Cover image - Helix Nebula *by Steve Mohr*

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

SOCIETY NEWS

On the last evening of October, MPAS visited Bayside Christian College in Langwarrin South/Frankston to speak to 45 Year 10 and 9 pupils, plus a few teachers and parents. Peter Skilton gave the talk indoors, preceded by a prayer by the organiser. No, the astronomy talk wasn't going to be that frightening or confronting, even though it was Halloween. Very unusually, even for this age group, no questions were asked at all by anyone during the talk. This was followed by night sky viewing through the telescopes on the school oval of the southern campus. Ironically, a couple of the students were dressed in Halloween makeup, probably after combing their neighbourhood for lollies earlier. I say ironically, because this school is renowned in the past as having extremely conservative views about the Universe. Conditions were pleasantly warm, with quite a few insects at dusk and clear skies away from most lights, enabling the Moon, Mercury, Venus, Jupiter, Saturn and several constellations to be readily seen by all. Operating the telescopes on the oval were Simon Birch, Fred Crump, Philip Rea, Mark Stephens, Greg Walton, Phil Holt, Jamie Pole and Ben Claringbold. *Regards, Peter Skilton*

Public Night November 1st - The November public night at the Briars had 120 visitors, plus a host of members in attendance, on a very cloudy evening. The visitors included a large contingent of families from an Indian background social group, who were so well organised that they brought along copious curry and rice for anyone to eat after the viewing, and this was set up on tables on the upper slab. For those who enjoy a 10pm spicy curry with their telescopes, this was just the thing to stir the senses into action and clear the sinuses. Some glimpses of the planets were possible, though the cloud was a hindering filter all evening. The talk indoors on Exoplanets was ably given by Trevor Hand. Outside helping with telescopes and other tasks were Fred Crump, Bonnie Cass, Lara Conway, Simon Hamm, Mark Stephens, Peter Skilton, Nerida Langcake, Piper Grierson, Jamie Pole, Greg Walton, Anders Hamilton, Peter Lowe, John Cleverdon, John Goodall, Ben Claringbold, Kevin Rossiter, Ross Berner and Bob Heale. *Regards, Peter Skilton*


Photo by John Cleverdon


Photo by John Cleverdon

What a wonderful turnout on Friday night with more than 120 attendees! Some 90 or so from an Indian social group from Cranbourne. A number of interesting questions from the crowd at the end too. Unfortunately the skies did not cooperate, with only a blurry view of the Jupiter, Saturn and the Moon. As I exited the shed my olfactory senses were overloaded with the aroma of a rather yummy Indian feast. Pity I had dinner earlier, but I did see a number of members tucking into a welcome, and unexpected, treat. I talked to several from the group and they hope to attend again when the skies are more promising. *Trevor Hand*

Scout viewing night November 8th - The Scout, Cubs and Guides night on 8th November went ahead at The Briars with 32 visitors from Carrum Downs Cubs. Despite it raining, and even hailing, while driving to the Briars, the skies cleared nicely around the observatory location, even though thick cloud was evident all around towards the horizon. The Cubs saw the Moon to begin with, just in case the cold front closed the clouds, followed by the talk indoors by Peter Skilton. After the badge talk, the skies had darkened more, and Venus, Jupiter, Saturn were all visible for everyone to see as the clear skies locally had prevailed, before they closed over soon after 9:30pm. Helping with running the telescopes and the matters outside were Ben Claringbold, Nerida Langcake, Piper Grierson, Fred Crump, Simon Hamm and Jamie Pole. *Regards, Peter Skilton*

School viewing night at the Briars November 13th - A visit to the Briars by 26 Year 6 pupils from Derinya Primary School on camp went ahead as planned. Unfortunately the skies didn't co-operate after initially looking like the cloud cover was thinning into the dusk. But, alas, it soon worsened and no sky viewing proved possible. Peter Skilton gave the talk inside, showing the meteorite and fielding lots of probing questions, including many that were about geology and earth science. After the talk, the group then had a close look at the observatory and its instruments before heading for bed. Helping outside were Fred Crump, Ben Claringbold, Simon Hamm, Jamie Pole and Phil Holt. *Regards, Peter Skilton*

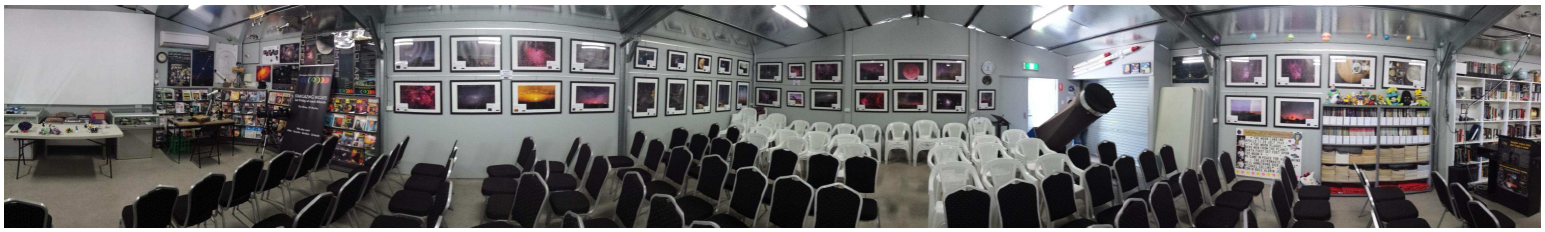
MPAS @ Peninsula Radio Fest November 17th - MPAS were at the Rosebud Radiofest - http://www.rosebudradiofest.com run by SPARC http://vk3bsp.org - trying to foster some common interest between the groups. Unfortunately the weather didn't play nice that day - and we weren't able to show people the solar disk....
Present were Jamie Rolfe, David Rolfe and Jamie Pole

Society Meeting November 20th About 40 members attended. Peter Skilton (President) chaired the meeting and updated members on what had happened over the previous month and upcoming events. Our guest speaker Dr Bill Birch, retired geology curator Melbourne Museum, talked on unusual Meteorites. During a coffee break the sky was clear so we did some viewing with the telescopes in the observatory, mainly Jupiter, Saturn, NGC104 and NGC2070. Mark Stephens did sky for the month, Sky Murphy presented 'π in the Sky', Ian Sullivan tested our brain with some trivia, then interesting videos were screened. A big thanks to Phillip Rea who mowed most of the lawns before the meeting. *Greg Walton*

Members BBQ and Working Bee November 23rd - There was a good turnout at the working bee which started at 4pm. With Anders Hamilton mowing the lawns while Greg Walton and Bob Heale whipper snipped around the trees. Roland replaced the batteries in most of the red dot finders on the telescopes. Lara continued sorting out the library. Jamie Pole & Anders replaced the handles and one of the hinges on the toilet door and rewired the 12 volt power to the EQ8 and EQ6 mounts in the observatory. Then after dark they also polar aligned the newly installed EQ6 on the 8 inch Newtonian. At 6pm Paul Albers & Simon Hamm fired up the BBQ. As the sky was clear Bob Heale & Simon Hamm set up their go-to telescopes on the upper slab, along with Fred Crump with his 6 inch Dobsonian which showed excellent views of Saturn. The highlight of the night was Venus and Jupiter sitting side by side low in the western sky. We also had Saturn in the telescope in the Sirius Dome where we connected a camera and sent the image of Saturn to the TV in the big shed. Clouds started rolling in at 11pm so we packed up and went home. A big thanks to all who helped set up the tables and cleaned up afterwards. Also a very big thank you to all those who brought along cakes and salads and special thanks to Jamie for buying all the supplies. *Greg Walton*

Public Night December 6th - The December public night saw 81 visitors plus 2 members in attendance at the Briars, sitting inside for the talk, on a mild evening that started fairly clear in daylight but then quickly clouded over with twilight and beyond. Some views of the Moon through patchy clouds were nevertheless possible. There were quite a number of empty seats for this time of year, no doubt affected by the adverse cloud conditions. Trevor Hand gave a talk on galaxies, while outside helping were Nerida Langcake, Piper & Ashley Grierson, Fred Crump and Bonnie Cass, Greg Walton, Peter Skilton, Jamie Pole, David & Jamie Rolfe, Bob Heale, Gavin Curnow, John & Marj Cleverdon, Robin Broberg, Simon Hamm and Ben Claringbold. If there were other members who forgot to sign the members' attendance log book, then please remember for next time so we can mention you. *Regards, Peter Skilton*

We had another great turnout on Friday night with more than 80 people! Our next viewing night will be January 3rd, 2020 and my subject will be "Galaxies". It has a slight overlap with the tail end of my talk on "Star Clusters" and then continues to expand through the cosmos to cover the plethora of different types of galaxies, not all of them resemble our own galaxy. Hopefully the weather gods will co-operate this time? *Trevor Hand*



Photos by Greg Walton

Rosebud Justice Service Centre Viewing Night December 13th - A small group of 8 had their Christmas party at the observatory. Members demonstrated the telescopes, but due to clouds not much viewing was done. They brought along their own food and drinks.

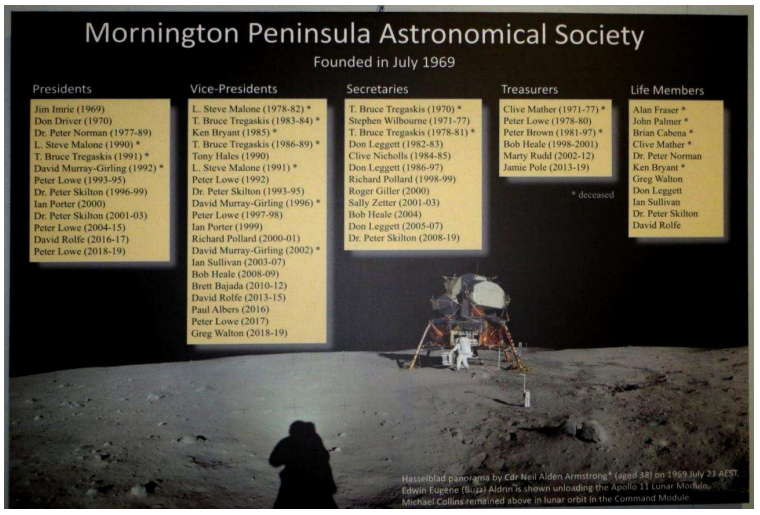
Members Xmas Party November 14th - Pia and I had swept out the shed, setup the Xmas tree and setup the tables the day before. There were 46 members in attendance, with about 6 members arriving early to cut the grass, whipper snip and dust off the telescopes. Anne and Geoff put the Xmas mail out in alphabetical order to make it easier to hand them out to members as they arrive. Paul and Therese Albers and family brought along a large snapper, which Paul had caught the day before, and cooked it in the new oven. The flies were bad so at 6pm the food tables there moved inside and we started unpacking the food and slicing the roasts that Pia had cooked earlier that day. Jamie put sausages and veggie burgers on the BBQ. Just before 7pm everyone lined up for the Xmas banquet. We had the DVD Stargaze playing on the big screen - a slide show of Hubble images with quiet music in the background. After dinner around 8pm Peter Skilton (President) asked us to time how long it'd take to evacuate the building only using one door. We did this in well under the recommended 90 seconds. It was mainly a ruse to get members outside for the group photo, after which the many desserts brought along by members were put out on the tables. I only saw one star pop out from between the clouds, so no viewing was done. A very big thanks to all who helped out to make this a memorable event and a special thanks to Anne for running the kitchen, providing quality plates and doing most of the clean up. *Greg*

Merry Christmas to all and have a happy safe new year. ***From the MPAS committee***

Photos by John Cleverdon

PRESIDENT'S REPORT

Looking Back at 2019. Another full year at MPAS with the purchase and installation of the new kitchen which was long overdue. We also upgraded the coffee-making area and BBQ shelter. We then installed picture-rails so we could hang members' images. Also installed an honour board. Then we had a shipping container delivered to the site and repainted it green to match the big shed; this is so we can store the items we don't use often. We fixed the leaking toilet and repainted the walls and floor. The small domed observatory also had an upgrade with a bigger telescope and cables run to the big shed, so we can now send video from the telescope to the TV or projector in the big shed.



Events we hosted. The Victorian Astronomy Convention (VASTROC) was run along with the popular astrophotography workshop, telescope learning day and for the first time a concert with astronomy themed music, courtesy of the Southern Peninsula concert band. We were allocated VI3MOON as our special-event radio call sign to celebrate the 50th anniversary of the Moon landing by Apollo 11, along with MPAS 50 years anniversary dinner.

Monthly and other events

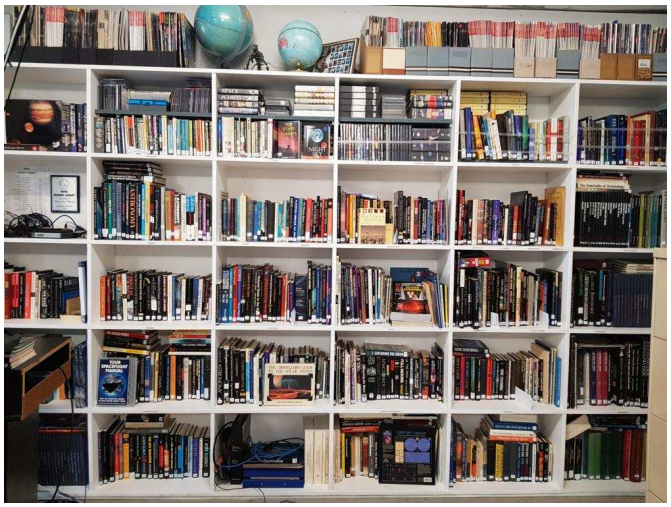
The members' BBQs which are held on the Saturday after each monthly society meeting continue to be popular, where members share food, socialise, talk about their astronomical experiences, exchange ideas, use the computerized telescopes in the Peter Lowe observatory and complete their training. This year we have started to precede the members BBQ with a working bee between 4 - 6pm; this has been a big help taking much of the on-going jobs away from the main volunteers and spreading these jobs among more members.

MPAS visited many schools, scout groups and public events throughout the year. We also attended the science fair at Coolart Somers for the second time as part of the National Science Week.

Again this year we have had record-breaking numbers of the public at viewing nights held on the first Friday of each month, with attendance number regularly over 100, despite capping our online booking at 80 and increasing the fees.

Looking forward to 2020. The MPAS society meetings will have the same format on the third Wednesday of each month except in December. After the talks we will have the chance to do some viewing through the MPAS telescopes in the Peter Lowe observatory, if the sky allows.

Members can borrow books from the MPAS library at the society meetings and Members BBQ.



Over January we will be running public viewing night on the first, second, third Friday's and for the first time we will have an extra PVN on the first Saturday, 4th. If you wish to help at any of the MPAS events, public nights or school viewing nights & are not certain where to start, just say you wish to help, to the president or any committee member. We will find you a job & show you the ropes or telescopes in this case; also there are many other jobs such as setting up the chairs and coffee bench.

There will be 2 Telescope Learning Day events: Saturday 22nd February and 24th October starting at 4PM followed by a BBQ at 6pm. These are public events, so we need members on hand to help newcomers with their telescopes. There will also be some solar viewing.

16th May Pt Leo is an outing to look for dinosaur bones and learn about our planet's local geology.

On 20th June we will be having Solstice Party to mark the shortest day and longest night giving us the maximum amount of time under the stars.

MPAS will be having its society dinner on 18th July. We will set up an on-line booking closer to the date, so we'll know how many are attending and there will also be a small charge as everything will be provided on the night. The President will do the mandatory speech.

MPAS sales area hopes to continue providing members and the public with a bigger range of astronomy goodies.

We hope to train more members on the telescopes in the observatory, so they can taken deep sky images or help with our public outreach program.

MEMBER PROFILE

Mornington Peninsula Astronomical Society

FROM *IAN SULLIVAN* Nov 2019

Leaving a job as an industrial chemist at AUSTRALIAN PAPER MANUFACTURERS in 1968 I started with the Education Department teaching chemistry and general science. In the science there was astronomy for which I had a latent interest which grew through the seventies. In my first school a student asked me to attend a meeting of the ASV at the Herbarium Hall with his parents. I went and joined, while he soon dropped out.

The year 1976 brought a total solar eclipse to Melbourne and I was involved in preparing students to observe it. (The Education Dept banned schools from arranging viewing events). On Oct 23 we left home and drove to Mt Buller to avoid cloud - but in vain. We only saw the final partial phases! Arriving home my next-door neighbour told me he saw totality - I should have stayed home! Around Melbourne - success was pure luck.

I spent the seventies reading, observing and attending lectures at ASV. In 1973 I qualified as guide at the Observatory and was rostered monthly. I also attended a basic course at Council of Adult Education tutored by John Perdrix. In 1979 I became the tutor for CAE, and carried it on for 20 years. I attended the NACAA Convention at Geelong in 1980 and joined the ASV Council soon after. In 1985 I was appointed as Director of ASV Demonstrators at the Observatory, which involved training, and rostering of ASV members for about six nights a month around the moon. I married Elvine in 1983, and daughter Kim has now given me a granddaughter.

After qualifying for a Education Technology course, I transferred to the Distance Education School of the Dept. and left classroom teaching in 1985. My work became more audiovisual then, preparing video for distant students. My job also enabled my preparation of manuals, notes, for CAE students and ASV guides.

In 1990 I attended NACAA again (co- hosted by ASF and ASV) at Frankston and have attended every event since then, except 2006. Since 1998 I have also presented a paper at each event and met many society members from all over Australia. I also supported most VASTROC events, held in the years between NACAA events.

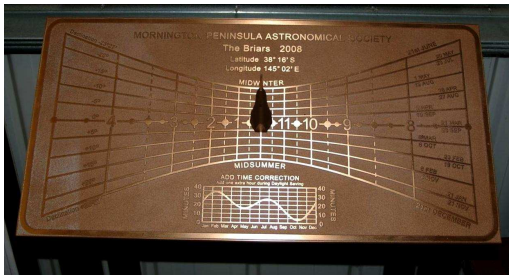
In 1990 on a trip to Turkey we got good view of the eclipse that started in UK. We followed this with a trip to Africa in 2001 to see a 3 min. eclipse in Zambia on the Zambesi River. This time - I got a view and photos. In Ceduna SA in 2002, Jim Blanksby and I did it again, after leaving the coast and heading inland escaping cloud, but not the wind. On the special Qantas eclipse flight in 2003 to Antarctica, Jim Blanksby and I saw totality through the plane windows but no great photos.

After 50 years, the Museum-ASV voluntary guide Observatory arrangements ended, and the Royal Botanic Gardens took over in 2000, and now takes bookings, appoints guides from ASV, and writes a roster for Mondays or Thursdays, instead of 6 nights around the moon phases each month. All training is still done by ASV, but RBG imperfectly arranged the display and notices mostly without ASV consultation.

The move from Museum to RBG was not smooth and there was jostling by influential ASV members to join in the fray, which they had hitherto steadfastly avoided. It was time for me to resign a Director, leave the ASV Council, where I was a Life Member and Vice President in 1999, and attend monthly meetings in a more amenable place – ASF now MPAS. Nevertheless I sill attend ASV Members Nights and Diurnals meetings, and I've have only just retired as a guide at the Observatory.

At MPAS I attended viewing nights and ran a training session for those interested in ASF, at Council facilities then at the Mornington Library once each month on a Saturday afternoon. In the latter Peter Lowe and Greg Walton also came. Numbers were not large but appreciative. As the Library became unavailable we had got more amenable premises at the Briars which have grown to opulent proportions of late, due to public support.

Over the years many Society members have attended a Solar Day facilitated by me, in fair weather or foul. The link between solar and sidereal time, and an introduction to sundials and possible benefits are explained. Just the existence of the solar noon is demonstrated. I acquired the solar shadow stick and board etc. from CAE classes.



The down side of my participation at MPAS is a one hour drive each way, which gets more onerous as I advance in years. I have even been made a Life Member of MPAS for my modest efforts to contribute. I will try to be useful as long as I keep sharing and enjoying astronomy in the Mornington Peninsula.

Centre - Ian's Queststar telescope which is a bit of a collector's item now.
Above - Ian conducting one of the many solar days at MPAS.
Bottom - Bronze sundial especially made for MPAS donated by Ian.

Observatory update.

Anders Hamilton and I installed a new mount in the observatory today (5th November 2019) - a Skywatcher NEQ6 Pro to replace the smaller Celestron mount in the observatory. (With some help from Greg Walton)

This will make using the Newtonian a lot easier and more accurate - as it's the same hand controller as the other observatory mounts, and has a much greater weight capacity. See photo at right.

Observatory users please note - the Newtonian is now a little higher - **so please ensure the OTA is rotated so the finder scope doesn't make contact with the roof when rolling the roof back on.**
Happy Observing! Jamie Pole

Donations to MPAS

Jane McConnell - Donated a Meade 125etx go-to telescope, box of eyepieces and 2 books for the library.
See photo at left.
Jane was a member when I joined MPAS some 20 years ago.

Jane spent much of her time printing, stapling and mailing out the MPAS newsletters. Jane also attended most of the MPAS events, helping out at the public nights with the tea and coffee. We all hope to see Jane at the Briars again. *Greg Walton*

Hi all, I picked up a telescope setup today from Len Allen at Mt Eliza who donated his gear to MPAS due to his age and lack of mobility. I have set the gear up in the container but it will need a good clean up and a few minor repairs at the next working bee. It had been under the tarp in his yard (mount with pegs to ground) for a few years. Len had been doing some astrophotography with it, but had not got around to guiding yet. The setup is a Skywatcher Black Diamond ED120 on a HEQ5 Pro mount. There is a battery, CTek charger, assortment of eyepieces and various 1.25" filters.
Regards, Dave Rolfe.

2020 Special Events

Saturday 18th January, 8PM - Observatory & Telescope Training Day
Starts after the Members' BBQ - Night Talk: Observatory Manager Anders Hamilton

Saturday 22nd February, 4PM - Telescope Learning Day (Bring Your Telescopes)
Day starts at 4PM followed by a BBQ at 6pm. **This is a Public event.**
Night Talk: Mark Stephens What are Stars / Planets / Clusters / Galaxies & Nebulae
Night Talk: To be arranged Telescopes & Mounts - How they work
Binocular Basics - What you will see through the eyepiece (field of views)

Saturday 16th May, Dinosaur/geology outing to Pt Leo. Details being finalised.

Saturday 20th June, 4PM - Solstice Party
Starts before the Members' BBQ - Talks: To be arranged

Saturday 18th July - Society dinner
Starting at 6pm sharp @ the Briars Don Leggett Astronomy Centre.
An after dinner speech by the President. Roast dinner provided.

Saturday 15th to the Sunday 23rd August - National science Week
Friday 21st public viewing night - start time 8pm

Saturday 12th September, Astrophotography Workshop, 1PM
Day starts at 1PM followed by a BBQ at 6pm.
This is a Public event. Bookings Required. (See MPAS website)
Afternoon Talk: David Rolfe, Greg Walton, Jamie Pole, Alex Cherney

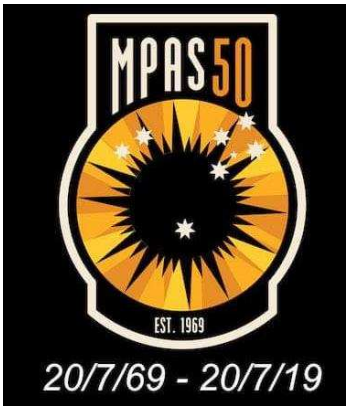
Saturday 24th October, 4PM - Telescope Learning Day (Bring Your Telescopes)
Day starts at 4PM followed by a BBQ at 6pm. **This is a Public event.**
Night Talk: Mark Stephens What are Stars / Planets / Clusters / Galaxies & Nebulae
Night Talk: To be arranged Telescopes & Mounts - How they work
Binocular Basics - What you will see through the eyepiece (field of views)

Saturday 19th December - MPAS Xmas BBQ
Starts at 6pm (Bring a plate of goodies)

SCAG - Combined Scout, Cubs & Guides @ the Briars 8pm to 10pm (Help required)
February 28th - May 29th - July 31st - October 30th

New Members Welcome

Candice Weir and family
Evan Sofos
Kitty Penfold
Barry Gale
Tushar Tikkoo
Dennis Nolan
Yaqirah Herut
Ash Fathers



MPAS SUBSCRIPTIONS 2020

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 2020 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 2020 fees is:

SOCIETY FEES

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

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.
Click on the link for further information - https://drive.google.com/file/d/0ByvkxzZGI9g_NXZ4cWxHbERTdEE/view?usp=sharing

Full Member	$50
Pensioner	$45
Family	$65
Family Pensioner	$60

You can now renew your membership online. See link below. Click on Members then JOIN NOW at the bottom of the page. Then just fill in your detail on Try-booking.
http://www.mpas.asn.au/members.html

CALENDAR — January / 2020

Red Days indicate School Holidays

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2 Moon at 404,580km	First Quarter 3 **Public Night 8pm**	*extra* 4 **Public Night 8pm**
5	6	7	8	9	10 **Public Night 8pm**	11 **Full Moon**
12	13	14 Moon at 365,958km	15 **Society Meeting 8pm**	16	Last Quarter 17 **Public Night 8pm**	18 **Members BBQ 4pm 6pm 8pm**
19	20	21 Mars right of the Moon dawn	22	23 Jupiter below the Moon dawn	24	25 **New Moon**
26 **Australia Day** Mercury below the Moon	27 **A/D Holiday** Neptune 0.5 deg right of Venus	28 Venus right of the Moon	29	30	31	

Monthly Events

Public Nights - 8pm start on the 3rd, 4th, 10th and 17th @ the Briars
Society Meeting - 8pm to 10pm on the 15th @ the Briars
Members Night BBQ - 6pm on the 18th @ the Briars - Working Bee 4pm start - Telescope training 8pm

CALENDAR — February / 2020

Red Days indicate School Holidays

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2 **First Quarter**	3	4	5	6	7 **Public Night 8pm**	8
9 **Full Moon** Supermoon	10	11 Moon at 360,561km	12 ASV Meeting	13	14	15
16 **Last Quarter**	17	18	19 **Society Meeting 8pm** Mars above the Moon	20 Jupiter just below a thin crescent Moon	21 Saturn above the Moon	22 **TLD Members BBQ 4pm 6pm**
23	24 **New Moon**	25	26 **Scorpius Deadline** Moon at 406,278km	27 Venus right of the Moon	28 **SCAG**	29

Monthly Events

Public Nights - 8pm start on the 7th @ the Briars
Scout Viewing night - 8pm start on the 14th @ the Briars
Society Meeting - 8pm to 10pm on the 19th @ the Briars
TLD - Telescope Learning day - 4pm on the 22nd @ the Briars (Note this is a public event so help is needed)
Members Night BBQ - 6pm on the 22nd @ the Briars

Please… we need helpers to keep the MPAS Observatory open to members on all Saturday nights.
If you can help, contact Greg Walton on 0415172503 or email - gwmpas@gmail.com

Mornington Peninsula Astronomical Society - 2020 Calendar

Day	January	February	March	April	May	June	July	August	September	October	November	December	Day
1	W New Years Day	S	Su	W	F 8pm Public Night	M	W	S	T	Th	Su	T	1
2	Th	Su	M	Th	S	T	Th	Su	W	F 8pm Public Night	M	W	2
3	F 8pm Public Night	M	T	F 8pm Public Night	Su	W	F 8pm Public Night	M	Th	S	T Cup Day	Th	3
4	S 8pm Public Night	T	W	S	M	Th	S	T	F 8pm Public Night	Su Daylight Savings Starts	W	F 8pm Public Night	4
5	Su	W	Th	Su Daylight Saving Ends	T	F 8pm Public Night	Su	W	S	M	Th	S	5
6	M	Th	F 8pm Public Night	M	W	S	M	Th	Su Fathers Day	T	F 8pm Public Night	Su	6
7	T	F 8pm Public Night	S	T	Th	Su	T	F 8pm Public Night	M	W	S	M	7
8	W	S	Su	W	F	M Queen's Birthday	W	S	T	Th	Su	T	8
9	Th	Su	M Labour Day	Th	S	T	Th	Su	W	F	M	W	9
10	F 8pm Public Night	M	T	F NACAA Good Friday	Su Mothers Day	W	F	M	Th	S	T	Th	10
11	S	T	W	S NACAA Easter	M	Th	S	T	F	Su	W Remembrance Day	F	11
12	Su	W	Th	Su NACAA Easter	T	F	Su	W	S APWS 1pm	M	Th	S	12
13	M	Th	F	M Easter	W	S	M	Th	Su	T	F	Su	13
14	T	F Valentines Day	S	T	Th	Su	T	F	M	W	S	M	14
15	W MPAS Meeting 8pm	S	Su St Patricks day	W MPAS Meeting 8pm	F	M	W MPAS AGM 8pm	S NSW	T	Th	Su	T	15
16	Th	Su	M	Th	S Dinosaur Geo Outing	T	Th	Su NSW	W MPAS Meeting 8pm	F Vic South	M	W	16
17	F 8pm Public Night	M	T	F	Su	W MPAS Meeting 8pm	F	M NSW	Th	S Vic South	T	Th	17
18	S OT 4pm Members	T	W MPAS Meeting 8pm	S 4pm Members	M	Th	S 4pm Society Dinner	T NSW	F	Su Vic South	W MPAS Meeting 8pm	F	18
19	Su	W MPAS Meeting 8pm	Th	Su	T	F	Su	W MPAS Meeting 8pm	S 4pm Members	M Vic South	Th	S Members Xmas Party	19
20	M	Th	F	M	W MPAS Meeting 8pm	S Solstice 4pm Memb	M	Th NSW	Su	T	F	Su	20
21	T	F	S 4pm Members	T	Th SPSP	Su	T	F NSW 8pm Public Night	M	W MPAS Meeting 8pm	S 4pm Members	M	21
22	W	S TLD 4pm Members	Su	W Scorpius Deadline	F SPSP	M	W	S NSW	T	Th	Su	T Scorpius Deadline	22
23	Th	Su	M	Th	S 4pm Members	T	Th	Su NSW Coolart	W	F	M	W	23
24	F	M	T	F	Su SPSP	W Scorpius Deadline	F	M	Th	S TLD 4pm Members	T	Th	24
25	S	T Scorpius Deadline	W	S ANZAC Day	M	Th	S	T	F	Su	W	F Xmas Day	25
26	Su Australia Day	W	Th	Su	T	F	Su	W Scorpius Deadline	S	M	Th	S Boxing Day	26
27	M A/D Holiday	Th	F	M	W	S	M	Th	Su	T	F	Su	27
28	T	F SCAG	S	T	Th	Su	T	F	M	W Scorpius Deadline	S	M B/D Holiday	28
29	W	S	Su	W	F SCAG	M	W	S	T	Th	Su	T	29
30	Th		M	Th	S	T	Th	Su	W	F SCAG	M Blue Moon	W	30
31	F		T		Su		F SCAG	M		S Halloween		Th New Years Eve	31

Colour code

Green Boxes - Public nights Friday @ the Briars 8pm
Yellow Boxes - MPAS Meeting @ the Briars 8pm to 10pm
Blue Boxes - Members BBQ nights @ the Briars 6pm, working bee starts 4pm
SCAG - Combined Scout, Cubs & Guides @ the Briars 8pm to 10pm
Grey Boxes - Weekends & Public Holidays
Bold Underlined Days - School Holidays

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

Full Moon ◯ New Moon ●

MPAS Calendar 2020 - *by Greg Walton - Version 2020-16-jan*

OT = Observatory/telescope Training 18th Jan 8pm after w/bee & BBQ
TLD = Telescope Learning Day 22nd February @ the Briars 4pm (Public)
Sol = Solstice party 20th June @ the Briars 4pm
Society Dinner - 18th July @ the Briars 6pm
NSW = National Science Week 15th to 23rd August (Public)
APWS = Astrophotography Workshop - 12th September @ the Briars 1pm
TLD = Telescope Learning Day 24th October @ the Briars 4pm (Public)

NACAA – Easter @ Parkes. National Australian Convention of Amateur Astronomers
SPSP = South Pacific Star Party - 21st to 24th May @ Ilford NSW
VicSouth Star Party - 16th to 19th October @ Nhill Victoria

THE BRIARS SKY

By Greg Walton

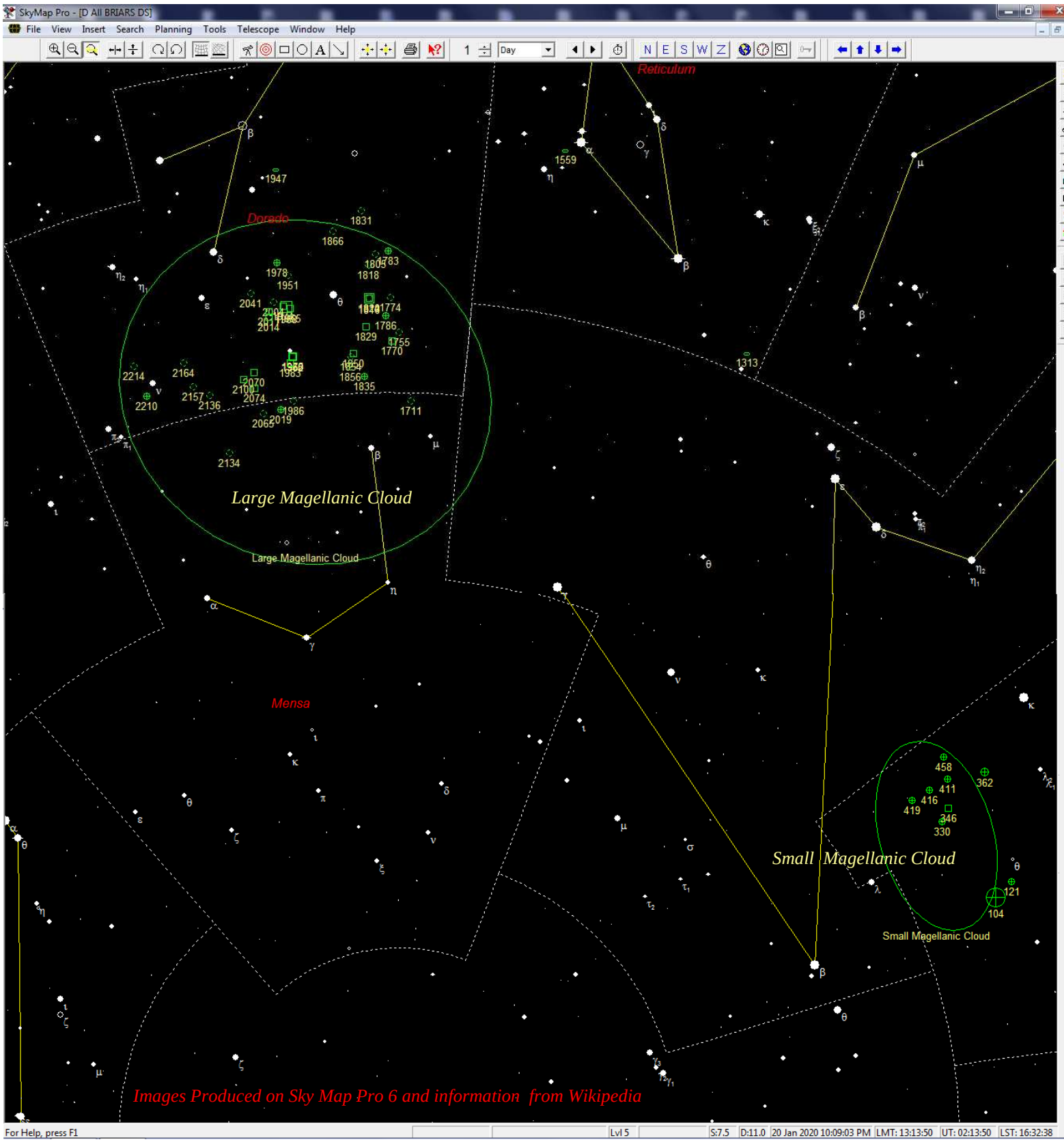
Mornington Peninsula Astronomical Society

Summer is the best time to view the Large and Small Magellanic Clouds, as they ride high in the southern sky.

LMC is about 10 degrees across and easily seen on a moonless night. It is 7,000 light years across at a distance of about 160,000 light years; a barred spiral galaxy with 30 billion stars. The brightest object within it is NGC2070 - Tarantula nebula.

SMC is about 5 by 3 degrees across and half as bright as LMC. Its 3,500 light years across at a distance of about 200,000 light years and thought to be irregular galaxy. Sitting next to the SMC is NGC104 - 47 Tucana - Second brightest globular cluster in the sky containing about 500,000 stars and now thought to be 13 billion years old and at a distance of 13,000 light years.

In the MPAS Gallery below you will find 2 images of the LMC by Dave Rolfe and Jamie Pole



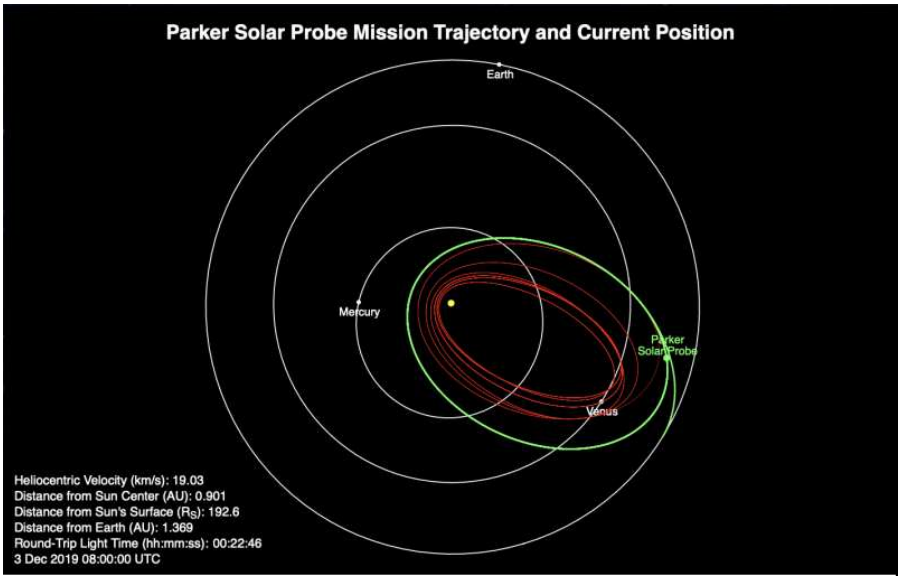
ASTRO NEWS

By Nerida Langcake

Mornington Peninsula Astronomical Society

Parker Solar Probe sheds light on our local star

Parker Solar Probe – now in its 4th orbit around the sun – can endure heat and radiation like no previous mission. New studies reveal new insights about the sun's mysterious corona and solar wind, and scientists who study the sun are buzzing! The studies are based on data collected by the record-setting Parker Solar Probe mission – launched in 2018 – during the spacecraft's first two close sweeps past our star (late 2018 and early 2019). These early studies, the scientists say, have provided insights into the two fundamental questions the Parker Solar Probe mission was designed to answer. First, defying all logic, why does the sun's outer atmosphere – or corona – become much, much hotter the farther it stretches from the sun's surface? Second, what accelerates the solar wind – a supersonic stream of protons, electrons and other particles – emanating from the corona and permeating the entire solar system?



Parker Solar Probe's location with respect to Mercury, Venus and Earth on December 3, 2019. The craft completed its 3rd orbit around the sun on November 15.Then there will be a Venus flyby on December 26. Image via NASA/JHUAPL

In their statement, these scientists said that the Parker Solar Probe revealed that the sun's rotation or spin on its axis – completing a single spin only once every 27 days at its equator – has an impact on the solar wind much farther away than previously thought. They already knew that – near the sun – the sun's magnetic field pulls the solar wind in the same direction that the sun spins. Farther from the sun, at the distance the spacecraft measured in these first encounters, they had expected to see, at most, a weak signature of that rotation. However, as one scientist said, "To our great surprise, as we neared the sun, we've already detected large rotational flows – 10 to 20 times greater than what standard models of the sun predict. So we are missing something fundamental about the sun, and how the solar wind escapes. This has huge implications. Space weather forecasting will need to account for these flows if we are going to be able to predict whether a coronal mass ejection will strike Earth, or astronauts heading to the moon or Mars.

Parker Solar Probe's findings regarding the sun's magnetic field – which is believed to play a role in the coronal heating mystery – were equally surprising, the scientists said. The new findings relate to what are called Alfvén waves, which are waves that occur in a plasma (the sun is so hot that most of its gas exists in plasma form). Alfvén waves were detected in the solar wind long ago. Some researchers thought they might be remnants of whatever mechanism is causing the mysterious heating of the sun's outer atmosphere, or corona. Parker researchers were on the lookout for indications that might be the case, but found something unexpected. One scientist explained, "When you get closer to the sun, you start seeing these 'rogue' Alfvén waves that have four times the energy than the regular waves around them. They feature 300,000 mph velocity spikes that are so strong, they actually flip the direction of the magnetic field.

According to these scientists, those polarity-reversing velocity spikes offer another potential candidate for what may cause the corona to get hotter moving away from the sun. This is clearly an early result, but it gives space scientists something to be watching for as – aided by breakthrough technologies that let the craft endure heat and radiation like no previous mission – Parker Solar Probe continues to sweep closer and closer to the sun.

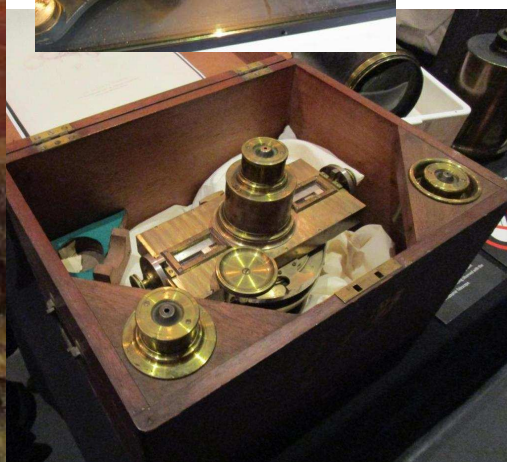
The Parker Solar Probe is engineered to thrive in an extreme environment. Image via NASA

The probe launched on August 12, 2018. On October 29 of that year, it broke its first record, coming closer to the sun than any other human-made object (passing within the previous record of 42.72 million kilometres from the sun's surface, set by the German-American Helios 2 spacecraft in 1976).

As the Parker Solar Probe mission has progressed, the spacecraft has repeatedly broken its own records, coming closer and closer to the sun. Its most recent perihelion (closet point to sun) – perihelion #3 – was September 1, 2019. The next one – perihelion #4 – will be January 29, 2020. In 2024, the craft is expected to come within 6.1 million kilometres of the sun's surface.

Great Melbourne Telescope 150 years

On Sunday 24th November a small group of MPAS members attended the 150 year celebration of the Great Melbourne Telescope at Scienceworks Spotswood, where the telescope has been put on display. There were 4 speakers including Matthew Churchward, Richard Gillespie, Jeremy Mould and Barry Adcock all talking about the history of the telescope from its inception, manufacturer and use. At one time it was the largest steerable telescope in the world. Its main purpose would be to see if nebulae in the southern sky have changed their appearances over time. Melbourne was chosen as it was in the middle of the gold rush and so had lots of money. The telescope took 2 years to build and had a speculum mirror 48 inches in diameter, which is stored at Melbourne museum along with the polishing machine, which in its day was steam powered. The speculum mirror was one of the last ever to be built and one day will be put on display with the fully restored telescope. The plan is to make a new glass mirror for the telescope with a slightly shorter focal length. When the telescope first went into operation the astronomers would have made hand drawings of the various objects and recorded their position in the sky. The massive eyepieces used for this job were also on display in their original box and are very large Huygens design as the telescope's focal length was about 165 feet long or 50 metres. See photo below left. ASV member Barry Adcock has dismantled and measured the eyepieces so new replica eyepieces can be made, as the original eyepiece are considered far too priceless to be used. Also on display was the original finder scope, mirror support system and double star micro measuring device. See below.



1854 - Eureka stockade.

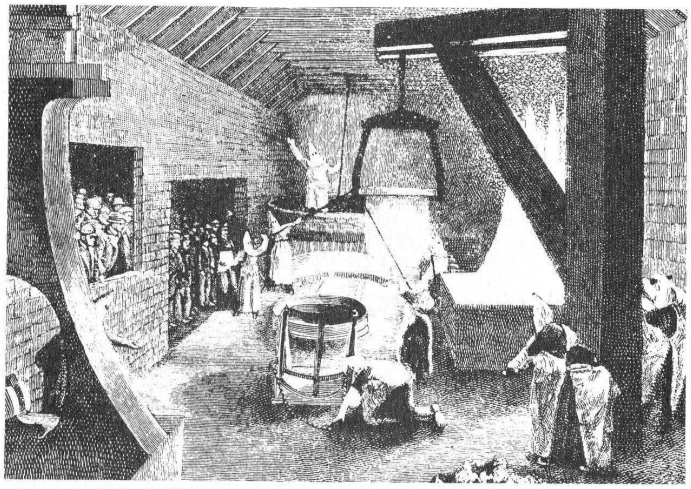
The telescope has had a long and troubled history, so here's a brief history.

1861 - Burke and wills expedition

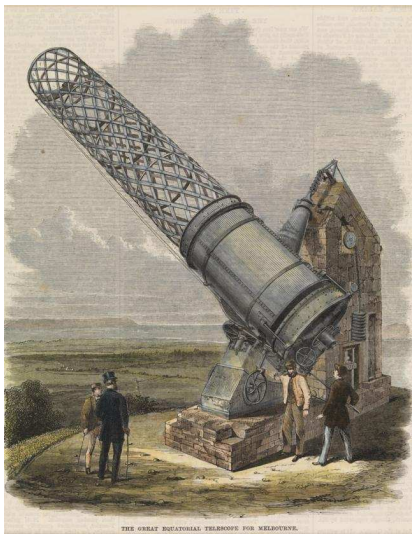
1862 - Plans were made to build the GMT. (The Royal Society had discussed a large southern telescope for 15 years prior.)

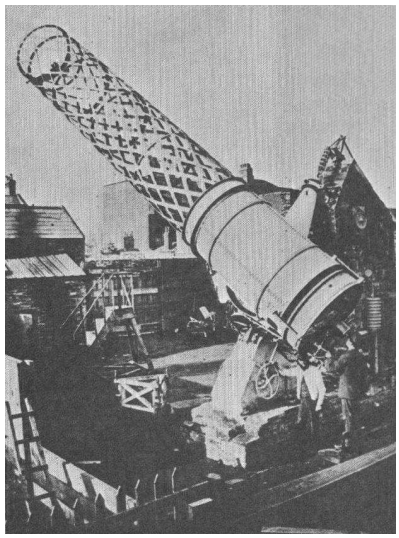
1865 - Victorian Government ordered the telescope from Thomas Grubb, Dublin Ireland.

1861 to 1865 - American civil war



Casting the 48 inch speculum metal mirror of the Great Melbourne Reflector in Dublin in 1867





These images above are from the Grubb works in Dublin

1868 - GMT shipped to Melbourne.

1873 - Uluru first sighted by Europeans and name Ayers rock.

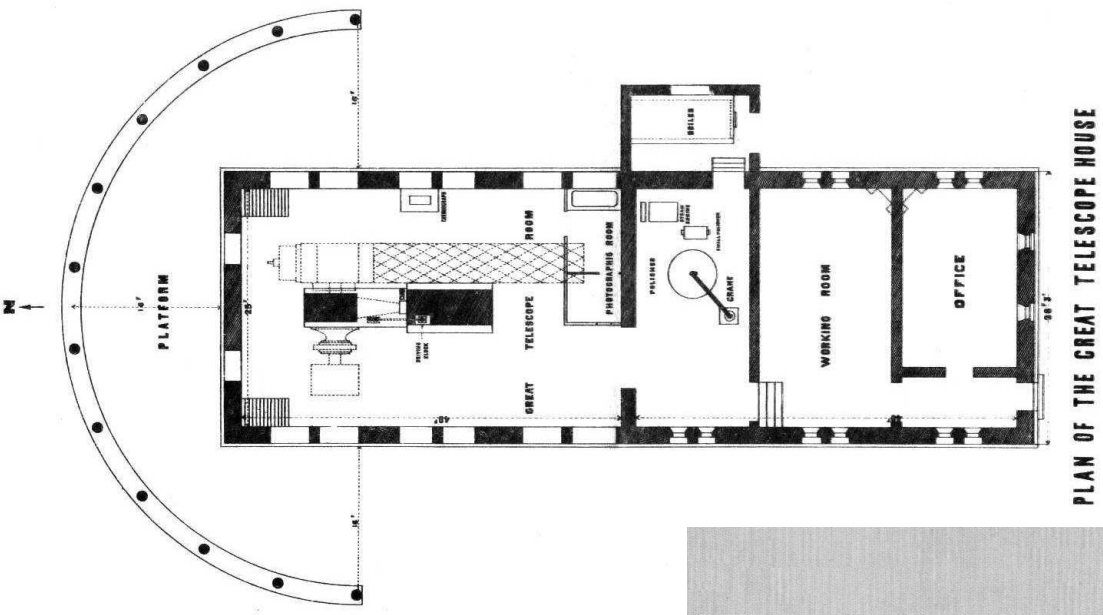
1869 - July: GMT operational, making observations of nebulae, comet, Neptune.

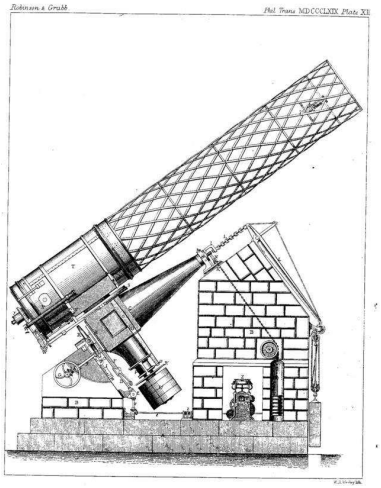
1880 - Ned Kelly hanged. 1894 - Women granted the right to vote.

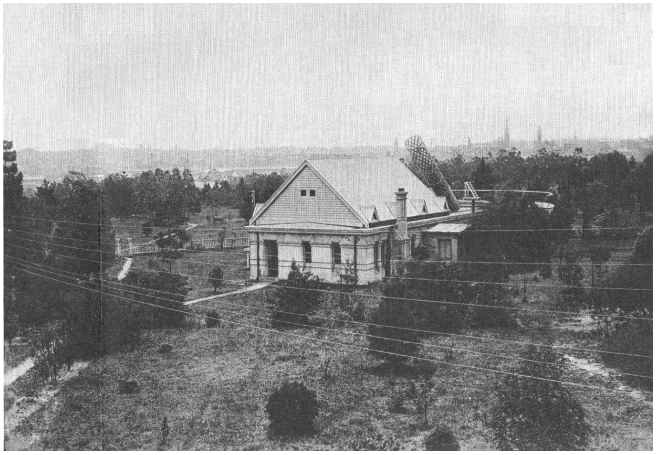
1910 - Halley's Comet was photographed by a plate camera fitted where the secondary mirror sits.

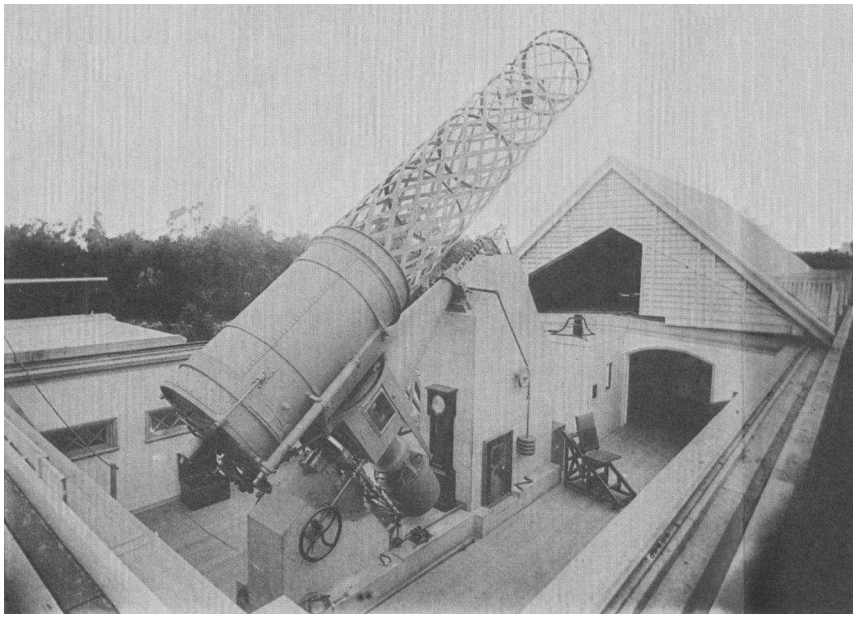
1901 - First Australian parliament in Melbourne.

I was told that some of the operators would climb out on the lattice of the tube to change the photographic plates.



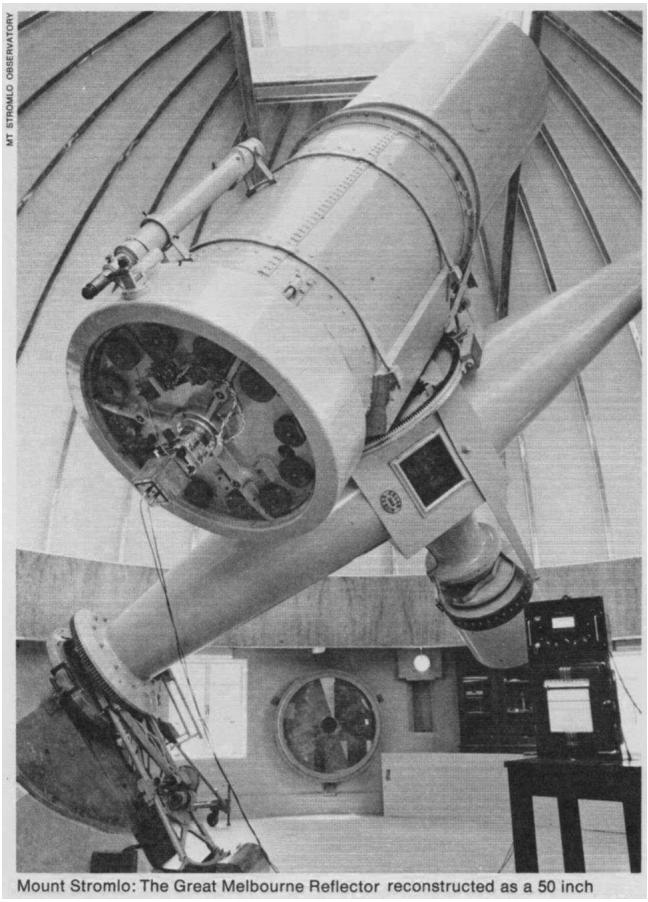




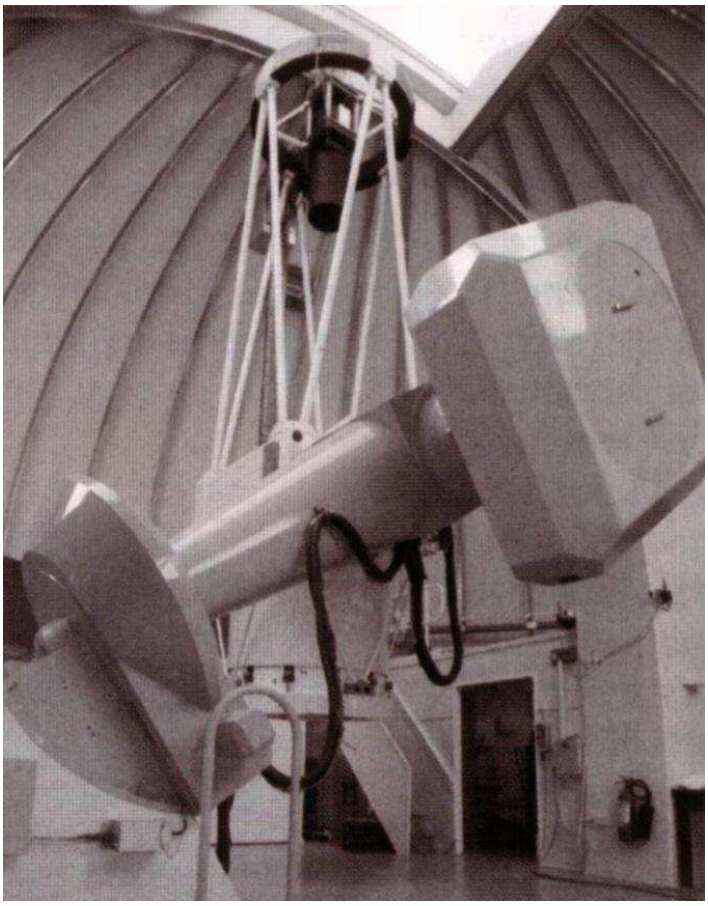


These images above were from Melbourne Observatory.

1944 - Melbourne Obs. closed. Weights & Measures Department occupied building, scales are still in cabinet.
1945 - GMT sold as scrap metal to Commonwealth, to erect at Mount Stromlo Observatory. 2nd World wars ends
1961 - GMT rebuilt at Stromlo with a 50 inch (1.25 metre) Pyrex mirror and new drive system. Photo below left
1973 - GMT decommissioned after main bearing fails.
1984 - Discarded parts of GMT are returned to Melbourne museum for storage.
1992 - GMT rebuilt for Massive Astronomical Compact Halo Object, for detection of dark matter. Photo below right



Mount Stromlo: The Great Melbourne Reflector reconstructed as a 50 inch



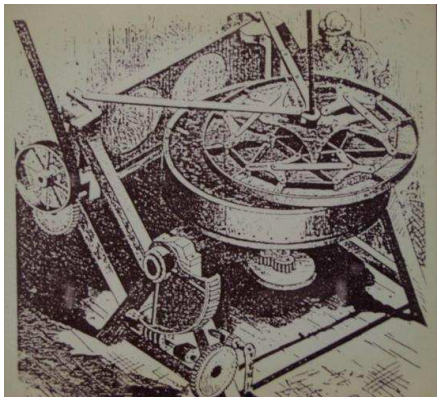
2003 - GMT destroyed in bushfires along with major telescopes and buildings at Mount Stromlo. Photo below

2008 - Remaining parts of GMT recovered by ASV volunteers and returned to Melbourne.

2009 - I visited the GMT observatory at mount Stromlo to see what was left.

2009 - Work starts on disassembling the GMT and documenting of parts by ASV volunteers.

After Melbourne observatory was closed, luckily many parts including the original upper gage, eyepieces, finder scope, star micrometer and the speculum mirror polishing machine was sent to Melbourne museum for storage.



Over the past 10 years the Great Melbourne Telescope had been measured, catalogued, cleaned of paint and rust. Work has started on making the missing parts, which you can read about in a newsletter produced by the ASV, see link below.

Great Melbourne Telescope newsletter. https://greatmelbournetelescope.org.au/newsletter/

Also anyone can get involved in the restoration of the GMT. See links below

Melbourne museum - https://greatmelbournetelescope.org.au/

Melbourne museum - https://collections.museumvictoria.com.au/articles/2626

Scienceworks -https://museumsvictoria.com.au/scienceworks/whats-on/great-melbourne-telescope-restoration/

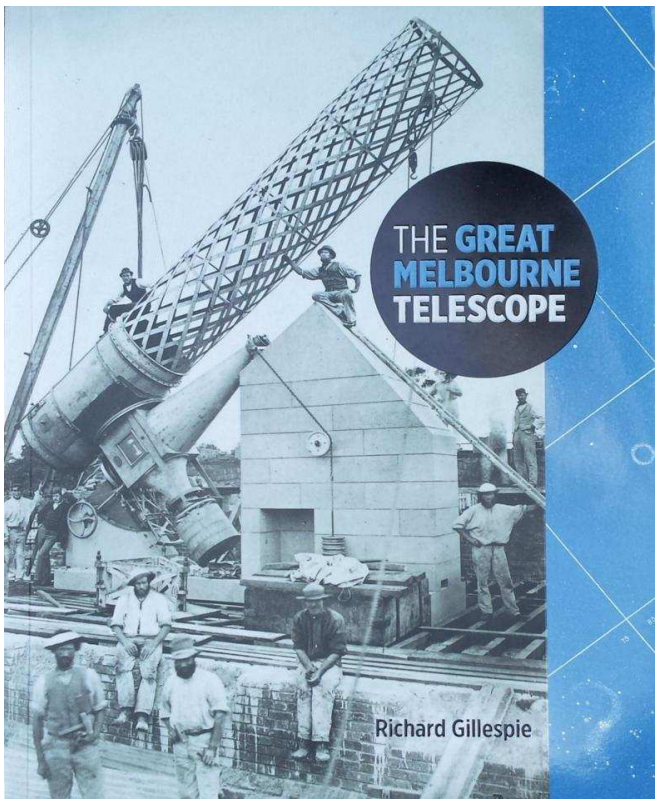
ABC - https://greatmelbournetelescope.org.au/2017/02/02/the-great-melbourne-telescope-on-abc-australia-wide/

What's Next

The building that housed the telescope is still there and restoration has started, mainly fixing rising damp and getting the roof moving again. In the photo at right you will see 4 small peaks on the side of the roof. These house the wheels which are still in place. The roof moves to the left, but there was a small add-on in the way, which has now been removed so the roof can now be opened. Also the lean-to in front of the observatory was not there originally and a decision has to be made whether to remove it or not.

The State Government has finally decided to throw some money into getting the GMT operational again, but more as a tourist attraction. They have said they will pay for a replacement glass mirror the same size as the original and make a set of eyepieces the same as the original for use by the public. The cost is expected to be about $6,000,000

Further reading.



This book starts by telling the story in England and Ireland leading up to building a great southern telescope, which was hoped to work out if nebulas were changing over time and hopefully find if nebulas and galaxies were outside of the Milk-way galaxy. There was much debate about the design and where it should be built. The English government thought it a waste of money, saying that the measuring of the position of the stars to help with navigation is more important and a smaller refractor would be better suited.

Then the story moves to Melbourne and setting the scene to the 10 year lead up to building the GMT. An observatory had been setup at Williamstown for the purpose of finding accurate time for the port. The time ball tower is still there today.

Victoria was a lawless place with bushrangers, the gold rush, the Eureka stockade and a newly formed Victorian government. Melbourne's population had swelled from 26,000 to 110,000 and grand buildings were being constructed. Somehow a very small group of educated people tricked the government into ordering the telescope for 4,600 pounds. It’s amazing that such a telescope would be setup in Melbourne.

Then the story moves to the Grubb factory in Ireland and the troubles they had in casting the mirrors and the roof catching on fire, the testing of the telescope before its transport to Melbourne, then its reassembly and who would operate the GMT.

This book is still available and a pleasure to read with not too many big words. *By Greg Walton*

Facebook video - https://www.facebook.com/museumvictoria/videos/564014251021762/

Facebook video - https://www.facebook.com/abcnews.au/videos/10155805956429988/

Facebook video - https://www.facebook.com/7NEWSMelbourne/videos/2699535673400674/

Facebook video - https://www.facebook.com/9NewsMelbourne/videos/1815373031931277/

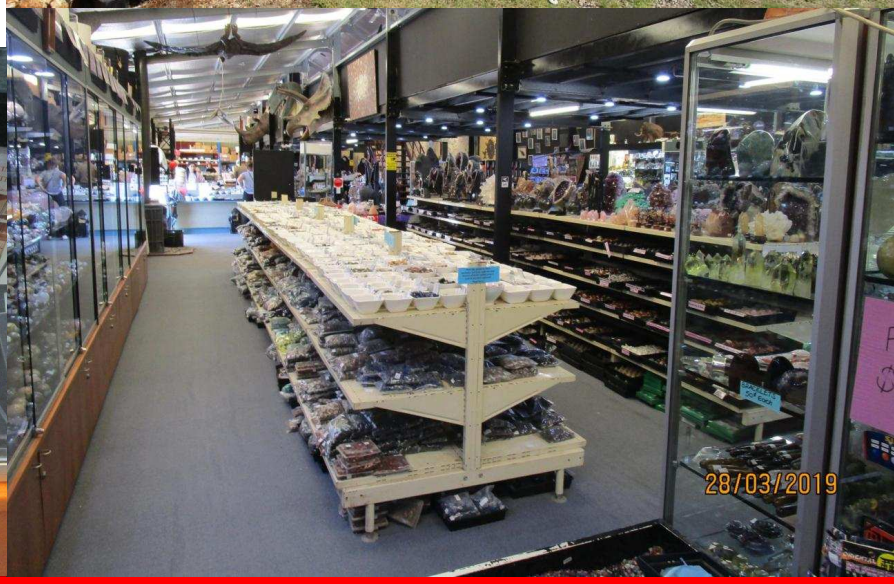
Facebook video - https://www.facebook.com/9NewsMelbourne/videos/263704370997341/

YouTube video - https://youtu.be/FF1iwzjdUNc

Crystal World.

13 Olive Road, Devon Meadows. Open Daily 10am to 4:30pm

Crystal World is on a country lane at Devon Meadows, not far from the Cranbourne Botanical Garden. Not just a place to buy crystals, but an interesting and educational day out with dinosaurs roaming the grounds. The range of minerals on display is truly enormous and it's all at wholesale prices.
Inside the large shed are rows of glass cabinets filled with all types of rocks, fossils, amber, meteorites, superstitious crystals and shiny things to buy as gifts. So best to leave your money at home. It's free entry, but it's very hard to walk out empty handed.
Some of the meteorites on sale below, *Greg Walton*

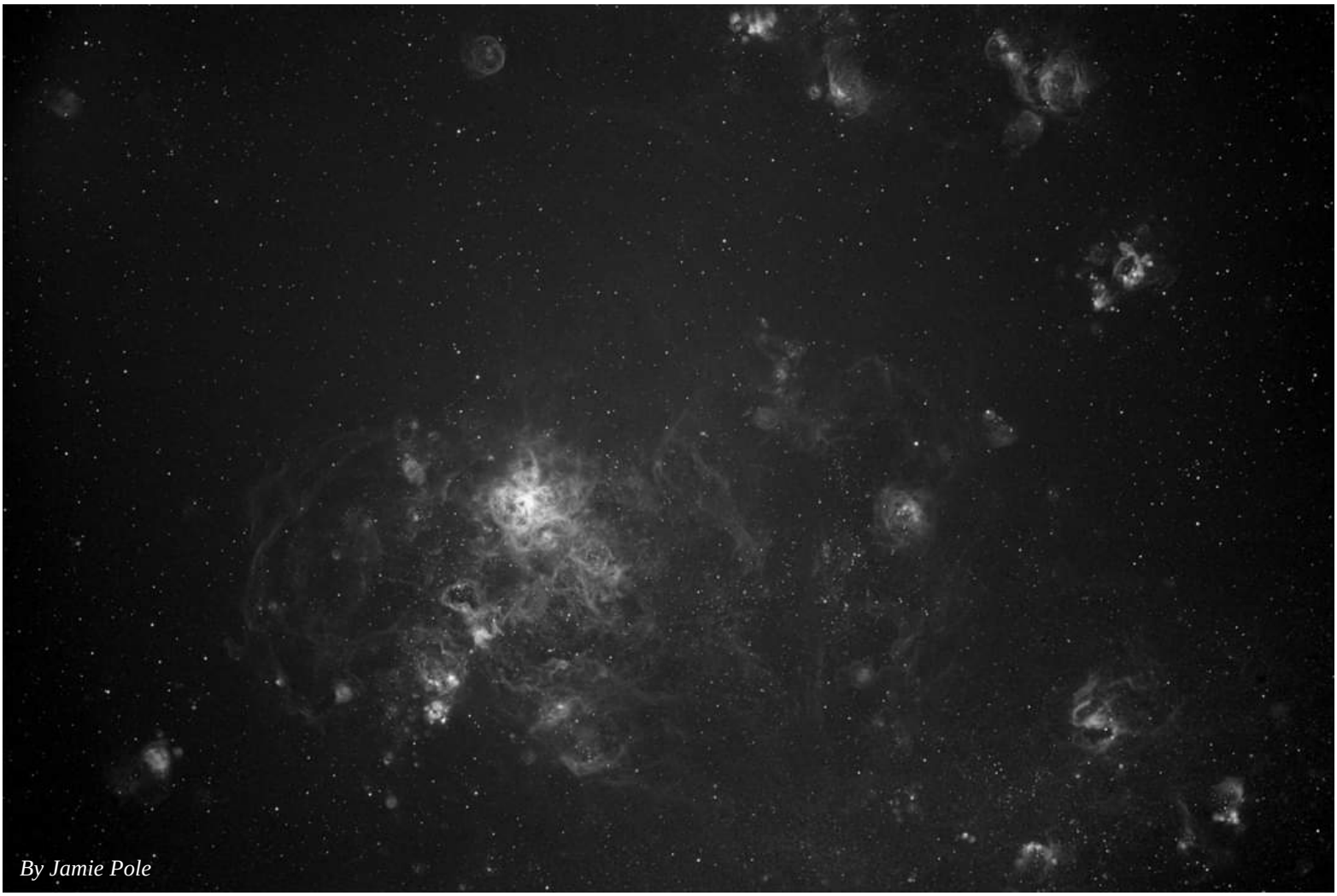


MPAS GALLERY

Right - NGC2070 taken with VC200L Telescope, SBIG STL11k Camera, about 20 minutes worth of data for each RGB & L filter.

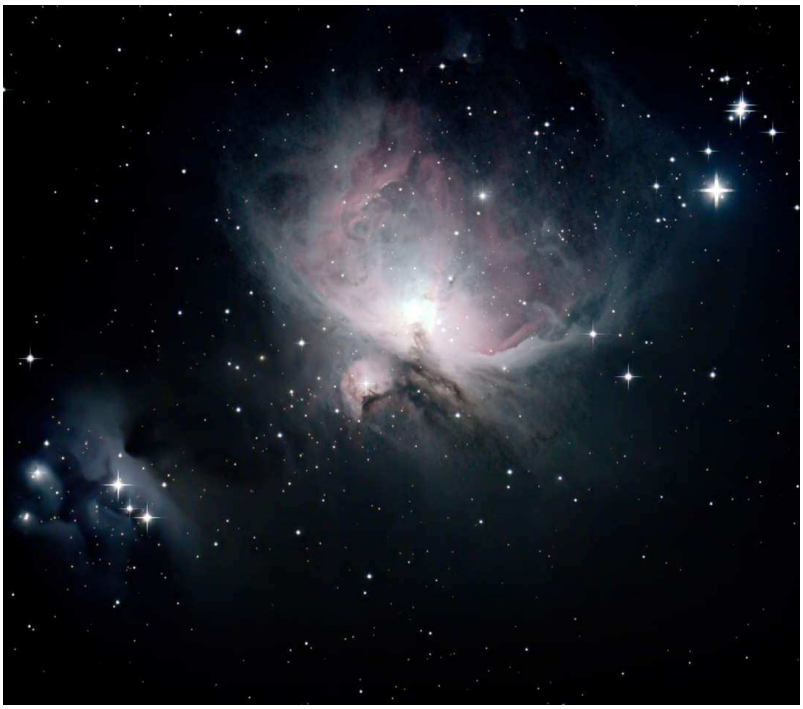
At Cranbourne
29 October 2019
By *Dave Rolfe*

Below - A quick process of some Tarantula Nebula (NGC2070) data from last night - haven't had the scope out in ages and it was good to capture some photons. Approximately 100mins of data, 10min Ha Subs, combined and stacked.
By Jamie Pole



My go at Orion, taken last night 27th November using the 127mm refractor at the Briars and my Canon 6d.

By Ben Claringbold



Above - NGC55 | Whale or Cigar Galaxy - Full Resolution: https://live.staticflickr.com/65535/49015078792_1283c09ebc_o.jpg

In the background, the surrounding space is peppered by a variety of distant galaxies, some extremely distant, those identified by tiny defused golden speckles. Others more sizable include face-on and side-on spiral galaxies, plus many irregular and intriguingly shaped galaxies. This image is composed of luminance, hydrogen alpha [Ha], red, green and blue filtered sub-exposures. Although a significant amount of Ha was collected, the information was attempted to be incorporated gently in accordance to the suggested brightness level of the Ha data [so a lot of effort for little representation :-( ]. This left some of the Ha emissions very faint, and hopefully correctly represents the varying brightness levels of these emission nebulae [that is, some areas are very intense, whilst others are very faintly represented].
Instrument: Planewave CDK 12.5 | Focal Ratio: F8 Camera: STXL-11000 + AOX | Mount: AP900GTO
Exposure Details: Total: 32.92hours | Lum: 46 x 900 sec [11.5hr], Ha: 44 x 1200sec [14.67hr], RGB 450sec x 18 each [6.75hrs]
Viewing Location: Central Victoria, Australia. Observatory: ScopeDome 3m Date: July-October 2019 *Author: Steve Mohr*

Saturn - Big Gas Giant
A few months ago I was really focused on getting my planetary scope working, and I was lucky to have one night of very good seeing. I caught 15x 1min videos in RGB sequences. Captured by Firecapture which automated filter exchanges, and filter offsets - a really sweet program. Used Winjupos to align tifs created in Astrostakkr. Its a long process. Then some wavelets in PI, then finished in Photoshop.
By Steve Mohr

NGC 1055 is an edge-on spiral galaxy located in the constellation Cetus. The galaxy has a prominent nuclear bulge crossed by a wide, knotty, dark lane of dust and gas. The spiral arm structure appears to be elevated above the galaxy's plane and obscures the upper half of the bulge. Discovered on December 19, 1783 by William Herschel from his home in Slough England.
[Courtesy from the Wikipedia] Hi resolution link: https://live.staticflickr.com/65535/49040932298_4abaa8faf4_o.jpg
Instrument: Planewave CDK 12.5 | Focal Ratio: F8 Camera: STXL-11000 + AOX | Mount: AP900GTO
Exposure Details: Total: 23.4 hours | Lum: 41 x 900 sec [10.25hr], Ha: 17 x 1200sec [5.67hr], [RGB 450sec x 20 each [7.5hrs]
Viewing Location: Central Victoria, Australia. Observatory: ScopeDome 3m Date: July-October 2019
Software Enhancements: CCDStack2, CCDBand-Aid, PS, Pixinsight - NGC1055 - *By Steve Mohr*

Cover image. By Steve Mohr

Helix Nebula | NGC7293 | LHaOIIIRGB

I recently had some months break from a lot of things including FB, to get through some issues [like we all have to from time to time...], and found some respite in trying new things/routines associated with image processing. One of the things I discovered was a method of revealing faint, tiny things in the image. I basically sat on the one object, the Helix Nebula, NGC 7293, for nearly two months just playing with the data in Photoshop and Pixinsight.

This technique required me to really wreck the image to get what I wanted - a special mask. In many images you do, there are foggy, cloudy aspects in the field that basically conceal other objects/ tiny stars, things you can just see through the murk. Or, there are strings of very faint background galaxies barely visible, or perhaps not immediately visible. In this case, my master luminosity frame revealed very faint objects in both the murk of the nebula, and in open space, all near to the background level of noise.

So I tried many things in both Photoshop and Pixinsight. Had average to okay results, trying to create a mask that I could apply to the colour image to lift these faint things out of the background or cloud of the nebula.

I eventually found the Pixinsight MLT tool extremely successful, algorithm: starlet, focusing on the tiny details, manipulating mostly layers 1 and 2, pushing these hard to get an image that was a grey and white like mask, white again revealing the faint stars, galaxies, and other things just a bit brighter from off the background darkness [plus it also enhance heavily the normal things too]. Applied the PS threshold tool to the image to make it black and white. To get rid of normal stars, and other bright things, I then subtracted a normal star mask from this, plus manually painted out other things missed like bright parts of the nebula, to leave a useful mask that revealed what first seemed like a lot of noise. When applied this to the master LRGB image, I could control the brightening of these tiny objects all over the field of view. Many of the faint stars in this image were not originally visible, but digitally present in the original master frame.

The two objects I recently completed are the Helix nebula and NGC55, the whale or cigar galaxy? NGC55, I can't figure out the right common name for it - ha! In NGC55, there are many galaxy strings showing up, all now visible due to this technique. I think it's amazing what's in the data we collect.

But here below is my Helix Nebula. I didn't want a madly stretched result, I tried to keep it mostly LRGB, with a dash of Ha and OIII [I forget to originally say OIII was in the image in Flickr, but without it, you don't get the highlighting of the inner spokes the same]. My system really struggles to collect faint things, a limitation of the chip I use, plus the focal length [not F ratio].

This image is still ratty here and there, but hey, this object is super faint. Sorry about the vibrant colours too, I must be a little colour blind.

Hope you have a great weekend.

The hi resolution link below shows the end result best:

https://live.staticflickr.com/65535/48958922528_e85be32d9d_o.jpg

Information regarding this image:

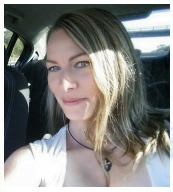
Center (RA, Dec): (337.433, -20.859)
Center (RA, hms): 22h 29m 43.846s
Center (Dec, dms): -20° 51' 31.789"
Size: 48.9 x 32.6 arcmin
Radius: 0.489 deg
Pixel scale: 0.732 arcsec/pixel
Orientation: Up is 15.8 degrees E of N

Instrument: Planewave CDK 12.5 | Focal Ratio: F8
Camera: STXL-11000 + AOX | Mount: AP900GTO
Camera Sensitivity: Lum/Ha/OIII: BIN 1x1, RGB: BIN 2x2
Exposure Details: Total: 85.91hours | Lum: 88 x 900 sec [22.00hr], Ha: 130 x 1200sec [43.33hr], OIII 37 x 1200 sec [12.33hrs], [RGB 450sec x 22 each [8.25hrs]
Viewing Location: Central Victoria, Australia.
Observatory: ScopeDome 3m
Date: June-September 2019
Software Enhancements: CCDStack2, CCDBand-Aid, PS, Pixinsight

SOCIETY INFORMATION


Peter Skilton


Mark Stephens


Nerida Langcake


Jamie Pole


Anders Hamilton


Trevor Hand


Simon Hamm


Peter Lowe


Dave Rolfe


Greg Walton

OFFICE BEARERS OF THE MORNINGTON PENINSULA ASTRONOMICAL SOCIETY

President: Peter Skilton
Vice President: Mark Stephens
Committee: Anders Hamilton, Trevor Hand, Simon Hamm, Dave Rolfe & Peter Lowe

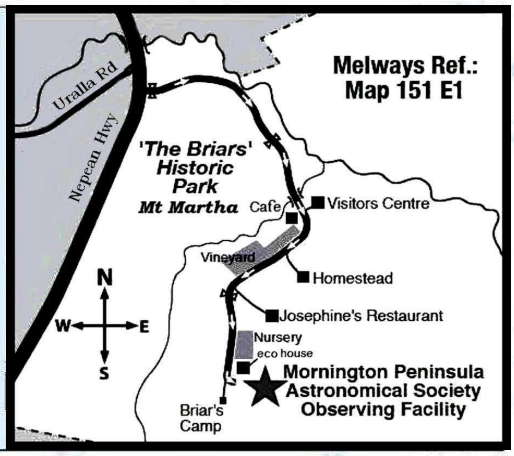
Secretary: Nerida Langcake
Treasurer: Jamie Pole
Web master: Rohan Baumann
Scorpius editor: Greg Walton
Librarian: Fred Crump

SOCIETY MEETINGS

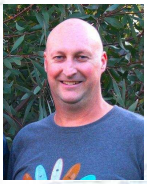
Meeting Venue: MPAS Astronomy Centre
The Briars, Nepean Hwy, Mt Martha
(Melways ref. 151/E1)
Society meetings: Don Leggett Astronomy Centre
8pm on the third Wednesday of the month
(*except December*)
(See map at right & Below)

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



LIBRARY


Rohan Baumann


Fred Crump

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

E-SCORPIUS NEWSGROUP

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

MPAS members - https://www.facebook.com/groups/MPAS1/
MPAS - 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.

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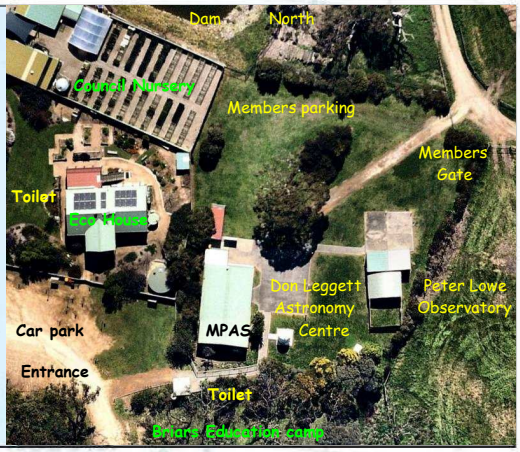

Members please write a story about your astronomy experiences and add some pictures.
Send them to the editor: Greg Walton gwmpas@gmail.com
MPAS Scorpius on facebook - https://www.facebook.com/Scorpius-MPAS-1694951307446763/

SCORPIUS **The journal of the Mornington Peninsula Astronomical Society**