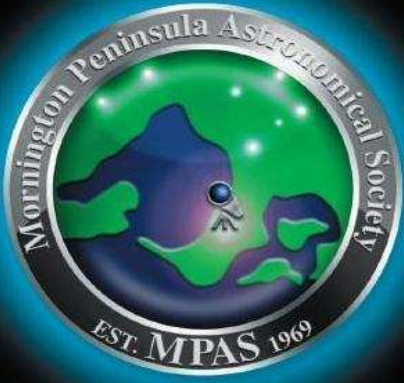


Cover images - Public night at the Briars in January 2015 by Greg Walton

MPAS Public Night @ the Briars <https://vimeo.com/117765280>

# SCORPIUS

THE JOURNAL OF THE  
MORNINGTON PENINSULA ASTRONOMICAL SOCIETY INC.

Volume XXIV, No 2 (March / April )

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 services of its members for educational presentations and observing nights for schools and community groups. Reg No: A268 ABN: 34569548751 ISSN: 1445-7032



## A word from the Scorpius editing team.

Members please write a story about your astronomy experiences and add some pictures.

Send them to:  
Brett Bajada  
Peter Lowe  
Greg Walton  
[gwpas@gmail.com](mailto:gwpas@gmail.com)

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

### Newsletter Disclaimer

The Scorpius Newsletter is published online, once every two months for its membership, by the Mornington Peninsula Astronomical Society, for Educational Purposes Only. As a newsletter, this publication presents news spanning a spectrum of activities, reports, and publications in order to keep society members abreast of a variety of events and views pertaining to astronomy. While prudent, reasonable effort has been utilized to verify factual statements made by authors, inclusion in this newsletter does not constitute or imply official MPAS endorsement. All materials (except previously published material, where credited) are subject to copyright protection © 2015, Mornington Peninsula Astronomical Society



# SOCIETY NEWS

By Greg Walton

**January public night on the 2nd** - Saw around 15 members and 40 public in attendance under a clear sky. It was a hard to find our usual deep sky objects with the almost full Moon, so most of the 'scopes showed the Moon.... Although we did get to see comet Lovejoy above Orion. We also saw the International Space Station pass over head. Trevor gave another excellent talk in the shed.

**January public night on the 9th** - Around 10 members and 10 public in attendance. However no telescopes set up as the rain kept falling. Trevor gave another excellent talk in the shed, while members chatted over coffee.

**January public night on the 16th** - 15 members and about 30 public this time under a cloudy sky. We were hoping to see comet Lovejoy but the clouds foiled this. Many stayed on to see Jupiter rising in the east, though it was a bit fuzzy.

**January Society Meeting** - 17 members in attendance. Peter Lowe chaired the meeting and Ian Sullivan finished the second half of his talk on the great astronomers of the past. Greg Walton did sky for the month, then members chatted over coffee.

**January members BBQ** - 20 members attended. The planets put on a show at dusk with crescent Venus shining brightly. There was the largest number of telescope setup I have seen in a long while. Also, 3 astrophotography telescopes were running. We found comet Lovejoy in the 80mm Binocular chair and in many of the telescopes. Additionally, some were looking for that asteroid fly by. Thank you to Peter Lowe (President) for buying in all the food. And thanks guys for help with the cooking and thanks to the girls for setting up the food and the cleaning up afterwards.

**February public night** - About 15 members and 40 public were in attendance under a clear sky. Trevor gave another excellent talk in the shed, while Jupiter put on a show until an orange Moon rising in the east stole the show. The night was warm & many stayed till late. Moonrise Time lapse by Rohan 06-Feb-2015 <http://youtu.be/WJWtVAqGX7w>

**February Society Meeting** - 26 members in attendance. Peter Lowe chaired the meeting & talked on the Kuiper Belt. Greg Walton did sky for the month, then members chatted over coffee.

**February members BBQ** - Astro Photograph Workshop at 1am seen about 12 members in attendance, the high temperature made in uncomfortable. Clear skies meant we were able to image the sun with a white light filter on the ED80 and the PST, the images were not great, but we proved the concept. More member turned up for the BBQ. Thank you to Peter Lowe (President) for buying in all the food. Thanks guys for help with the cooking and thanks to the girls for setting up the food and the cleaning up afterwards. As the clear was still clear we set up some visual telescope on the top slab, while Jamie, Ronan, Anders & I set up our Imaging equipment on the lower slab.

## Bendigo District Astronomical Society host VASTROC - 18th to 19th April

Hello Fellow Astronomy Enthusiasts,

We are now less than 4 months before VASTROC 2015 will be hosted by Bendigo District Astronomical Society at Discovery Science & Technology Centre, Bendigo. To find out more info on this event for amateur astronomers by amateur astronomers, visit the following web site: [vastroc.net](http://vastroc.net)

I would like the following message to be passed on to your fellow members at your next club meeting and in your next club magazine (pdf file attached to help) re VASTROC 2015. Registration information is now available and a call for speakers. Sincerely yours, Chris Wyatt, Media Officer VASTROC 2015.

\_ spacenaut@iinet.net.au\_ @SpacenautChris " @BDASPresident



Photo from Rohan

## New Members Welcome

Mario, Mimma & Chiara  
Piazzese

Helen Bendall

Julie Bendall

Fred Crump

Robert Dahni

Trent, Julie & Meissa  
McDougall

Anders & Jacqui Hamilton

Kent Fathers

Dr Sky Murphy

Kevin & Janet Sullivan

Mark Cassidy

Angela & Harald Zerha



**Astronomy 2015-year books can be purchased @ \$25 for members.**

## PUBLIC NIGHT THANK-YOU

Recent public viewing nights and school viewing nights have continue to be very well received by the attendees. It is no coincidence that this is due to the efforts put in by the members that help out at these events. To everyone that has helped out over the past months, a very big thank-you goes to you all. Your efforts are very much appreciated, and are being very well received.

## 2015 SUBSCRIPTIONS DUE

The ticking over of the New Year also means that society fees are now due to be paid. The society has worked hard to ensure that 2015 fees are still the same as last years prices. So to assist the society in maintaining the facilities and service we provide, we appreciate your prompt payment for the 2015-year ahead.

As a reminder, the following structure of the fees are:

## SOCIETY FEES

Subscriptions can be paid in a number of ways:

- Direct Cash payments to a committee member
- Send a cheque or mail order to the society mail box MPAS. P O Box 596, Frankston 3199
- Make a direct electronic payment into the society working bank account.

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.

- \$50 – Full Member
- \$45 – Pensioner Member
- \$65 – Family Membership
- \$60 – Family Pensioner Membership

Under the new government regulations, a list of financial member is required for insurance purposes, so please make certain your membership renewals are on time.

CALENDAR		March / 2015				
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3 Jupiter below the Moon	4 Viewing Night @ Parkdale Secondary College 8pm	5	6 <b>Public Night 8pm Full Moon</b>	7 Jupiter's Moons all on the left
8	9 Labour Day Io shadow transit 9:30pm Jupiter	10 Camberwell Grammar 8pm @ Camp Manyung	11 ASV Meeting	12 Saturn below the Moon	13 Saturn above the Moon	14 Messier Star Party <b>Last Quarter</b> Jupiter's Moons all on the left
15 MPAS @ Environment Week Festival @ Briars Eco House 10 – 4pm	16 Penbank Primary School 8pm @ Point Leo	17 St Patricks Day	18 Society Meeting 8pm	19 Penbank Primary School 8pm @ Point Leo	20 <b>New Moon</b> Solar eclipse in Denmark	21 Members Night BBQ 6pm Solar Day 1pm
22 Venus & Mars either side of the Moon	23	24 Ganymede shadow transit 11:50pm Jupiter	25 Committee Meeting 8pm <b>Aldebaran &amp; Moon</b>	26	27 <b>First Quarter</b>	28
29	30 Jupiter below the Moon	31	<b>ASV - Messier Star Party @ LMDSS</b> <b>Saturday 14th March 2015 - \$10 entrance fee none members</b>			

**Monthly Events & High Lights. - Watch out for Auroras - Red Days** indicates School Holidays  
**Public nights** 6th, 8pm start - **Society Meeting** at 8pm on 18th @ the Peninsula School  
**Members Night BBQ** 6pm at the Briars 21st also at 1pm **Solar Day** at the Briars 21st  
**MPAS @ Environment Week Festival @ Briars Eco House** 12 – 3pm **Members Help** needed  
**Evening** - Io shadow transit 9:30pm Jupiter on the 9th - Venus & Mars either side of the Moon on the 22nd

CALENDAR		April / 2015				
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3 <b>Public Night 8pm Good Friday</b>	4 <b>Lunar eclipse Full Moon</b> Easter Saturday
5 Easter Sunday Day Light Savings Ends	6 Easter Monday	7 Saturn above the Moon	8 ASV Meeting	9	10	11 Venus 2.5 deg right of the Pleiades
12 <b>Last Quarter</b>	13	14	15 Society Meeting 8pm	16	17	18 <b>VASTROC</b> Members Night BBQ 6pm
19 <b>VASTROC</b> <b>New Moon</b>	20 Mars below a crescent Moon	21 Venus right of the Moon	22 Committee Meeting 8pm	23	24	25 ANZAC DAY
26 <b>First Quarter</b>	27 Jupiter below the Moon	28	29 Moon furthest from the earth 405,083km	30		

**Monthly Events & High Lights. - Watch out for Auroras - Red Days** indicates School Holidays  
**Public nights** 3rd 8pm start - **Society Meeting** at 8pm on 15th @ the Peninsula School  
**Members Night BBQ** 6pm at the Briars 18th - **VASTROC - 18th to 19th April**  
**Lunar eclipse on the 4th maximum at about 11pm DLS**  
**Evening** - Venus 2.5 deg right of the Pleiades on the 11th - Mars below a crescent Moon on the 20th  
**Evening** - Venus right of the Moon on the 21st - Jupiter below the Moon on the 27th

**Note this years the Members night BBQ's will be the first Saturday after the Society Meeting.**  
 Also General Meetings will be called Society Meetings under the new regulations.

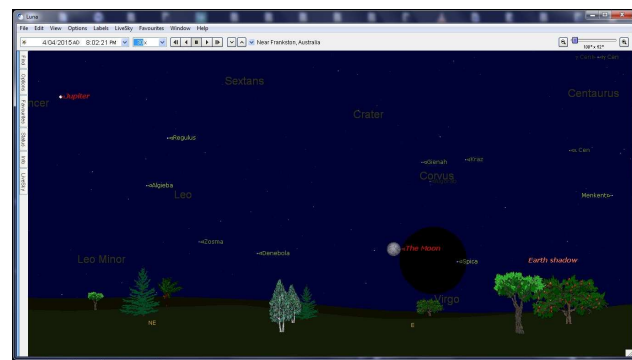
Sky for April we look at the Lunar eclipse on the 4th  
With Maximum shadow coverage at about 11pm.

The Briars is well suited for this event.

As the Moon will be low on the eastern horizon at the start.

There will not be much to see at the start,  
as the Penumbra shadow is barely noticeable.

Around 9:20pm you should see the Umbra shadow,  
starting to cover the Moon.



**Penumbra shadow Starts at 8pm**

**Penumbra shadow half cover 8:40pm**

**Umbra shadow Starts at 9:20pm**

**Umbra shadow half cover 10:00pm**

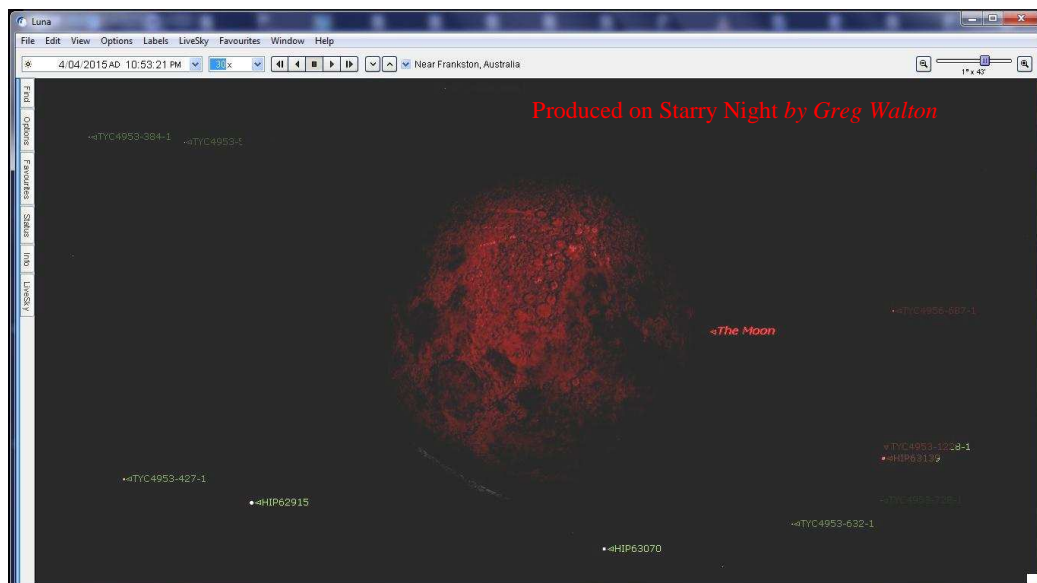
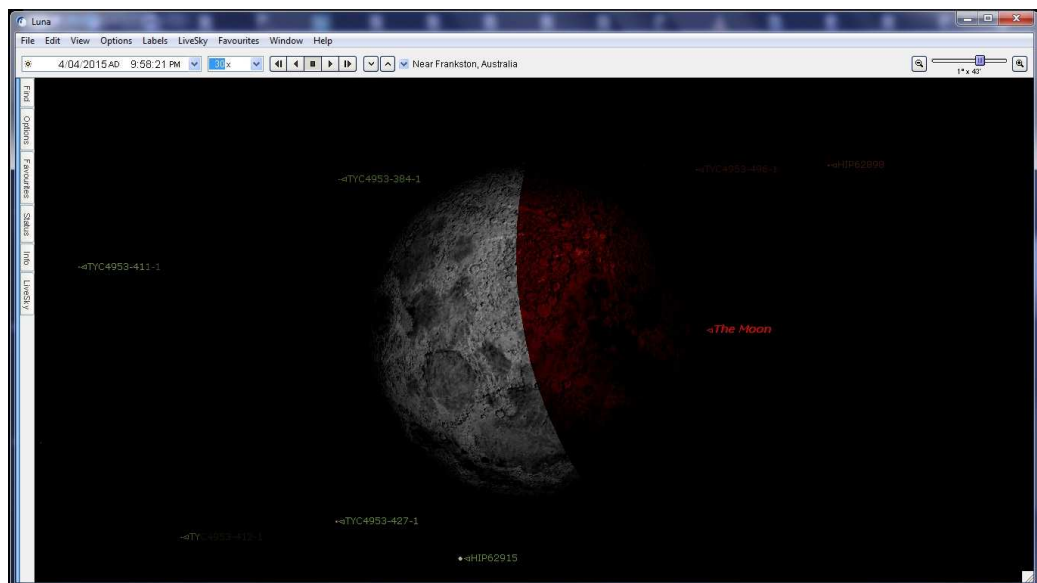
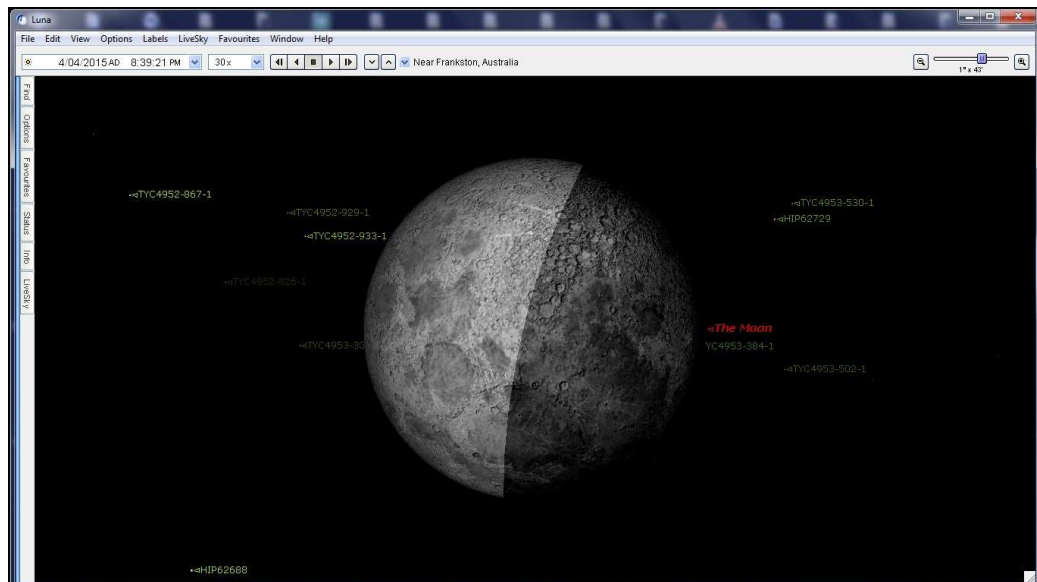
**Umbra almost total cover 11:00pm**

**Umbra shadow finishes 12:40pm**

**Penumbra shadow finishes 2pm**

Jupiter will also keep sky watchers happy.  
As Ganymede will magically reappear  
from Jupiter's shadow at 9:46pm

Below image taken with the MPAS  
18 inch Newtonian at the Briars  
By Greg Walton in 2007



Lunar eclipses 28Aug2007 8:47pm Taken with MPAS 18inch EQ Pentax ist ISO200 6sec  
By Greg Walton Briars Mornington





## **A Message from the President**

### **Where To From Here? /What Do We Want? /When Do We Want It?**

We have just renewed the Briars Astronomy Centre lease for the next 15 years. This gives us some breathing space to consider and plan how we want our society to develop over this 15-year period, that is out to 2030AD. I certainly hope I'm still online in 2030AD. It seems like a long time into the future but I remember 15 years back in 2000AD as if it was just yesterday when the Briars Astronomy Centre was not much more than a dream. All we had in those days was a small wooden shed on a concrete pad. The committee is about to review plans for the next phase in our society's development and we need feedback and help from the members, namely "What Do You Want?" All our members can contribute to the planning for the society's future and if we don't plan then we just let chance determine our fate.

Our last development plan dating back to the mid-1990's lead to the development of the Briars Astronomy Centre and culminated in the opening of the main building at the 2006 National Convention (NACAA). Since that time the facility has been steadily upgraded and is used today for general observing, social activities and public education events plus local conferences such as VASTROC.

The monthly General Meeting held at the Peninsula School is the other significant society activity. General meetings provide a forum for presentations and discussions concerning the latest astronomical and space news. Occasionally specially invited speakers present on specific topics of interest and enhance the discussion.

In putting together a new development plan there are a number of objectives determined by our articles of association that the committee must take into account plus our business plan formulated to keep the society both financially viable and actively vibrant.

As an incorporated organisation we have stated articles of association.

These aims can be summarized as:

- Promote the study by amateurs of astronomical science.
- Conduct meetings for discussion and delivery of lectures
- Arrange exhibitions for the promotion of astronomy.
- Maintain a library of papers, books, reports, and astronomy publications.
- Promote the application of amateur astronomical science encouraging hand-on learning.
- Promote the association of astronomy-minded individuals and collaborate with other organizations of common interests

To help committee we require feedback from the general membership on what members want, what they like or dislike about the current activities and what they foresee for the future. Over next few months the committee will be seeking feedback from the members to aid this planning process. Please feel free to send comments into the society E-Scorpius chat group or directly with the committee members.

Thanks for your ideas. Peter Lowe (President)



### ***Blast From The Past***

Don Driver (left) was our first President when the society formed as the Astronomical Society of Frankston in 1969. While he could not continue as President, he remained active for a number of years. This picture is from 1969 near the Frankston public library. [Now the cinema complex] At that time we would just set up telescopes at suitable locations and show the general public the sights.



This was just prior to a Total Solar Eclipse that traversed Melbourne  
Robert Potter (left) and Graham Percy were early committee members around 1974.

This picture is from the top of Donna Buang, which was a popular dark sky site until access to the summit was blocked and sky light pollution forced members to observe further afield.

Members get together at Mt Martha Park circa Christmas 1990 (?)  
Back row from Left – Peter Lowe, Roger Cleverdon, Don Leggett, John Cleverdon & Bob Heale.  
Front Row – David Girling with daughter, Marg Cleverdon and Pam (?)  
Sorry if I can't remember all the names.

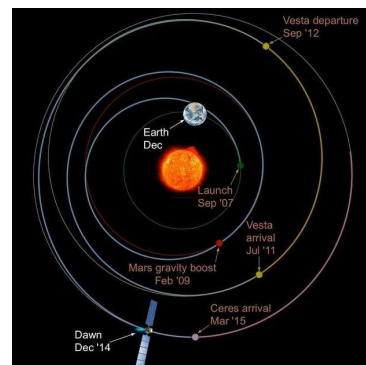


# ASTRO NEWS

By Peter Lowe

## **DAWN CLOSES IN ON ASTEROID CERES**

The DAWN space probe has started its final approach phase toward the giant asteroid Ceres. The probe delivered its first high-resolution pictures in Dec 2014. While these pictures do not surpass the best Hubble images, Dawn is expected to deliver much better images when it goes into orbit in mid-2015. Ceres is the largest asteroid in the main asteroid belt. Since its launch in 2007, Dawn has already visited the second largest asteroid Vesta. During its 14 months in orbit around Vesta, the spacecraft delivered unprecedented scientific insights, including images of its cratered surface and important clues about its geological history. Vesta and Ceres are the two most massive bodies in the main asteroid belt. Ceres is roughly spherical and about 1000 km in diameter. Discovered in 1801 AD by Piazzi, it was one of the first new planets found in the new age. Later re-classified as an asteroid because of its smaller size.



## **ORGANICS AND WATER DISCOVERY IN ANCIENT MARTIAN METEORITE.**

Chinese scientists have discovered that a Martian meteorite contains signs of water and organic carbon combinations. This hints of Martian extraterrestrial life dating 700,000 years back in time. Meteorite 'Tissint' landed in the midst of Moroccan desert on 18 July 2011. The 8-kg gray-coloured glassy boulder surprised scientists, as it contained traces of water, but it was only recently that the researchers found organic carbon compounds of unknown origins. While it is possible these organic compounds are of abiotic origin meaning they form by terrestrial physical chemical processes this is considered very unlikely. The scientists point out the organic matter is extraterrestrial in origin because it has four unusual features. Firstly, the meteorite did not spend a lot of time on Earth outside of the scientists' control. Secondly, the organic matter was sealed inside the rock, under its glassy surface, created by the high temperatures only possible at atmospheric entry and thirdly, some of these carbon compounds hardened into diamond, which is only possible in natural conditions outside of Earth. Finally, the carbon-containing matter also bears significant deuterium, found in Martian soil.

## **NEW HORIZONS HEALTHY AND HOMING IN ON PLUTO**

The American New Horizons space probe has finally been activated after a nine-year journey to take a close look at Plutonian (dwarf) planetary system. The IAU withdrew Pluto's status as a planet in 2006 and re-classified it as a dwarf planet. It is our closest Kuiper Belt object consisting of at least five gravitational bound objects; Pluto, Charon and three smaller moons. Nearly four billion kilometres from Earth the space probe is healthy and transmitting to Earth. Messages take about four hours to be received. The probe aims to study Pluto and its several moons during a flyby mission in July this year. New Horizons began its exploration of Pluto in January at a distance of about 260 million kilometres from the body but is expected to pass through the system at closest approach after which it will continue to travel further in the outer solar system. During its mission, New Horizons will collect data on Pluto's topography and its largest moon Charon, giving astronomers their first up-close look at the surfaces of these remote icy objects. The probe carries onboard seven instruments including infrared and ultraviolet spectrometers, a multicolour camera, a high-resolution telescopic camera and a space dust detector. After New Horizons finishes its six-month investigation of Pluto, it will pass near other objects in the Kuiper Belt, a vast ring of debris left over from the solar system's birth 4.6 billion years ago. Pluto is about 2,300 kilometres in diameter, smaller than Earth's moon, and has a mass about 500 times less than Earth.

## **PHILAE LOST BUT NOT FORGOTTEN.**

Mankind's latest comet probe, the robot lab Philae found traces of organic molecules and a surface much harder than scientists imagined. Philae fell asleep on comet 67P/Churyumov-Gerasimenko having run out of onboard battery power after 60 hours of prodding and probing the surface of the comet. The probe rested against a rock wall after a less than perfect landing during which bounced several times and landed miraculously right side up and still working. The touchdown some 510 million kilometres from Earth did not go entirely as planned, when Philae's duo of anchoring harpoons failed to deploy and it bounced twice before ending up in a crevice, its solar panels shadowed from battery-boosting sunlight. Its final resting place has yet to be discovered but it is hoped that sunlight finally falling its solar cells will revive the probe. The first probing shows the surface while coated in light dust is surprisingly hard.



It is hoped a drill can be used to obtain deeper samples. Despite its imperfect footing, Philae managed to deploy a drill, but it was not clear whether any soil sample had been examined onboard. Shortly after landing Philae's COSAC gas analyser managed to "'sniff' the atmosphere and detect the first organic molecules. By March-April of 2015, it is hoped that Philae will communicate with its mother ship as the comet moves closer to the Sun allowing its battery to be recharged." Rosetta will continue orbiting the comet to receive any signals from Philae, if it were to wake up from hibernation.

### **DETECTION OF LIFE ON MARS GETS CLOSER.**

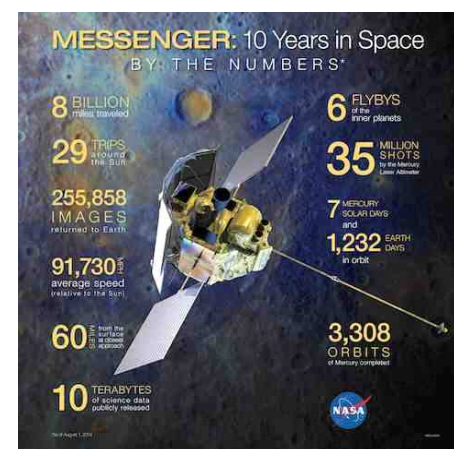
#### **Methane Detection from Drill Site**

The team responsible for the Sample Analysis at Mars (SAM) instrument suite on NASA's Curiosity rover has made the first definitive detection of organic molecules on Mars. Organic molecules form the building blocks of all known terrestrial life, and consist of a wide variety of molecules made primarily of carbon, nitrogen, hydrogen, and oxygen atoms. The surface of Mars is currently inhospitable to life as we know it, but there is evidence that the Red Planet once had a climate that could have supported life billions of years ago. The organic molecules found by the team were in a drilled sample of the Sheepbed mudstone in Gale crater, the landing site for the Curiosity rover. Scientists think the crater was once a lake billions of years ago, and rocks such as mudstone formed from lake sediment. Moreover, this mudstone was found to contain 20 percent smectite clays known to provide high surface area and optimal interlayer sites for the concentration and preservation of organic compounds. While the team can't conclude that there was life at Gale crater, the discovery shows that the ancient environment offered a supply of reduced organic molecules for use as building blocks for life and an energy source for life. Curiosity's earlier analysis of this same mudstone revealed that the environment offered water and chemical elements essential for life and a different chemical energy source. Additional rock samples from different locations, and representing different geologic histories are being sought to confirm the detections. Organic molecules can also be made by chemical reactions that don't involve life but there is not enough evidence to tell if the matter found by the team came from ancient Martian life or from a non-biological process. An example of a non-biological sources include chemical reactions in water near ancient Martian hot springs



### **MESSENGER MERCURY MISSION NEARS END.**

After more than 10 years NASA's Messenger spacecraft will soon finish its mission when it literally runs out of propellant. The mission statistics are truly impressive including six planetary flybys. It has spent the last four years orbiting the planet Mercury. With most of its propellant expended it's on course to impact the planet's surface toward the end of March 2015. When this liquid propellant is completely exhausted, the spacecraft can no longer make adjustments to its trajectory meaning the inevitable impact with Mercury's surface can no longer be delayed. By utilizing the gaseous helium used to pressurize Messenger propellant tanks it is hope to gain about another month of mission life. As the craft slowly spirals down to its inevitable demise it will continue making low-altitude observations to acquire the highest-resolution images ever obtained of Mercury's surface. Additionally it will measure variations in Mercury's internal magnetic field at shorter horizontal scales than ever before, scales comparable to the anticipated periapsis (minimum orbital altitude) altitude between 7 km and 15 km above the planetary surface. The current periapsis altitude is approximately 101 kilometres and decreasing.



### **CHINA PREPARES NEXT STAGE FOR LUNAR MISSION.**

China's lunar orbiter program was the world's first mission to the moon and back in some 40 years, making China the third nation to complete a return mission to the moon after the Soviet Union and the United States. The service module of China's unmanned lunar orbiter is scheduled to return to the moon's orbit in mid-January for more tests to prepare for the country's next lunar probe mission, Chang'e-5. The service module left the Earth-Moon second Lagrange Point (L2) where it has been circling while performing additional tests. It was the first time for a Chinese spacecraft to reach the L2 point, and the service module completed three circles around the point, expanding probe missions. The service module was separated from the test lunar orbiter's return capsule, which returned to Earth on Nov1 last year after circling the moon during its eight-day mission.



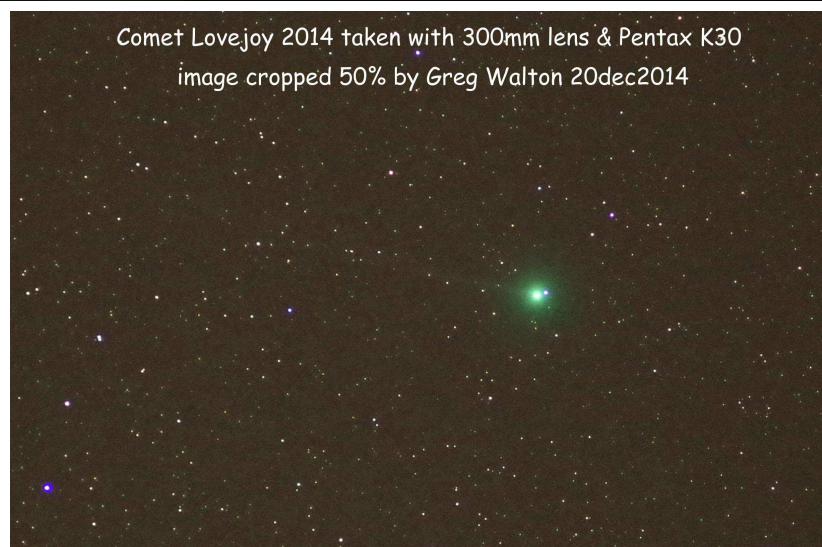
Left & Below  
Moon, Venus & Mars  
by Rohan on 21/2/2015  
Taken with Canon 600D, 18-  
270mm Tamron zoom lens @  
76mm, 1 sec exposure, f5.6,  
ISO400 Straight out of the  
camera - no processing (apart  
from image resizing)

### Lightning from Chelsea by Greg Walton

Lightning <https://www.flickr.com/photos/128812093@N05/16216101896/>



Lightning from Cranbourne by Dave Rolfe



Comet Lovejoy 2014 taken with 300mm lens & Pentax K30  
image cropped 50% by Greg Walton 20dec2014

Above - MPAS at Dave's, the night was mainly to test out newly acquired camera & learn new soft ware.  
We also imaged comet Lovejoy. I got this single photo with a 300mm Lens, no stacking, by Greg Walton



# Some Photos of Comet Lovejoy 2014 - Plus Links to Vimeo Time Lapse

Comet Lovejoy 2014 <https://vimeo.com/118193829>

Comet Lovejoy 2011 <https://vimeo.com/120268226>

Comet McNaught <https://vimeo.com/120000201>

Comet Garradd & M71 <https://vimeo.com/116935164>

Clairview 2014 <https://vimeo.com/119033927>

Comet Lovejoy 2014 by Phillip Holt

Comet Lovejoy 2014 LMDSS 8" Newton AG CC1 EQ6 Pentax K30 12x30sec iso12800 By Greg Walton MPAS/ASV 18jan15

M45

Comet Lovejoy LMDSS 135mm Pentax K30 Polaire 12x30sec iso12800 By Greg Walton MPAS/ASV 18jan15



# TIME POOR MAN'S ASTRO IMAGING TECHNIQUES

In this article I am going to show you ways to shorten up the setup and pack-up times of that imaging rig and make the most of your imaging time.

As a few of my friends will testify, I am often packed up and gone within an hour of dawn as I usually have another days activities planned. This means 2 things; I want some sleep and I need to be efficient at what to take and how to transport the gear so nothing is either lost or broken.

## *Sleep.*

It is great doing an all nighter, the satisfaction and gratification of conquering the night. Done that numerous times (a few people I know don't like the typically visual astronomers - those who stare in an eyepiece and Paul Albers.) but the next day is a write-off. Automating your system is a must. This could be a full scripted plan for the night, or as I do by just automating the basics like guiding and tracking. Generally I pick an object that is not going to cause a mount meridian flip and I head to bed. In the morning, get up, shutdown the system and pack-up.

## *Setting out your gear.*

Most images use a laptop for control. It is important you set up you laptop as close as practical to your imaging rig. I use a tent for a few reasons as it muffles the light emitted from the laptop as well as providing shelter from any rain or dew. Lot of other people have tables with boxes to cover the laptops to contain the emitted light and dew as possible. It is a good idea not to have your laptop screen facing the imaging rig.

## *What to take.*

Setup your rig at home. Make sure everything is connected and working, this is the minimum equipment you need in the field. It always pays to have spare leads (USB and power cords) when possible for any fault. More often than a spare cable will help out other people in the imaging field who have ran into trouble. Things people usually forget are the equipment not always stored with the gear which including tables, chairs & batteries.

## *Setting up for the night.*

Some people can take 2-3 hours after dark to setup for one nights imaging. This includes the painful task polar alignment and mount alignment. Most people guide. For a single night run learn to use your polar scope. Sure, do the drift align and other methods, but then take the time to look back in your polar scopes and see how far off it is. This can be aligned just like a finder scope. When you are familiar with it (its accuracy), just use it and your roughly aligned in minutes in the future - guiding takes care of the rest. Over the summer months, you really only have 6 hours of imaging darkness, why waste 3 of them on alignment? After you have polar aligned, 2 star scope alignments is fine providing your location, date and time are correct.

## *Imaging Time.*

Have your plan worked out. There is no use going through all these steps and then debating what to image. Work out what targets suits your setup (wide or narrow), look at the rise and set times and also consider when a meridian flip will occur. No use picking a target, framing the target in your shot, getting your guiding trained and 10 minutes later needing to re-do it as your mount has ran out of travel. Use those 6 hours to their best efficiency.

## *Dark Frames.*

A lot of time can be wasted doing 'darks' when they are not required. If you have a temp controlled camera, shoot 3 darks at whatever length and binning you are using and that's all you will need for the night. Darks also can be re-used the next night, or even the next month. Darks can often be used 6 months later, you will need to re-do them when you start to see hot pixels or a defective column coming through.

## *Flats.*

These are best to do in the morning when it is too light for imaging. Be careful not to adjust your focus or rotation if possible. I will cover darks and flats in another future article.

## *Efficient Pack-up.*

A lot of people leave his or her rigs setup at home, so completely dismantling the rig – every cable, item and adapter can take hours. Try loosening up, put on some ACDC and transport your imaging train in one piece. Just make sure before you move it there are no cables attached or obstacles to trip on. Bend your knees and make sure where you are going to put it (i.e. back seat) is clear. Below is an example from Steven Mohr.

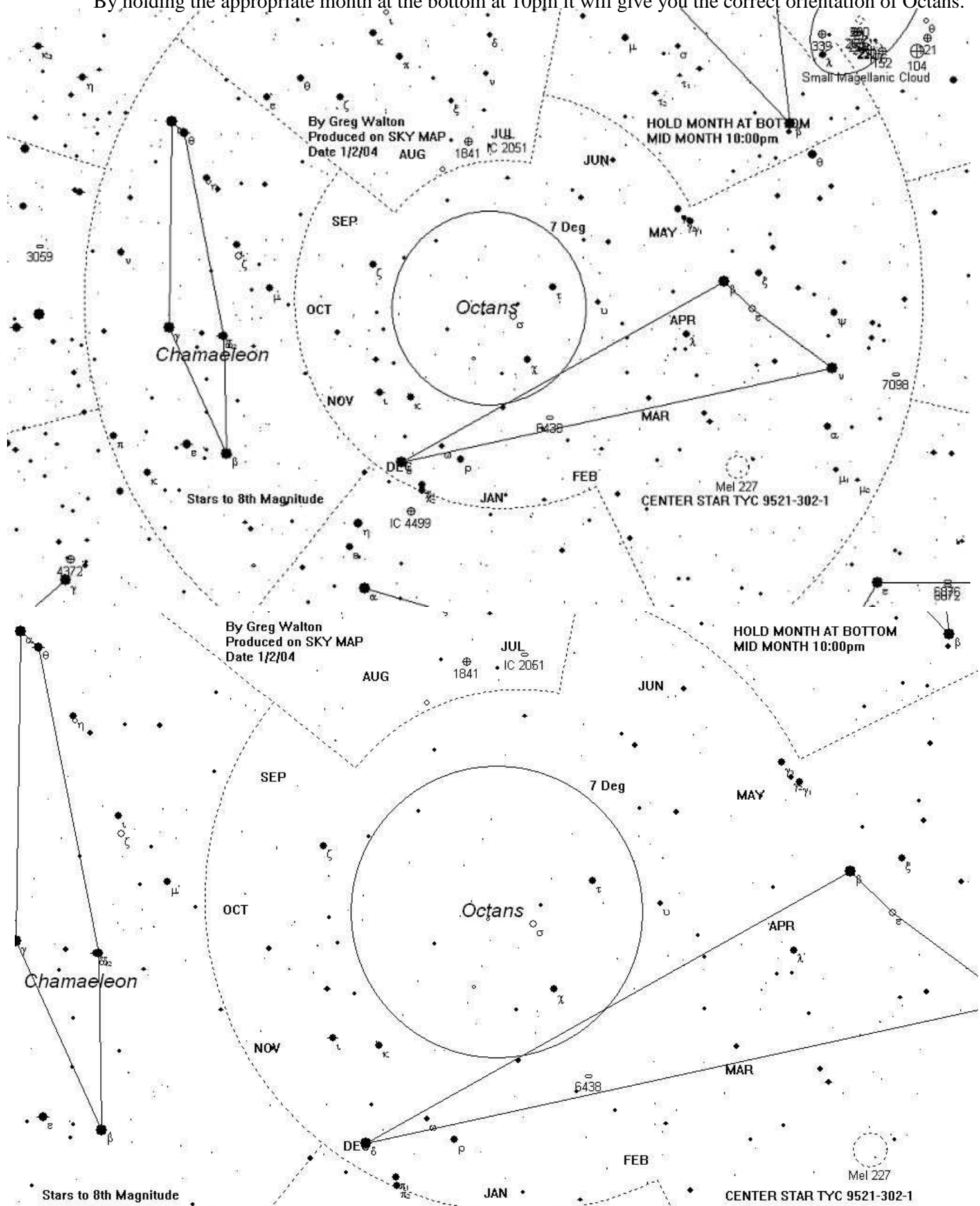
Till next chapter,  
Keep Looking Up,  
Big Dave.





# Polar alignment, Finding the South Pole constellation Octans.

Here are 2 maps which are handy for finding the south celestial Pole. Briars Lat -38 16' 23" Long -145 2' 30"  
 The centre 7 degree circle, this is what you would see through a pair of binoculars.  
 From the Briars you will need to look up 38 degrees above the southern horizon.  
 By holding the appropriate month at the bottom at 10pm it will give you the correct orientation of Octans.



Note that the view through the polar scope is up side down and back to front.

## Aligning a Newtonian with a laser, *by Greg Walton*

When you buy your Newtonian telescope you will notice it has adjusting knob and screws. Most telescopes leave the factory only roughly line up, knowing that in transport things will change any way. So it is up to you to line up the optics. I have bought many new telescopes and very few have come with instructions, why?

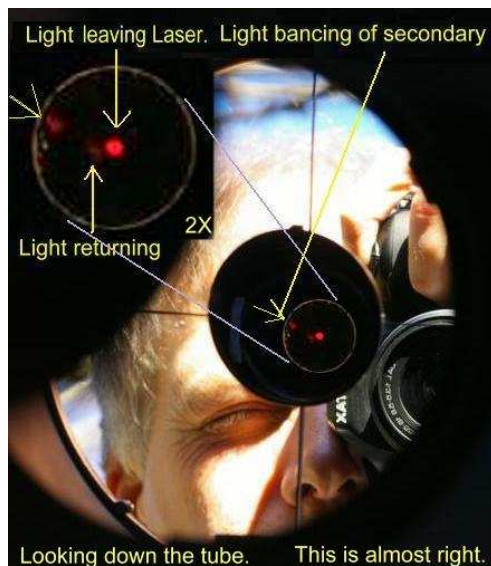
1. Once you have bought the laser collimator, you will need to test it to see how accurate it is. Some will come with a Vee block. Attach the Vee block to something solid. Place the laser on the vee block and rotate it slowly whilst aiming it at a wall about 8 metres away, to see if it draws a circle. If it does, you will need to adjust it until it makes the very smallest of circles, or no circle at all. There should be 3 adjusting screws around the outside. By loosening and tightening the screws by a small amount, you can slowly make the circle smaller and smaller. This is a bit tedious and can waist a whole hour. See photo below.

2. Now the laser is ready. We insert it where the eyepiece go; and switch it on. The beam of light should hit the centre of the secondary mirror (diagonal), bounce off, then hit the centre of the primary mirror. You will need to loosen and tighten the 3 adjusting screws in the middle of the spider, till the beam of light hit the centre of the primary mirror, most have a small circle on the mirror. Occasionally you will need to slightly rotate the secondary by loosening the centre holding screw.

3. Second stage is to get the beam of light to bounce off the primary mirror and back to the secondary mirror, then on to the front face of the laser. You will notice there are 6 adjusting knobs at the back of the Newtonian. Three are locking screws which you just back off two turns. They are often painted white. Then you will need to loosen and tighten the other 3 adjusting screws, till the beam of light returns back to its source. Sometime it is faster and easier if 2 people work together. Now re-tighten the locking screws while making certain the beam of light stays aligned.

4. A Dobsonian should stay aligned all night, but a Newtonian on an equatorial mount will change as it points to different parts of the sky. The reason being that the primary mirror is never held tightly, as this could bend the mirror. Resultingly, they can move very slightly which impacts on the alignment. So collimate the telescope while point at the part of the sky you wish to image.

5. Refractor may also require collimating from time to time. Place the laser were the eyepiece goes and switch it on. The beam of light should hit the centre of the front lens. If not, you will need to loosen the screws that hold the focuser and move it till the beam of light hits the centre of the front lens... then re-tighten the screws. I have often had to file the screw hole larger to make this happen. Generally you only need to do this once, unless you drop or overload the telescope.



Note- Find someone who has done this before and watch them.



## Sun Spots and Venus Transit, as It Happened?

With a view of encouraging beginner star gazers to have a go towards any wholesome pursuit you want, I would like to share a very humble experience that's nevertheless of astronomical significance to me –the Venus Transit on 6<sup>th</sup> June 2012.

Whereas Captain Cook and team were sent to heave over and under mountainous seas, through debilitating doldrums, scurvies and cannibalism (in order to, among other imperial pursuits, observe the Venus Transit and make measurements of major scientific significance in estimating the various dimensions of the planetary universe) I only had to march down a hill near Burleigh Heads on the Gold Coast, Qld lugging my 'astronomy' gear and caught a couple of buses, just for my pleasure of no significance to mankind whatsoever. As a member of the Southern Astronomical Society (SAS) I chose to join their public event, to benefit from other members' wisdom and hopefully also contribute to the public what little I had.

Through circumstances including the sailing ketch I was living and adventuring on having been destroyed by a cyclone a short time prior, various possessions ceased to exist and things like binoculars etc were on loan to me as I became a landlubber with no wheels.

Here's an account of what worked:

- 1) A few days before the event and after reading heaps I experimented with various setups at home, projecting the view of far away tall trees from outside the window onto plain paper. This meant figuring out the sizes and distances of things and how best to prop them up at adjustable heights and angles. A hole through a cardboard box was a no-hoper, as was projecting from one side of a pair of binoculars. A spotter scope on a tripod was found to work best (I no longer have it or its spec.). The screen of A4 paper was clipped onto a metal bookend secured to another tripod with a part of some other gear I don't remember what. The adjustment of this tripod allowed the screen to be angled perpendicular to the scope body (Picture 1). Being practically in the bush, shooting the sun didn't happen but fiddling about prior to the event helped a lot.
- 2) Well before time I scribbled a list and packed everything that might be needed. Things like a piece of rope/cord, packaging cardboard, hat, sunglasses, water and camera can become very important. Steep hills and public transport connections called for creativity and Tetris game playing skills.
- 3) Travelling to the site I allowed for a lot of setup time. Just as well because, for example, I needed to improvise by cutting some cardboard (radial cuts to fit best) as a collar around the tube to block out strong sunlight from around the image. My neckerchief became handy, tied to block the cut holes, Picture 2, (remember scout's and girl guide's neck cloth thingy?) Also as the sun moved, rather too rapidly, I had to get the hang of tracking it in two directions. (Has an ecliptic or erratic mount been invented that isn't motorised?)
- 4) When I got the view of the sun I couldn't quite believe what I saw and exclaimed "What are these?!" "Sun spots." What! This humble setup can show sunspots so clearly?! My first sunspots!
- 5) Then the winds came up blowing the screen and jiggling the scope about. My approach in life has been to know that solutions exist and to think of and apply what ideas and skills from other areas to the situation at hand. For this minor challenge, in situ solutions were (Picture 2):
  - a. Putting heavy things in a bag and weighed down the tripod.
  - b. Tying a piece of rope/cord across the screen to the backing (the bulldog clips were now not enough) and then to the luggage cart to steady the screen and back tripod.
- 6) I was surrounded by huge telescopes with sturdy mounts etc but am not one who's ashamed of what I have. It seems that many people are ashamed of honest things while unashamed of shameful things. I hope you will enjoy your rich experiences in life unhindered by putdowns some of which come from people who don't even have but on a borrowed aura say 'theirs' bigger than yours'. I wish the world would wake up and realise that verbal hits are like innocent-looking seeds or cancer cells that rapidly replicate and permeate, in this case from home to schools to friends to work to the internet to nations, as verbal then physical violence and wars at various personal and group levels. I wish upon the stars that we would learn and stop casting these seeds on each other. The specific relevance here is that social values and practices can, did, and still do unjustly hinder and punish science and scientists also.



Picture 1



Picture 2

**Warning - Never look at the SUN through any Telescope or Binoculars!!!**



The result from this setup was, surprisingly, quite a clear image on a large enough display that several people, even just walking past through the park, can all see, witnessing this almost real-time motion of Venus traversing across the sun. (Picture 3, unedited)

An initial (unthinking, long lasting) impression was that, unlike any image from the sun that shows what happened approx. 8.3 minutes previously, here's Venus transit at it happened.... ? Well, not really. An un-cross-referenced source about that transit showed Venus being 43 million km from Earth. With the speed of light 299792458 m/s the light from, or light blocking by, Venus would have taken place 2.4 minutes earlier.

Now and again I'd become re-aware (a new word just invented) that we could have been rapturously admiring some lights from deep sky objects that took however long they took to reach us, totally in oblivion that ten minutes later something that had already happened that long long long time ago, including while we were complacently admiring, would just hit us. Of course anything much closer can also happen suddenly but the relative times of event and vision are different. And regardless of what lowest of low probability, it is not exactly an impossibility.

There was one other projection setup there that used a melamine-top chipboard (from my vague recollection) as a screen on a steady timber trough. The image was much steadier and the screen also travelled with the tube so needed no further adjustment. I hope to do that next sun-view, with grateful thanks to the owner who showed the setup to me. The rest were big telescopes with images that were really great but had to be viewed one person at a time through the eyepiece.

It was a total surprise that this ugly duckling of a setup turned out to be quite useful also as a bit of a crowd pleaser despite its moderate shiftiness (the kit, not the crowd). The support from fellow members of the SAS (Southern Astronomical Society) was very heart warming. John kindly took several photos and posted them to me; these are precious.

As a prized memento, for a child always in me that has placed her heart and wonder ever skyward into the universe and the unfathomable beyond, a longed-for contact with NASA came as a faint glimmer yet a bright spark for me, as shown in Picture 4. The explanatory text over the name field was placed there just for this article.

Voices of substance came from Noeleen Lowndes, the President of SAS (I was pleased to see, in MPAS Scorpius 5/2013, a group photo that showed her having received a David Malin astrophotography award), who said a few times to people I was introduced to that she had never seen anyone improvise so much to achieve the final goal, and also from Jennifer Robinson, the then SAS editor and the civil engineer who designed the bridge near the Paradise Point viewing site –she published the image I got alongside hers in their Event Horizon 07/2012 as shown in Picture 5. Her setup was of course much much more sophisticated. I just want to share with you the message in what Jenny wrote, *"This is the result... which shows what can be achieved with simple gear"*.

The final goal isn't everything; for me the 'experiencing' as well as the learning, specifically as well as tangentially, are highly prized.

*Sky 9-Feb-2015*

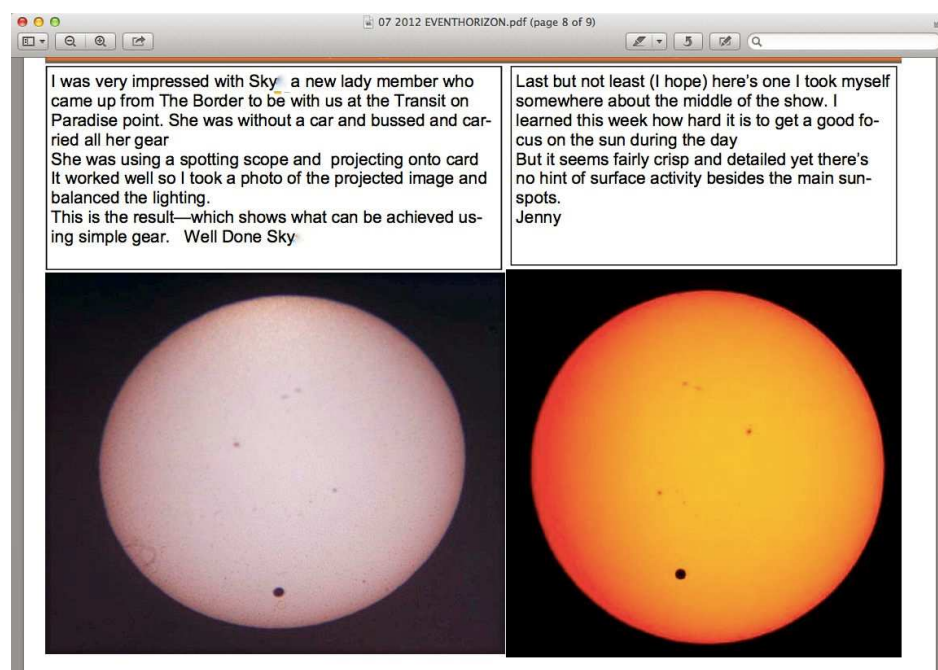


Picture 3



Picture 4

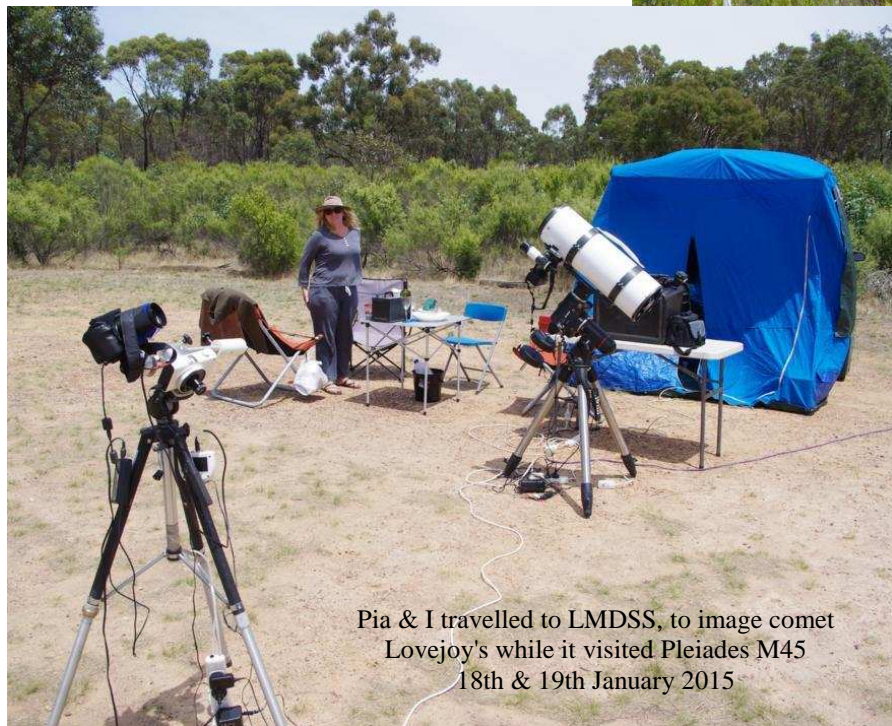
Picture 5



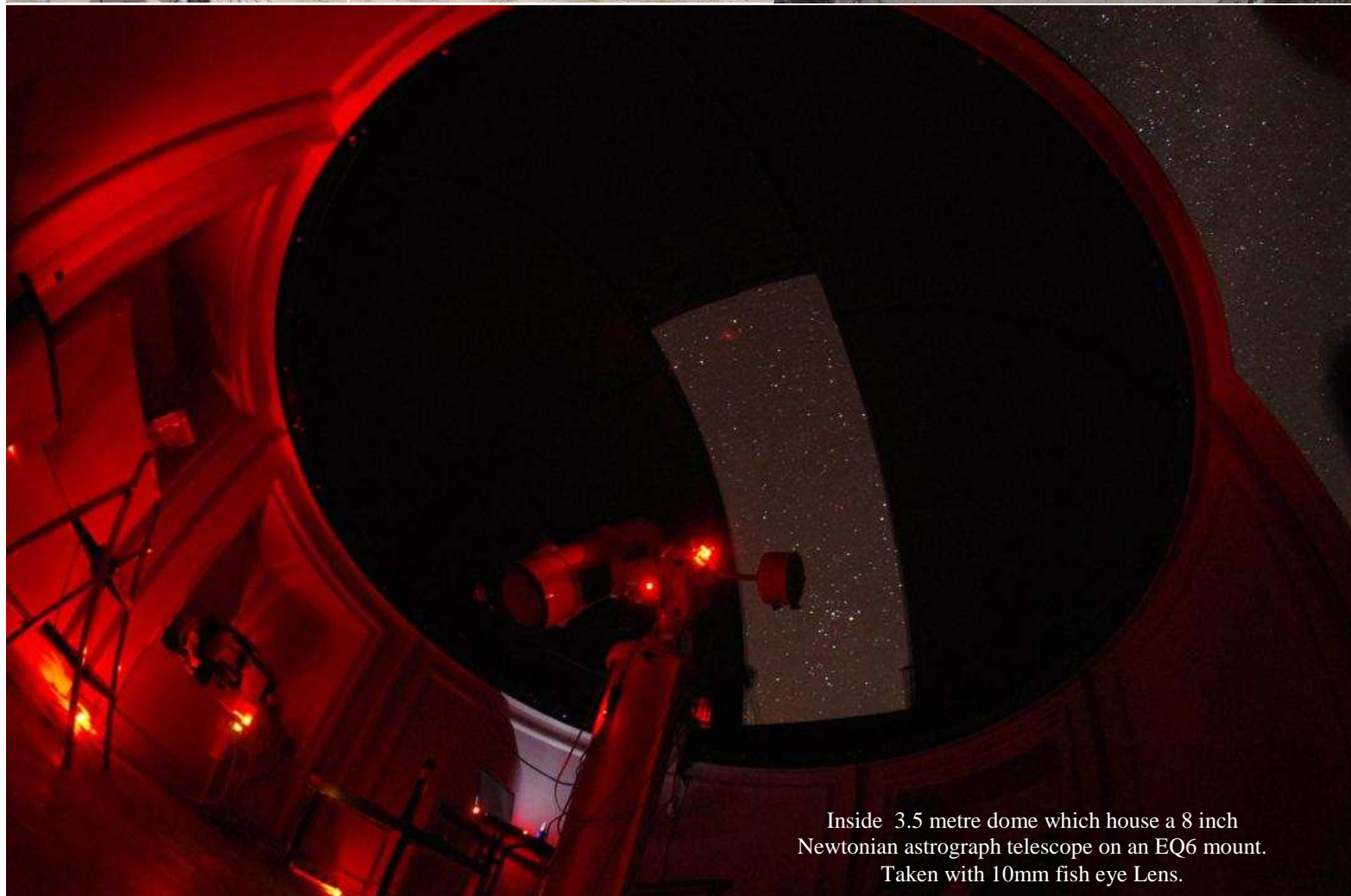
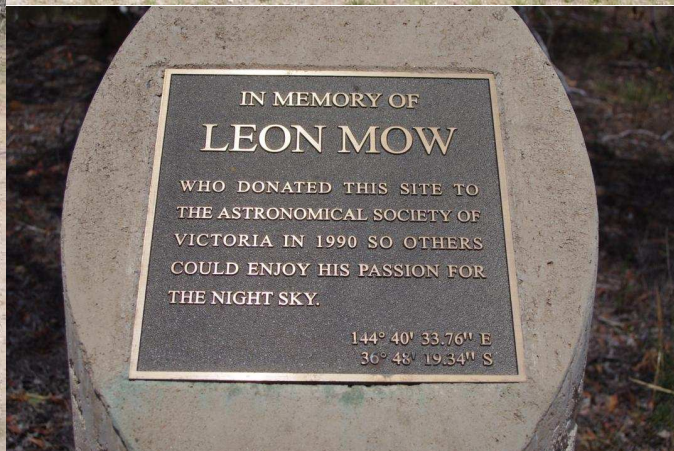


## ASV up grade

Many of the MPAS member are also members of the ASV & use the LMDSS on a regular basis. The astronomical society of Victoria's Leon Mow Dark Sky Site at Heathcote has had an upgrade, with the installation of a 3.5 metre dome which houses an 8 inch Newtonian astrograph telescope on an EQ6 mount. Also, the radio astronomy section is installing a 8.5m radio dish. *Photos by Greg Walton*



Pia & I travelled to LMDSS, to image comet Lovejoy's while it visited Pleiades M45  
18th & 19th January 2015



Inside 3.5 metre dome which house a 8 inch Newtonian astrograph telescope on an EQ6 mount.  
Taken with 10mm fish eye Lens.



## *ASV radio dish being assembled at LMDSS*

This 8.5 metre Radio dish was brought by the ASV & it's a major project under taken by the Radio astronomy section, made from aluminium the plans are to attach it on a steerable mount. It will be an impressive structure and a great asset once completed.



Various Dish & antennas for listening in on the universe.



## Who needs a telescope for astrophotography, *by Greg Walton*

All these images below were taken with an ordinary 300mm F5.5 camera lens with the Pentax K30 on a Polaris mount. The Pleiades, Horse Head & the California nebulae are very hard to see visually, but easily captured with a cheap lens. This is an inexpensive way to get started in astrophotography and quickly get excellent results. A 300mm lens has a wider field of view than a telescope; almost the same as the telescope's finder scope or a pair of binoculars. It is therefore very easy to find your object by looking through the viewfinder on the camera. The camera settings I use are iso12800 at 30 second exposure & white balance set to cloud. I then set the interval timer to 65 seconds at 30 shots. Using the live view to focus on a bright star, I then find my target & push the shot button. Then stack all 30 images into one with deep sky stacker.

See Astro-Imager Plus <http://tiny.cc/gregwalton>



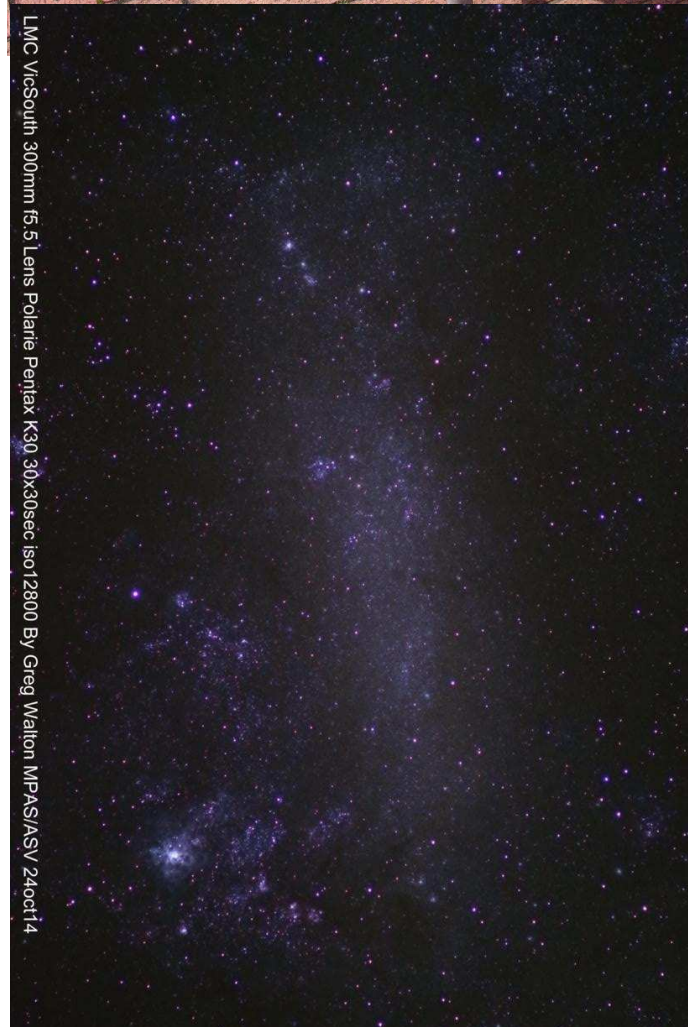
M45 VicSouth 300mm f5.5 Lens Polaris Pentax K30 30x30sec iso12800 By Greg Walton MPAS/ASV 24oct14



NGC2024 B33 VicSouth 300mm f5.5 Lens Polaris Pentax K30 30x30sec iso12800 By Greg Walton MPAS/ASV 24oct14

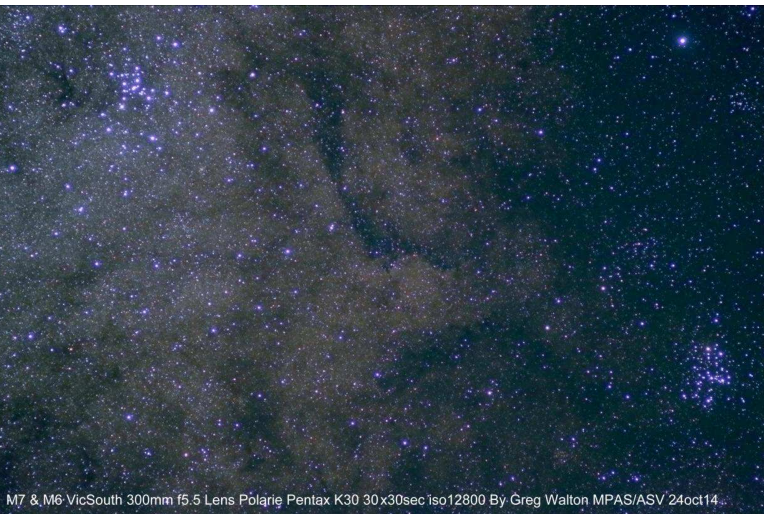
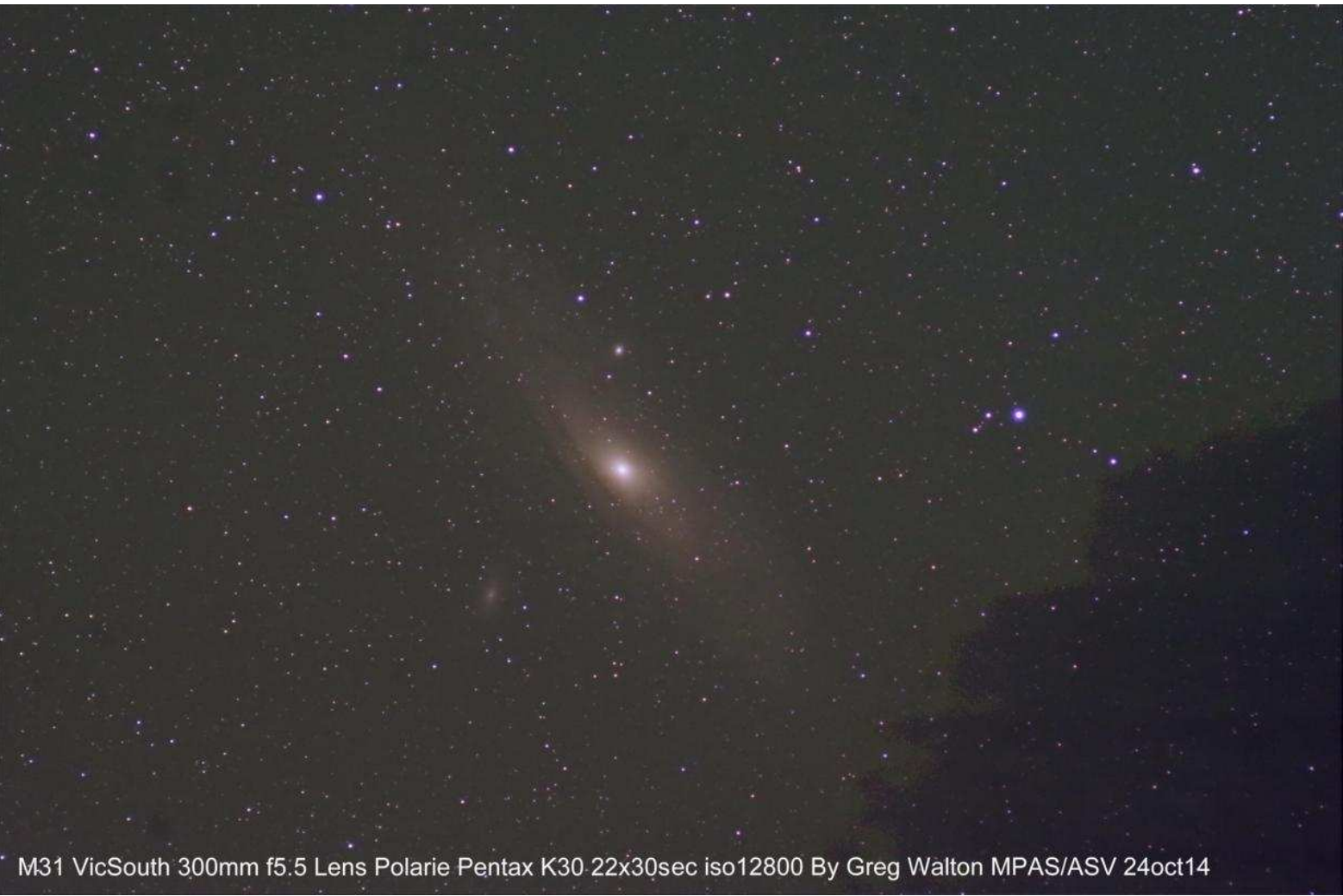


NGC1499 VicSouth 300mm f5.5 Lens Polaris Pentax K30 30x30sec iso12800 By Greg Walton MPAS/ASV 24oct14



LMC VicSouth 300mm f5.5 Lens Polaris Pentax K30 30x30sec iso12800 By Greg Walton MPAS/ASV 24oct14







## MPAS Gallery By John Cleverdon



Right  
Pia mowing the  
MPAS Briars site  
Photo Greg Walton





# OFFICE BEARERS OF THE MORNINGTON PENINSULA ASTRONOMICAL SOCIETY



Peter Lowe



Dave Rolfe



Peter Skilton



Jamie Pole



Trevor Hand



Paul Albers



Paula Ritchens



Clemens Unger


Greg Walton - Please send your articles & photos to [gwpmpas@gmail.com](mailto:gwpmpas@gmail.com)

**President:** Peter Lowe  
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**Committee:** Trevor Hand, Fiona Murray, Paul Albers,  
Paula Ritchens, Clemens Unger.  
**Phone Contact:** Peter Skilton - 0419 253 252

**Secretary:** Peter Skilton  
**Treasurer:** Jamie Pole  
**Web Master:** Steven Mohr  
**Scorpius Editor:** Greg Walton  
**Library:** Fiona Murray

## SOCIETY MEETINGS

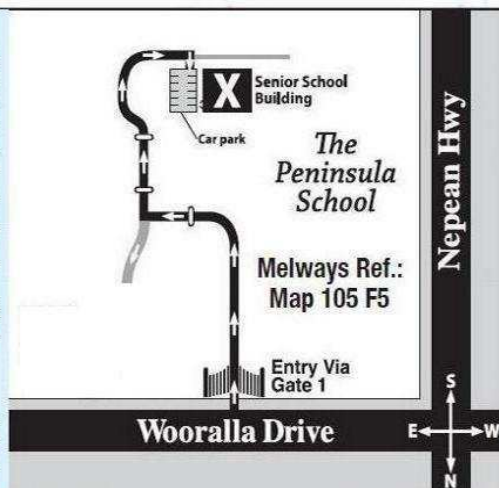
**Meeting Venue:** The Peninsula School,  
Wooralla Drive, Mt. Eliza, (Melways ref. 105/F5)  
in the Senior School at 8pm,  
on the 3rd Wednesday of each month  
(except December).  
Entry is via the main gate, off Wooralla Drive.  
(see map).

**For additional details:**

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

**Phone:** 0419 253 252

**Mail:** P.O. Box 596, Frankston 3199, Victoria, Australia.



## LIBRARY

The Society also has books and videos  
for loan from it's library, made available on most  
members nights at The Briars site, contact Fiona Murray.

## 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 and event information as well as  
being able to join in discussions and ask questions with other members.

To join, go to: <http://groups.com/group/e-scorpius> and sign up to Yahoo groups  
- You require to sign up to Yahoo groups to join E-Scorpius. Once you have signed up at Yahoo  
groups, email [welcome@mpas.asn.au](mailto:welcome@mpas.asn.au) saying that you want to join E-Scorpius and you will be added  
to the E-Scorpius list.

## VIEWING NIGHTS - 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 either 9776 2074 or  
0415 172 503 if they need help in getting to the  
site. Upon arrival at the site, remember to sign  
the attendance book in the observatory building.

**For additional details:**

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