

Cover image - The Trifid Nebula (catalogued as M20) is an H II region in the north-west of Sagittarius in a star-forming region in the Milky Way. Taken back on July new moon weekend at Heathcote (20 x180 second subs). I hope it brightens any lockdown blues! *Dominic Lucarelli*



SCORPIUS

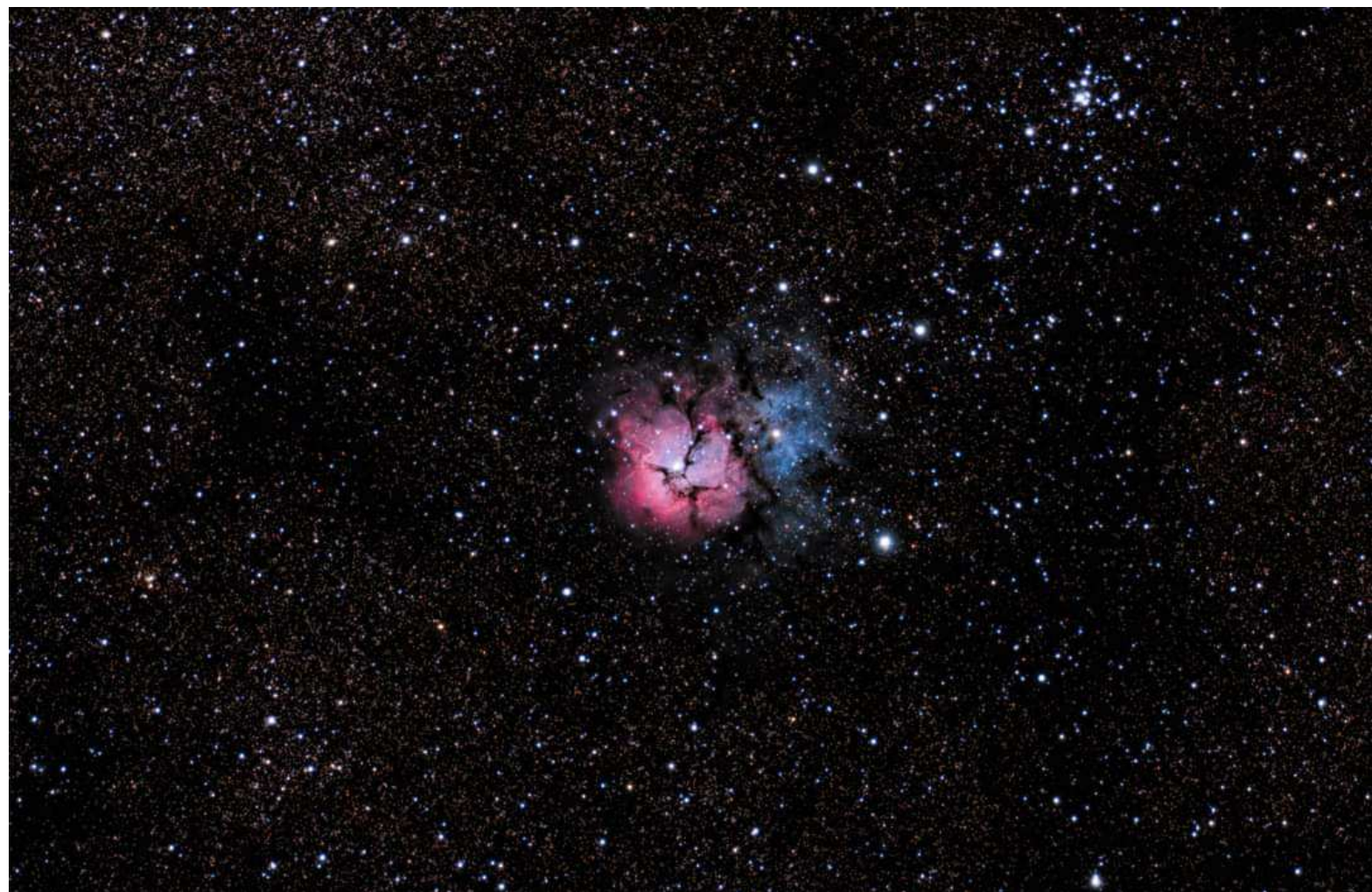
THE JOURNAL OF THE
MORNINGTON PENINSULA ASTRONOMICAL SOCIETY INC.

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

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



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

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

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

Mornington Peninsula Astronomical Society

WHAT'S ON



Our COVID Safe Plan is in place, and therefore there are rules we must all follow when visiting the site.

Here are the basic rules which are required and are mandatory for all MPAS Members:

- 1) **BOOKING.** No site entry unless you have a confirmed email booking (welcome@mpas.asn.au) showing date/times, name and phone of all persons.
- 2) **SICK.** If slightly unwell or with cold/flu symptoms DO NOT enter the site any further. Go home.
- 3) **SIZE.** Max of 100 people outdoors. Max of 25 people or 1 per 4m² (plus speaker/usher) in auditorium, and other areas as sign-posted.
- 4) **CHECK-IN.** All attendees must check-in using the MPAS QR code (or log book as last resort) to assist in contact tracing, and show a committee member your digital or printed certificate or official medical exemption upon arrival.
- 5) **CLEANLINESS.** All touched surfaces and handles must be carefully cleaned after your use. Wipes and cleaning agents provided. Cleaning checklist on site.
- 6) **DISTANCING.** Min 1.5 metres between people anywhere on-site.
- 7) **HANDS.** Wash often. Never assume someone else has already cleaned the surface. Hand sanitiser provided.
- 8) **MASKS.** Masks must be worn at all times. **(NOTE - These rules may change at any time)**

With the imminent transition of COVID-19 restrictions for community groups such as ourselves, it is time to reopen the Briars observatory site in line with applicable government guidelines, and cognizant of the age and health of some of our members.

Members who are able to show they are double-vaccinated may attend the 2021 events below. Vaccinated guests and public, however, will not be able to attend until 2022. Unvaccinated members will have to be patient and wait until the government eases restrictions even further once COVID-19 is considered endemic throughout the community. Regional members from outside metro Melbourne can only attend once boundaries are removed. *Regards, Peter Skilton*

The timetable at The Briars is as follows.

NOVEMBER

- Friday 5th, 8pm Briars. Members-only stargazing night (free), solar system talk and viewing night. Speaker Manfred Berger.
- Wednesday 17th, 8pm monthly society meeting in person (free). We are unclear yet how many will be allowed indoors on this date.
- Saturday 20th, 4pm. Members-only Telescope Learning Day (free).

DECEMBER

- Friday 3rd, 8pm Briars. Members-only stargazing night. (free). Speaker Trevor Hand.
- Saturday 11th, 6pm. Members-only Christmas dinner. Bookings will open in Trybooking soon.
- There will be a \$5/head charge for this catered meal (perhaps a roast again), which is refunded to members upon attendance.

Those attending must QR code on arrival and, if aged 16 or older, show their proof of vaccination electronically, or on paper, or be carrying a medical exemption certificate. Compliance is still necessary with all public health orders. Bookings aren't necessary, however we must ensure required attendance caps on the night if they look like being exceeded.

Public stargazing nights will restart in January on every Friday evening at 8pm. These will be booked in Trybooking as per usual.

2022

APRIL

Thursday 7th, 6:30pm, Essex Heights Primary at Iluka Retreat, 20 Shoreham Road, Shoreham. 75 Year-5 pupils. Speaker needed.

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

SOCIETY NEWS



Public viewing Night September 3rd - Cancelled due to COVID.

Society meeting September 15th - The meeting featured Prof. Chris Impey speaking about "The Physics of Black Holes", including about the super massive Black Hole, Sagittarius A* at the centre of the Milky Way, 4 million times the mass of the Sun. You can watch by clicking on this link - <https://www.youtube.com/channel/UCm6XOKIcIft4y0XRBXpXuw>

Members BBQ & Working Bee September 18th - Cancelled due to COVID.

Public viewing Night October 1st - Cancelled due to COVID.

Society meeting October 20th - Hi everyone! 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. To mark the anniversary of the first artificial satellite in Earth orbit, Sputnik, the meeting features a once-thought lost documentary about "Sputniks, Bleeps and Mr. Perry". It tells the story of inspiring science Physics teacher, Geoffrey Perry, and Chemistry teacher, Derek Slater, and the so-called Kettering Satellite Tracking Group of their students who, in 1960 using humble amateur radio techniques, monitored and decoded the signals from a Sputnik craft in orbit and discovered a top secret Siberian launch site unknown to NASA and the CIA. The same school continued the tracking work with later generations of students right up until January 2000 when Geoffrey Perry MBE passed away, and inspired other amateur observers in the USA and Europe to follow their lead. *Regards, Peter Skilton*



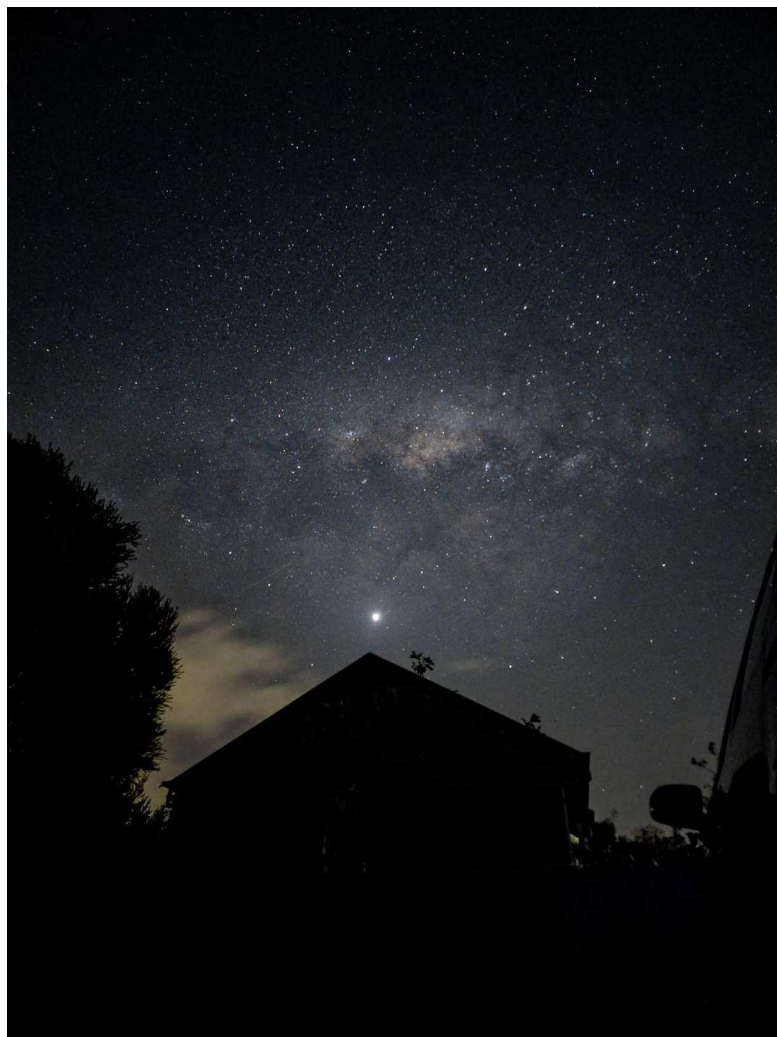
You can also watch it here by clicking on this link and going to the most recent video on the channel:

<https://www.youtube.com/channel/UCm6XOKIcIft4y0XRBXpXuw> or MPAS site: <https://www.mpas.asn.au/meeting-recordings/>

Members BBQ & Working Bee October 23rd - At the working bee we mowed the law, washed all the tables, de-cobwebbed everything swept the dust out. We also managed to wash the dome and install the de-humidifier. The basic BBQ was an outdoor event (with current restriction) and we had about 15 or so in attendance. The skies cleared and we moved to the observatory for some viewing of Venus, Saturn and Jupiter and a couple of Deep sky objects. The earthquake about a month ago did not mess up the alignments! While we were there, we examined the new eco-house dome located right next to our entrance and debated how we could convert it for our use. *Dave Rolfe*



First night back at the MPAS Observatory, with Venus shining brightly in front of the Milky Way - taken with my trusty Samsung Note20 Ultra smartphone. *Nerida Langcake*

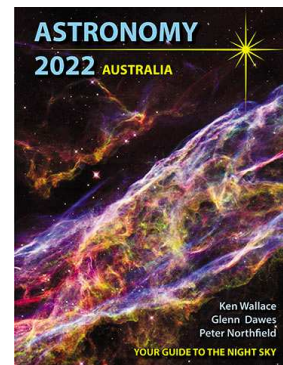


Scout viewing night October 29th - **Cancelled due to COVID.**

School viewing nights - **Rescheduled due to COVID.**

2022 Quasar Astronomy sky almanac should be on sale in November.

For those who missed out on the pre ordering deadline, we usually purchase extras for sale to the public. So ask at the sale counter at the Briars MPAS clubhouse for a copy.



Vale - Heinz Rummel

We've been informed by one of his sons that Heinz Rummel passed away last weekend at the age of 92. Heinz had been a long-time member of MPAS since 1999. He had lived in Bundaberg, QLD, for a couple of years now after moving there from near Parkdale, VIC, with his wife. While in Queensland, he particularly liked reading the society magazine, Scorpius, which one of his sons would print out for him to read each edition.

Both Heinz and his wife would usually be the first to volunteer to come along to nearby school telescope nights with their telescope, especially at Parkdale Secondary College, and would eagerly show the kids the night sky.

The photo at right is a part of one snapped by John Cleverdon at the 2014 Christmas BBQ at the Briars. Heinz is shown with the yellow star above him, and his wife, Inge, is to the right dressed in red. *Regards, Peter Skilton*





After many months of lockdown the lawns looked very woolly.
Took 3 1/2 hours on the ride-on mower to put them back in shape.

Right - Council had installed a mains water tap in the paddock east of the MPAS site. This is for a proposed community garden. We can only hope this does not impact the viewing site.



OBSERVATORY UPDATE



MPAS's 18 inch fork mount has had a new shroud made and fitted, ready for the reopening of the MPAS Briars site. The material on the old shroud was crumbling after 20 years of service. The new shroud is made from a better quality material called Ripstop, the name meaning if you try to rip this material it just stops dead. Very hard to rip. This material is shiny on one side, making it easy to clean and fine flat velvet on the other, which is excellent to stop any reflecting light reaching the primary mirror, improving the performance of the telescope. We also replaced all the Velcro and cleaned the metal parts.



★ New Members Welcome ★

Brian & Jenny Thomas
 Lynne & Mal Heming
 Julie McErlain
 Ella Gillespie

MPAS SUBSCRIPTIONS 2022

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 2022 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 2022 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*



Full Member	\$50
Pensioner	\$45
Family	\$65
Family Pensioner	\$60
\$30.00 joining fee	

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		November / 2021					Red Days indicate School Holidays
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
	1	2 Melbourne Cup	3	4 Mercury above a thin crescent Moon dawn Uranus at opposition	5 New Moon Members only viewing night 8pm	6 Moon at 358,844km	
7	8 Venus left of a thin crescent Moon	9	10 Saturn right of the Moon	11 Remembrance Day First Quarter Jupiter right of the Moon	12	13	
14	15	16	17 Society Meeting 8pm	18 Leonids meteor shower	19 Full Moon	20 Members BBQ & TLD 4pm	
21 Moon at 406,279km	22 Comet 19P near NGC7552 in Grus	23 Comet 19P near NGC7582 in Grus	24 Venus below the Moon	25	26	27 Last Quarter Ceres at opposition	
28	29	30					

Monthly Events

Members only viewing night - 8pm to 10pm on the 5th @ the Briars

Society Meeting - 8pm to 10pm on the 17th @ the Briars

Members-only Telescope Learning Day - 4pm on the 20th @ the Briars

Members Night BBQ - 6pm on the 20th @ the Briars

Comet 19P is in the evening sky

CALENDAR		December / 2021					Red Days indicate School Holidays
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
			1	2	3 Members only night 8pm Mars right of thin moon dawn	4 New Moon Moon at 356,794km Comet 19P near IC5332 in Sculptor	
5	6	7 Venus below the Moon	8 Saturn below the Moon	9 Jupiter below the Moon	10	11 First Quarter Xmas Party	
12	13 Geminids meteor shower 4th - 20th	14	15	16	17	18 Moon at 406,320km	
19 Full Moon	20	21	22 Scorpius Deadline	23	24	25 Xmas day	
26 Boxing day	27 Xmas Holiday Last Quarter	28 B/D Holiday	29 Venus and Mercury close	30	31 New Years Eve	Mars right of thin Moon on the 1st Jan 2022 dawn	

Monthly Events

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

Public night - 8pm to 10pm on the 3rd @ the Briars

Members Xmas BBQ - 6pm on the 11th @ the Briars

Watch your emails, as on any clear nights the Observatory may be opened for members only viewing.

THE BRIARS SKY

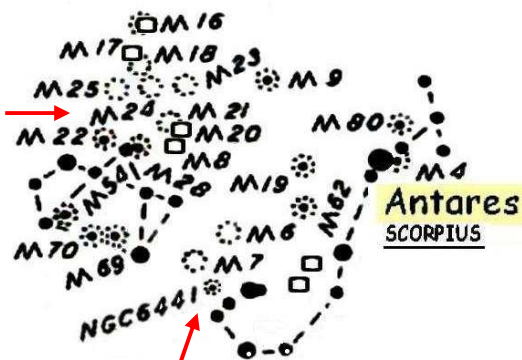
By Greg Walton



Buried in the centre of the Milky Way is M24 star cloud, just north of Sagittarius, is a naked-eye object from a dark sky site. Through a large telescope you will see a sea of tightly packed stars. You will need to fish around as it's 3 degrees by 1.5 degrees in size and doesn't all fit into the eyepiece. At one end you will find the most beautiful strings of stars like Christmas tree lights. It's amazing to think how these stars could line up so perfectly. At the other end, look hard and you will spot a NGC6603 globular cluster hiding in field of star, it's still undecided whether it's a globular or an open cluster. Looking to one side of M24 you will come across an inky dark patch with one star at its centre named Barnard 92, so see if you can spot B93. A smaller Dobsonian with a 40mm eyepiece will make the dark patch stand out.



While in the area take a look at NGC6441, a small but bright globular cluster which lies next to a magnitude 3 naked-eye star near the tail of the Scorpius. It's easy to find and truly a beautiful sight.



A new look at 42 of the largest asteroids in new images

The main asteroid belt, between Mars and Jupiter, is composed of millions of rocky bodies, from pebbles to worlds the size of dwarf planets. Most are very difficult to see, even with the best telescopes, since they are so small and far away. In October, astronomers with the European Southern Observatory (ESO) have obtained new images of 42 of the largest asteroids. The images show these asteroids with a level of detail not previously achieved by earthly telescopes.

The astronomers published the results of their imaging study in the peer-reviewed journal *Astronomy & Astrophysics* on October 12.

The astronomers used the Very Large Telescope (VLT) in Chile for these new images. The images reveal a wide variety of shapes, from spherical ones to some that look like dog bones. Only three large main belt asteroids, Ceres, Vesta and Lutetia, have been imaged with a high level of detail so far, as they were visited by the space missions Dawn and Rosetta of NASA and the European Space Agency, respectively. The ESO observations have provided sharp images for many more targets, 42 in total.



This composite image shows 42 of the largest asteroids in the main asteroid belt, as seen by the SPHERE instrument on the Very Large Telescope VLT. They range from about 584 miles (940 km) to 56 miles (90 km) in size. Image via ESO.

View larger: <https://cdn.eso.org/images/publicationjpg/eso2114a.jpg>

The asteroids are divided into two basic families: spherical and elongated. Ceres, for example, is nearly perfectly spherical (and also classified as a dwarf planet), while smaller Kleopatra looks like a dog bone. Most of these 42 asteroids are larger than 100 km in size. The researchers also imaged 20 out of 23 of the asteroids larger than 200 km.

Not only do the asteroids vary in shape, they also differ widely in density. At the low end, four of the asteroids have densities of about 1.3 grams per cubic centimetre. That is approximately the density of coal. This includes the asteroids Lamberta and Sylvia. The two highest density asteroids are Psyche and Kalliope. They have densities of 3.9 and 4.4 grams per cubic centimetre respectively. To give a comparison, that's higher even than diamond, which comes in at 3.5 grams per cubic centimetre.

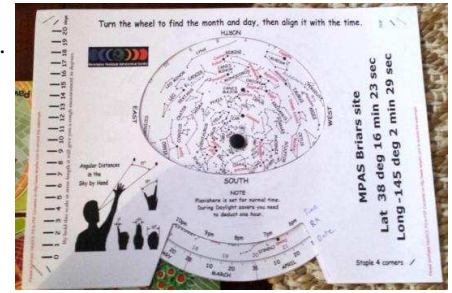
Some of these asteroids are in the main asteroid belt, but 10 of them are what are called near-Earth objects. Some of those are also potentially hazardous, meaning there's a chance they could hit Earth someday.

MPAS Planisphere, by Greg Walton

I have many shop-bought planispheres and found that none of them work well. Mainly because after setting the time and date, it often shows the wrong section of the night sky. This is because they're set to a broad area. Also most planispheres are hard to read in the night as the font is too small.

So I decided to make a planisphere that's accurate for the MPAS Briars site.

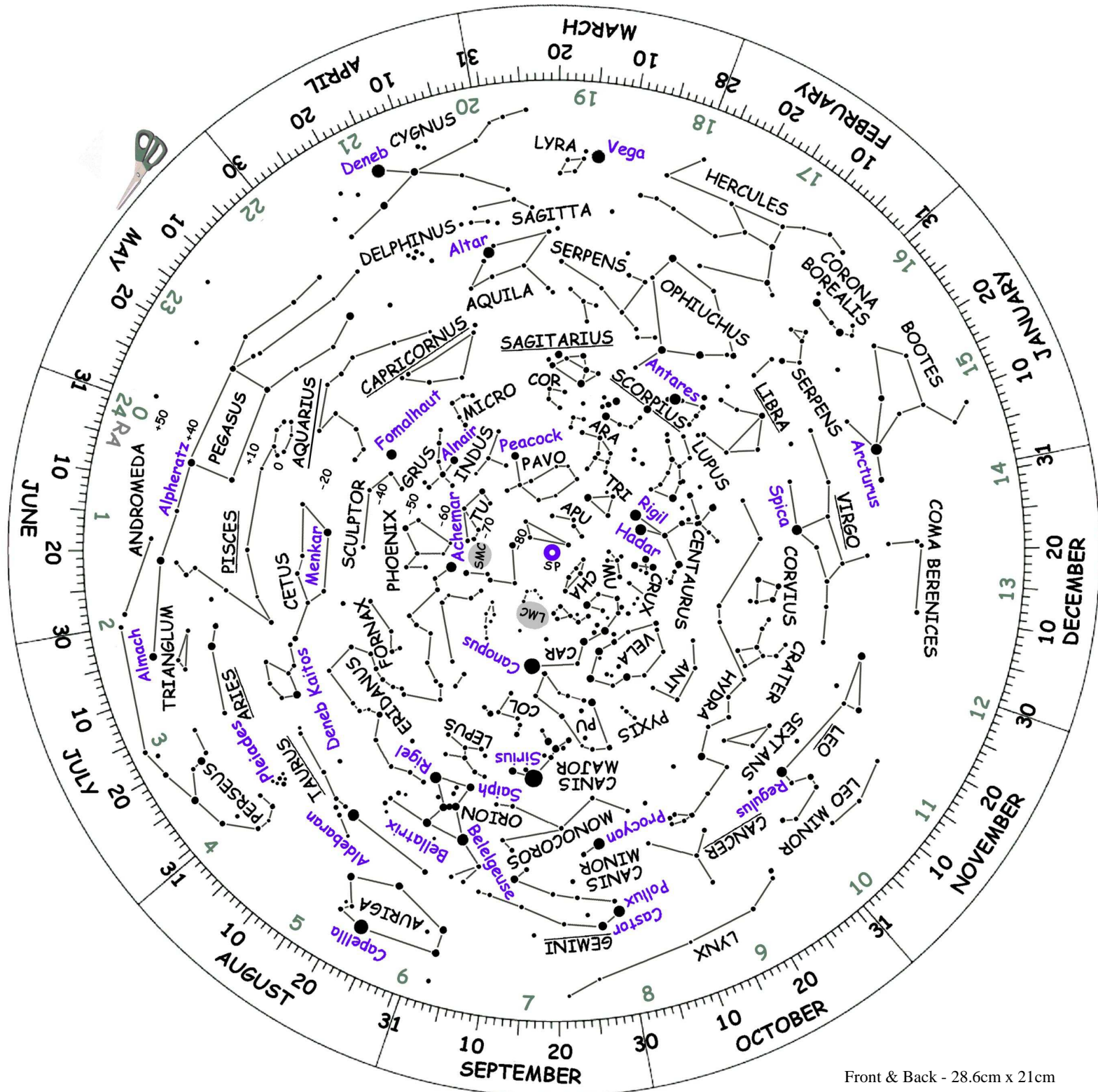
- 1 Print, laminate, cut around star wheel and shaded areas on front & back.
- 2 Staple together front and back in the 4 corners.
- 3 Use a drawing pin and cork to attach the star wheel through the centre. (SP)



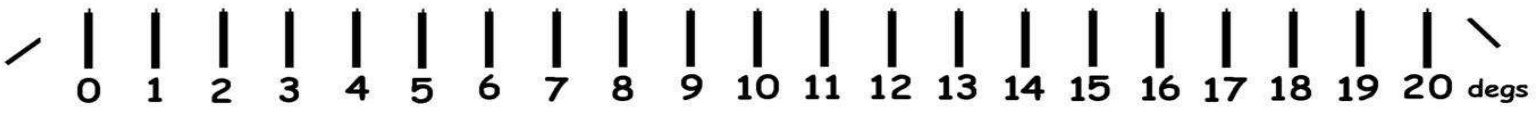
I added the brightest stars to aid those of you with GOTO telescopes. (Purple)

On the front, I have added a scale which you can use to work out the distance between stars in the sky.

On the back, I have added a table which will show you the magnification of your telescope and eyepiece combination.



Front & Back - 28.6cm x 21cm



Hold this scale at arms length it will give you a rough measurement in degrees.

Turn the wheel to find the month and day, then align it with the time.



NORTH

EAST

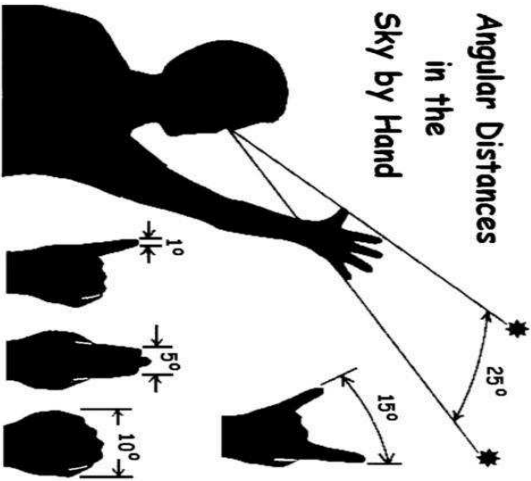
SOUTH

WEST

Cut out shaded areas



Angular Distances
in the
Sky by Hand



NOTE

Planisphere is set for normal time.
During Daylight savers you need
to deduct one hour.

10pm

9pm

8pm

7pm

6pm

Time

RA

Date

Cut out shaded areas



MPAS Briars site

Lat 38 deg 16 min 23 sec

Long -145 deg 2 min 29 sec

Front

Staple 4 corners

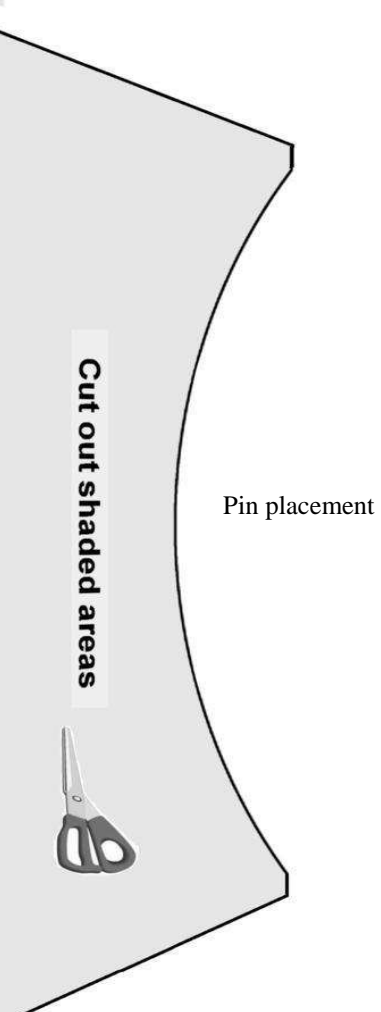
Focal Length of Eyepiece

	300	500	600	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2200	2400	3000
40	8	13	15	20	23	25	28	30	33	35	38	40	43	45	48	50	55	60	75
35	9	14	17	23	26	29	31	34	37	40	43	46	49	51	54	57	63	69	86
32	9	16	19	25	28	31	34	38	41	44	47	50	53	56	59	63	69	75	94
26	12	19	23	31	35	38	42	46	50	54	58	62	65	69	73	77	85	92	115
24	13	21	25	33	38	42	46	50	54	58	63	67	71	75	79	83	92	100	125
22	14	23	27	36	41	45	50	55	59	64	68	73	77	82	86	91	100	109	136
20	15	25	30	40	45	50	55	60	65	70	75	80	85	90	95	100	110	120	150
19	16	26	32	42	47	53	58	63	68	74	79	84	89	95	100	105	116	126	158
18	17	28	33	44	50	56	61	67	72	78	83	89	94	100	106	112	118	129	167
17	18	29	35	47	53	59	65	71	76	82	88	94	100	106	112	118	129	141	176
16	19	31	38	50	56	63	69	75	81	88	94	100	106	113	119	125	138	150	188
15	20	33	40	53	60	67	73	80	87	93	100	107	113	120	127	133	147	160	200
14	21	36	43	57	64	71	79	86	93	100	107	114	121	129	136	143	157	171	214
13	23	38	46	62	69	77	85	92	100	108	115	123	131	138	146	154	169	185	231
12	25	42	50	67	75	83	92	100	108	117	125	133	142	150	158	167	183	200	250
10	30	50	60	80	90	100	110	120	130	140	150	160	170	180	190	200	220	240	300
9	33	56	67	89	100	111	122	133	144	156	167	178	189	200	211	222	244	267	333
8.8	34	57	68	91	102	114	125	136	148	159	170	182	193	205	216	227	250	273	341
8	38	63	75	100	113	125	138	150	163	175	188	200	213	225	238	250	275	300	375
7	43	71	86	114	129	143	157	171	186	200	214	229	243	257	271	286	314	343	429
6.5	46	77	92	123	138	154	169	185	200	215	231	246	262	277	292	308	338	369	462
5	60	100	120	160	180	200	220	240	260	280	300	320	340	360	380	400	440	480	600
4	75	125	150	200	225	250	275	300	325	350	375	400	425	450	475	500	550	600	750
3	100	167	200	267	300	333	367	400	433	467	500	533	567	600	633	667	733	800	1000

To calculate the magnification for your telescope and eyepiece combination,

divide focal length of the telescope by focal length of the eyepiece.

By Greg Walton



Constellation Key

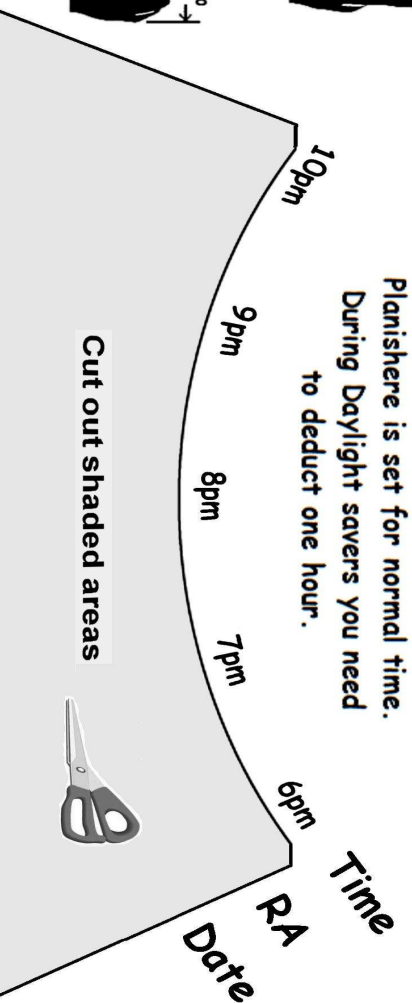
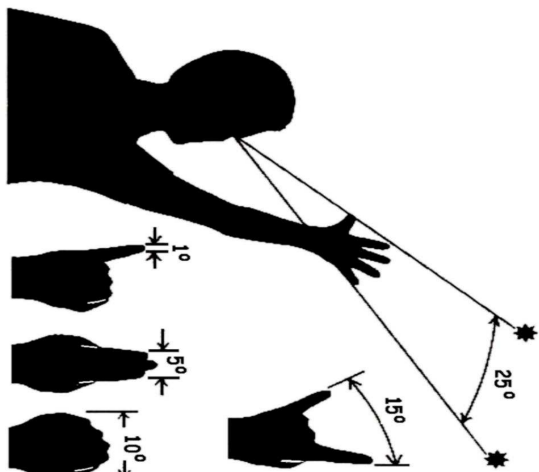
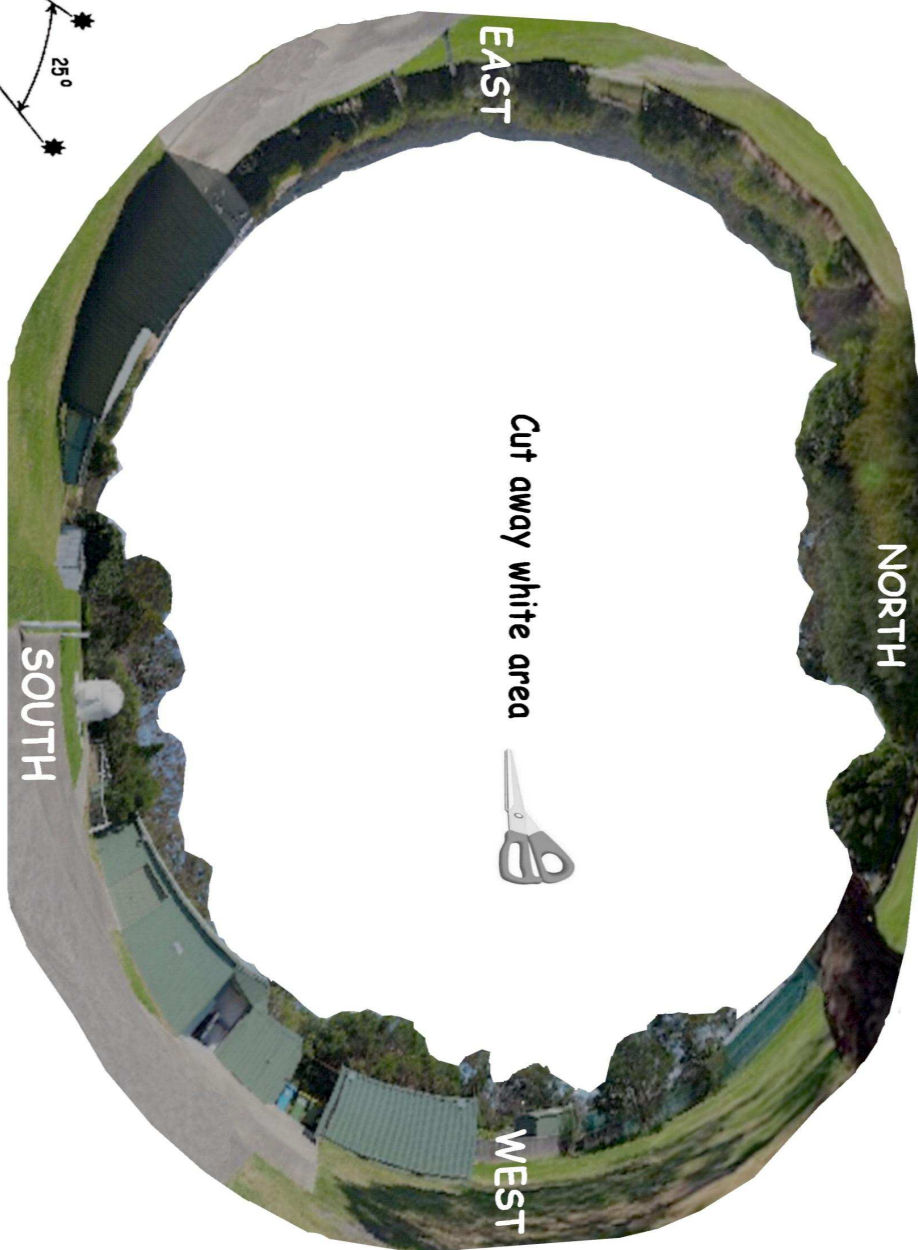
- ANT** = Antlia
- CAR** = Carina
- CHA** = Chameleon
- COL** = Columba
- COR** = Corona Australis
- MU** = Musca
- PU** = Puppis
- TRI** = Triangulum Australe
- TU** = Tucana
- SP** = South Celestial Pole



Hold this scale at arms length it will give you a rough measurement in degrees.



Turn the wheel to find the month and day, then align it with the time.



MPAS Briars site

Lat 38 deg 16 min 23 sec
Long -145 deg 2 min 29 sec

Staple 4 corners

YOUR ASTRO QUESTIONS



UHC filter

How effective are filters like this when it comes to just observational astronomy? Struggling to see anything except the planets and a couple of star clusters at home stuck in lockdown with Bortle 5-6 skies. I'm looking forward to when lockdowns end so I can come to the club. *Connor Anthony Mathieson*



I'm by no means an expert, but in my experience at the Briars you can't really see many nebulae with the naked eye, Orion nebula and Tarantula I've seen but even then they're just a faint wispy cloud. Filters changed it so they had a little bit of colour or maybe some more contrast but it's nothing like taking a photo of course. I'm currently wondering if buying a filter for my DSLR camera is worth it. So kinda in the same boat. *Ben Claringbold*

I find them useful as the nebula stands out against the night sky in metro Melbourne. You can see the structure of the nebula better, the stars do go funny colours due to the filters. I found when I was at the ASV dark sky site I couldn't see Thor's Helmet unless I had a filter. Normally when I view in the country the filters I tend not to use. *Mel Lee*

The UHC filter works great on any emission and planetary nebula, but are useless on reflection nebulas. If you have lots of light in the backyard coming into the side of the eyepiece, you need to block it - with a hand, or with a butterfly eyecup, or where really bad, by throwing black cloth over head and eyepiece.

If you have Sky Atlas 2000, you'll see scores of tiny planetary nebulas plotted. With an 8" telescope you can spot most of them using the UHC using the technique of "blinking" - where one moves the filter sideways back and forth between the eye and eyepiece, or alternatively, hold the filter between eye and eyepiece and twist it 45 degrees.

What happens is that either a tiny dot becomes a brighter dot while "blinking", or a dot becomes visible where it was invisible before. The latter is especially fun.

You can also stick a UHC filter with Blu Tack to one eyepiece of a pair of binoculars and look at big nebulas - it actually works better than having a filter on each eyepiece.

You lament the lack of colour in nebulas by eye compared to what one gets from a camera picture. Unfortunately, what you see by eye or in a telescope is what is actually there - you will never see by eye the colours a camera captures - even if you could fly right up to those nebulas. They'd be the same colour as seen in a telescope.

Renato Alessio

All a matter of experience. UHC filter, means ultra high contrast and is the best all round nebula filter. Works best with larger telescopes 10 inch or larger. Basically it only allows light of certain wavelengths to pass through the filter, making it easier to see objects like the Helix Nebula NGC7293 which is normally very hard to see. The 1 1/4" size UHC filter usually costs around \$200 and the only filter I would recommend, as it's the most useful of all the nebula filters.

Renato mentioned holding the UHC filter in front of the eyepiece, rather than threading it to the back of the eyepiece. I have used this method and it works very well. The main advantage is that you can instantly see the difference the filter makes.

Looking at the Small Magellanic Cloud SMC without the filter you can see 2 small nebulas next to one another. Then hold the UHC filter in front of the eyepiece and a third nebula appears all in a row. This demonstrates the usefulness of the filter.

The Rosette Nebula around the bright open star cluster NGC 2244 is almost impossible to see without the UHC filter. Adding the filter makes all the difference, but you will need a very low power eyepiece, as the nebula is large. You may need to scout around the edge of the star cluster to see the full extent of the nebula.

In the centre of the open star cluster M46 lays a Mars size planetary nebula NGC 2438, which can be only just seen with an 8 inch telescope. By adding the UHC filter this planetary nebula is much easier to see.

In GRUS you can find another Mars size planetary nebula called the Spare Tyre IC 5148. This one is impossible to see without the UHC filter. But once you find it, you will see an almost perfect ring. One for the bucket list.

In Scorpius you can find another planetary nebula which is a perfect ring, NGC 6337. This one too is impossible to see without the UHC filter. Interestingly it was removed from Sky Atlas 2000 because it couldn't be seen in an 8 inch telescope.

Of course you can use your UHC filter to get a better look at the (Eta) Carina Nebula NGC 2070 and the Lagoon M8. The first thing you will notice is that the nebulas are much larger and the dark nebulas stand out against the bright nebulas.

NGC3199 crescent nebula near Eta carina is another which is hard to see without the UHC filter.

Here is the link to an article on filters I did for MPAS newsletter in the past. *Regards Greg Walton*

https://drive.google.com/file/d/0ByvkxzZGI9g_cEJPTTIBUEZnTmc/view?usp=drivesdk[HYPERLINK](#)

[https://drive.google.com/file/d/0ByvkxzZGI9g_cEJPTTIBUEZnTmc/view?usp=drivesdk&resourcekey=0-JQ0Cy4viwinS_wo87mNJIQ"&HYPERLINK](https://drive.google.com/file/d/0ByvkxzZGI9g_cEJPTTIBUEZnTmc/view?usp=drivesdk&resourcekey=0-JQ0Cy4viwinS_wo87mNJIQ)

[https://drive.google.com/file/d/0ByvkxzZGI9g_cEJPTTIBUEZnTmc/view?usp=drivesdk&resourcekey=0-JQ0Cy4viwinS_wo87mNJIQ"resourcekey=0-JQ0Cy4viwinS_wo87mNJIQ](https://drive.google.com/file/d/0ByvkxzZGI9g_cEJPTTIBUEZnTmc/view?usp=drivesdk&resourcekey=0-JQ0Cy4viwinS_wo87mNJIQ)

TELESCOPE BUILDING



Building a Rich Field Telescope (Part 2) - making the tube.

Last issue I gave an overview of my experience making a fast 8 inch F3 mirror. Now I want to describe how to make the tube. The tube needs to be strong enough to hold all the optical parts in collimation and be light enough to carry.

Home-made telescopes are often made with cardboard tubes. They used to be cheap and they work quite well. These days you often have to buy 3 metres of tube and cut it down to the size you want. So it costs more than it needs to unless you have friends wanting to make similar scopes to yours.

I prefer to make my own octagonal-shape tube out of wood. I normally use 6 or 7 mm ply. Plyco in Mornington sells good quality birch ply which I often use. You can get it veneered if you want a different look. A great cheap alternative is the 7 mm red oak ply at Bunnings. You have to check their sheets carefully. They are sometimes bent or the top veneer is not as clear as it could be.

Octagonal tubes have some advantages:

Relatively easy to build

Light

Flat surfaces to mount bearings, focuser and finder.

No tube box necessary. The rocker box and ground board can therefore be a little smaller

Attractive

Here are two octagonal tube scopes I've built.





The process for building a tube like this is straightforward if you have a table saw or a router table. With a router, you need a 22.5 degree chamfer bit. With a table saw you adjust the blade angle to 22.5 degrees. Both sides of the boards are then cut so they have a 22.5 degree bevel. I use an online calculator to calculate the board width:

<https://rechneronline.de/pi/octagon.php>

Once the boards are cut, I lay them together with the bevel side facing down and tape them together like this:



I then flip the taped pieces over and apply glue to the gaps between the boards and assemble the tube. This video shows the process more clearly than I can describe it:

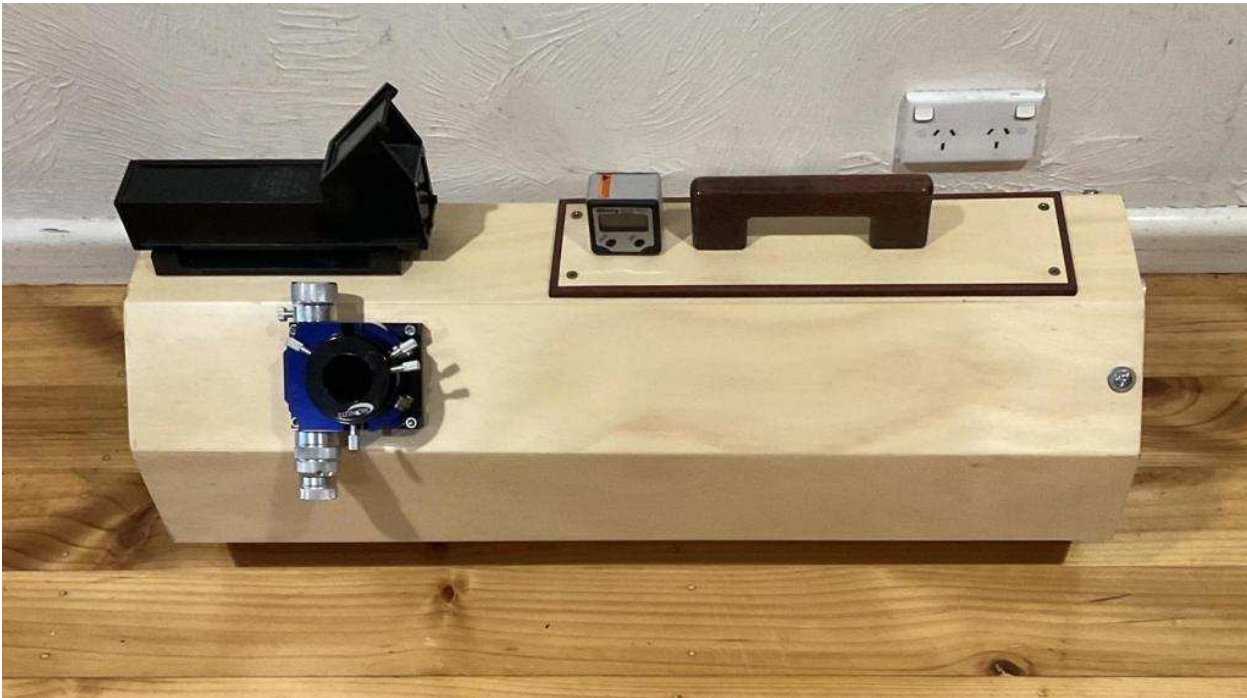
https://drive.google.com/file/d/1WGMoYyX_6JNNOIyblcNHNK9qOAOptHpR/view?usp=drivesdk

To hold it a bit tighter while drying I use a few hose clamps or rivet small hose clamps to some metal banding:



I finish the tubes with exterior polyurethane or marine spa varnish. To get a smoother finish I dilute the finish 50/50 with a thinner then apply it with a rag. The thin coats dry more quickly and get fewer dust nibs. 4 to 6 thin coats are needed.

My 8-inch F3 tube is completed and I have added a handle, the main mirror cell, focuser and Telrad finder. I have ordered an AstroSystems secondary holder and when that arrives I'll make the spider and the optical tube assembly will be complete and ready for star testing. Here is what it looks like now:



The main mirror cell is based on this design:

<https://garyseronik.com/a-simple-double-plate-mirror-cell-for-your-reflector/>

The only change I made is that I don't like to glue the mirror to the cell. I installed three plastic bolt heads for the mirror to sit on and added clips to hold it in place.

If anyone wants to make a tube like this and don't have access to tools, I would be happy to cut the wood and bevel it as required.

Rod Brackenridge.

Moon Clock

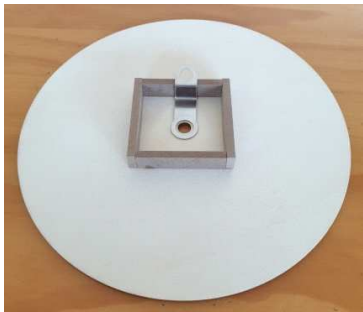
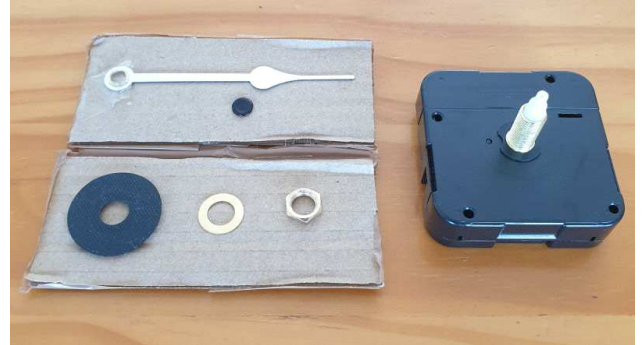
Rohan Baumann

Initial Idea

With inspiration taken from Peter Skilton's posts to the MPAS message board earlier this year – <https://e-scorpius.groups.io/g/Members/message/11793> and <https://e-scorpius.groups.io/g/Members/message/11798> (you'll need to be logged in to see the messages) – I thought this little DIY project might be just up my alley, so I decided to create my very own Lunar Synodic Clock (a.k.a. a moon clock).

Preparation and Design

The first step in the process was to order the lunar phase mechanism and hand (approx. £27.50 GBP including shipping from the UK, which at the time I purchased equated to about \$50 AUD) via the eBay links in Peter's original message.



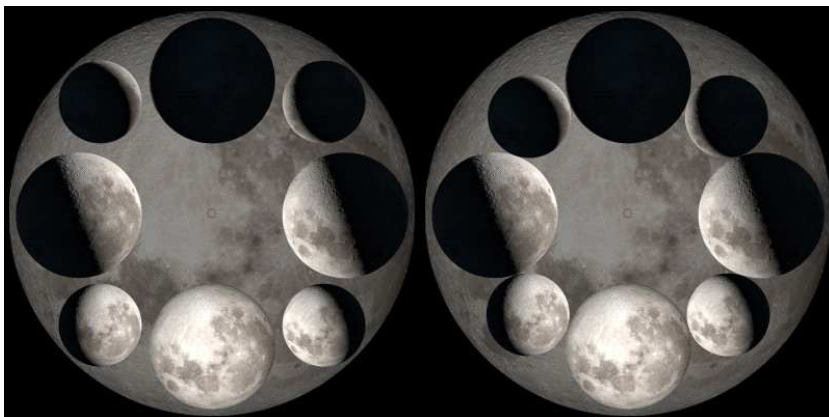
Next step was to work out how I was going to mount the mechanism and hand. I settled on a simple timber round clock base (25cm diameter), that I picked up from Spotlight for \$13 (<https://www.spotlightstores.com/craft-hobbies/other-crafts/craft-kits/shamrock-craft-round-plywood-clock-base-with-housing/BP80354495>). I'm sure similar can be purchased at any craft and hobby shops, or their online equivalents, for just a few bucks.

(I did initially consider buying a suitable standard time clock, perhaps a timber framed station clock, and replacing its face, hands and mechanism with those required for the moon clock... but maybe that's a project for the future.)

My thinking was that I would use an image of the full moon as the "backdrop" of the clock (the main face of the clock) with, again inspired by Peter's posts, smaller "moon phase" images at each of the 12 points of the face where you would traditionally see the hours marked. This idea was fairly quickly put aside however, when I realised that each moon phase image would be too small to provide the "visual impact" I was trying to give the clock.

So I thought showing just the 8 "common" moon phases on the clock face would be the way to go. Initially my idea was to have larger images for the phases in the 12, 3, 6 and 9 o'clock positions (new moon, full moon, first and third quarter), with smaller images of the waxing and waning crescent and gibbous phases filling the spaces between. All images were downloaded from NASA's Scientific Visualization Studio, specifically from <https://svs.gsfc.nasa.gov/4875>. They may not be the most perfect images, but more than suitable for my little project.

But the initial result just didn't look "right" to my aesthetics.



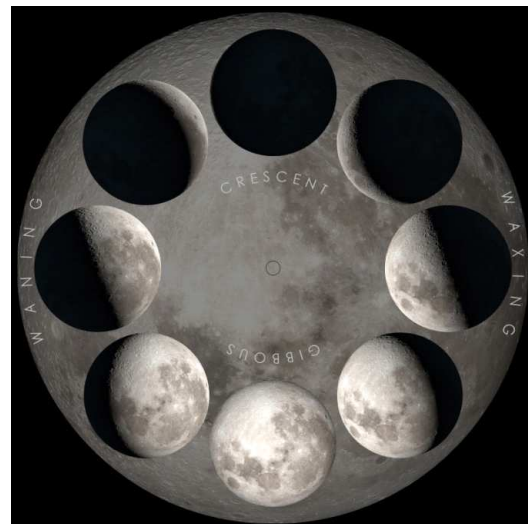
After a lot of trial and error with other layouts, such as changing the sizes, spacing and "vividness" of some of the images, the most pleasing to my eye ended up being the most basic layout of all... having all 8 phases depicted equally around the clock face: size, spacing, vividness, etc.

Who was it that said "simple design is most often the best"?

I also had in the back of my mind, the idea that I wanted the clock to not only show the current moon phase at a glance of the hand, but also to identify **waxing/waning** and **crescent/gibbous** aspects of the current moon phase.

So, with the help of my graphic software, some more trial and error using loads of different fonts in all manner of sizes, colours, weights etc., led me to realise that, once again a simple design gave the best looking result. Don't forget to mark the centre of the circle too, it helps when attaching the moon.

So, finally, my clock face was ready. All I needed now was a colour printout of it, so that the full moon background would exactly cover the size of the timber clock base I had bought. Luckily for me, my wife has access to a colour laser printer at work, but no doubt you could get a similar (probably better) quality printout from Officeworks for around the cost of a gold coin.

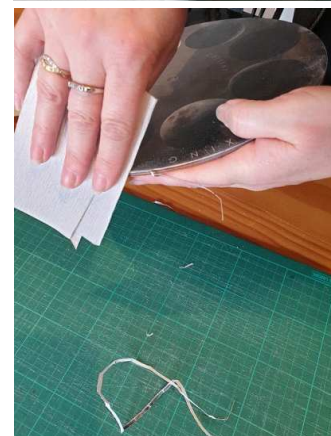


Assembly

Assembly was actually very easy. The trickiest part was accurately cutting out the circular face! I actually cut it out slightly larger than required, to allow for unsteady hands! But also to ensure when you adhere the cutout clock face to the base, it covers it properly. Another consideration (if your clock base has a timber framework, or similar, on the back of the clock base) is knowing where the 'top' of the clock will be. This is important for making sure the top of the clock face cutout (I decided that this would be the New Moon phase) is aligned properly with the clock base when the two are adhered together. This is also where it comes in handy to know the exact centre of the clock face, as it provides a guide to help ensure the clock base and face are centred (there's not much chance of adjusting it if the alignment isn't accurate).



Then it was time to spread a thin layer of PVA glue on to the whole of clock base, especially the edges so it (hopefully) doesn't lift up over time, and to glue the cutout on to the clock base.



Once glued, the excess edges were trimmed off with some fine sandpaper, and the edges of the clock base were coloured black (I used a black Texta). This was for aesthetics mainly.

The final steps are to connect the clock mechanism and hand to the clock, insert the battery and set the correct moon phase. Then hang on a suitable wall space and admire your handiwork!



MEMBERS GALLERY



The planet Jupiter From Sunday night. The atmosphere was very steady, so if you look closely you can see very fine detail.

By Dominic Lucarelli



Planet Jupiter under very good seeing conditions from last night. I used a C11 and a ZWO 290MM and de-rotated 45 minutes of video. The B&W image is taken at a special frequency of light, in the infra-red, that you can't see with your eyes. What a bonus, great seeing conditions and a sleep in for the public holiday to boot! *By Dominic Lucarelli*



Corona Australis. Kind of a timely post considering all the lockdowns we are exhibiting, NGC 6726-7 and the globular cluster NGC 6723 Taken under not ideal conditions in Melbourne's light polluted and breezy skies.

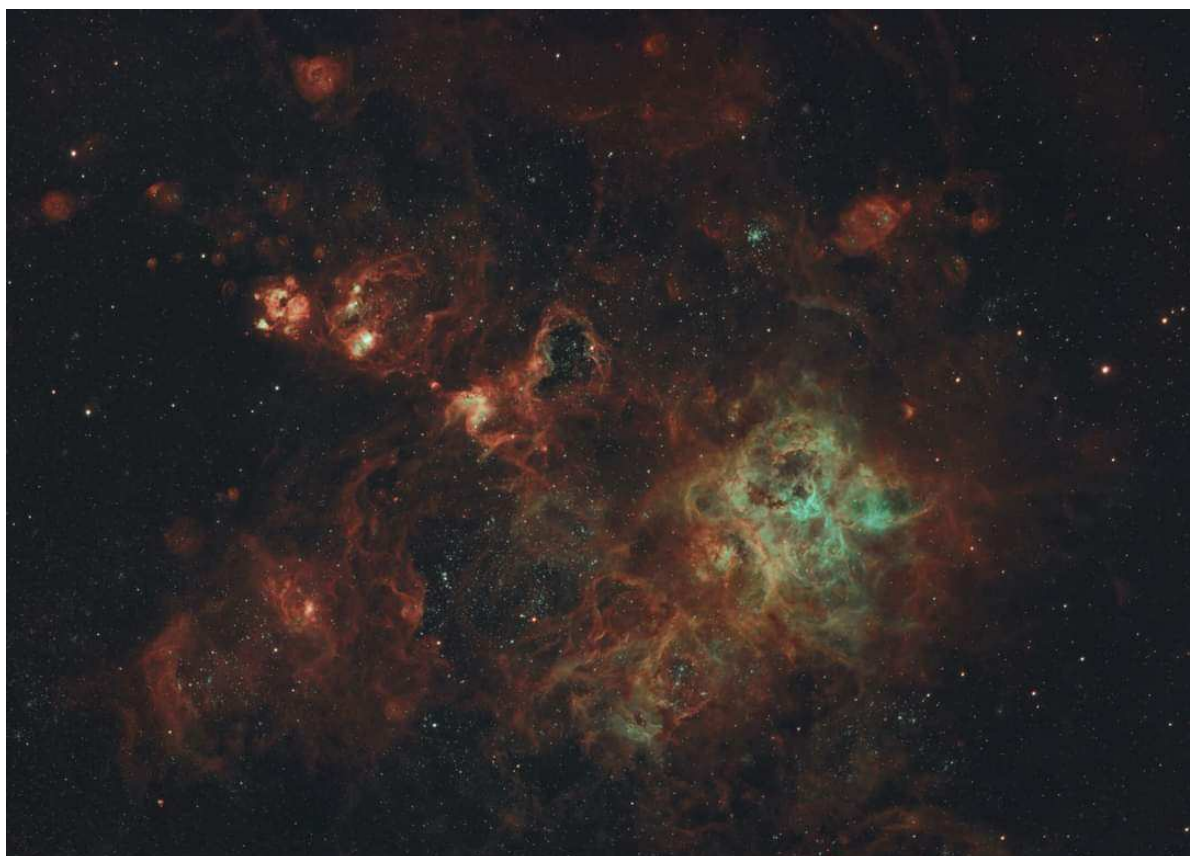
4 hours acquisition 10 minute subs ZWO 294mc Pro camera, Optolong L-Extreme filter, TSoptics 130mm refractor triplet with Riccardi 0.75 reducer, ASIAR pro with NEQ6 belt mod. This needs at least 16 hours acquisition time but our weather is not being helpful.

By Nik Axaris



Tarantula Nebula - Early morning from Lockdown Melbourne. One of our rare clear nights. Taken with TSoptics 130 APO and Riccardi 0.7 reducer. ZWO 294MC Pro and ASIAR Pro Optolong L-Extreme 60 x180 sec.

By Nik Axaris



Below - The Moon, by *Ben Claringbold*



Below - Lagoon Nebula M8 and Trifid Nebula M20 from tonight with my new scope/guide camera. 6D Mk II and a William Optics Z81 and 1 minute exposures. First time trying to guide camera and it appears to work somewhat, anything over 30 seconds without the guide camera turned into a blurry mess so this is a definite improvement. Can't wait to get back to the Briars so I can annoy people with questions and learn to improve. *By Ben Claringbold*





Hi everyone, Here is some NGC 346 (in the Small Magellanic Cloud - a small dwarf galaxy near the Milky Way) above, the Helix Nebula at right, the Jewel Box taken through a GoTo Dobsonian and Venus in IR/UV below. Hope you managed to take advantage of Wednesday night. Cheers *Russell Smith*

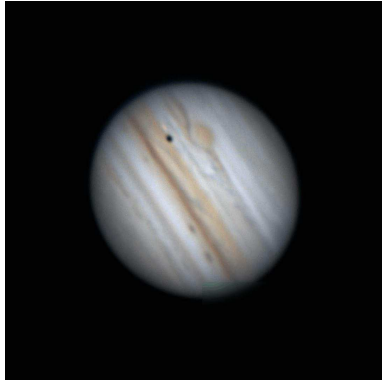


Below -

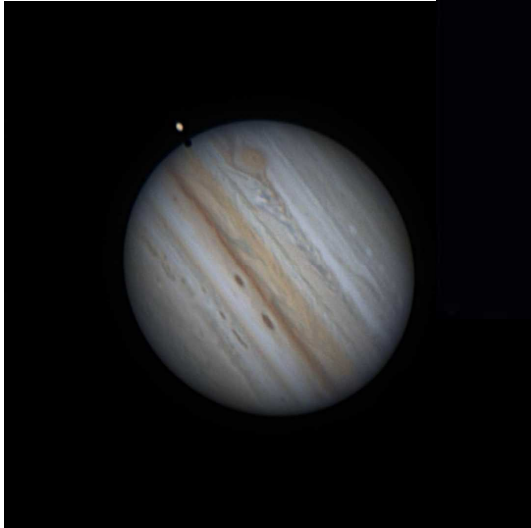
Time lapse from Wednesday
25th August 2021 ~35 mins
<https://www.astrobin.com/fc4z1d/>
By Russell Smith



Above - The Moon by Russell Smith



Below - Thursday 26th August
2021, Europe shadow 7:39pm
Finish. Europe transit 7:58pm
Finish, by Russell Smith

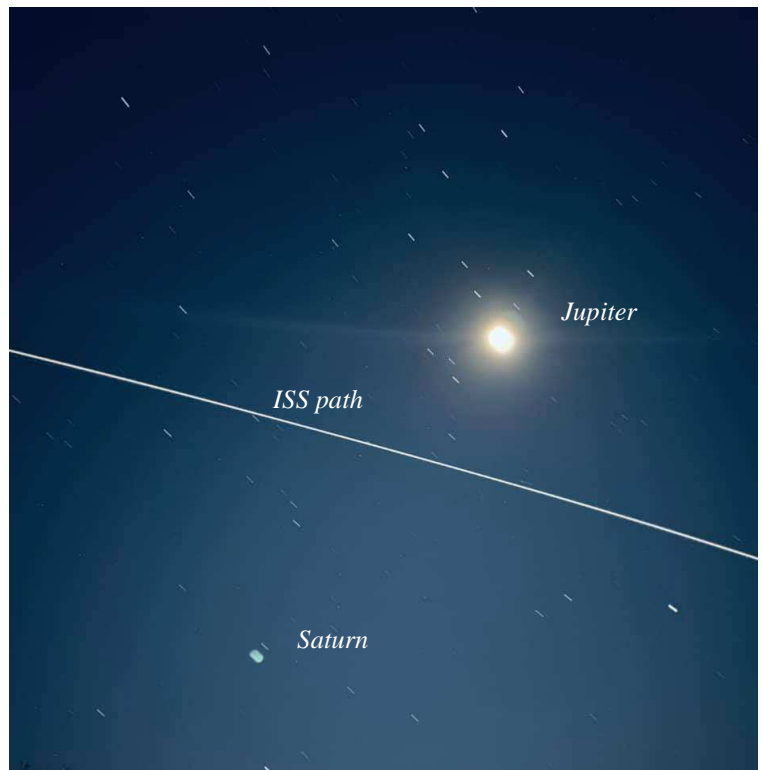


Right - ISS passes between Saturn and Jupiter
On the 19th August. By Guido Tack

Below - Moon by Simon Hamm
Taken with a smart phone through an 8-inch Dobsonian.



By Simom Hamm



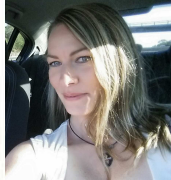
SOCIETY INFORMATION



Peter Skilton



Mark Stephens



Nerida Langcake



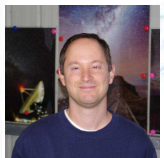
Jamie Pole



Anders Hamilton



Trevor Hand



Simon Hamm



Guido Tack



Ben Claringbold



Greg Walton

OFFICE BEARERS OF THE MORNINGTON PENINSULA ASTRONOMICAL SOCIETY

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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)

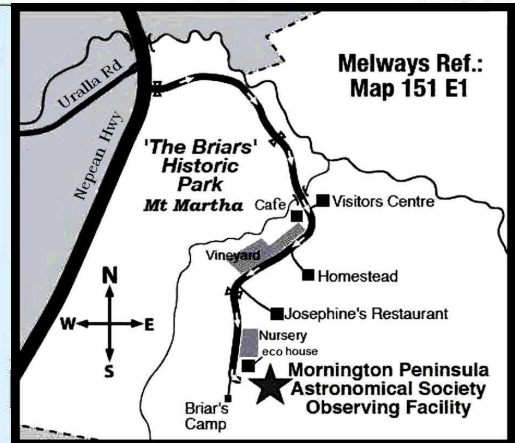
Society meetings: Don Leggett Astronomy Centre
 8pm on the third Wednesday of the month
 (except December)
 (See map at right & Below)



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

Phone: 0419 253 252

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



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.

facebook MPAS members - <https://www.facebook.com/groups/MPAS1/>
 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
 email: welcome@mpas.asn.au

Phone: 0419 253 252

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



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

MPAS newsletters online - https://drive.google.com/folderview?id=0ByvxkzZGI9g_SUNmZVhkZTFGWTA

SCORPIUS The journal of the Mornington Peninsula Astronomical Society

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