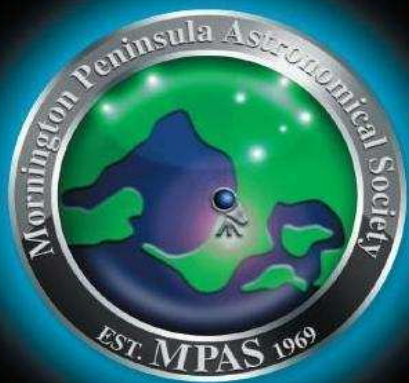


Cover image - Running Chicken's Belly IC2948. *By Nik Axe*

SCORPIUS

THE JOURNAL OF THE
MORNINGTON PENINSULA ASTRONOMICAL SOCIETY INC.

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

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



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

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

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

Mornington Peninsula Astronomical Society



WHAT'S ON



In line with the recent government relaxation of the pandemic rules for community groups such as ours, the COVIDSafe Plan for the Briars site has been similarly adjusted: www.mpas.asn.au/covidsafe-plan/

Public Stargazing Nights

Stay home if you have any suspected COVID-19 symptom.

Pre-booking remains required for the public. Members need not book. At the moment we are capping public nights at 70 visitors, plus any members there.

QR code check-in and Proof of Vax status are no longer required. Anyone may attend.

Face masks are optional, and social distancing is advised.

Events will be outdoors as much as possible.

Surfaces and equipment are still cleaned.

Member gatherings

Stay home if you have any suspected COVID-19 symptom.

If you've been at the Briars for any length of time, and in the following week test positive, please let us know by email to welcome@mpas.asn.au, or telephone one of the committee members, and we will inform any potential close contacts.

QR code check-in and Proof of Vax status are no longer required. Any member may attend.

Face masks are optional, and social distancing is advised.

Members are encouraged to bring their own telescopes, eyepieces etc.

Any shared equipment (eyepieces, focuser knobs, hand controllers) needs to be cleaned regularly.

Members are now able to use the site fully. This means that if you have completed the observatory training and have received a key and/or fob, you are welcome to use the observatory at any time.

Continue to sanitise your hands regularly.

Surfaces, such as handles, knobs, locks, taps, tables and chairs, hand rails etc. need to be cleaned before leaving the site.

With the transition of COVID-19 restrictions for community groups such as ourselves, we have reopened the Briars observatory site in line with applicable government guidelines.

The 2022 timetable of public events.

JULY

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

AUGUST

Friday 5th, 8pm Briars. Public stargazing night. Speaker Katherine McCoy. 70 anticipated.

Wednesday 10th, 7:30pm, Mount Erin Secondary College, 53 Robinsons Rd Frankston. 70 anticipated. Speaker Peter Skilton.

Friday 12th, 8pm Briars. Scout/Guides/Cubs night. Speaker Peter Skilton. No bookings yet.

Friday 19th, 8pm Briars. Public stargazing night for National Science Week. Speaker Trevor Hand. 70 anticipated.

Tuesday, 30th, 7:00pm, Strathcona Baptist Girls School at Merricks Lodge Camp site in Merricks, 3670 Frankston-Flinders Road, Merricks. 28 Year 10 girls are booked for this stargazing evening. WWCC required.

Wednesday 31st, 7pm Briars. 1st Redhill Cubs. Speaker TBD. 55+ anticipated.

SEPTEMBER

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

Wednesday 7th, 6:30pm, Baden Powell Joey/Cubs at Frankston South hall. Speaker TBD. 45 cubs anticipated.

Friday 9th, 7pm Briars, 3rd Ringwood East Scouts. Speaker TBD. 50 cubs anticipated.

OCTOBER

Friday 7th, 8pm Briars. Public stargazing night. Speaker Manfred Berger. 70 anticipated.

Friday 28th, 8pm Briars. Scout/Guides/Cubs night. Speaker Peter Skilton. No bookings yet.

NOVEMBER

Friday 4th, 8pm Briars. Public stargazing night. Speaker Trevor Hand. 70 anticipated.

DECEMBER

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

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

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

Regards, Peter Skilton

SOCIETY NEWS

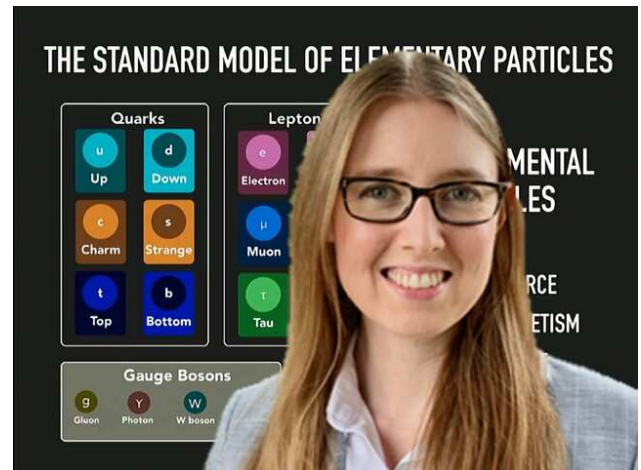


Public viewing Night May 6th - Public night saw 41 hearty souls visiting from near and far under total cloud cover, and occasional drizzle, to hear Katherine McCoy speak indoors about the solar system, and field some tricky questions. No telescope observing was possible afterwards due to the weather, however, everyone had the opportunity to inspect the observatory facilities and were invited back for next month. Helping with the smooth running of the evening were Simon Hamm, Jamie Pole, Guido Tack, Nerida Langcake, Mark Stephens, Peter Skilton, Anders Hamilton and Ben Cashman, with Alan Predjak and Jason Heath also. *Regards Peter Skilton*

Scout viewing Night May 10th - Tuesday evening saw 43 visitors at The Briars from the Langwarrin Christian Cadets, with the skies starting clear earlier in the evening. Their previous booking had been postponed due to last year's pandemic lockdown, but it hadn't dampened their enthusiasm. Peter Skilton gave the talk indoors, with the group moving outdoors midway through the talk in order to see the Moon and other objects as high level cloud started to thicken. Then afterwards they moved back inside for the remainder of the talk. Helping outside during the evening were Mark Stephens, Guido Tack, Ben Claringbold, Chris Kostokanellis, Fred Crump, Robin Broberg plus John and Marj Cleverdon. *Regards Peter Skilton*

Society meeting May 18th - Saw 14 members in attendance. First Peter Skilton (President) gave a report on recent and up coming events. Then we watched a recorded video on Atoms, see details below, then Mark Stephens did Sky for the Month. After a break for coffee we watched 3 short YouTube videos on the recent imaging of the black hole at the centre of the Milky Way galaxy and how it was done. Meeting ended at 10:15pm. *Greg Walton*

For those of you who are not yet subscribed (it's free) to the MPAS YouTube channel, this month's meeting has been uploaded for viewing. The meeting features Asst. Prof. Phiala Shanahan, Physicist at the Massachusetts Institute of Technology, giving a public lecture about "The Building Blocks of the Universe". She obtained her doctorate from the University of Adelaide originally, before moving to the USA. This talk is courtesy of the Perimeter Institute of Theoretical Physics in Ontario, Canada, who hosted it. The meeting also features two excellent up-to-the-minute explanations about the Event Horizon Telescope's released image of the Black Hole, Sagittarius A* at the centre of our Milky Way galaxy. If subscribed, you should be notified of this automatically by YouTube. You can also watch it here by clicking on this link and going to the most recent video on the channel: <https://www.youtube.com/channel/UCm6XOkIcIflt4y0XRBXpXuw> or watch it on the MPAS site once it's refreshed for this month: <https://www.mpas.asn.au/meeting-recordings/> *Regards, Peter Skilton*



Members BBQ & Working Bee May 21st - Members night and working bee was very successful with 15 members in attendance. There was no sign of the snake that was living in the garden shed, so we were able to pump up the tyres on the ride-on mower and cut the grass and edges trimmed. We also attached the rocket weather vane to the corner of the shipping container, where it could be seen. We removed the small gum tree which was damaging the drain at the rear of the clubroom and repaired the broken drainage pipe. Leaking tap washer was replaced in the BBQ shelter. Clubroom was cleaned and vacuumed. Focuser was repaired on the 350mm Meade telescope. By 6pm the sausages were cooked and we had a red sunset indicating clear skies. Though we did have fog hanging around and the dew was already getting very heavy. The observatory was open for viewing, but the telescope eyepieces kept dewing over, which was a constant problem. We looked at the most popular objects including Omega Centauri which is always a stunning view. Ben, Guido, Chris and Andrew all had set up their astrophotography systems on the concrete slabs; we hope to see their results in the near future. A big thanks to all who helped out on the day. *Regards Greg Walton*



Photo Nerida Langcake



Photo Nerida Langcake

Sporadic Briars observatory members viewing night 28 May 2022, saw 6 members in attendance under a mostly clear sky. The clouds glowed white from the lights of Melbourne and when they cross the sky they looked beautiful against the Milky Way which is directly overhead at this time of year. At this time of year we get few clear nights and the cold air keeps most of us inside by the heater, but some of us still make the effort to get out under the stars. We opened the roof on the observatory and fired up the telescopes. First we visited the usual favourites: Omega Centauri globular cluster 5139, Tarantula nebula 2070, Eta Carinae 3372, Pin Cushion 3532, Jewel Box 4755, Gem Cluster 3293, spidery-looking globular cluster near Antares M4, and Butterfly cluster M6. We looked at the objects with the 5 inch refractor at 66 times magnification, then looked at the same objects with the 14 inch Meade telescope at 100 times magnification. Both telescopes worked marvellously, but you can definitely see size matters, being able to see far more detail in all the objects through the Meade.

After, we did a planetary nebula tour with the Meade: Ghost of Jupiter 3242, Eight Burst 3132, NGC3918 and C90 NGC2867. Then we finished off the night looking at some galaxies: Southern Pinwheel M83, Sombrero M104, Hamburger NGC5128, Spindle NGC3115, Ringtail NGC4038, and M61. Ben had set up his astrophotography telescope outside to test out his new camera; we hope to see his images soon. There was some aurora activity happening on the night with the Kp index showing 5. I took my camera down the paddock and snapped a few quick shots of the southern horizon, but couldn't see any aurora. But I did get a nice picture of some hay bales in the paddock with night sky. I also took a few shots of the weather vane with the Milky Way in the background. All in all a pleasant night at the Briars observatory; finished up around 10pm. *Regards Greg Walton*



Public viewing Night June 3rd - The Briars was a cold one, and started with outdoors stargazing while the skies were only 10% clouded near the horizon, ahead of them moving in fully during the evening. Winter in the region, of course, is renowned for clear atmospheric viewing, but usually at the expense of having to endure cold nights. By observing early, the visitors who arrived on time were able to see several objects prior to the talk under clear skies, which rapidly closed in during the subsequent talk. Inside in the warm, Manfred Berger then gave his Minor Planets talk to 56 attendees who came from far and wide. Members in attendance were Nerida Langcake, Guido Tack, Ben Claringbold, Peter Skilton, Greg Walton, Jamie Pole, Anders Hamilton, Yvonne Hsu, Julie McLain, Russell Smith, Fred Crump, Bonnie Cass, Simon Meyer and Simon Hamm. Apologies if I missed anyone during the evening. *Regards, Peter Skilton*

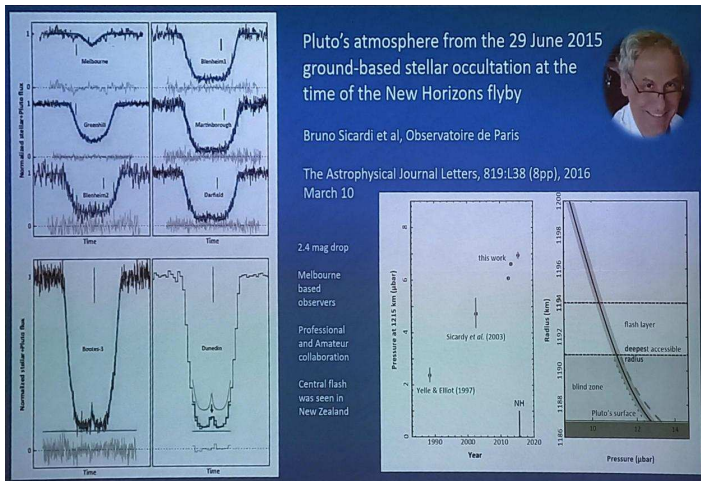
With bad weather looming we decided to do the viewing before the talk. The sky started off 100% clear and stayed clear till 9pm, then the clouds start moving in. We continued viewing by slewing to clear patches. Omega Centauri globular cluster 5139, Tarantula Nebula 2070, Eta Carina 3372, Pin Cushion 3532, Jewel Box 4755, Gem Cluster 3293, globular cluster near Antares M4, Ghost of Jupiter, Eight Burst 3132, NGC3918 and Sombrero M104 were some of the objects that we visited. At 10:30pm the sky was gone, hidden by thick clouds. Just in time as my voice was starting to go, as everyone had lots of questions and I did my best to answer them all. We packed up the telescopes outside and shut the observatory roof, then as we headed home the rain started falling at 11:30pm. Manfred Berger gave the talk on the planets. The 2 heaters kept the meeting hall nice and warm, while outside it was pretty cool. *By Greg Walton*

Scout viewing Night June 10th - Cancel due to no bookings

Scout viewing Night June 11th - Saturday night saw 62 from the Narre Warren South Scouts having a stargazing evening at their hall in Narre Warren South. Unfortunately it was a drizzly evening in Melbourne, with only fleeting appearances of the Moon through the cloud, precluding any telescope usage. The talk was given by Peter Skilton, with many questions from the audience, and supporting inside on the telescopes were Nerida Langcake and Chris Kostokanellis. *Regards, Peter Skilton*

Society meeting June 15th - saw 12 members in attendance. Peter Skilton (President) reported on recent and future events, followed by a pre-recorded talk on what we know about time by professor Carlo Rovelli, Aix-Marseille University & RI, then a break for coffee. Mark Stephen did Sky for the Month. After, Peter played 4 short YouTube videos: Age & size of the universe, The Multiverse, Glass cracking, and Does swearing reduce pain? Meeting finished at 10:30pm. *Greg Walton*

For those of you who are not yet subscribed (it's free) to the MPAS YouTube channel, this month's meeting has been uploaded for viewing. The meeting features Prof. Carlo Rovelli, Theoretical Physicist at the Centre de Physique Theorique de Luminy of Aix-Marseille University, France, giving a public lecture about "The Physics and Philosophy of Time". This talk is courtesy of the Royal Institute in London, who hosted it. You can watch it by clicking on the link below. <https://www.youtube.com/channel/UCm6XOkIcIfl4y0XRBXpXuw> *Regards, Peter Skilton*



Welcome to the June 2022 Meeting

Black hole (Quasar) J1144 in CEN from Siding Spring. Mass of 500xSGR A*. 1 Earth per sec. Credit: Dr. Christopher Onken & Christian Wolf (ANU)

Mag 15. RA 176.199 deg, Dec -43.150 deg

Jun-01 Pluto central flash 1:46am local. Credit: NASA

James Webb May-23/25 dimpled on C3 by 0.1mm particle. Also 4 tinier specks already. Credit: Ciel et Espace & NASA

Jun-01 Pluto occultation fence set up near Katherine. Credit: Dave & Karen Gault at Jabiru, NT. Reappearance captured only.

We acknowledge the land, water and sky under which we meet are of the Bunurong and Boon Wurrung peoples and we pay our respects to their Elders past and present.

Scout Viewing Night June 17th - saw Narre Warren South P-12 College visit the Briars as part of a Peninsula-wide science crawl across the day via coach. It was pretty impressive that the driver squeezed the big coach over the tiny one-lane bridge next to the Visitors Centre, without rearranging its guard rails in the process. There were only 24 visitors present from the Year 10 astronomy class, who listened to the talk given by Peter Skilton. The skies unfortunately were 99% clouded over, however the students did get to see the very yellowish gibbous Moon rising low in the east across the paddocks, and toured the facilities. Helping on the night outside were Mark Stephens, Nerida Langcake, Fred Crump, Simon Hamm, Greg Walton and Ben Claringbold, with Simon selling multiple small telescopes. *Regards, Peter Skilton*

Members BBQ & Working Bee June 18th - Members night and working bee was very successful with 15 members in attendance. We finally finished trimming the tree east of the observatory, ready for when the planets return to the evening sky in a few months time. Chris did the line trimming around the trees. Roland plugged the mouse hole under the sink. Simon planted shrubs behind the clubroom. Telescopes, Clubroom & toilets were all cleaned. Jamie cooked the sausages. Afterwards we opened the observatory and looked at Omega Centauri, Ghost of Jupiter and Eight Burst planetary nebula which still has its star shining at its centre. Always a stunning view through the 14 inch Meade. Ben had his astrophotography systems set up and Simon Meyer used the 8 inch Newtonian in the observatory to image the Eta Carinae nebula. A big thanks to all who helped out on the day and special thanks to those in the kitchen. *Regards Greg Walton*

MPAS - Society AGM

The AGM is in July each year.

Current Committee

President: Peter Skilton

Vice President: Mark Stephens

Secretary: Nerida Langcake

Treasurer: Jamie Pole

General Committee: Anders Hamilton, Trevor Hand, Simon Hamm, Guido Tack & Ben Claringbold.

**MPAS members
please consider a
position on committee,
as we have much work
to be done for the year
ahead.**

AGM Invitation

20th July 2022 at 8PM
The MPAS Briars site
Don Leggett Astronomy Centre
Nepean Hwy, Mt Martha
(Melway ref. 151/E1)

Agenda

1. Apologies
2. Confirm Minutes of previous AGM
3. President's Report
4. Treasurer's Report
5. Election of Incoming Committee
6. Special Business (Constitution updates – details to follow)
7. Other Thanks
8. Close of AGM.

We hope to get more members on committee.

If you feel you would like to get involved in the society business or have a particular skill you think would be useful to the society as a whole please give some thought to becoming an Office Bearer or committee member.

The Annual General Meeting will be held on Wednesday 20th of July, 2022. In this edition of Scorpius there is a 'Committee Election Form' that can be used for the submission of nominations for the next committee. This can be posted to MPAS. PO Box 596, Frankston 3199. Alternatively, nominations can also be submitted electronically to welcome@mpas.asn.au, stating which position on the committee you would like to nominate for.

2022 AGM Committee Position Nomination - (Leave blank if not applicable)

I
..... would like to nominate for the position of
(circle)

- PRESIDENT VICE PRESIDENT
SECRETARY TREASURER
GENERAL COMMITTEE

for the Mornington Peninsula Astronomical Society
committee of 2022/2023.

Seconded by

.....
..... Dated/...../ 2022

Both the nominee and the seconder need to be financial members of MPAS at the time of the AGM. Nominations must reach the Secretary by the 14th July 2022.

New Members Welcome

**Ian Travers
Malcolm Tucker & Sebastien Lancia
Lance O'Farrell**

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



\$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		July / 2022					Red Days indicate School Holidays
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
31 Delta Aquarids and Alpha Capricornids meteor shower peak before dawn					1 Public night 8pm	2 Eu shadow 1:45am F Eu transit 1:58am S Eu transit 4:24am F	
3	4	5 Io shadow 2:00am S Io transit 3:21am S Io shadow 4:13am F	6	7 First Quarter	8	9 Eu shadow 1:47am S Eu shadow 4:22am F Eu transit 4:33am S Eu transit 7:00am F	
10	11	12 Ga transit 2:15am F Io shadow 3:55am S Io transit 5:15am S Io shadow 6:07am F	13 Moon at 357,264km	14 Full Moon Comet C/2017 K2 near globular M10 Io shadow 12:35am F Io transit 1:54am F	15 Saturn below Moon	16 Eu shadow 4:23am S Eu shadow 6:58am F Eu transit 7:05am S	
17 Ca shadow 2:27am S Ca shadow 4:30am F	18	19 Jupiter below Moon Ga shadow 1:00am F Ga transit 3:30am S	20 AGM - Society Meeting 8pm Pluto at Opposition	21 Last Quarter Io shadow 12:17am S Io transit 1:35am S Io shadow 2:30am F	22 Mars above Moon	23 Working bee 4pm BBQ 6pm	
24	25	26 Moon at 406,274km Ga shadow 2:00am S Ga shadow 5:00am F	27 Venus above dawn thin crescent Moon Eu transit 1:13am F	28 Io shadow 2:11am S Io transit 3:24am S Io shadow 4:23am F	29 New Moon	30 Mercury left of a thin crescent Moon Io transit 12:02am F	

Monthly Events

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

- Public night - 8pm to 10pm on the 1st @ the Briars
- Society Meeting - 8pm to 10pm on the 20th @ the Briars
- Working Bee - 4pm on the 23rd @ the Briars
- Members night & BBQ - 6pm on the 23rd @ the Briars

<p>Working Bee job list Mow lawn & trim edges Remove tree branches Clean kitchen Clean observatory</p>

CALENDAR		August / 2022					Red Days indicate School Holidays
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
	1	2 Uranus 1.5 deg from Mars Ga shadow 6:00am S Eu shadow 10:52pm S	3 Eu transit 1:14am S Eu shadow 1:25am F Eu transit 3:38am F	4 Mercury 0.7 deg right of Regulus Io shadow 4:06am S Io transit 5:14am S	5 First Quarter Public night 8pm Io shadow 10:34pm S Io transit 11:40pm S	6 Io shadow 12:46am F Io transit 1:52am F	
7	8	9	10 Eu shadow 1:26am S Eu transit 3:38am S Eu shadow 4:00am F Eu transit 6:02am F	11 Moon at 359,828km Io shadow 5:58am S	12 Full Moon Scout & Guides viewing night Saturn above the Moon	13 Io shadow 12:28am S Io transit 1:29am S Io shadow 2:40am F Io transit 3:38am F	
14	15 Jupiter below Moon Saturn at Opposition	16	17 Society Meeting 8pm Eu shadow 4:00am S Eu transit 5:58am S	18	19 NSW - Public night 8pm Last Quarter	20 Working bee 4pm BBQ 6pm Mars above the Moon	
21 Io shadow 8:50pm S Io transit 9:43pm S Io shadow 11:03pm F Io transit 11:53pm F	22	23 Moon at 405,418km Vesta at Opposition	24 Scorpius Deadline	25	26	27 New Moon Io shadow 4:14am S Io transit 5:02am S Io shadow 6:30am F	
28 Io shadow 10:44pm S Io transit 11:28pm S	29 Mercury above Moon Io shadow 12:58am F Io transit 1:39am F	30 Strathcona Baptist Girls School at Merricks Lodge Camp 7pm Ga shadow 10:00pm S	31 Comet C/2017 K2 near Delta Scorpii 1st Redhill Cubs	Note - 31st Ga transit 12:57am S Ga shadow 1:03am F Ga transit 3:31am F	Note - 20th Io shadow 2:22am S Io transit 3:15am S Io shadow 4:35am F Io transit 5:26am F	Note - 27th Eu transit 9:26pm S Eu shadow 10:27pm F Eu transit 11:52am F	

Monthly Events

Jupiter shadow transits can now start to be seen. Times in brown

- Public night - 8pm to 10pm on the 5th @ The Briars
- Scout & Guides viewing night - 8pm to 10pm on the 12th @ The Briars
- Society Meeting - 8pm to 10pm on the 17th @ The Briars
- NSW = National Science Week - Public night - 8pm to 10pm on the 19th @ The Briars
- Working Bee - 4pm followed by Members Night BBQ - 6pm on the 20th @ The Briars

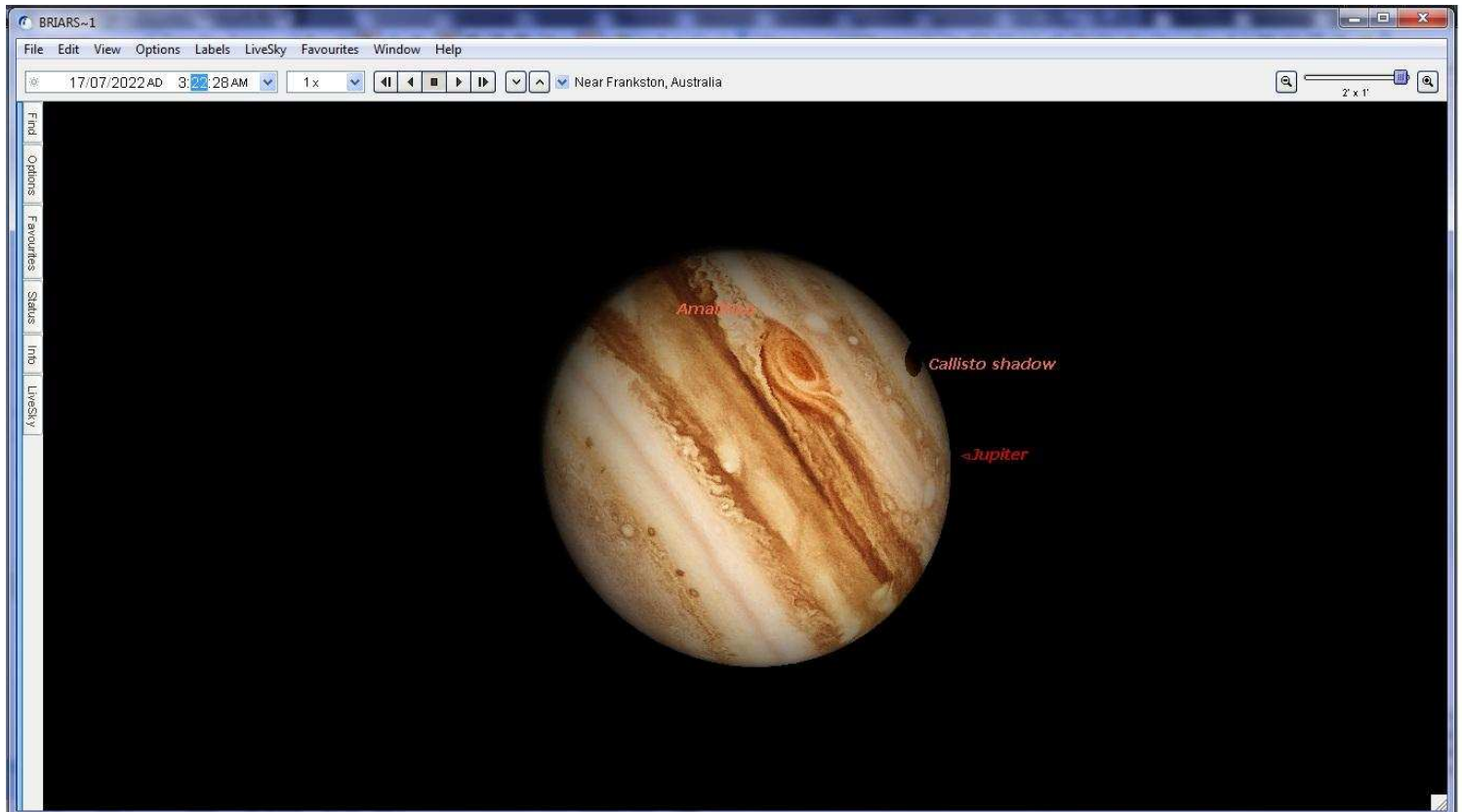
<p>Jupiter Moon code Io = Io Eu = Europa Ga = Ganymede Ca = Callisto S = start F = finish</p>
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THE BRIARS SKY

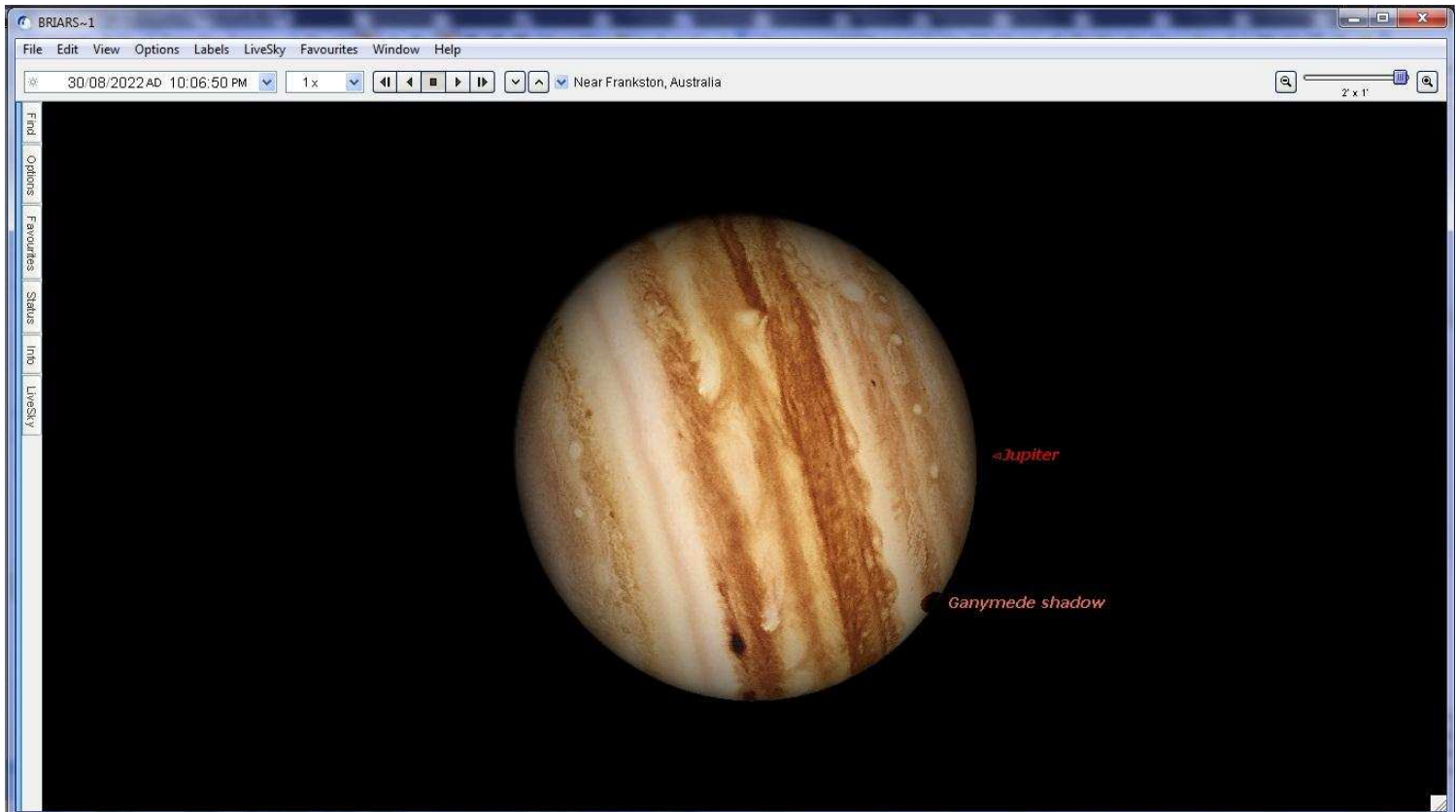
By Greg Walton



Jupiter's Moon Callisto shadow transit on the morning of 17th July starts at 2:27am and finishes at 4:30am
It will look as if Callisto takes a chunk out of the top of Jupiter, see below



Jupiter's Moon Ganymede shadow transit on the evening of 30th August starts at 10pm and finishes at 1:03am on the morning of 31st
It will look a large black dot cross the face of Jupiter, see below



NASA launches rocket in Australia in 'landmark' first

In a first for Australia, US space agency NASA launched a commercial rocket from a remote area of the Northern Territory just after midnight on Monday morning. The launch was streamed live online and hosted by Dr. Brad Tucker from ANU. Many members will remember Brad from when he visited the Briars a few years ago to give a talk to MPAS.



The rocket launched from the Arnhem Space Centre near Nhulunbuy, on the lands of the Gumatj people who were consulted throughout the process. Weather conditions delayed the launch for about an hour as wind, rain and clouds arrived at the launch site. "We had a few delays because of the weather but when it finally went you feel the shock of the rocket as it left and the noise was pretty impressive," said Michael Jones, CEO of Arnhem Space Centre. "We went through the full weather spectrum last night, we had heavy rain and cloud. It would put some risk into what the launch angles will be, so we just had to make sure it was safe."

The rocket finally launched from the red dirt but was only visible for ten seconds before it disappeared into the earth's atmosphere. It is a 13 metre "sounding rocket" which will carry an atmospheric observation platform to examine the Alpha A and B constellations. The rocket is expected to travel 300 km during the 15 minutes it moves through space.

"Without getting too deep into the science, it was effectively a large X-ray camera looking at various astrological phenomenon and trying to capture parts of boulders in the Milky Way and particularly the star cluster of Alpha Centauri."

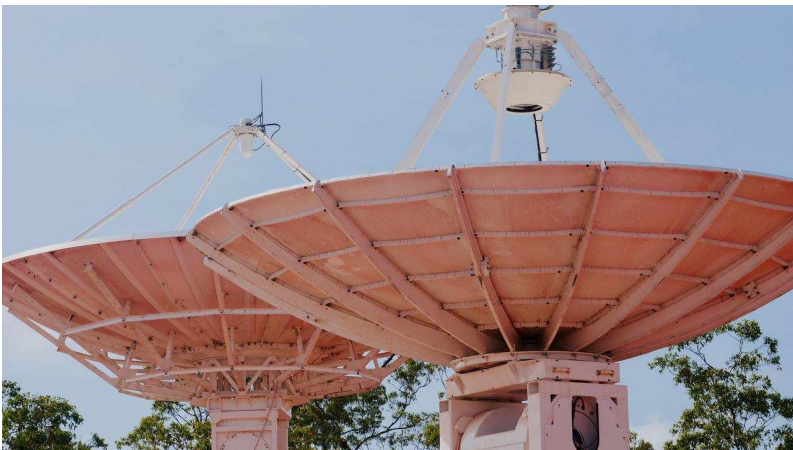


NASA successfully launches its first rocket from newly created Arnhem Space Centre

It was the first time the internationally renowned space agency has launched a rocket from a commercial port outside the USA. The rocket is also the first to leave Australian soil in 26 years, since the 1995 launches from the Royal Australian Air Force Woomera Range Complex.

The rocket is the first of three NASA-designed rockets to be launched from the remote NT space centre, which will not enter orbit but instead collect valuable scientific information into the physics of the Sun, astrophysics, and the type of planetary science which can only be conducted in the southern hemisphere. The second and third rockets are scheduled to launch on July 4 and 12.

The launches mark a historic collaboration between some of the world's foremost scientists and the world's oldest living continuous culture. The launch pad is on traditional land, which NASA has pledged to clean up after the launch by returning all the material and debris back to the US. The Arnhem Space Centre is owned and operated by Equatorial Launch Australia, which hopes to drastically increase its capability to host 50 launches a year by 2024.



NASA has installed telemetry equipment to facilitate the launch.

The site's geographic location and proximity to the equator could attract more international space agencies. Our proximity to the equator being 12 degrees south gives us an astrodynamics and physics advantage over a lot of launch sites around the world and is highly desirable for large and complex orbital solutions in space, plus it is adjacent to the sea so that if the rocket misbehaves during its flight, then there's miniscule prospect of it hitting anyone on the way down.

YOUR ASTRO QUESTIONS



What is a comet? By Greg Walton

Comets are old going back to a time when our solar system was formed some 4.5 billion years ago. They are made up of water/ice and dust which was left over after the Sun and planets were formed. The comets that formed in the space between the Sun and Neptune would have been ejected out of the solar system by the movement of the planet around the Sun or found themselves crashing into the Sun or planets. The comets far outside the orbit of Neptune would settle down into stable orbits around the solar system, forming a large belt of comets called the Kuiper belt, named after Gerard Kuiper (1905 - 1973) who in 1951 proposed the theory, which led to the discovery of faint objects beyond the orbit of Neptune. There are 200,000 comets larger than 100km and 1,000,000,000 smaller ones in the Kuiper belt.

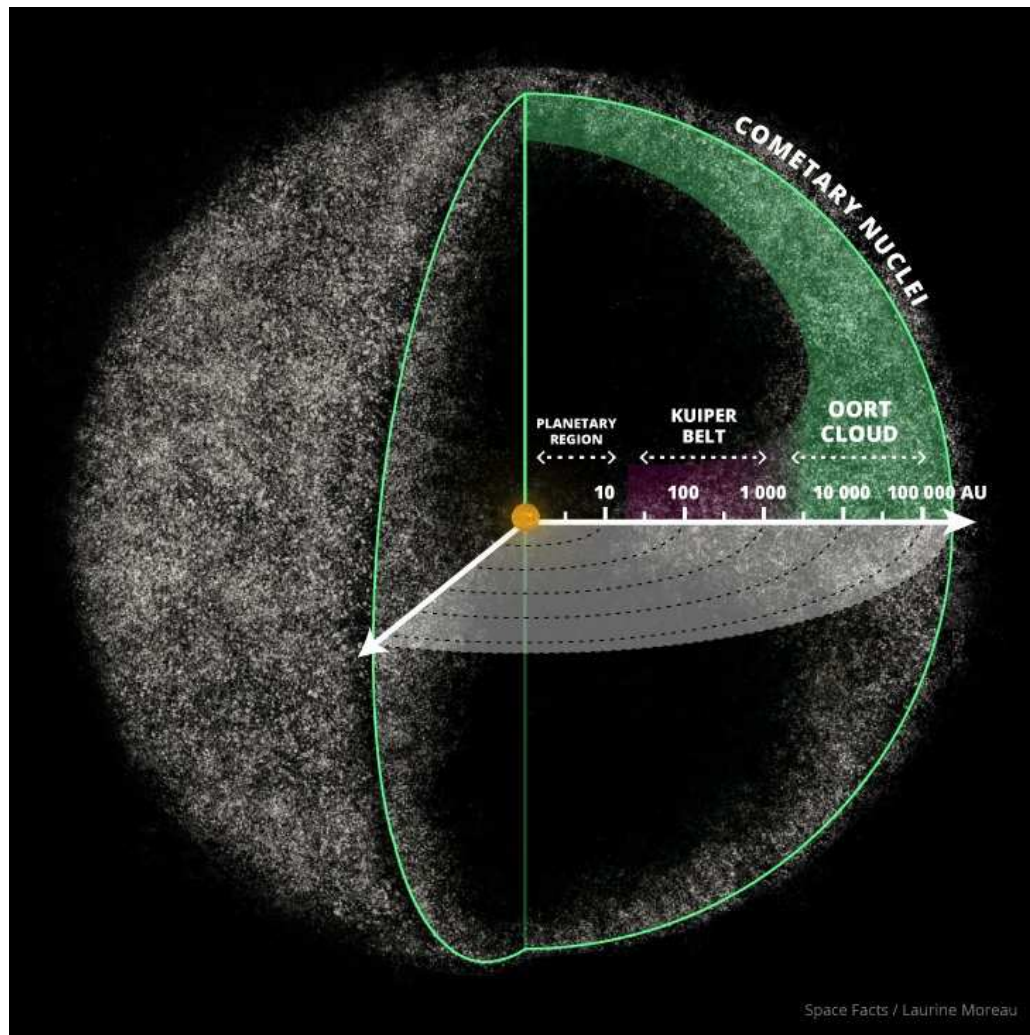
The Oort cloud is a shell of dirty snowballs the size of the average house up to the size of Mt Everest that circle the solar system, named after Jan Oort (1900 - 1992) who predicted its existence in 1950 after studying the movement of comets. Number of comet in the Oort cloud is estimated to be 1,000,000,000,000

These dirty snowballs move very slowly and are very dim, making them almost impossible to see even with the biggest of telescopes. As the Sun travels around the Milky Way galaxy, it also moves up and down through the plane of the galaxy. In doing so our Sun comes close to other stars, which disturb the regular movement of the dirty snowballs around the outer solar system. Some of the dirty snowballs find themselves slightly nudged towards or away from the Sun. This process is very slow and it's thought that a dirty snowball would take one million years to travel from the outer solar system to the Sun. As it happens, our Sun passes through the plane of the Milky Way around one million years ago, so we can expect far more comets into the future.

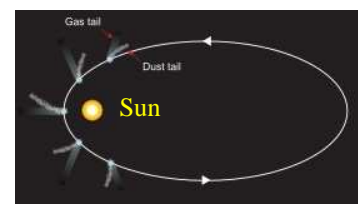
A comet's tail always points away from the Sun? As comets approach the Sun their tails are behind them, but when comets are moving away from the sun their tails are in front. The solar wind moves about 10 times faster than the comets, which blows the tail away from the Sun and ahead of the retreating comet. Comets can reach speeds of 70 kilometres per second, but the solar wind can be as high as 800 kilometres per second.

Why do some comets have more than one tail? As comets move close to the Sun, they sometimes develop mutable tails of dust and ionized gas. Comets have two main tails, a dust tail that reflects light from the Sun and a plasma tail that glows or fluoresces and bends to the direction of the magnetic field lines from the Sun.

Colour of a comet. After awhile you will notice that comets all seem to have the same green or aquamarine coloured halo around them. The atmosphere around a comet includes carbon-based molecules that are bombarded with ultraviolet light from the sun, breaking molecules apart and stripping off atoms, which gives of a green glow. The green or aquamarine colour also makes them easier to spot in your colour images.



Space Facts / Laurine Moreau



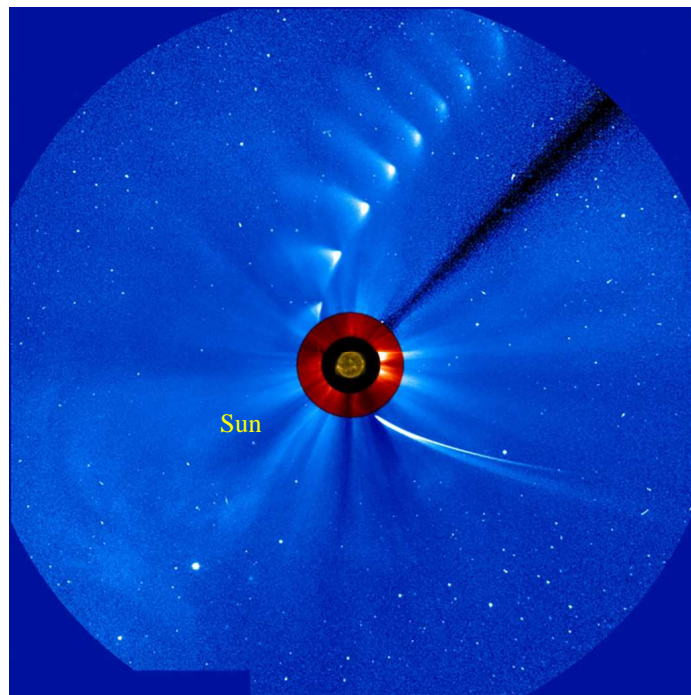
Comet Lovejoy 2014 LMDSS 8" Newton AG CC1 EQ6 Pentax K30 12x30sec iso12800 By Greg Walton MPAS/ASV 18Jan15

Comet hunting. Before the age of the comet hunting satellites most astronomers would spend hundreds if not thousands of hours searching the sky before they found a comet. Most comets can only be seen when they approach the sun and start to melt. The best time to search the western sky at sunset is the weeks after the full moon. The best time to search the eastern sky before dawn is around the time of the new moon. These days all comets are found by satellites or ground-based robotic telescopes which image the whole sky every night and use software which compares these images with images taken the nights before. The software alerts the astronomers of anything that has changed its position in the sky, drawing up a list of most likely comets. Then the astronomers use more powerful telescopes to have a closer look. Most of the time it's very hard to spot the difference between a comet or an asteroid. Asteroids being made of less volatile materials such as silica and metal don't produce a tail. Whereas comets are made from mostly water and start to melt as they get closer to the Sun. Another telltale feature is that most asteroids travel the same path as the planets across the sky in a circular orbit, usually in the asteroid belt. Whereas comets have very elliptical orbits and can come from any part of the sky. Astronomers often watch these objects for many months, waiting for them to reveal themselves. Astronomers can also check the spectra to see what an object is made from, water or stone.

An important thing to remember when comet hunting is that there are many objects in the sky that look like comets. The great comet hunter Charles Messier (1730 - 1817) had this problem so he decided to make a catalogue of objects that looked like comets. Using his 3-inch refractor in Paris, France, he put together a list of 109 objects with their exact positions in the sky, so he could quickly disregard these objects as not being a comet. Messier discovered 13 comets and 40 of the objects on his list. Messier's list is still the most popular catalogue of deep sky objects for amateur astronomers today.

These days the chance of an amateur finding a new comet is almost impossible, unless they have access to the same tools of the professional astronomer. But there is a way. NASA has satellites that continuously image the Sun and by watching these live feeds via the Internet you may spot a comet passing the Sun or even crashing into the Sun.

The Sungrazer Project is a NASA-funded program that enables the discovery and reporting of previously unknown comets in the ESA/NASA SOHO and NASA STEREO satellite instrument fields of view. Anyone, anywhere in the world can become a "Comet Hunter", and immediately begin looking for new comets in the spacecraft data. The Sungrazer Project provides this website to enable the reporting of these comets, and subsequently allows the project team to perform necessary measurements and data reduction to ultimately turn the comet reports into officially designated comets. With 4,325 Comets Discovered So Far. [Get Started!](#) Welcome to the "Sungrazer" citizen science Project comet program, based in the [Solar Physics Department](#) of the [U.S. Naval Research Laboratory](#), Washington D.C.



Water World. When the Earth was first formed from dust, rocks, and comets, it was very hot and any surface water would have been boiled away into outer space. After many millions of years the Earth cooled enough for surface water to start forming. It's thought that comets delivered 10 times the amount of water that's on the earth now. But when the planet **Theia** slammed into the Earth and creating the Moon, the process of comet delivering water to Earth had to start over. If **Theia** had not slammed into the Earth we would be living on a Water World like in the movie starring Kevin Costner.

The comets continued to fall to Earth but at a much slower rate. It's thought that half of all the water on Earth today was delivered to Earth by comets. Comets also delivered organic compounds which meant life could start on Earth. If a comet approached the Earth head on, all the organic compounds would be destroyed by the intense heat. But some comets would have been captured and orbit the Earth in a degrading elongated orbit, meaning at each pass of its orbit the comet slows till it gets to a slow enough speed when it can fall to Earth and the organic compounds would stay intact. We use the same concept to slow a spacecraft down to a safe speed when it can land on the surface of a planet. Also a planet with an atmosphere would slow the comet each time it grazes the upper atmosphere.

Jupiter collects comets. Jupiter's strong gravitational field helps to clear the solar system of comets making the Earth a much safer place for life to start and live. Jupiter is still helping to protect us today, as we have seen when comet Shoemaker-Levy 9 slammed in to Jupiter in 1994 leaving Earth-size impacts on its surface.

Southern Comets website -

<http://www.members.westnet.com.au/mmatti/sc.htm>

<https://m.facebook.com/michael.mattiazzo2>



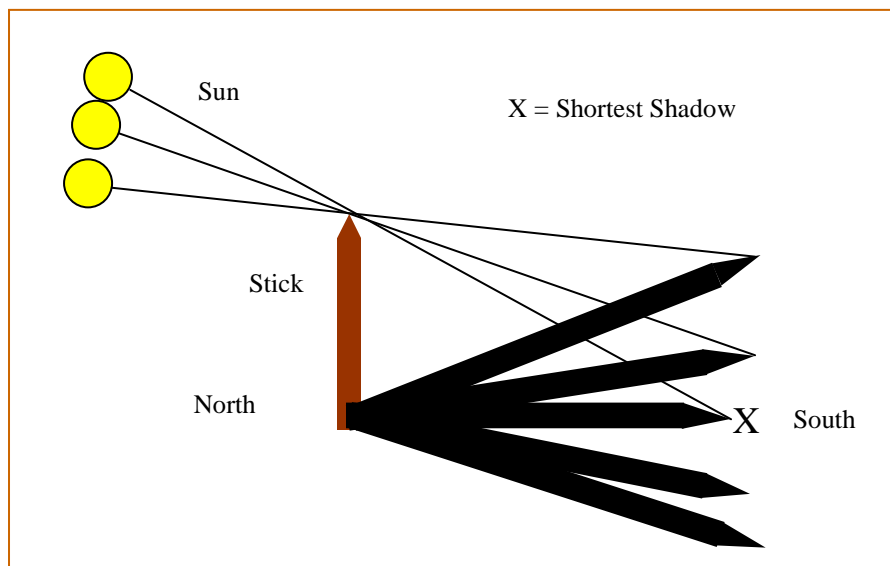
Hubble image

Finding North during the day.

As astronomer we know how to find North or South by using the stars.

But what about finding North or South during the day? One way of finding North or South is to hammer a stick in the ground and measure the length of the shadow. Mark the length of the shadow every half hour. When the shadow is at its shortest, this will give you south.

Down side is that this method could take all day.



The Watch Method

You can also determine direction using watch or clock that has hour and minute hands. The watch needs to be set to local time, without any changes for daylight savings. As with the Shadow-Stick method, the further you are from the equator, the more accurate this method will be. If you don't have a watch, you can draw a clock face on a piece of paper, marking the correct time on it.

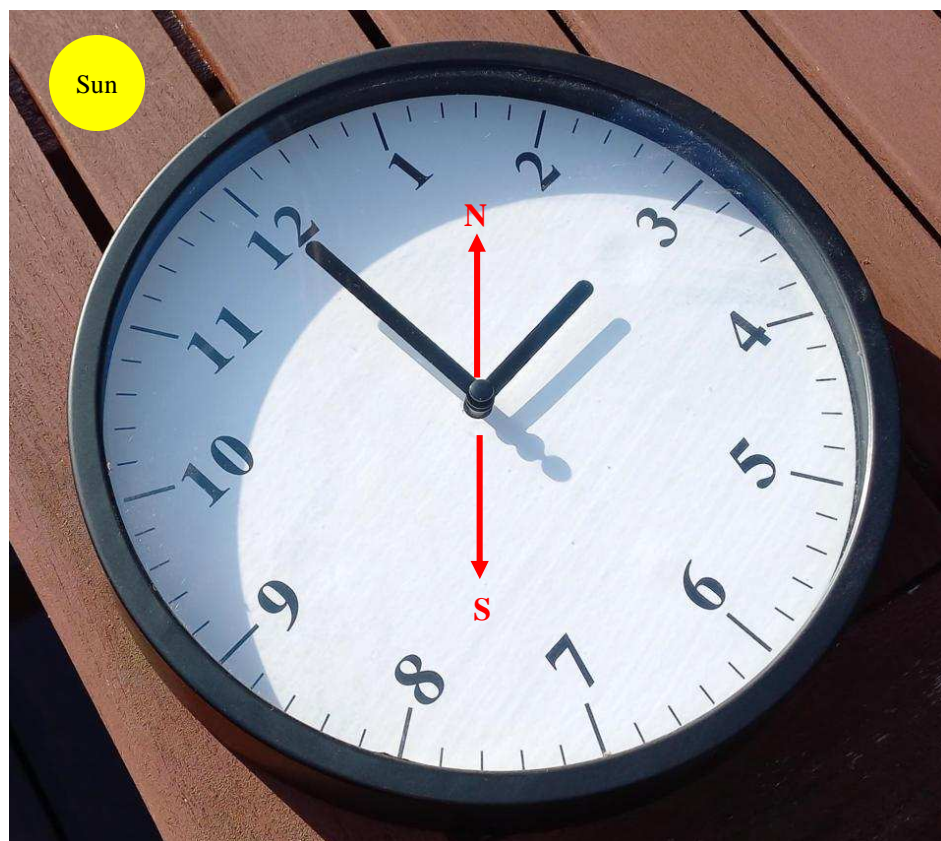
In the Southern Hemisphere, point the watch's 12-o'clock mark toward the sun; halfway between 12 and the hour hand will give you the north-south line. *See image at right.*

In the Northern Hemisphere, point the hour hand at the sun. Half way between the hour hand and the 12-o'clock mark will give you the north-south line.

As you get closer to the equator this method becomes less accurate and may become difficult to work out north and south. Just remember the sun rises in the east and sets in the west.

When using a clock its very easy to align the hands with the sun by looking at the shadow they cast and make sure they are parallel with each other.

By Greg Walton



Building a Rich Field Telescope (Part 4) Making a Dobsonian mount. *By Rod Brackenridge*

Introduction

This is the final article I'll write about building this telescope. I hope I've given someone reading a few ideas about how they could either build or modify an existing instrument. Ultra fast Newtonians (F3 and below) are a new trend in scope building. They combine wide fields with greater portability. For those who make mirrors they are an obvious type of instrument to build when you have developed some skills on simpler long focus mirrors as they are very expensive when purchased commercially.

Construction Details

The final step in building this scope was to make a Dobsonian mount. The short tube makes building a stable mount very easy. I used 12 mm birch ply and added Jarrah hardwood edges to cover the end grain. Jarrah boards were used for support pieces.

Here are the major parts after being cut:

The rocker is assembled as in the photo. The whole mount screws together. Where screw heads would be otherwise visible, I recessed the screws with an 8 mm Forster bit and used a plug cutter to make round pieces of Jarrah that were then glued into the holes above the screws. The plugs were then sawn and sanded flush with the surrounding wood.

The altitude and azimuth bearings are Formica riding on Teflon. An 8 mm bolt sits inside a roller bearing to provide the azimuth pivot point.

The degree circle shown above can be downloaded here:



<https://www.cloudynights.com/topic/514545-free-printable-setting-circles/>

I printed these out at OfficeWorks and had them laminate the sheet for me.

The pointer for the degree circle is magnetic and attaches to a magnetic strip sitting under the Jarrah banding on the rocker's circular base. The rocker sits on adjustable feet to help align the setting circle and inclinometer more accurately.

Here is the finished instrument:

Observing Experience

My 8 inch F3 is now complete and has been used several times at home and twice been to the ASV dark sky site at Heathcote. It's met, and in some ways, exceeded my expectations. The views are wide field, coma free and flat. I'm seeing detail I haven't seen before. I've enjoyed viewing old favourites like the Tarantula Nebula in view together with the surrounding nebulosity of the LMC. Eta Carinae looks massive and The Milky Way is a sea of stars.



An F3 is meant to be hard to collimate but I've found the opposite. The wire spider and double plate mirror cell work very well and require little or no adjustment between observing sessions.

The only issue I have is getting into a comfortable position next to such a small scope. I've been using a camp chair but most of the time I wind up kneeling next to it. I'm thinking of building a dedicated observing chair or possibly buying a drummer's throne.

I've really enjoyed building this little scope. It's compact size means I expect it will get a lot of use. I think it will also be fun for children to use at public nights.

Conclusion

I've worked on this telescope over about 2 years on and off. It's been a great project. Most of the work was on the mirror. The tube and mount were built over a few weekends. I believe many commercial instruments could be improved by exchanging their heavy chipboard mounts for plywood mounts. If anyone would like help with such a project I would be happy to help.



Personal Reflection – Conspiracy Theory

PHIL1037

Name: Laura Bellomia

Student number: 46513965

Introduction:

I have chosen to argue in favour of the claim that UFO's and Aliens have been in existence prior to two thousand BC. All around the world we are continually discovering remnants that have been left behind by ancient cultures that point towards the direction of the existence of UFO and Alien phenomena.

1. Depictions of UFO's and Aliens have been illustrated on stone and left behind by the ancient people of India and Australia. Drolia (2014) reports that within the Charama region of India, ten-thousand-year-old cave paintings have been discovered portraying images of UFO's and beings in spacesuits. Further down south on the continent of Australia similar findings of UFO and Alien beings can be observed among the Wandjina paintings, additionally the Wandjina paintings are estimated to date back five thousand years (Anon, 2011).

2. Ancient scriptures have reported accounts of UFO and Alien sightings. The Old Testament of the Hebrew Bible (Kings 2:1-3) describes the Prophet Elijah being taken up to heaven by a UFO. (Stichin, 1976) retells an account of an ancient race descending to Earth in a UFO which has been extracted from Sumerian cuneiform texts. While the Egyptian Tulli papyrus accurately describes the sighting of a UFO around 1480BC when King Thutmosis the third was ruler (Karasavvas, 2017).

3. Ancient cultures of South America engaged in space travel and in turn were visited by space travellers. Daniken (1968) draws our attention to a relief carving etched on the tomb lid of King Pakal of Palenque in Mexico, an ancient astronaut is depicted in his rocket at the centre of controls, additionally Von Daniken also concludes that spaceport landing sites are evident on the Nazca plains of Peru.

My poster will reflect Premises 3 and the main claim.

STANDARDISATION

C: UFO's and Aliens have been in existence prior to two thousand BC.

1. Depictions of UFO and Aliens have been found illustrated on stone in India and Australia

1.1. A ten-thousand-year-old cave painting depicting UFO's and beings in spacesuits has been discovered in India.

1.2. Australian rock paintings dating back five thousand years illustrate UFO's and Aliens

[Sub-premises 1.1 and 1.2 are linked]

2. Ancient scriptures have written accounts of UFO and Alien sightings.

2.1. The Old testament describes Elijah being taken up to heaven by a UFO.

2.2. Ancient Sumerian texts report a UFO descending to Earth.

2.3. The Tulli papyrus of Egypt registers a UFO sighting around 1480BC.

[Sub-premises 2.1 and 2.2 are convergent]

3. Ancient cultures of South America engaged in space travel and in turn were visited by space travellers. 3.1. An ancient astronaut has been illustrated in his rocket on King Pakal's tomb lid.

3.2. Spaceport landing sites have been discovered in Nazca Peru.

[Sub-premises 3.1 and 3.2 are linked]

[Premises 1, 2 and 3 are linked]

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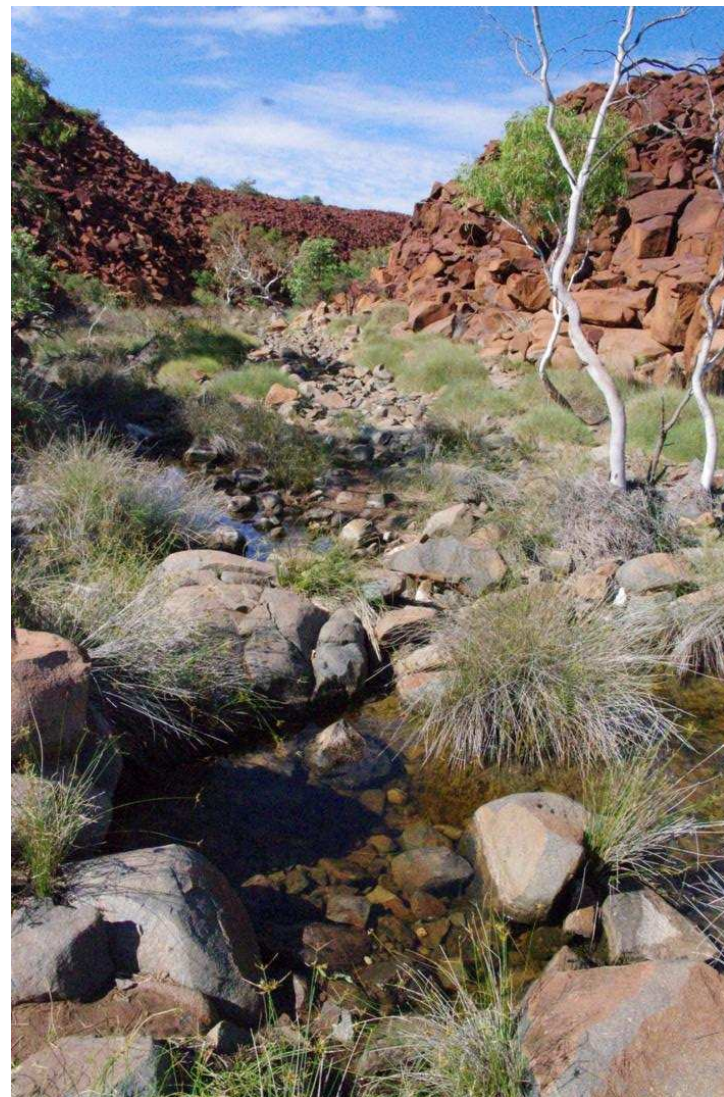
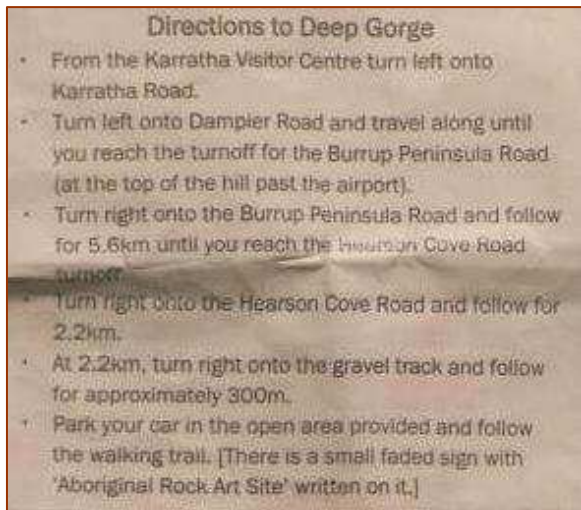
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Hunting for aliens in Western Australia, *Greg Walton*

Some years ago while travelling around Western Australia we came across the town of Karratha and stopped at the Visitor Centre, where they told us about Aboriginal rock art with many alien figures and gave us a map with instruction on how to find them, a bit like an old fashion treasure hunt. Sounded like an interesting challenge.



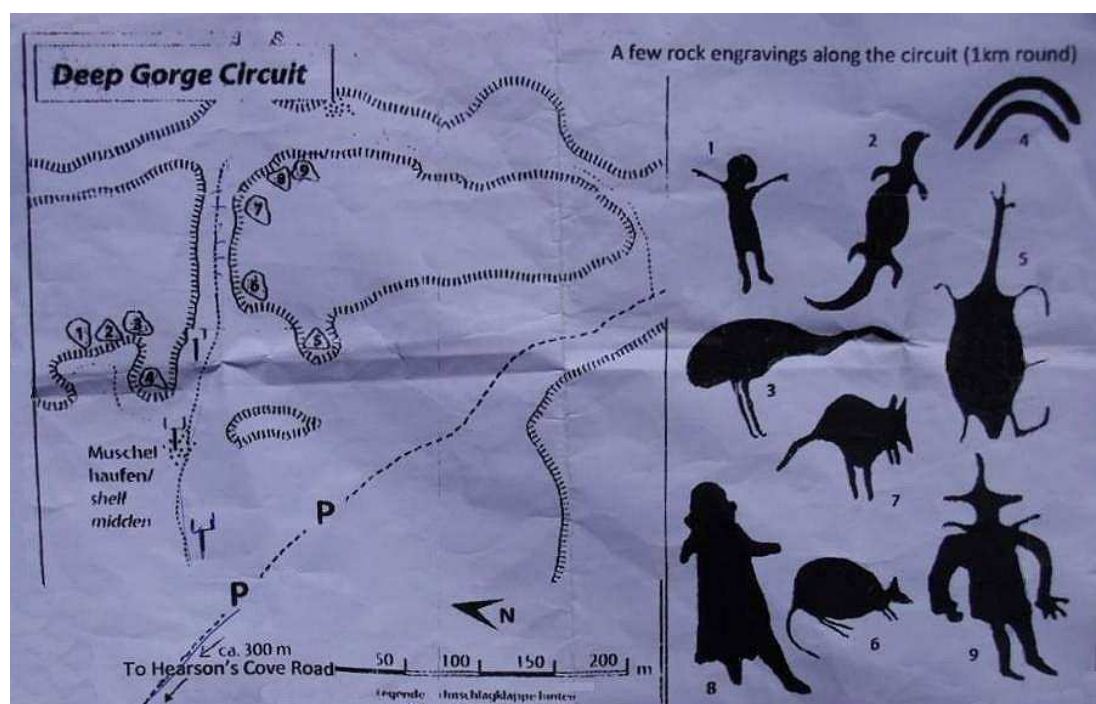
On arrival we found large mounds of burnt orange boulders, probably millions. We thought this could be like finding a needle in a haystack. The map led us between the mounds of boulders, along a small pretty water course with very sharp Spinifex grass. The rocks along the water course were light grey, a type of granite which is very hard and resists weathering. The mounds were exactly the same granite, but were coated in iron blown in from Dampier and the Pilbara iron deposits, which are mined on a massive scale. In fact the rocks have become even redder because of the recent mining activity.

See photo at right.

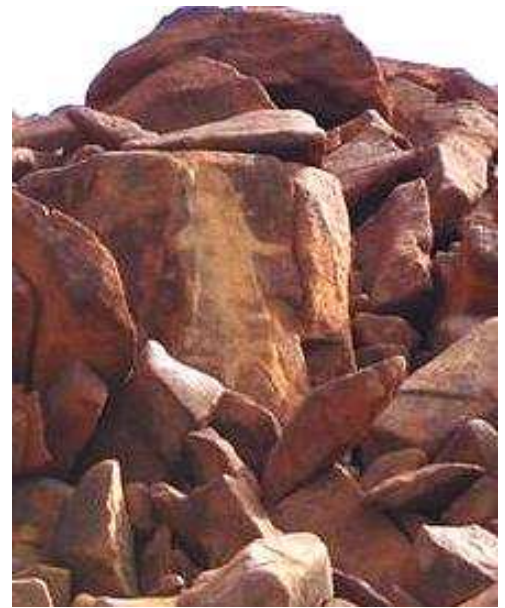
Deep Gorge is in the newest National Park in WA, Munujuga Nation Park, covering 4,900 hectares on the Pilbara coast. The petroglyphs type rock art is estimated to be 25,000 years old and number in the hundreds of thousands over the Burrup Peninsula. Protected by law as an Indigenous site, I can see that if there were too many people visiting, it could be spoiled. Probably lucky it's so far from anywhere. The artwork was made by scratching away the surface of the rock to expose the lighter coloured rock underneath.

Using the map we searched for the petroglyphs. At first it seemed impossible, but one by one we started to find them and soon we were finding them everywhere.

Figure 9 looked the most alien.
See photo below



A selection of the photos we took, see if you can find more aliens. Figure 8 looked like it has a face. *See photo top right*

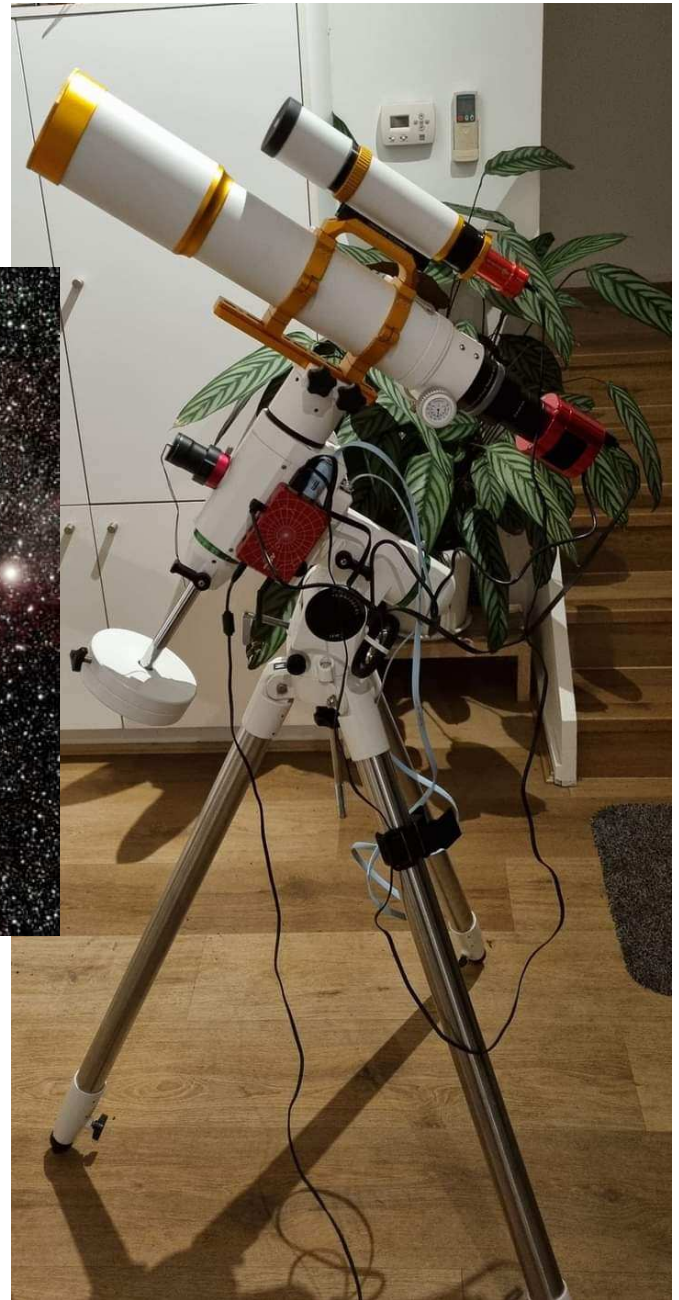


MEMBERS GALLERY



Right - New camera and ASIAIR Plus arrived, everything connected and seemed to be working; so now I just need clear skies and try to manage all the cables. *Ben Claringbold*

Below - Carina Nebula from Saturday 28th May. William Optics z81, ZWO ASIAIR and 183MC Pro camera. New setup worked a treat! Just have to learn how to process photos differently from my older camera now. Very happy with this as first attempt however. *Ben Claringbold*



Left - Jupiter by Russel Smith

Congratulations, Russell, on behalf of MPAS, on receiving your award. A fantastic image of Jupiter with one of its moons and shadow transiting its surface. I know from my experience that this is not easily done. Great work, regards Greg Walton

Antares.

I recently made a couple of attempts to photograph Antares and the surrounding region. The first attempt was from my back yard in Seaford, and the second attempt was from darker skies from MPAS at the Briars.

Figure 1. Antares, M4 Globular Cluster, and Sharpless 2-9 nebula from Seaford



Figure 2. Antares, M4 and Sharpless 2-9 from the Briars



Both images were taken with my 80mm x 500mm focal length refractor with a 0.8 Flattener / Reducer, at 1600 ISO and 180 sec exposure times. The camera was my modified Canon 550D DSLR. I stacked the 30 frames with Dark and Bias frames. I adjusted the colour and light levels and curves in Photoshop.

I didn't expect the difference that a darker sky would make to this noticeable. But it was a pleasant surprise to see the increased detail and nebulosity come out when I processed it.

Antares, the bright yellow star in the bottom right of this image, is near the heart of Scorpio, around 550 Light years from us. It's in a great position to view it at the moment, rising East-Southeast and passing almost directly overhead during the night.

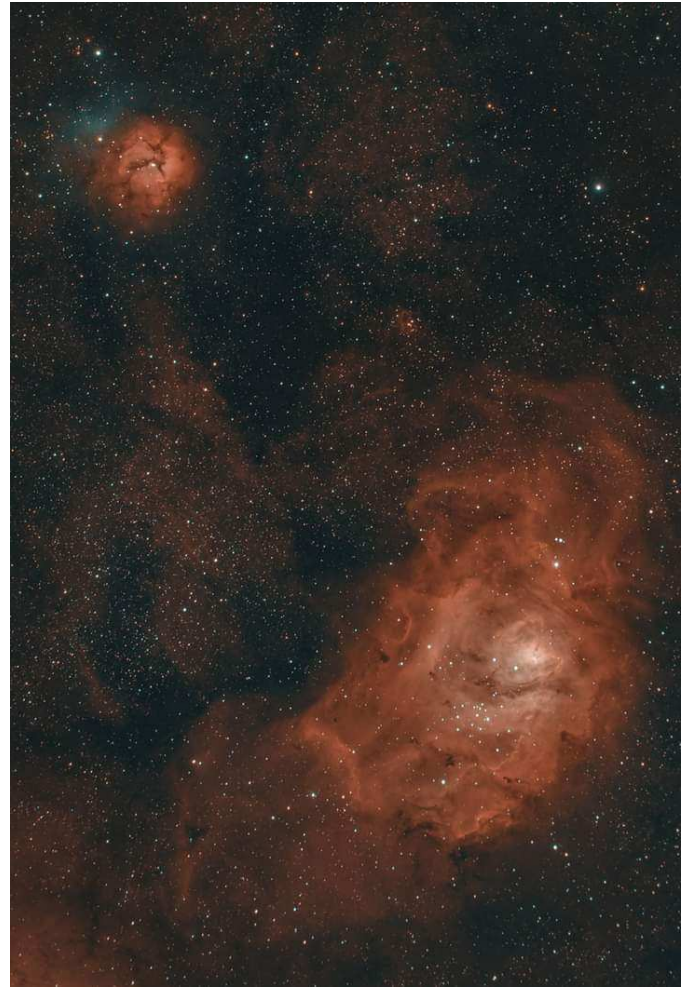
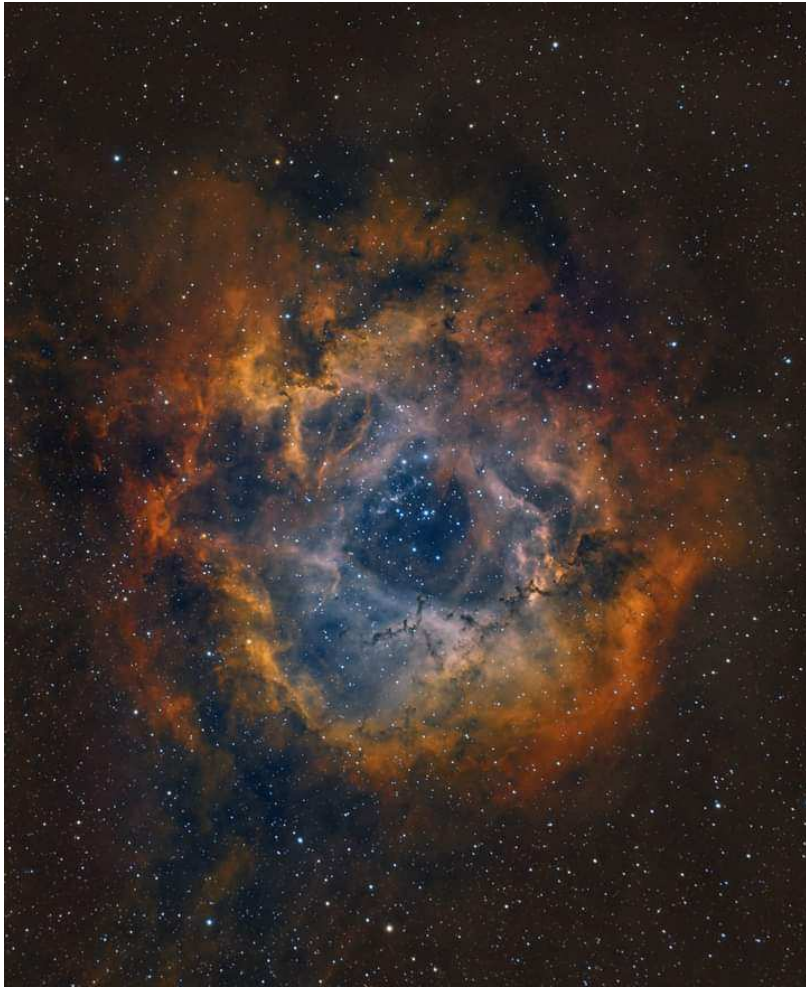
The Latin (Cor Scorpionis) and Arabic names for Antares both literally translate to "Heart of the Scorpion", but "Antares", the Greek name we know it by, translates to "Rival of Ares", Ares being the Greek name for the planet and Roman God, Mars. Antares was so named by the Greeks because its colour is similar to that of Mars and was thought to be taunting Mars / Aries as the red planet passed near the star every 2 years.

Antares is a Red Supergiant nearing the end of its life. It's expected to go Supernova within the next few million years, leaving behind either a Neutron Star or a Black hole. The yellow nebula around Antares is created by the star's stellar wind ionizing the gases around it. There are 2 Globular clusters in the image. The small one is NGC 6144, is around 29,000 l.y. from us and 62.5 l.y. in diameter. The larger cluster, M4, is much nearer, 7,200 l.y. from us and 75.1 l.y. in diameter.

Top left in the image is the star Al Niyat, or Sigma Scorpii, which lights up the gases surrounding it and also energises the hydrogen in the nebula to glow red. This is the Sharpless 2-9 Nebula.

This region of the sky has other interesting targets, such as IC4604 the Rho Ophiuchi nebula which is just below this image, and IC4592 the Blue Horse Head nebula, about 4° to the Southwest of this image.

But more clear skies are needed to capture these. *Chris Kostokanellis*



Above right - Lagoon M8 and Trifid M20 Nebulas. *By Nik Axe*

Above left - Rosette Nebula NGC2237

HOO version with synthetic Sulphur channel (mono extraction using APP) 294MC Pro. 3 hours acquisition. Optolong L-Extreme Skywatcher ED72 and 0.85 reducer. Processed in Photoshop Used a ha luminance layer for extra detail All extracted from the original stack of 300 and 600 second subs in Astropixel processor. ASIAIR for guiding. *By Nik Axe*

Right - The fighting Dragons NGC6188

Hoo version with synthetic Sulphur channel (mono extraction using APP) 294MC Pro 5 hours acquisition Optolong L-Extreme TSoptics 130APO at 910 focal length Processed in Photoshop Used an Ha luminance layer for extra detail. All extracted from the original stack of 180 second subs in Astropixel processor. ASIAIR for guiding.

By Nik Axe





M83 LMDSS 6 inch refractor F6.6 with 0.85FR EQ6 Pentax K30 30sec iso3200 By Greg Walton 5May2022

Finally in early May I was able to take Klarer Himmel, my 6 inch F6.6 refractor, to a dark sky site. The first 2 nights I used the telescope for visual astronomy. Visiting all the popular objects with a 31mm Nigel eyepiece which gave a wide 2.5 degrees field of view at 32 times magnification. I was very impressed with the telescope and amazed how many galaxies I could see. The main reason for building the telescope was to see dark nebulas against the starry background. As I slewed the telescope across the Milky Way, yes I could see inky dark nebulas. Visited about one hundred object each night.

Above - M83 Whirlpool Galaxy imaged from Heathcote Victoria with Klarer Himmel.

I also used my 8 inch F4 Newtonian to image Pluto over 3 nights, to see if I could detect any movement. See next page.

Greg Walton



Finding Pluto is not easy. In early May 2022, Pluto was near globular cluster M75. I thought if I imaged M75, there was a good chance I would get Pluto as well. But finding Pluto in the image would be almost impossible as it's only 14 magnitude. I would need to image M75 on 2 consecutive nights and look for any movement. The area of sky which my 8 inch telescope and camera combination were to capture is 1 x 1.5 degrees, so I would need to place M75 towards the right hand side of the image if I were to get Pluto. Everything would need to be in my favour as the weather forecast at ASV's LMDSS was not great. As you can see from the 2 images below, I did get Pluto and you can see some movement. On the 4th, Pluto is directly above a brighter star and on the 5th Pluto has moved slightly left of the same star.



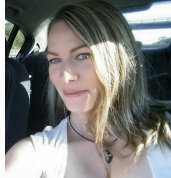
SOCIETY INFORMATION



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Mark Stephens



Nerida Langcake



Jamie Pole



Anders Hamilton



Trevor Hand



Simon Hamm



Guido Tack



Ben Claringbold



Greg Walton

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SOCIETY MEETINGS

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

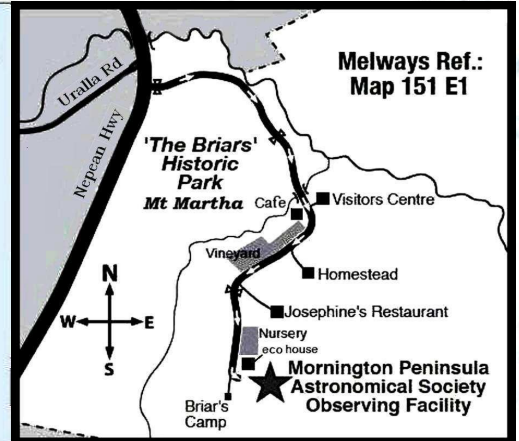
Society meetings: Don Leggett Astronomy Centre
 8pm on the third Wednesday of the month
 (except December)
 (See map at right & Below)



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.



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

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