcake*

A VERY PLEASANT NIGHT WITH GOOD COMPANY.

*Report by Greg Walton*



### TLD Telescope Learning Day February 25th 4pm –

The day started under a cloudy sky. Mark Stephens did a comprehensive talk on how telescopes work, then the chairs were cleared away so the public and new members could setup their telescopes in the clubroom, as by then the rain had set in. Our more experienced members then set about helping everyone on how to get the most out of their telescopes and answering all their questions.

In the background members were also busy at the BBQ cooking sausages and setting up the tea, coffee and chocolate-chip cookies.

At 6pm we setup the tables and chairs in the clubroom and brought out the food. Just a simple Bunning's style sausage, onion, bread, veggie burgers and sauce.

We had a really good turn out of experienced members on the day.

A big thanks to all the members who helped out. *Greg Walton*



*Photos by John Cleverdon*

# WHAT'S ON



## The 2023 timetable of public events.

### 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. 10,000 anticipated.  
 Wednesday 22nd or Thu 23rd, 8pm Briars. Strathaird Primary at Briars Camp. 80 Year 6 pupils. Speaker 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.

## ★ New Members Welcome ★

★ Brian Stephens  
 ★ Tim Fraser  
 ★ Kathy Viduka, Edward & Oliver Mishuda  
 ★ Merv Gillespie  
 ★ Wayne Woods  
 ★ Robin Smith  
 ★ Carolyn, Luke & Kate Donnelly & Ron Neugebauer  
 ★ Stephen Gilmore  
 ★ Liliana Porta, Jose, Leo, Rodri & Cami Palacios

Rosemary Shand  
 Mark Baker  
 Leah, Johnny & Mathew Keenan  
 Andrew McPherson & Tina Zhang  
 Simon Fee  
 Graham, Rohan & Isla Hart  
 Cathie Dethick  
 Pam & Peter Halsall, Spencer & Oliver Goodfellow  
 Domenic, Rose, Chloe & Marcus Martello

### 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		March / 2023					Red Days indicate School Holidays
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
			1	2 Venus Jupiter close	3 <b>Public night 8pm</b> Saturn Mercury close	4 <b>Trivia Night</b> Moon at 405,889km	
5	6	7 <b>Full Moon</b>	8	9	10 Comet 2022 E3 near NGC1637	11	
12	13 Labor Day Public Somerville Family Fun Day	14	15 Society Meeting 8pm <b>Last Quarter</b>	16	17	18 <b>Working bee 4pm</b> <b>BBQ 6pm</b>	
19	20 Moon at 362,696km Saturn left of thin crescent Moon dawn	21	22 <b>New Moon</b> Strathaird Primary at Briars Camp	23	24 Venus right of thin crescent Moon	25	
26 Moon above Pleiades	27	28 Mars above the Moon	29 <b>First Quarter</b>	30 Moon Pollux close	31 Moon at 404,919km		

**Monthly Events**

- Public night** - 8pm to 10pm on the 3rd @ The Briars MPAS
- Trivia Night & Southern Peninsula Concert Band** - 6pm on the 4th @ The Briars (Booking required)
- Society Meeting** - 8pm to 10pm on the 15th @ The Briars
- Working Bee** - 4pm - **Members night & BBQ** - 6pm on the 18th @ The Briars
- Watch your emails, as on any clear nights the Observatory may be opened for members-only viewing.**

CALENDAR		April / 2023					Red Days indicate School Holidays
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
30						1	
2	3	4	5	6 <b>Full Moon</b> Comet 2017 K2 near IC2006	7 <b>Public night 8pm</b> <b>Easter</b>	8 Easter	
9 Easter Comet 2022 E3 near IC2118	10 Easter	11	12 Comet 2020 K1 near NGC6893	13 <b>Last Quarter</b>	14	15	
16 Moon at 367,968km Comet 2017 K2 near NGC1537	17 Saturn above thin crescent Moon dawn	18	19 Society Meeting 8pm	20 <b>New Moon</b> Briars Partial eclipse WA total solar eclipse	21 Scorpius Deadline	22 <b>Working Bee 4pm</b> <b>BBQ 6pm</b>	
23 Venus above thin crescent Moon	24	25	26 Mars above the Moon	27	28 <b>First Quarter</b> Moon at 404,299km	29	

**Monthly Events**

- Public night** - 8pm to 10pm on the 7th @ The Briars MPAS
- Society Meeting** - 8pm to 10pm on the 19th @ The Briars
- Working Bee** - 4pm on the 22nd @ The Briars
- Members night & BBQ** - 6pm on the 22nd @ The Briars
- Partial solar eclipse 20th April.** The Moon will cover 11 percent of the Sun. Starting at 1:15pm and ending at 3:01pm local time.

# THE BRIARS SKY

By Mark Stephens



Hi all, welcome to my first article of what will in effect become 'Sky for the Month' for the two months of the Newsletter. It will follow a similar format to the version presented at the monthly meeting, hopefully alerting you all, to the wonderful and varied occurrences in our night sky that can be viewed at your leisure, either at home, at the Briars or anywhere you choose to do astronomy. I hope there is something that grabs your interest

Astronomical events occurring over the next two months include a plethora of comets, some meteor showers and a partial Solar eclipse. The Comets are as follows:

Comet 81P/Wild 2 is in Ophiuchus at around 10th magnitude. It rises in the SE sky about 11pm and it moves into Sagittarius during April, fading to 11th magnitude. This is a morning object for the keen.

Comet K2 PANSTARRS is between Eridanus and Horologium at around 8th magnitude. It sets in the Southern sky just after midnight. As the month progresses it will begin to fade.

Comet K1 PANSTARRS is in Sagittarius at around 12th magnitude. This makes it a morning object in a very 'cluttered' part of the sky. It is expected to brighten in April to 11th magnitude and move into Telescopium and then Indus, rising in the Southern sky about 90 minutes after twilight.

Comet E3 ZTF, the green comet begins the month in Taurus and then moves into Eridanus and at the end of April into Lepus. Setting just before midnight it will fade from 9th magnitude at the beginning of March to about 13th magnitude by the end of April. Go for it while you can, it won't be back for a while.

Comet Linear appears in April in Sagittarius at around 12th magnitude. It rises late evening in the SE, moving to the Eastern sky during the month and brightens to 11th magnitude.

Comet 364P/PANSTARRS moves through several constellations in April starting in Hercules and finishing in Aquarius. It rises in the NE sky after midnight at around 12th magnitude.

There are three Meteor showers over March/April and they are:

gamma-Normids which are active between 25/02 till 28/03. Peak is around 15/03 but nly expect about 6 per hour. Despite this they can be quite bright with a small number leaving trains.

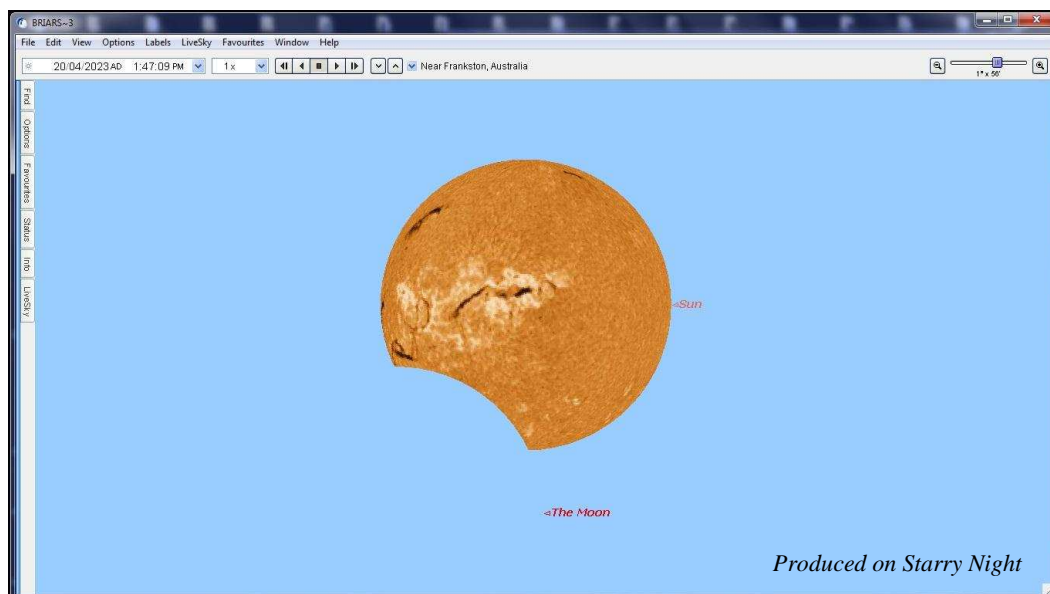
Lyrids which are a northern shower that can be seen in the south. Active from 16-25/04 with the peak around the 22nd.

pi-Puppids young southern shower caused by Comet Grigg-Skjellerup and active from 15-28/04 with a peak around 24/04. Best viewed from dusk to midnight so a good one to look for.

## And finally, a partial eclipse.

Partial solar eclipse 20th April 2023  
the Moon will cover 11 percent of the sun. starting at 1:15pm and ending at 3:01pm local time.

Maximum is around 2pm





### The Planets

Only three planets will be easily visible over March/April. Venus is now visible in the western twilight due to its relative brightness. It is still heading toward its maximum elongation and so will get a lot higher than it is. It will display partial views as does the moon as it moves towards us and so is worth looking at for its various aspects.

Jupiter is still visible low in the western sky but is moving more into twilight. Its size helps it still be seen but over the next two months, expect it to get too low to view.

Mars is not far behind Jupiter but as Earth has well and truly past it now the disc is getting much smaller and so not a lot of detail is visible.

Uranus is between Jupiter and Mars but due to its distance and size is unlikely to be visible due to evening twilight.

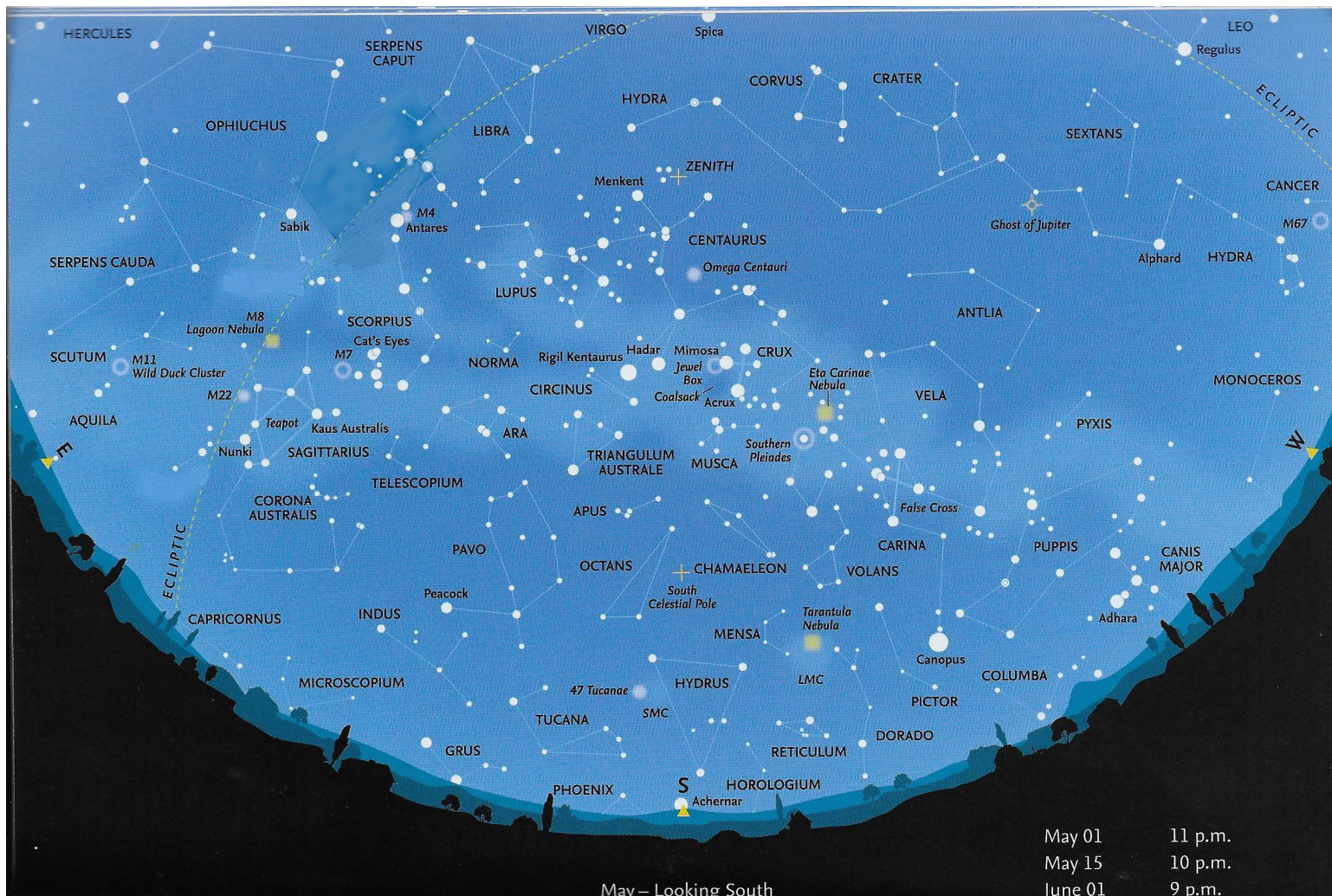
Neptune is in conjunction with the Sun on 16/03 and should return to the morning eastern sky toward the end of April.

Saturn has moved through conjunction and should once again be visible in the eastern morning sky later this month.

Lastly, Mercury has moved through Superior conjunction and will return to the western evening sky. You will, however, require a good eastern horizon view and some optical assistance to see it.

That concludes my meanderings of the night sky for March/April, hopefully there is something you are interested in. I have only covered the main things but as always, there is much more to look at including Nebulae, Galaxies and Clusters, both open and globular.

Happy viewing and clear skies till next newsletter.





## The largest 2D map of the sky over Earth just got even bigger!

The largest two-dimensional map of the sky over Earth ever created just got even larger and is now covering almost half the sky over Earth. The map created with data from a six-year-long pioneering survey of the cosmos features over a billion bright specks that represent galaxies, each containing billions of stars, according to the National Optical Astronomy Observatory (NRAO).

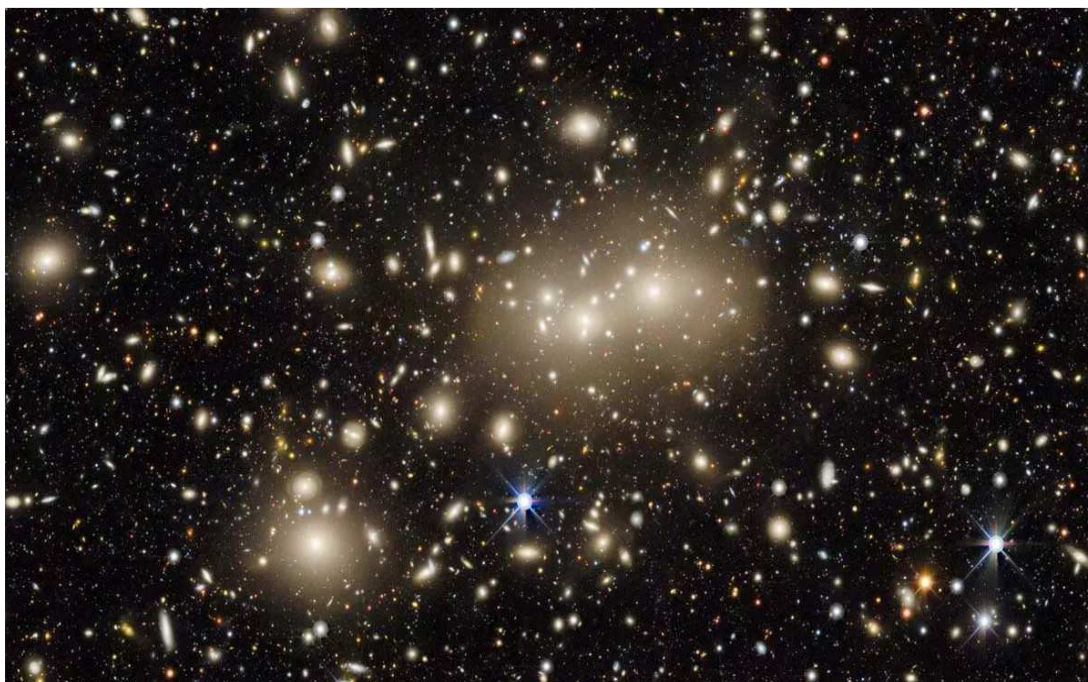
The expansion of the map comes thanks to the 10th data release from the Dark Energy Spectroscopic Instrument (DESI) Legacy Imaging Survey. The aim of the project is to identify around 40 million galactic targets that can be used to precisely map the expansion history of the universe over the last 12 billion years.

These targets are used by the five-year DESI Spectroscopic Survey, a project that could help scientists finally understand dark energy, the mysterious force that is driving the accelerating expansion of the universe. This is a pressing mystery because, despite the fact that dark energy accounts for 70% of the universe's total energy and matter content, scientists have little idea what it actually is.

These targets have been selected for the DESI Spectroscopic Survey from this massive 2D cosmic map already and the project is underway, but that hasn't stopped DESI scientists from adding to it to create the most comprehensive map of the sky they possibly can.

That means adding more images and incorporating better image processing techniques into the DESI Legacy Imaging Survey which already builds on the data from two earlier companion surveys: the Dark Energy Camera (DECam) Legacy Survey and the Beijing-Arizona Sky Survey. Jointly these three surveys have imaged 14,000

square degrees of the sky over Earth's northern hemisphere using telescopes at Kitt Peak National Observatory (KPNO) and Cerro Tololo Inter-American Observatory (CTIO) in Chile.



*The nearby galaxy cluster Abell 3158 imaged as part of the DESI Legacy Imaging Survey.  
(Image credit: DESI Legacy Imaging Survey/KPNO/NOIRLab/NSF/AURA)*

The 10th data release expands that coverage to 20,000 square degrees, nearly half the sky over Earth, by adding to the map DECam images of the sky over the southern hemisphere away from the glare of the Milky Way's bright disk.

In addition, the new data includes images of the sky with an additional filter that provides a view of the sky in near-infrared, just beyond the visible light spectrum that humans can see. As a result of increasing the map's view of space and giving it increased wavelength coverage, it should now be useful to more scientists studying different celestial targets.

"The addition of near-infrared wavelength data to the Legacy Survey will allow us to better calculate the redshifts [the stretching of wavelengths of light via the expansion of the universe] of distant galaxies or the amount of time it took light from those galaxies to reach Earth," CTIO astronomer Alfredo Zenteno, said in a statement.

The addition of near-infrared data means the data can be used to assist surveys that look at space using radio and X-ray wavelengths. This is because those investigations need a complete optical view to help track emissions back to clusters of galaxies or active supermassive black holes.

The data from the Legacy Surveys is publicly available meaning amateur astronomers, as well as professional scientists, can access and use it to explore the universe. "Anyone can use the survey data to explore the sky and make discoveries," NRAO astronomer, Arjun Dey, said. "In my opinion, it is this ease of access that has made this survey so impactful. We hope that in a few years, the Legacy Surveys will have the most complete map of the entire sky, and provide a treasure trove for scientists well into the future."



## Western Australia Total Solar Eclipse 20th April 2023

**To go or not to go, that is the question.** Exmouth is almost as far as one can get from Melbourne travelling by car. Google said, it's 4,568 kilometres. If we travelled 500km per day it would take 11 days. But we probably would only cover 200km per day taking 23 days to get to Exmouth. We looked at what other places we could see along the way. Burra, Woomera Rocket Range, Wave Rock, Coolgardie, Pinnacles, Carnarvon Space Museum, stromatolites, Esperance Stone Henge, Gravity discovery & science museum.

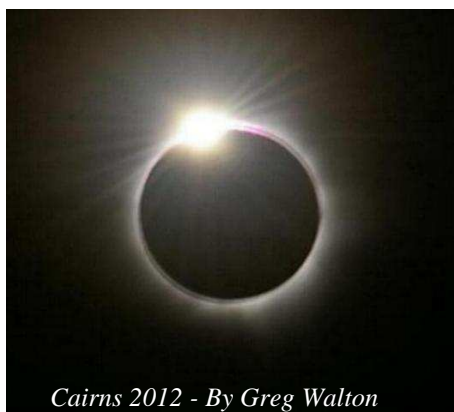
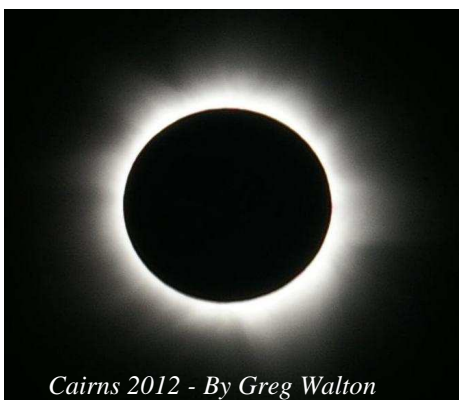
Eclipse centre line is between Exmouth and Learmouth Lat 22.0838 Long 114.0968

The Sun is 400 times the diameter of the Moon and is 400 times further away. This stroke of luck means the Sun and the Moon appear the same size from Earth. But the Moon doesn't have a circular orbit around the sun; at its closest it's a mere 360,000 kilometres and at its furthest its over 400,000 kilometres. When the Moon is at its closest it appears larger and covers the Sun for a longer time, about 5 minutes, but when the Moon is at its furthest distances it doesn't fully cover the Sun; this is called an annular eclipse. Perth experienced an annular eclipse in 2019, see photo.

On the 20th April the Moon will be at a distance of 378,922 kilometres meaning the Moon will only just cover the Sun, which will give a short totality of 1 minute.

The Moon will start to passing in front of the Sun at 10:04am WA time. Totality is from 11:29:29am to 11:30:30am. Then at 1:02pm the Moon will leave the Sun.

Just before totality, as the Moon snuffs out the last of the sun's light, you should see the diamond ring affect, a bright flash of light on the edge of the Moon with a thin ring of light around the Moon. This is a very beautiful sight which also reoccurs at the end of totality as the Sun re-emerges from behind the Moon. *See photo centre*



During totality you should see wispy rays of light streaming away from the Sun; this is the solar wind which is charged particles flowing away from the Sun. See photo at left. The sky doesn't go totally dark, I found it to be more of an eerie smoky blue.

You may also glimpse a small row of red lights on the edge of the Moon; these are called Bailey's beads and often happen during times of solar maximum, which is happening now. They're caused by light from solar prominences shining through gaps in mountains on the edge of the Moon. Astrophotographers often capture Bailey's beads with long focal length telescopes.

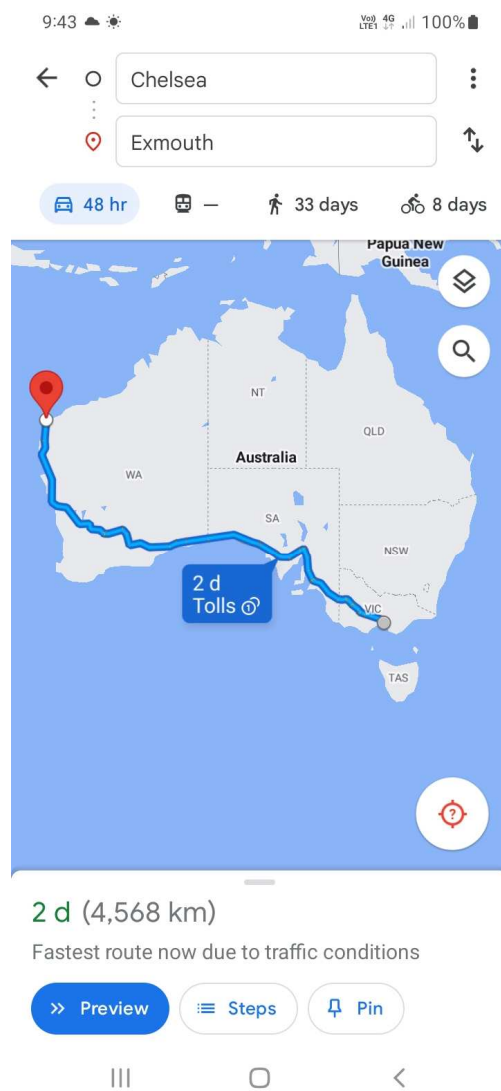
Many eclipse chasers seem to go just for the atmosphere, being with a large group of people all experiencing the same thing. There is usually a quiet anticipation just before totality. Then as the last glimpses of the Sun's rays are snuffed out by the Moon there is a lot of Wows and mixed emotions as the air goes cool and birds are often heard calling with a barrage of camera shutter noise. I found it all very overwhelming, what should I be looking at? What stars and planets can be seen, or look around the horizon to see if the Sun is shining on the distance hills, and the eclipse of cause. At the 2012 eclipse in Cairns, Queensland there were many young couples hugging or just holding hands, probably wondering if this is the end or would the world be a better place when the Sun re-emerges.

Then all too quickly the first few rays of sunlight start to stream past the Moon and show an even more beautiful diamond ring effect than the first, probably because our eyes have started to adapt to darkness. Along with the loud cheering from the crowd, yes the Sun has returned, probably the highlight or climax of the eclipse. Soon the Sun was too bright to see the Moon, it's over, now what? How can we top that? Most people start picking up their belongings and heading to their cars.

A few stay on to photograph the last stage of the eclipse, as it would take another hour for the Moon to totally uncover the Sun. By then everything has returned to normal and you wouldn't have thought an eclipse had ever taken place.

At the 2012 Cairns eclipse we found a spot on a hill which gave us the best chance of seeing the Moon's shadow moving across the surrounding landscape. Exmouth has a lookout at the lighthouse but it's not in the centre of the eclipse's path and would probably be overcrowded.

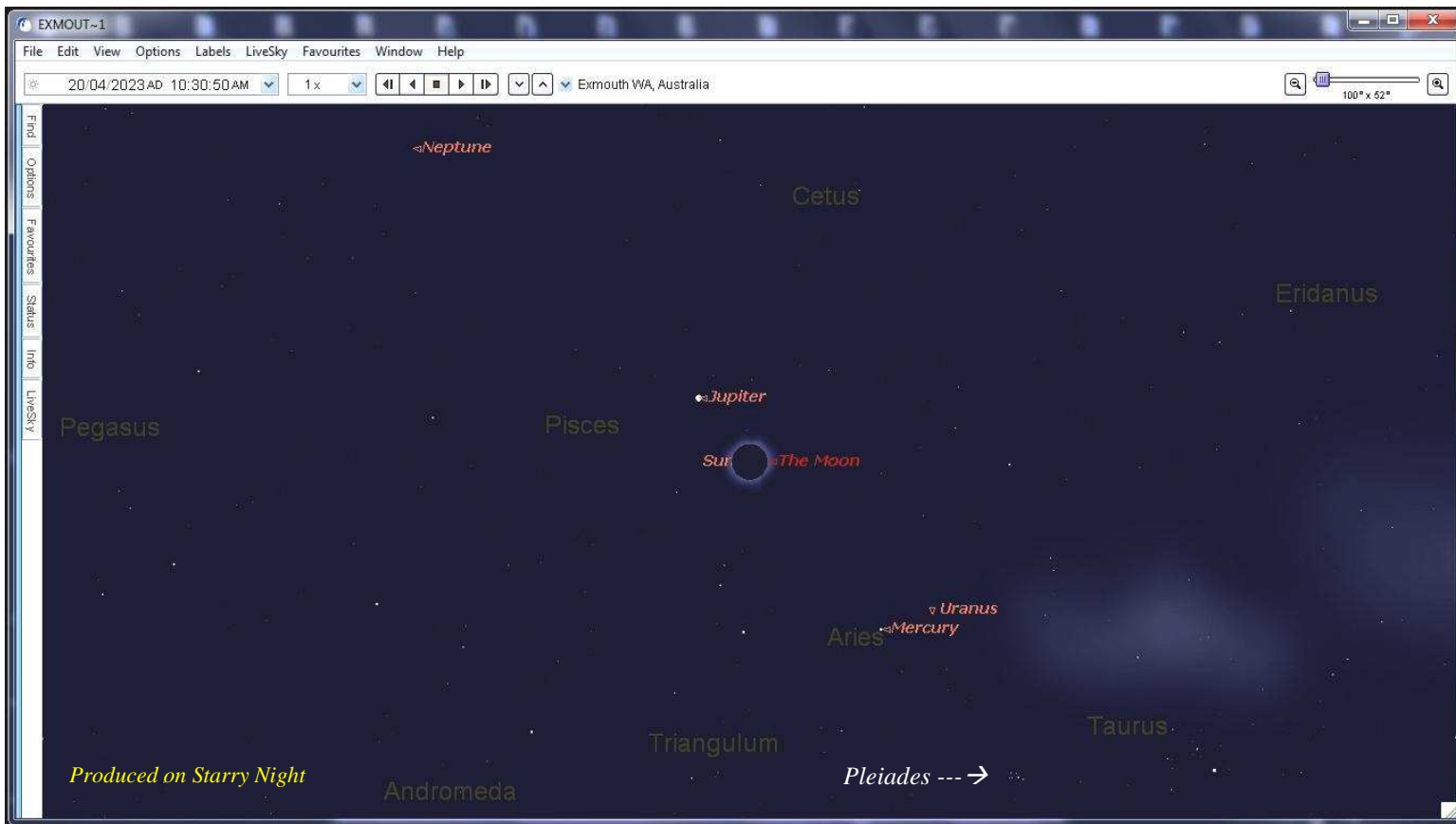
Solar eclipses are rare events in the galaxy let alone the solar system, if there were any aliens with the capability of getting to Earth, they should turn up to witness the eclipses on Earth. We haven't seen any aliens yet, maybe they have some type of cloaking technology.



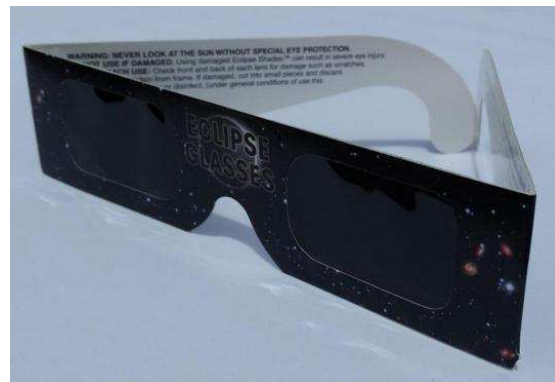
**Found the planets during the eclipse.**

At totality the Sun will be 54 degrees above horizon and 22 degrees right of north.

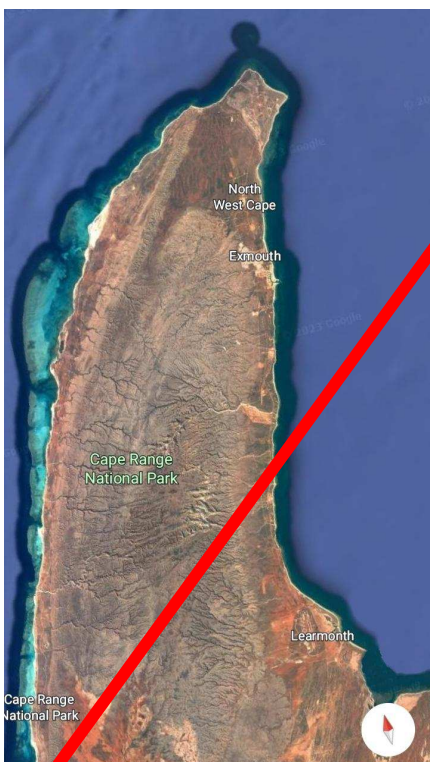
During totality you should be able to spot Venus at 20 degrees above horizon, Mercury at 40 degrees above horizon, Jupiter at 59 degrees above horizon, Saturn at 53 degrees above horizon, some stars and possibly Pleiades at 27 degrees above horizon between Venus and Mercury. But there isn't much time so if you can't see the planets don't worry.



Of course the only time you can look at a solar eclipse with the naked eye, is when the Moon totally covers the Sun. As soon as the first rays of sunlight start to stream past the Moon and on to your eyes is the moment you must stop looking at the eclipse. From there on you can only view the Sun with the aid of a solar filter. I wrote about viewing the Sun in Scorpius newsletter 2, Mar-Apr 2021.



**Solar eclipse glasses** need to be purchased from a reputable supplier. Made from cardboard and Mylar plastic film they usually have a limited life and usually cost around 5 dollars. Again you need to hold them up to a bright light to check for pinholes or any other damage before use. *See image at right*



At the 2012 Cairns eclipse we set up our telescope in the night on the morning of the eclipse. This meant we could polar align the telescopes and so we could have good tracking while imaging the eclipse.

The maximum focal length is 1500mm if you wish to image the whole Sun with a DSLR camera, but you will need excellent tracking. I prefer 800mm to 1000mm focal length, this gives me a bit leeway if the sun drifts across the sensor. A good idea is to practise with your telescope and camera setup before the day of the eclipse.

Centre line of the path of the eclipse shown in red.

*By Greg Walton*





## Book review: *Eclipse Chasers* By Guido Tack

I have never seen a total solar eclipse. I came closest in 1999, when I was right in the path of totality, in south-western Germany, under thick clouds (which disappeared shortly after totality had ended). This experience gave me a deep appreciation why this book is called *Eclipse Chasers* - and not *Eclipse Observers*.

Nick Lomb, Toner Stevenson and their contributors give a detailed account of the history of eclipse chasing - and, sometimes, observing - in Australia. While they also present all the technical aspects of what eclipses are and how people observed them in the past and now, the real strength of the book is the focus on the stories and people behind the observations. For example, the authors note that people often wore their best clothes to these once-in-a-lifetime events, and the many carefully coloured and digitally enhanced photos from these early expeditions were a highlight for me.

The uniquely Australian focus sets the book apart, starting with an overview of solar eclipses in First Nations traditions, and then recounting the eclipse expeditions of the 19th and early 20th centuries. These expeditions often required scientific instruments to be shipped from England and then transported to very remote parts of the country. Many of these attempts failed, mostly due to the weather, while others were very successful - for example, delivering photographic evidence for the effects predicted by Einstein's theory of general relativity. All of them are fascinating stories about the first well-organised, well-funded, large scale and collaborative scientific projects in Australia.

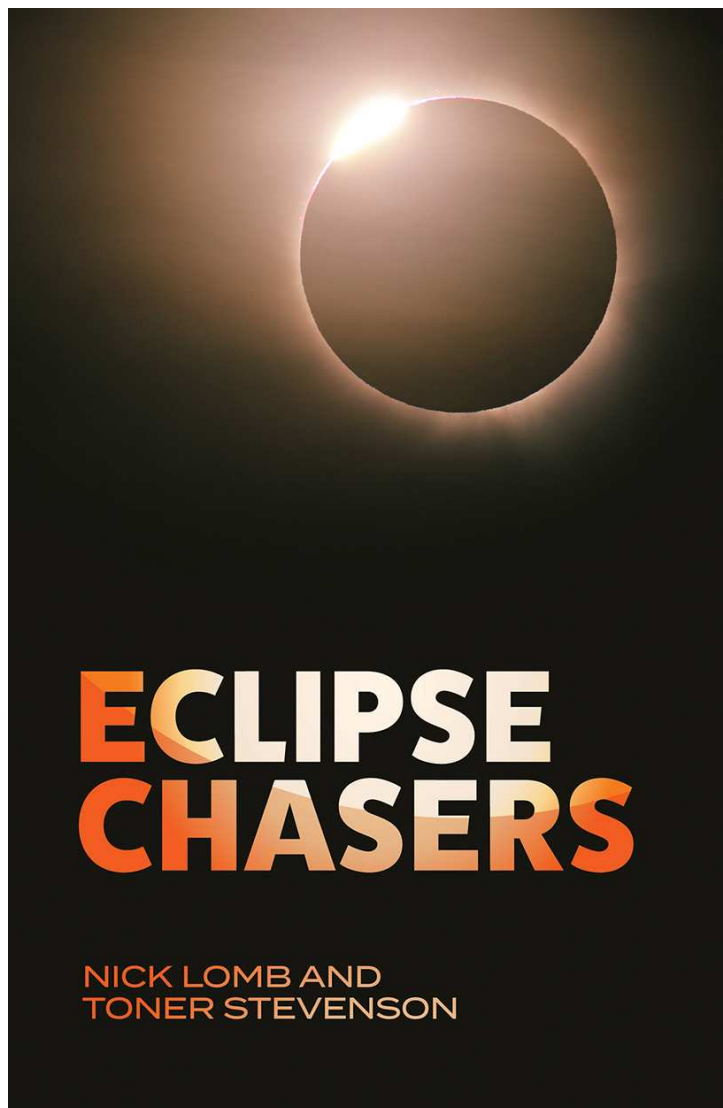
In addition to the history of the scientific expeditions, the book also covers eclipse observations by the general public, who were often discouraged from watching eclipses at all, until safe "eclipse glasses" became widely available. And it tells the stories of amateur eclipse observers such as the Astronomical Society of Victoria, who organised the first chartered eclipse flights (it probably helped that the flight's captain was an ASV member).

The final chapter prepares the reader for the five upcoming total eclipses that can be seen from Australia over the next 15 years, with useful tips on observing locations and equipment. A few MPAS members are planning to travel to the 2023 eclipse, only visible from Exmouth in Western Australia or a cruise ship off the coast. An opportunity a bit closer to home for most of us will be the 2028 eclipse, with Sydney in the path of totality. And while Sydney Harbour is certainly a spectacular backdrop for such an event, I can't imagine a more magical scenery than watching the 2037 eclipse at Uluru.

Whether you're a seasoned eclipse chaser/observer, considering to become one, or just interested in the history of science in Australia, this book is a must-read.

You can pre order *eclipse chasers* at <https://www.publish.csiro.au/book/8098/>

I also enjoyed the book. A journey from the first eclipses seen from Australia, with all the problems of distance, funding and weather, to a comprehensive guide to future eclipse in Australia. Well worth adding this book to my collection. *Greg Walton*



# YOUR ASTRO QUESTIONS



## How can I clean my optics? *By Greg Walton*

### The first thing to consider is.

Does the optics really need cleaning? There is a good chance you will do more damage, making your optics worse. I always say, only clean if it is really necessary. Removing a little bit of dust won't make your telescope work any better. The optics do need to be pretty bad before I would clean them.

### Prevention is better than cure.

Best not to let the optics get dirty in the first place. Keep the lens covers on and block the hole in the focuser where the eyepiece goes. Also if you own a Newtonian, it's a good idea to cover the back end of the telescope, the end with the mirror. There usually is an air gap around the mirror to aid with cooling. Unfortunately this air gap will let dust and spiders into the telescope. Some Newtonians also come with a 12-volt fan behind the mirror to speed up cooling. You really need to consider the direction the fan spins. Clean cold air should be drawn in through the front of the telescope and pushed past the mirror out the back of the telescope. If the fan turns the other way, you could blow dust and dirt into the back of the telescope and up the tube, which will fall back onto your mirror. The situation becomes even worse if you own a Dobsonian, as the mirror is very close to the ground. This fine dust which falls on the mirror can be removed with compressed air. But if the dust is to get wet, which is often the case, then the dust will change to mud and will be very hard to remove. Consider how you store your telescope; if the optics are pointed straight up, then dust is more likely to collect. Best to store your telescope flat, in other words don't have the mirror pointing up. If a spider moves in, then the spider dropping won't land on your mirror. Spider droppings are very corrosive and will remove the aluminium coating off your mirror and can even etch glass.

### Never touch your optics.

Your fingers contain acid which will etch glass and remove the aluminium coating from your mirrors. Also the high-end refractors and eyepieces have anti-reflective coated optics, which are more susceptible to being damaged by the acid on your fingers. Sad to say, over the years I have seen it too many times, finger prints etch into anti-reflective coats and they're there forever. Anti-reflective coatings stop light from bouncing off the surface of the glass. It acts a bit like a sponge which absorbs light. Anti-reflective coatings helps stop double reflection which are often seen in cheap telescopes.

**So you have decided to clean your optics anyhow.** This is not a 5 minute job and it's best to find someone who knows how this is done.

**Reflectors.** Telescopes with mirrors such as Newtonians and Dobsonians.

Remove the primary mirror cell. This means undoing lots of screws around the outside of the tube. Once removed stand it on its back and remove the 3 screws which hold the mirror in its cell. Carefully lift the mirror out and stand it in a sink. Run only slightly warm water over the mirror, then wait 10 minutes. Repeat this a few times. This will help soften any stubborn dirt. Place a bit of wood under one edge of the mirror, so water can run off the surface. Rinse off mirror again and inspect. If the dirt has not moved, then you will need to rub the dirt off. Remember, every time you touch the mirror with anything you will scratch the aluminium coating. Never use paper produces, because they're made from wood and wood contains silica (glass) which is very hard compared to aluminium. You can buy disposable cleaning cloth made from a type of soft plastic from camera shops. The type you use for cleaning your camera. These are ok for small mirror. For larger mirror it's recommended to use cotton wool. Wet a small ball of the cotton wool. Starting from the centre of the mirror, lightly touch the mirror centre and drag the cotton wool ball to the edge of the mirror and then throw it in the bin. Then repeat with a fresh piece of wet cotton wool, starting from the centre and drag the cotton wool ball to the edge of the mirror and then, again, throw it in the bin. Work your way around the mirror till it's done. Just remember, never use the same piece of cotton wool twice. Rinse off the mirror with distilled water, yes the same distilled water you put in your iron, which is available from the supermarket. Now wait till it dries. If you are a bit impatient and find a few drop of water that will not go away you can suck them up with the corner of a tissue, just don't touch the surface of the mirror. You can clean the secondary mirror with the same method. Now I hope you can still remember how to reassemble the telescope. Once it's all back together, you will need to align or collimate your telescope. You can find an article I wrote in Scorpius 2 2015.

**Refractors.** Telescopes with lenses. (There are many types of refractor)

Most amateur astronomers only ever clean the outside face of the front lens, as this is the face which gets grubby. Best to attempt this in stages. First try blowing off any dust with an air puffer. If the dust didn't move, try a soft brush. Then if it's really bad, use only slightly damp cotton wool and dab the surface. Wait a minute or two, then with a new piece of damp cotton wool, start at the edge and move to the centre of the lens, then drop it in the bin. Repeat with a new piece of damp cotton wool starting at the edge again and moving to the centre. Just work your way around the lens till it's clean. Just remember to drop it in the bin each time, as if you picked up a grain of sand, you could scratch multiple lines across the lens. If there is dirt on the inside of the telescope, you will need to dismantle.

The budget refractor usually comes apart very easily and the lens can be washed under a tap then dried with tissues or cloth. Being glass they're much harder than aluminium-coated mirrors and a bit easier to clean and less likely to scratch. Most refractors have 2 lenses, the front lens is called the crown & the rear lens is called the flint. You need to make note of which way the lenses face and sometimes they are also marked on the edges of the lenses. These marks should line up, as the budget-type lenses are matched so as to cancel out any errors. They usually have a spacer or shims between them to stop them from touching. Called an air space doublet. Also when reassembling, don't over tighten the screws as this can bend or distort the lens, reducing the quality of the viewing.

I try not to use any cleaning chemicals, only tap water and distilled water.



Some of the older high-quality doublets have oil between the lenses. Called oil-spaced lenses, usually have an F ratio between 12 and 20 and their surfaces are ground spherical. These can be a bit tricky to clean and reassemble. After cleaning you need to lay the front face of the crown lens on a piece of soft cloth. Then add one new drop of mineral oil to the centre of the back of the crown lens. Then carefully place the front of the flint lens on top of the crown, making sure you remove all air bubbles between the lenses. By applying a slight downward force in the centre of the flint, you can carefully slide the lens around about 20mm either way to help them settle. Usually this job is only tackled by the most experienced astronomers or optical technicians.

Cleaning the highest quality refractors with their fancy anti-reflective coatings can be a bit of a mission. Especially if there are finger print marks on the lens. You can scrub all you like, but they will never come off. All you will be doing is damage the coating. This is because these coatings are porous in nature, so absorb oil from your fingers. Many of the high quality refractors have 3 lenses with a complicated system of spacer rings. If you get any of them around the wrong way the telescope will be useless. Also these lenses are marked on the edge with a line. A good idea is to photograph the position of the lines before you pull them apart. Again, this job is only tackled by the most experienced astronomers or optical technicians. Most amateur astronomers only ever clean the outside face of the front lens, as this is the face which gets grubby. Best to attempt this in stages. First try blowing off any dust with an air puffer. If the dust didn't move, try a soft brush. If you need to wash the lens, use only slightly damp cotton wool. With a piece of damp cotton wool, start at the edge and move the to the centre of the lens, then drop it in the bin. Just work your way around the lens till it's clean. Just remember to drop it in the bin each time, as if you picked up a grain of sand, you could scratch multiple lines across the lens. **Another word of warning**, if you use too much water, the water can flow into the telescope. As the surfaces of the lenses are almost touching, dirty water can be sucked into this gap between the lenses, with a process call *capillary action*. Then you will probably need to dismantle the telescope.

### **Often the cleaning is only half of the job.**

Now your refractor telescope is cleaned and reassembled. It's a good idea to check the collimation. Place your laser collimation tool where the eyepiece goes, then switch it on and look at the front primary lens. The red laser dot should land in the centre of the primary lens. Unfortunately most refractors leave the factory misaligned or get bumped in transit. Loosen the 3 screws which hold the focuser body and see if you can move the focuser body so the red laser dot should land in the centre of the primary lens, then re-tighten the screws. I usually find I need to remove the focuser and drill out the holes to a larger size. While doing this make sure the focuser draw tube is not loose.

Once the focuser is aligned, you need to look at the primary lens cell. Some older refractors come with adjustment screws, usually 3 screws with spring behind them. It's just a matter of tightening each of the screw till the lens cell is square to the tube. Then point the telescope at a star and adjust the focusing till the star is sharp, now turn the focuser knob 1/4 of a turn or till the star has some circles around it. The circles should be perfectly round and equally spaced. If the circles are off centre and not round, you will need to adjust one of the screws on the lens cell. With a bit of trial and error you should eventually get round circles with the star at its centre.

The budget refractors often have 3 screws like on the focuser. If you get a piece of A4 paper and wrap it around the telescope tube making sure the edges align. Then hold them in place with sticky tape. Now slide the tube of paper up to the primary lens cell and check if its square to the end of the paper tube. Loosen the screws and adjust. Again it's often the case that you will need to drill out the holes to a larger size so you can get enough movement. I found this method is quick and give good results.

High-end refractors usually have a primary cell which threads onto the tube with no adjustment, which can be a good thing, if all the parts are made accurately the telescope should never go out of alignment.

### **Catadioptrics.** Telescopes with lenses and mirrors. (Maksutov and Cassegrain)

Cleaning catadioptrics is a very time consuming job and is only tackled by the most experienced astronomers or optical technicians. The good news is that these types of telescopes are very well sealed, so most likely it's only the front lens or corrector plate which will need cleaning. These telescopes cost a lot of money and if the corrector plate is damaged you will not be able to buy a replacement part as the corrector plate is matched to the primary mirror. Also most corrector plates have anti reflective coatings to stop light bouncing back and forth between the corrector plate and primary mirror which would produce a double image.

As I mentioned above, it's best to attempt this in stages. First try blowing off any dust with an air puffer. If the dust didn't move, try a soft brush. Then if it's really bad, use only slightly damp cotton wool and dab the surface. This will help to soften any dirt. Wait a minute or two, then with a new piece of damp cotton wool, start at the edge and move the to centre of the corrector plate, then drop it in the bin. Repeat with a new piece of damp cotton wool starting at the edge again and moving to the centre. Just work your way around the corrector plate till it's clean. Just remember to drop it in the bin each time, as if you picked up a grain of sand, you could scratch multiple lines across the corrector plate. You will find some of the dirt has now moved to the area around the secondary mirror. You will just have to do the best you can to carefully clean this area. A word of warning here, make sure the cotton wool is not too wet, as water and dirt could be sucked into the joint between to corrector plate and secondary mirror. Also the same goes for the outer edge of the corrector plate and retaining ring. It's very rare to find dirt on the inside of a catadioptric telescope because they're a sealed unit. But some catadioptric telescopes have fans behind the primary mirror to speed up cooling, these fans can allow dust to enter the telescope. There is no clear way to describe how to dismantle a catadioptrics, as there are too many different designs. Best to get on the Internet and research as much as you can.

Aligning or collimating Cassegrain telescopes is a science all on its own, which very few have mastered. Most Cassegrains only have adjustment on the secondary mirror. If you place your laser collimation tool where the eyepiece goes, the red laser dot should hit the centre of the secondary mirror and return back to the centre of the laser collimation tool.

Aligning or collimating Maksutov telescopes. Under rubber covers you will find 3 adjusting screws on the rear of the telescope, these adjust the tilt of the primary mirror. If you place your laser collimation tool where the eyepiece goes, the red laser dot should hit the centre of the secondary mirror and return back to the centre of the laser collimation tool.



## Sundial cannon, by Greg Walton

Is it real or just a gimmick? I think it's a bit of both and a good excuse to play with small cannons. Though Occupational Health and Safety these days would probably ban them or at least make you place it in a metal box with a hundred warning signs in place and tell you to get an explosive licence.

The main reason for making a sundial cannon is as a labour saving device. You set the cannon to fire at noon and then work on your ship. And when you hear the cannon fire, you can quickly adjust your ship chronometer (clock). Of course you will need the sun to shine.

In practice thousands of these sundial cannons were made and used at ports around the world. With so many manufacturers the designs varied greatly. The larger permanently mounted sundial cannons do work accurately with a skilled operator. Whereas the smaller sundial cannons are more of a toy and there accuracy is very bad. *See some examples below*



Adjusting the Sundial which Sets Off the Cannon Automatically at Noon



### Can we make our own sundial cannon?

YouTube video Sundial cannon <https://youtu.be/9suf0D13Ws0>

Using a shop-bought sundial and by adding a magnifying glass and a cannon, it should be possible to build one. But for safety's sake, I decided to do away with the cannon and replace it with a cotton thread which would burn through releasing a weight which would strike the edge of the sundial, making it ring like a bell. This audio option would be close to the cannon system. I happen to have a brass sundial that I picked up at an op shop and a box of old magnifying lenses. So I found a lens with the correct focal length and made a bracket to hold it at the correct distance from the cotton thread. Of course the sun changes its height above the horizon each day, so we will need to adjust the position of the magnifying lens every month. By setting up the thread to run north-south then the burning point of light should cross the thread; this would reduce the need to adjust the position of the magnifying lens as often. I would need to make all the parts from brass as it would be outdoors. On the first attempt it worked, burning through the thread and releasing the weight. Now when I'm outside gardening and I hear the sundial bell, I will know it's lunchtime. *See photo below* Sundial Bell video - <https://youtu.be/dNKBzZSmwI>





# MEMBERS GALLERY



## Aurora from the Briars

When I saw the cloud rolling in I packed up my phone, which I had attached to a fence post down the dirt road behind MPAS tonight. Running an intervalometer app on my phone it took 300+ raw images, each 30 secs at ISO500. All the images had no colour, except for this very last one it took!

*By Nerida Langcake*



## Star trails from the Briars

Some star trails taken with my smartphone attached to a fence post down the dirt road behind MPAS whilst waiting for the possible aurora last night.

*By Nerida Langcake*

## Galaxy NGC253

Bit of a blurry mess, but this is the Sculptor Galaxy taken using my equipment mounted on the 350mm Meade in the observatory. Managed to get my camera, guide camera and ASIAIR connected and driving the mount around, plate solving etc. Focusing is pretty tough at this focal length, maybe a Bahtinov mask would be good? Not sure if you can get one big enough for the Meade though.

The black circles are dust spots on the flattener, I couldn't find a cloth or anything to clean it so will do that next members BBQ.

Guido and I checked the polar alignment and according to the ASIAIR it's a bit out. However with the guide camera going the guiding was actually surprisingly good, the mount still clicked but was working great.

Excited to try this more and see if I can get some more galaxy images/planetary stuff, my scope focal length is 477mm so going up to the 2970 or whatever the Meade is quite the change!

*Ben Claringbold*



### Thor's Helmet NGC2359

This has been a nightmare with clear evenings then clouds rolling in about midnight so in total 3 nights with only in total 4 hours of acquisition of 10 minutes each.

I extracted the HA03 in mono to use this as a luminance layer then used the HA03 colour version to do the rest.

All in Astropixel processor for stacking and extraction, then in PixInsight for BlurXTerminator and NoiseXTerminator followed by Generalised Hyperbolic Stretch then in Photoshop to complete the works.

294mc pro, Optolong L-Ultimate, TS Optics Apo 130 with .75 reducer, ASIAIR, Skywatcher NEq6

*By Nik Axaris*



### Orion Nebula M42 & M43

Taken a few nights ago and tried some post processing that incorporated Asto Pixel Processor, Siril, PixInsight and Photoshop. The L-Ultimate is an excellent filter that really pulls out the H-alpha however since Orion is a complex emission and reflection nebula I needed to shoot a sequence with just the UV IR cut filter and then blended them together to get both the H-alpha clouds and the blues of the Running Man and part of the Orion complex. Either way the filter, combined with the Askar 300 is a great combo with the 294MC Pro after drizzling then resampling.

5 hours of 10 and 600 second subs though I think the 294 doesn't like 10 sec subs

*By Nik Axaris*



### Vela supernova remnant

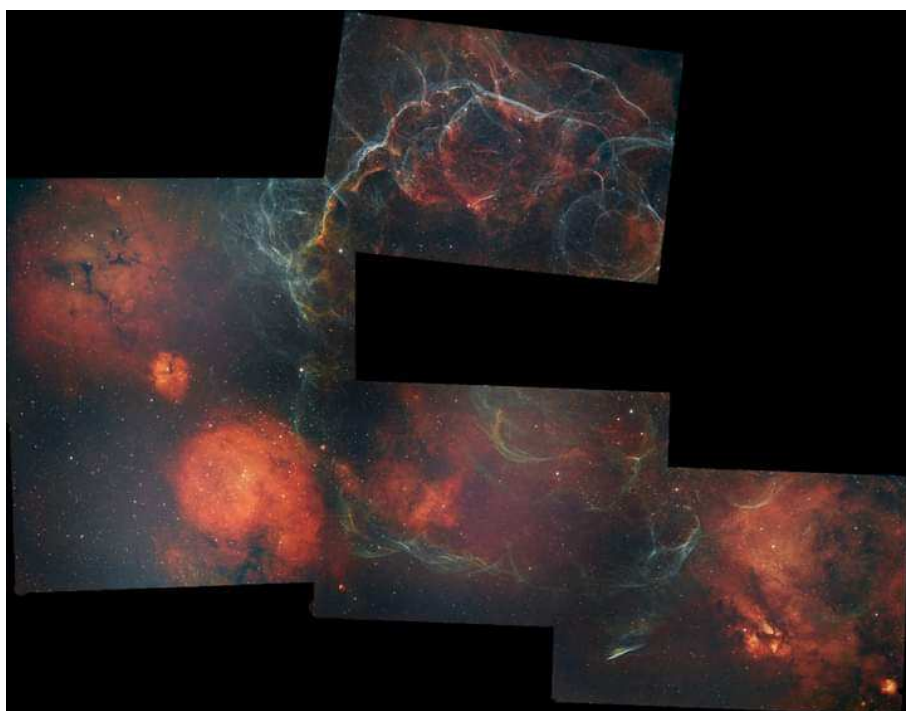
Huge work in progress, I've been working on this now for 2 months on and off thanks to weather and work etc.

Vela supernova region with my FRA300, 294MC Pro and ASIAIR Optolong L-Ultimate etc.

Astopixel processor for the stacking and the mosaic so far.

This is a large project and hopefully with clear weather I can complete this some time this millennium. Stay tuned for the final image, or not :)

*By Nik Axaris*





## LMC.

NGC 1763. This nebula is on the outer edge of the LMC. It's the second largest star-forming region in the LMC, after 30 Doradus, aka The Tarantula.

This is my first go at using the Optolong L-Extreme filter. Sharpstar CF80, 0.8 Reducer, ASI 294MC Pro, Optolong L-Extreme 15 x 300 Sec, Stacked and processed in Siril.

*By Chris Kostokanelli*



## Orion

M78 and a section of Barnard's Loop. This was taken from my backyard with my 80mm Triplet, 0.8 Reducer / Flattener, Optolong L-Extreme Dual band filter and ASI294 MC Pro.

M78 is a reflection nebula, not an emission nebula, so the L-Extreme isn't much good for it, but it does a terrific job on Barnard's Loop, which emits H-alpha.

I was hoping to get some shots with a UV-IR filter to blend into this to highlight M78 better, but forecast isn't looking good. 5x600 sec exposures.

*By Chris Kostokanelli*



## Aurora

Was very lucky to have clear skies, and some decent Aurora activity last night. These are from Tekapo. Even close to the town, the skies here are incredible. Can easily make out LMC and SMC naked eye, and even 47 Tuc.

*By Chris Kostokanelli*







Comet C/2022 E3 taken with 6 inch Refractor - Pentax K 30 from LMDSS 8feb2023  
by Greg Walton



**Above**  
Comet E3 taken with 6 inch refractor field flattener Pentax K30 iso 12800 sec 30 on HEQ5 mount from LMDSS near Heathcote Victoria. *By Greg Walton*

**Right**  
Mars & Comet E3 taken with 6 inch refractor field flattener Pentax K30 iso 12800 sec 30 on HEQ5 mount from LMDSS near Heathcote Victoria. *By Greg Walton*  
**Time-lapse** [https://youtu.be/mT\\_xeA\\_1jDM](https://youtu.be/mT_xeA_1jDM)



**Below**  
Orion Nebula M42, Horsehead Dark Nebula B33, Flame Nebula NGC2024 & M78 Nebula on the bottom edge, taken with 135mm Lens & Pentax K30 iso 6400 sec 30 on Vixen Polaris mount from LMDSS near Heathcote Victoria. *By Greg Walton*



M42 & Horse head - 135mm Lens, Pentax K30 30sec iso6400 from LMDSS 11feb2023 by Greg Walton





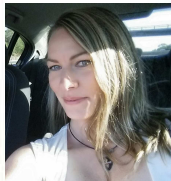
SOCIETY INFORMATION



Peter Skilton



Mark Stephens



Nerida Langcake



Jamie Pole



Anders Hamilton



Trevor Hand



Chris Kostokanellis



Guido Tack



Simon Hamm



Greg Walton

OFFICE BEARERS OF THE MORNINGTON PENINSULA ASTRONOMICAL SOCIETY

**President:** Peter Skilton  
**Vice President:** Mark Stephens  
**Committee:** Anders Hamilton, Trevor Hand, Guido Tack, Simon Hamm and Chris Kostokanellis

**Secretary:** Nerida Langcake  
**Treasurer:** Jamie Pole  
**Web master:** Guido Tack  
**Scorpius editor:** Greg Walton  
**Librarian:** Fred Crump

SOCIETY MEETINGS

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

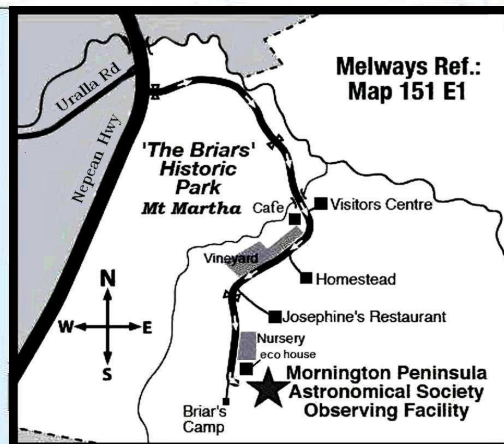
**Society meetings:** Don Leggett Astronomy Centre  
 8pm on the third Wednesday of the month  
 (except December)  
 (See map at right & Below)



**For addition details:**  
 Internet: [www.mpas.asn.au](http://www.mpas.asn.au)  
 email: [welcome@mpas.asn.au](mailto:welcome@mpas.asn.au)

**Phone:** 0419 253 252

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



Melways Ref.: Map 151 E1



Fred Crump

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

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

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:**  
 Internet: [www.mpas.asn.au](http://www.mpas.asn.au)  
 email: [welcome@mpas.asn.au](mailto:welcome@mpas.asn.au)

**Phone:** 0419 253 252

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



Members please write a story about your astronomy experiences and add some pictures. Send them to the editor: Greg Walton [gwpas@gmail.com](mailto:gwpas@gmail.com)

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SCORPIUS The journal of the Mornington Peninsula Astronomical Society

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