

MACARTHUR ASTRONOMICAL SOCIETY Inc.

Journal



# PRIME FOCUS

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## President's Report

Hello and welcome to all members and guests. It would appear that sensors aboard the good ship MAS have detected the end of the year approaching faster than the speed of light. Here we are at our 2nd last meeting for this year already. Where has the time gone?

## Last Month

We extend our appreciations to last month's guest speaker Don Whiteman. His presentation on collimation was not only informative but a lot of fun as well. Maybe a future purchase will see me stargazing through a reflector again and Don certainly gave me some insights into optical alignment. Well done!

Tonight's guest speaker is Dr Russell Cannon from the Anglo-Australian Observatory. As you are aware from previous notifications Dr Cannon was due to give his talk next month. However a change in Observatory schedules will see

Russell in China making it difficult for him to attend. Tonight he will talk to us about observing Spiral Galaxies with **Spiral**, a fixed placed Optical Fibre Array which is currently in position on top of the 3.9m Anglo-Australian Telescope at Siding Springs. I'm sure that like me you will be fascinated to get some insights into this groundbreaking research of Galactic spectral analysis.

## Other Matters

Tonight our raffle draws to a close so please give generously and good luck. Remember the prizes are as follows:

- 1st Prize Your Choice of 2 Plossol eyepieces from York Optical;
- 2nd Prize Annual subscription to *Sky and Space Magazine* and *Southern Astronomy*;
- 3rd prize Free family pass to the Nepean Observatory;
- 4th Prize A bottle of fine wine

I would like to thank Terry Storey for organising the

eyepieces and Michael from York Optical for making it happen. Also Johnathon Nally from *Sky and Space Magazine* for the very kind subscriptions, and of course John Rombi for his donation of the family pass to Nepean Observation.

## Upcoming Events

- 20/10 Members Field Night at Yanderra or The Oaks
- 10/11 Public Open Night at Uni
- 17/11 Members Field Night The Oaks
- 19/11 Monthly Meeting
- 08/12 Xmas Party at the Dome
- 15/12 Members Field Night (venue TBA)
- Yanderra Members Night

## Help Wanted

A while back I was informed that a fellow keen amateur astronomer needed some assistance with the usage of his telescope. Due to various reasons the opportunity to give some assistance was only available recently and as such I can now report the following.



Alex resides on a property of just over 3 acres at Yanderra, about 35 minutes south of the Uni. His mobility is restricted by a bad case of arthritis which makes operating his 25" Starsplitter truss tube telescope a tad bit difficult, especially since its as big as a car and is housed in a roll off shed.

After visiting Alex the other week I came to the conclusion that some MAS members might be interested in doing some observing with the 25", as well as enjoying the much darker skies Yanderra has to offer. Alex has expressed the wish that we bring down our scopes and have a field night. This seems like a great opportunity so I'll have a map available tonight for those who would like to go, or we can meet at the car park downstairs on the 20th Oct at 6.30pm. However, you can still go to the Oaks if you prefer. Remember my Mobile No. is 0410445041, so please let me know.

### A Field with a View

The Public open night on the 22nd of September was a night that very few members of the general public attended, but we had the best roll up of telescopes yet, almost 15 which is just amazing even despite the low turnout it was a very good night. At one point Peter Druery was having a peek through my new refractor when a satellite made its appearance in the eyepiece. With a 25 mm Plossol giving a meagre 20 times magnification we could track the satellite as it was moving from the region near the Triffid Nebulae all the way to near the great square of Pegasus, which is a huge chunk of sky!

We had a lot of fun with members playing a game of tag team lining up one after the other to catch a glimpse, but what made this possible? Simply the low powered field of view enhanced by the wide angle nature of the Plossol eyepiece design. To further illustrate I could place the Seven Sisters into the field without much trouble. As well as that I almost bagged the belt stars of Orion into the eyepiece. This can be verified by John Rombi as we were the last brave souls in attendance that night.

This has given me a new appreciation of the versatility of telescopes. There is no way my F5 104mm apertured scope would take me to the belts of Jupiter but for extended objects its ideal. Anyone can try it, just grab a pair of binoculars and search the heavens. Good luck with your Observations and enjoy wherever they may take you. Until next time we meet.

Kind regards

Noel Sharpe (President)

**Quotable Quote:**  
**"Time is Nature's way of ensuring that everything doesn't happen at once."**  
**(Roy L. Bishop)**

## What IC This Month

October 15 – November 18, 2001

### Highlights

Moon visits Mars and Saturn.  
 Mars visits Neptune / Uranus.  
 Jupiter moon-less for 20 mins  
 Prepare for the Leonids.  
 Three large galaxies in sight.

### Trivia Answer

What are you looking for when you put ice in your telescope? Ask AMANDA! The Antarctic Modular Atmospheric Neutrino Detector Array is buried 1.5 km under the South Pole. Designed to look for neutrinos given off by gamma ray bursters, colliding black holes, the violent cores of distant galaxies and exploded stars, AMANDA is pointed down through the ice so the Earth can filter out all other radiation. 677 glass modules visually trace the path of incoming particles through the Earth and ice allowing their original source to be plotted backwards. A larger detector is planned to convert a cubic kilometre of Antarctic ice into the world's largest scientific instrument called 'Ice Cube'

Sunset between 6.00 - 6.40pm  
 Sunrise 5.00 - 4.30am

New Moon	Oct 17
First Qtr	Oct 24
Full	Nov 1
3 <sup>rd</sup> Qtr	Nov 8
New Moon	Nov 15



## Evening Sky Planets

**Mars** rises in Sagittarius in daylight travelling eastward, and sets about midnight. Now 3 months past opposition a dust storm has raged over most of the surface, making feature sightings almost impossible. On 23/10 it will be close to a ¼ Moon and over the next 3 days will be less than 1° from M75. Mars has reached quadrature (90° angle between Earth-Sun-Mars) making an egg-shaped disk in telescopes. During November it will join Neptune and Uranus being just 2° from Neptune on 5/11 and 0.8° from Uranus on 26/11.

**Neptune & Uranus** continue in Capricornus rising in daylight. They will be directly above about 7.30pm. On 24-25/10, each will be 5° from a ¼ Moon on successive nights. During November they will be close to Mars.

**Saturn** rises in Taurus about 9.30pm and will stay close to Aldebaran all month. On 4/11 it will be overcome in the glare of a full Moon, but will be a good photograph, about 10.30pm.

**Jupiter** rises in Gemini about midnight, but earlier as the month draws on. It is now separated from Saturn by 30° and increasing, where in June 2000 they were only 1° apart. We have to wait till 2020 to see them together again. On 7/11 it will be 5° from a waning Moon. For 20 mins on 9/11 at 2.30am, all of Jupiter's moons will be either eclipsed (behind) or transitting (in front of) the disk of the planet. It is quite rare to not see at least one moon.

The **Magellanic Clouds** are high in the southern sky for viewing again and **M31** is appearing in

the north-east. Latest news is that M31 is warped on one side, a twisted sister galaxy.

## Trivia Question

How is astronomy connected to GUTs and TOEs? What are we talking about?

## Morning Sky

**Mercury** and **Venus** are both close to the morning Sun during Oct-Nov. Mercury will become an evening object in late December and Venus in late February

## Favourite Star

This month's favourite star is not visible any night of the year. However if you get up very early in the morning you can see why **John Casey** has an ongoing affair with **Sol**, yes our own Sun. A G2 yellow ordinary star burning hydrogen providing warmth, light and life to all the Earth. Who can dispute the glorious colour of a sunrise in the early morning or sunset in late afternoon. By far the brightest of stars at mag.-26, Sol has helped us understand about all stars. "We'd be in real trouble if anything happened to it," says John.

## Meteors

The **Orionids** are active from Oct/Nov in the late evening to dawn near Betelgeuse. From 18 - 26/10 expect 25 zhr. Prepare now for the **Leonid Meteor Shower**. The peak is expected at 3.30am on Mon. 18 & 19/11, if there is one.

## Constellations of the Month

These constellations are all part of the same legend so have been

placed in the sky to be visible at the same time of year.

Coming to maximum height during November is

## Andromeda – The Princess

Andromeda became involved in a confrontation with Neptune (Roman name for Poseidon) by her foolish mother. Queen Cassiopeia unwisely claimed that she and Princess Andromeda were more beautiful than the Sea Nymphs, the daughters of Poseidon. Angered by the insult to his daughters, Poseidon sent a sea monster and organised for floods to destroy Ethiopia, the Kingdom of Cepheus and Cassiopeia. An oracle told Cepheus that Andromeda was the only suitable sacrifice to avert the disaster. She was chained to a rock by the water for the monster. However flying back from killing Medusa the Gorgon, Perseus sees her, falls in love at first sight; turns the monster into stone by revealing the head of Medusa, and takes her off to be his wife. Which is not really what Dad had in mind, but that's another story.

The constellation is marked by a line of four stars and another line of fainter stars diverging like a long bent V from a corner of the great Square of Pegasus. Her head is the shared 2<sup>nd</sup> mag star  $\alpha$  (**Sirrah** or **Alpheratz**), a blue-white star 120 ly away.

$\beta$  is a red giant called Mirach 75 ly away.  $\gamma$  called Almach is a triple star, a yellow mag 2 with a blue mag 4. The blue has a very close mag 6 companion. Very nice sight in low power.  $\delta$  is an orange giant. Main point of interest is the spiral galaxy **M31** which is part of our local group of galaxies. Although 2 million ly away it is visible to the naked eye as a fuzzy patch. Binoculars



or low power scopes reveal the elliptical form and bright centre. Too much power will reduce it to a haze.



M31 is bracketed by two smaller galaxies. A  $\frac{1}{2}^\circ$  from the centre on top as viewed from Sydney is **M32** very faint in small scopes. Underneath  $1.5^\circ$  away (not in our picture), you can spot **M110** also called NGC205.

About  $18^\circ$  away to the left of M31 is the planetary nebula **NGC7662** very bright, easy to see in scopes at mag 9. Boost the magnification to x100 to see the elliptical disk.

High in the northern sky is **Cetus – The Sea Monster**. Drawings of 400 years ago show the monster to look something like a sea elephant basking beside the river (Eridanus), minding his own business and not looking fierce at all. This much misunderstood creature is also called the Whale from the Biblical story of Jonah.

The constellation is large but faint, located between Aquarius and Taurus in an area which has few stars brighter than 2<sup>nd</sup> or 3<sup>rd</sup> mag. Best viewed looking north the head of the monster is towards Taurus.

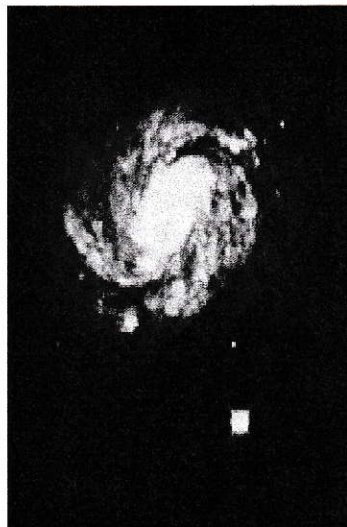
$\alpha$  called **Menkar** (nose) is a bright orange star at mag. 2.8. The brightest star is  $\beta$  called **Diphda** (the tail) a yellow star at mag.2.2 over  $40^\circ$  from Menkar.  $\gamma$  **Kaffaljidhma** meaning 'short hand' (maybe flipper) mag.3.6, is a double star yellow and blue.

$\omicron$  (Omicron) Ceti called **Mira (the Wonderful Star)** is a large long period variable growing in magnitude between 9 – 3 over 331 days. Mira is so large its diameter is the same as the Earth's orbit around the Sun.

$\zeta$  called **Baten Kaitos** (the belly star) is an orange yellow star  $10^\circ$  from Mira to the south.

Star hop from  $\alpha$  through  $\gamma$  to the neck of the beast where you will find  $\delta$  a mag. 4 star  $6^\circ$  from Mira to the north. This is the jump off point for M77 just  $1^\circ$  to the right.

**M77** is a magnificent spiral with broad distinct arms and is one of the biggest galaxies in Messier's list. It's about 60 million ly distant and is unique and peculiar for several reasons.



**M77**

It is classed as a Seyfert Type II galaxy with giant gas clouds moving away from the central core at hundreds of km/sec. To generate these speeds enormous energy is generated in a strong active nucleus filled with interstellar matter. Intense star forming activity is going on in the inner disk indicated by very bright ultra-violet imaging. This is the most luminous star forming region within a 100

million ly arc around us. **Cetus A** is a radio source like a mini quasar, within the core.

**NGC 1055** is an edge on spiral galaxy just  $0.5^\circ$  to the NNW at mag.10

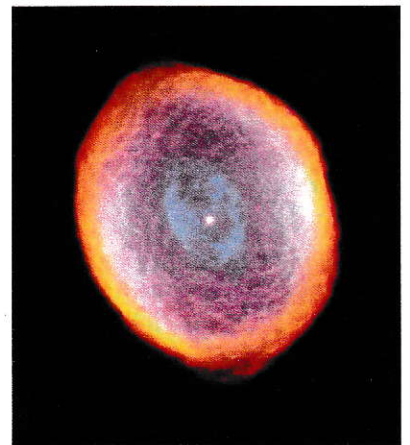
Directly north of Cetus beyond Aries and Triangulum is the third participant in this drama. However because he is upside-down we only see his waist and legs from Sydney, and we will have to leave him till next month.

We may not have to slay monsters or possess winged shoes, but we can still enjoy the mystery and magic of these sights in the heavens above.

Good Seeing

IC

### Spirograph Nebula



Glowing like a multi-faceted jewel, the planetary nebula IC 418 lies about 2,000 light-years from Earth in the constellation Lepus. In this picture, the Hubble telescope reveals some remarkable textures weaving through the nebula, like the lines in a spirograph pattern. Their origin however, is still uncertain.