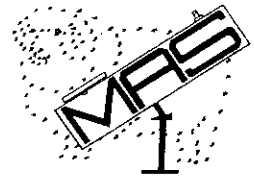


MACARTHUR ASTRONOMICAL SOCIETY Inc.

Journal



# PRIME FOCUS

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## President's Report

### If You Missed It!

We held our AGM last month, maybe it was in the Easter break? or the riveting nature of the proceedings that left only the faithful in attendance. It looked for a while that approaches might have to be made to the security guards and the cleaner just so we could build the numbers. Thankfully some last minute arrivals meant we could go for a launch!

The reports were tabled and elections held. The only change to report is that John Koster has relinquished the Treasurer's position after serving for 3 years. To John goes my thanks for doing such a great job. A certain Mr Dick Everett was elected to fill the position and I pass on my congratulations and best wishes to him - welcome aboard.

The positions as elected are listed below for your reference.

**Vice President:** John Rombi  
**Secretary:** Ian Cook  
**Treasurer:** Dick Everett  
**Committee members:**  
 Lloyd Wright and Bob Bee

The returning officer for the night was George Cruickshank and he did a great job, especially considering the short notice. Thanks George.

I would like to pass on my congratulations to all the above. Also on the night I had the honour of being re-elected President, its a responsibility I gladly accept and will give it my best efforts in the year ahead!

### A Bit of Fun.

We filled in the evening after the AGM with some light relief which involved a debate

on if the moon landings actually took place. After a slow start in which one comment was "who cares" we really revved it up and much debate took place. The official position as voted for on the night was that the landings did in fact take place, so there you have it.

Also we played a game of guess what star I saw last night. Teams were selected and the guessing competition began. The same anonymous detractor was most pleased when his team won the competition, the star being Gamma Crucis also known as Gacrux, a fine double with a brilliant orange companion, a sight that was a first for me.

The forest night held on May 3rd and was just fantastic. It was certainly cold but the stars were boldly on display. Unfortunately the heavy dew knocked out a lot of scopes early in the piece. I had my

son in tow that night and after struggling to erect a tent in the dark for over an hour was told, "Dad" it's nice and warm in the cabin, I'm sleeping in the top bunk, goodnight!"

## Important

**Membership renewal fees are well past their use by date. They were due as at the end of February, a special for this year is that if you pay by end of this month you won't get slugged the joining fee. Next month you will be well and truly be unfinancial and will definitely have to rejoin and pay the joining fee ....sorry but no exceptions!**

### Upcoming Dates

24/05/03	The Oaks
31/05/03	The Forest
16/06/03	General Meeting
21/06/03	The Oaks
28/06/03	The Forest
12/07/03	Maybe The Oaks
20/07/03	Festival of North Sydney (FANS)
21/07/03	General Meeting
02/08/03	The Forest (Special Students Night)
18/08/03	General Meeting

### Festival of Astronomy North Sydney (FANS)

Please register with Bob Bee your interest in attending the FANS night, with your telescope or as a helper. It will be huge as the rehearsal last year attracted over 4,000 people and we need MAS to be well supported on the night.

## Speakers

In the near future Peter Druery will be paying us a visit, maybe next month, also on the cards are Bob Bee and Phillip Kidd. I can confirm that depending on his observing program at Siding Springs Professor Dick Hunsten from Sydney University will be on board perhaps in October or November.

Possible speakers for later on this year include Dr John O'Byrne, Sydney University, Monty Leventhal and hopefully our good friend Dr Russell Cannon. I will try and obtain a Mars specialist to speak to us in August, that's when Mars will be up close and personal.

I think that's all for now, except to say congratulations to Bruce Reardon for having success at long last with his astrophotography. It's been a long road but one worthwhile travelling when you can grab such fantastic photos. Good onya Bruce!

Noel Sharpe ■

### Backyard Astronomy

When we go outdoors on holidays, I am always pleased about the amazing, beautiful starry sky. But in the sky over Sydney, a lot of stars are missing because of light pollution. I still have fun with my telescope in our backyard in Moorebank. Now is the

best time to observe Jupiter, because it is in the sky all night. This famous planet has now the most moons of all the other planets. There were 12 new moons recorded on 16<sup>th</sup> March 2003 and 6 more new moons recorded on 5<sup>th</sup> April. This makes 58 known moons for Jupiter.

I keep my eye on Jupiter's four Galilean moons because they are the only ones we can observe. I study the paths of the moons from *Astronomy 2003* and observe the moons with my telescope and compare the positions of the moons. Only in the telescope, east and west are the other way round than in the book. I write down the order of Jupiter and the moons, because it is different every night.

Some of my recent observations are shown below, with the following codes: Jupiter (J), Ganymede(G), Callisto (C), Europa (E), Io.

30<sup>th</sup> March 03  
J, Io, E, G, C. Io is going behind Jupiter. I could just see the light of it.

○ . . . .

3rd April 03:  
G, C, Io, J, E. Callisto looks closer to Jupiter because it comes from behind Jupiter.

. . . ○ .

5<sup>th</sup> April 03:  
C, E, Io, J, G. It looks like the moons are in the right distances from Jupiter.

. . . ○ .

7<sup>th</sup> April 03:

C, J, E, G. I observed late (10.30pm). Jupiter had moved further to the west. Io moved in front of Jupiter.



9<sup>th</sup> April 03:

C, G, Io, J, E. Io is going in front of Jupiter and Europa left the face of Jupiter.



Jupiter looks like a disk and its moons like pearls on a string. Because we don't see it three dimensional. I first thought that I must see Callisto always on the outside. But the moons are going around Jupiter and when Callisto and Ganymede are coming from behind, they look closer to Jupiter. Until Jupiter disappears from the night sky we can make lots of drawings and a competition of who has the most drawings. But it is a lot of work.

Jupiter is still in Cancer and I see the Beehive cluster (M44) through my telescope too.

Ursula Braatz ■



(Escapee from another hive?)

## Star Shooters

I wanted to write a quick article in the follow up series of the Camera Club. The title *Camera Club* sounds a tad boring, so I've come up with a new title, just to jazz it up a bit.

The intrepid band of Astro-photographers is small when compared to the *Mighty Messier Hunters* - now there's a title - so I think it's important to keep those shutters clicking, especially considering Mars will be a fantastic target to aim for, as it will be close and indubitably gettable.

I know that Dick Everett has had some success with his camera tracker, and recently Bruce Reardon has scored some real beauties. Bruce, like Dick, has employed the use of piggyback photography, simply using the camera itself sitting on top of a telescope or tracking device.

Tracking is the basic key to taking photos. Those with equatorial mounts must set the latitude correctly as to location, mostly around here 34° will do it and we must point the polar axis of the scope to the south. It is not that hard so either read the instruction books or ask for some hands on.

Many times I am on the field and the equatorial guys are pointing every which way except where they should be. This limits what the mount is

designed to do. With Mars coming up several ways are available to take his photo, but tracking will be vital otherwise you will get blurring in your photos.

For those who have some experience watch for problems with your polar scopes. Those tricky little devils have a habit of not aligning themselves correctly in their bore holes. Nothing is worse than having a misaligned bore hole. If its out by a lot the mount will be offset to the south celestial pole, the polar scope will give a false reading thinking its right when the reality is somewhat different. Sounds like some people I know, outside the club that is.

I did some fine tuning of my polar scope recently and it was out a lot. I managed to bring it back into the ball park, the result was some really good tracking and good results in the photos up to about 15 minutes at prime focus. That's not too foul at all.

It would be great to get into "Starshooters" articles by other photographers, so what about it guys. I'm just a bit worried of some ... overexposure on my behalf!

Regards

Noel Sharpe ■

## What IC This Month

May 19 – June 15, 2003

### Bright Star Tour

First magnitude stars to the North include Sirius, Castor and Pollux, Procyon, Regulus, Spica, Arcturus and later in the month Antares, Vega and Aquila. To the South we have Canopus, Gamma Velorum, the Cross stars, the Pointers, The Tail of Scorpius, Sagittarius, Capricornus and low down right on the horizon Achernar.

### The Moon Diary

Last Quarter 23/5  
New Moon 31/5  
First Quarter 8/6  
Full Moon 14/6

### Evening Sky Planets

**Saturn** will set soon after sunset within Orion's borders and will only be seen in the bright twilight as it moves to conjunction with the Sun on 25/6. It will re appear as a morning planet.

**Jupiter** remains in Cancer setting between 9-11 pm. It is still high for good viewing although the best is past.

**Mars** rises in Capricornus about 10.30 pm. The God of War will show a dramatic increase in size and brightness leading up to August. On 21/5 the last Quarter Moon will be below and to the right and iota Capricornii will be just above. As the month goes on Mars will move along

to gamma Cap then early June will find it less than 1° from Deneb Algiedi. By 14/6 it will have crossed the border into Aquarius and closely pass Uranus.

**Neptune** and **Uranus** stay quietly in Capricornus and Aquarius respectively. Neptune has an appearance with the almost full Moon on the 21/5.

### Morning Sky

**Mercury** and **Venus** are both in Aries and this month we see several good conjunctions of Mercury with Venus before the sunrise. During May Mercury will rise past Venus and then swoop down to pass it again before they both disappear into the sunlight.

Between 25-29/5 they will be less than 3° apart and on 29/5 a thin crescent Moon will join them to make a tight triangle. On 3<sup>rd</sup> June Mercury will be at its highest in the sky before forming another triangle, this time with Aldebaran, and racing down past Venus to the eastern horizon

### Comets

**116P/Wild** is a faint mag. 12 in the middle of Libra just to the south of NGC 5897.

**RX14 (Linear)** is also about 12<sup>th</sup> mag near M65/66 in Leo. By end of May it will have faded, so hurry!

**65P/Gunn** is moving southwest in Sagittarius. Mid June it will pass in front of M54.

### Meteors

Only the **eta Aquarids** until the 28<sup>th</sup> May. Not many per hour but fast long-lasting yellow trails.

## Portraits in The Sky

### Capricornus – "The Sea Goat"

Capricornus is usually translated as "The Goat-Fish", although the name literally means *horned goat*. The constellation is very ancient, and was one of the earliest members of the zodiac.

Horned animals, particularly the ibex, were worshipped in the prehistoric Near East, and they were associated with sacrifice concerning heavenly events. One theory has it that The Ibex was an earlier much larger constellation where we now have Aquarius and Capricorn, but was broken up.

The Greeks had a story about Bacchus who was feasting on the banks of the river Eridanus when the monster Typhoon attacked the gods of Olympus. Attempting to hide, Bacchus jumped into the river, and the part of him underwater was transformed into a fish and the part above into a goat. From here Bacchus saved Jupiter from being torn apart, by blowing a piercing note on his pipes causing Typhoon to flee. Jupiter placed the new shape of Bacchus in the heavens to honour him.

Despite its supposed importance to the ancients, Capricornus is faint and the shape of a horned animal is not obvious. The *Alpha* star crosses the meridian at midnight on 26 July.

*Alpha Capricorni* is known as *Al Giedi* or *Algedi* (the goat or ibex).

*Beta Capricorni* is called *Dabih*, from the Arabic *Al Sa'd al Dhabih* meaning "The Lucky One of the Slaughterers". This name indicates that the star served to signal the beginning of a winter ritual, possibly a sacrifice to bring back the Spring. The sun would have been in this constellation at the winter solstice three to four thousand years ago.

*Delta Capricorni* is the brightest star of the constellation. This is an eclipsing binary located at the eastern end of the asterism. The Arabs called delta and nearby gamma Capricorni "The Two Friends".

#### Double stars:

*Alpha<sup>2</sup>* and *alpha<sup>1</sup>Cap* form an optical binary of yellow and orange stars: 3.6, 4.2; separation 378". Each star is a visual binary with *Alpha<sup>1</sup>* 4.6, 9.2; 45.4", and *Alpha<sup>2</sup> Capricorni*: 3.5, 9.5; 154", nice and easy to see.

*Beta Capricorni* is a wide visual binary with a nice colour contrast, yellow and blue: 3.1, 6; separation 205".

*Omicron Cap* is an optical double.

#### Deep Sky Objects:

*M30 (NGC 7099)*, a globular cluster with a very concentrated centre, and a number of star chains or strings coming from the centre to the outer edge about 40,000 light years away. *M30* is 3° ESE of zeta Capricorni.

*NGC6907* is a barred spiral galaxy 5° SE of *M75*

Next we look to the south for a large triangle.

### **TRIANGULUM AUSTRALE "The Southern Triangle"**

Triangulum Australe is one of the few constellations which has an obvious asterism around the SCP and is easy to see. It was introduced by Johann Bayer in 1603, who traced a half-dozen stars ranging from 1.9 to 5.9 visual magnitude. It will be on the meridian at midnight on 3<sup>rd</sup> June

#### Double stars:

Triangulum Australe has no binaries. *Iota TrA* is given as a binary in Tirion's *Sky Atlas* but this is an optical only.

#### Deep Sky Objects:

*NGC 6025* is a fairly bright open cluster of about thirty stars; it's found 3° NNE of beta Trianguli Australis.

### **SCORPIUS – "The Scorpion"**

The Scorpion is central to the legend about Orion. Whether the god Gaia sent the scorpion to kill the mighty hunter, because he had vowed to rid the earth of all wild animals, or it was Apollo who ratted on him because Orion had designs on Artemis, Apollo's sister, we don't know. Anyhow the scorpion was sent to kill Orion, and the animal continues to chase him across the heavens. But the scorpion never catches him, for it rises in the east only after Orion has safely departed over the western horizon.

Scorpius is one of the oldest constellations known - possibly even one of the original six signs of the zodiac. While the sun still traverses Scorpius, it only spends nine days there, while more time is spent in neighbouring Ophiuchus, which should be, but is not, named as part of the zodiac.

The gigantic skewed "S" was seen in many ancient cultures as a scorpion, possibly because of cultural conquest or influence. The two stars lambda and upsilon, both called "The Sting" in Arabic, traditionally form the stinger, although some star maps currently show the nearby "G Scorpium" as one of the stingers.

The constellation was once much larger, but the western portion representing the claws

of the scorpion was given to Libra.

*Alpha Scorpii* is better known as **Antares "Rival of Mars"**. This is one of the four Royal Stars of the ancients, along with Aldebaran, Regulus, and Fomalhaut. It glitters with an unusual metallic red while the entire region is bathed in a pale red nebula, lit from the same star. Antares transits the meridian at midnight on 29 May

This red supergiant is estimated to be between 285 – 700 sun diameters and is 600 light years away.

### Double stars in Scorpius:

*Alpha Scorpii* is a visual binary which is difficult to resolve due to the brightness of Antares. Try a moonlit night, which might cut the glare of the brighter star: 1.1, 5.4; separation 2.6".

The companion is usually described as green in colour, probably a visual effect created by the red glow of Antares. The star is estimated to orbit every 900 years.

*Beta Scorpii*. This superb double has a pleasant colour contrast: white and bluish-green. 2.6, 4.9; 13.7".

*Nu Scorpii* is a multiple system, a "double-double". Each of the visible components has a closer component; these are termed AB and CD.

AC: 4.4, 6.4, and 41"  
separation. AB: 4.4, 5.4, 1.3"  
CD: 6.3, 8.0; 2.3".

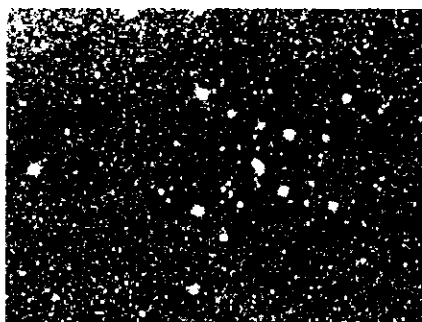
*Xi Scorpii* is also a multiple system, which includes another binary system: called Struve 1999.

Components AB form a close binary with period of 45.7 years. The companion is now gradually drawing away from the primary with a separation 0.39". *Struve 1999* is found just south of Xi Scorpii, and is gravitationally attached to the Xi Scorpii system. Two yellow stars of nearly equal brightness: 7.4, 8.1; 11.6".

*Sigma Scorpii*: a double with faint companion. AB: 2.9, 8.5; separation 20".

### Deep Sky in Scorpius:

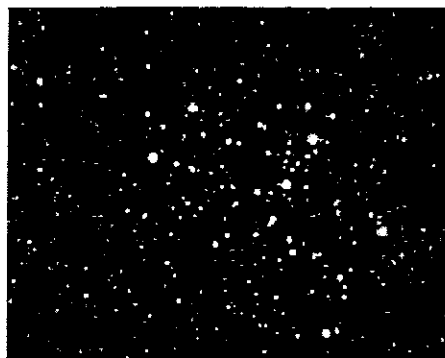
There are four Messier objects in Scorpius and some interesting star forming regions.



*M7 (NGC 6475)* (above) is known as 'Ptolemy's Cluster', and is clearly the best deep sky object of the constellation. This magnificent open cluster was first catalogued in ancient times. It is extremely large (two full-moon diameters) and quite bright, being visible to

the naked eye under suburban conditions.

A scope easily resolves the stars, the brightest twenty-two of which range from 5.6 to 9.0. There are several close visual binaries in the cluster. Burnham has extensive notes on this cluster. M7 is 4° NNE of lambda Scorpii, and about 800 light years away.

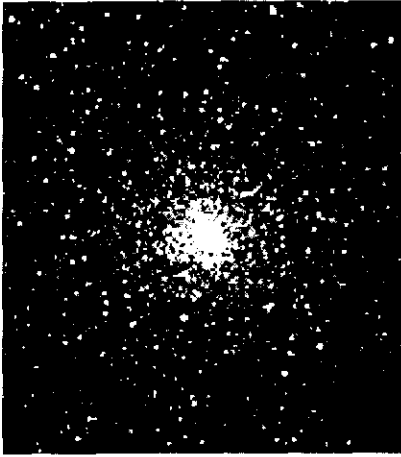


*M6 (NGC 6405)* (above) is the second-best cluster of the constellation. This is an open cluster which bears the name "The Butterfly Cluster". Its brightest star is BM Scorpii, a sixth-magnitude yellow giant. The cluster is about 1500-2000 light years away.

*M4 (NGC 6121)* is a close globular cluster located just west of Antares, roughly half way to sigma Scorpii. It is about 6000-10,000 light years away and there may be as many as fifty variables in the cluster. Without a large telescope it will not appear very spectacular.

*M80 (NGC 6093)* is a rather faint, very compact, globular cluster 4° NNW of Antares toward beta Scorpii, nearly midpoint between two 8th-magnitude stars. The cluster is

quite distant, some 36,000 light years away.



**M4**

*NGC 6231* is a naked-eye open cluster  $\frac{1}{2}^\circ$  north of zeta Scorpii (which is a member of the group). This cluster is certainly worthy of being a Messier: while noticeable to the naked eye, binoculars resolve its various members. It's about 5500-6000 light years from us.

The stars that make up the cluster are generally supergiants that resemble the Pleiades but would outshine those stars by 50 times, if they were located at the same distance

The cluster is only part of a much larger, very scattered, cluster called **H12**, which is found  $1^\circ$  north. In fact, the stars seen as joining NGC 6231 and H12 actually form one of the spiral arms of our own galaxy.

This part of the sky is very rich in bright stars, clusters and nebula in surrounding constellations.

Just browsing with binoculars will bring rewards

Good seeing            IC

### **Astronomers at the Bottom of the Fairy Garden.**

Once upon a time the intrepid M.A.S astronomers travelled to their southern observing site at The Enchanted Forest. After having set up their telescopes, they decided to explore the dark glen nearby. With cautious steps they entered the mysterious woods. Almost immediately they were greeted by three of the fairies that lurked within. They introduced themselves. "I'm Tinker bell and this is my sister Wendy and my little brother Peter Pan. You all look very tired and hungry, please join us for dinner." They all sat down at the fairies' table, it was surrounded by the most beautiful and colourful collection of mushrooms and toadstools that they had ever seen.

The astronomers had been waiting anxiously for several minutes, when Tinker Bell arrived with two huge plates full of the lovely fare that surrounded them.

"Dig in" she said, with a devilish laugh. So the six friends filled their plates and ate till they could eat no more.

After their meal the fairies asked the astronomers if they could use their telescopes to show them the wonders of the universe that they had discovered. They all agreed, so with a little difficulty after having eaten so much, Doc, Happy, Sleepy, Sneezy, Bashful and Dopey made their way back to their camp with the fairies in tow.

The collection of images shown to D.H.S.S.B.D. was the most beautiful that they had ever seen. There were globular clusters with millions of stars, galaxies with brilliant cores and spiral

arms, double stars, nebulae with their intricate and delicate wisps of clouds and of course who could forget the planets Jupiter and Saturn with their multi coloured cloud belts and rings.

Unknown to the others, Bashful and Dopey had secretly been searching for the planet Pluto. After many hours of hard work B. & D. were (reader may fill in this space) in finding Pluto. With the night quickly fading the astronomers decided to retire to their beds happy with the images the fairies had shown them.

On the rising of the Sun the astronomers greeted another day. With their eyes still full of sleep they gazed at one another wondering whether the night that they had experienced had actually happened. Was it the fresh garden salad that Noel had prepared the night before with the help of Daniel, Simone and Larissa or were we actually visited by the fairies from the bottom of the garden?

To find the answer to this perplexing question you will have to join us on the next trip to The Enchanted Forest. The End.

John Rombi.            ■



**A free copy of Prime Focus for the first enterprising person to identify this 'fairy.'**

### Cheap starter for 8" scope

One of our members, Doug McEachin, is making a very generous offer, free to anyone who asks (or make an offer): A galvanised iron tube to suit an 8" F10 newtonian, an 8" mirror cell, an 8" pyrex mirror (needs to be repolished and figured.)

See Doug at our meeting, or call on 46211664, or 0422379189

### Sweep Jupiter's Moons

I was reading an article the other day of yet more moons identified around Jupiter. I think (from memory) that it brought the total to 57 (or some equally ridiculous and forgettable number.)

It's getting beyond a joke. How's a man supposed to remember these large numbers, let alone be correct when someone asks you. Let's face it, it's the question on most people's lips – probably even the next \$million question on Eddie Maguire's show – "How many moons are there around Jupiter?"

It seems they are discovering a new batch ever week. So I came up with this idea for a guessing competition, or sweep, if you like. (Mind you, I haven't bounced this off the committee yet, but I'm sure they'll agree, if only to help pay off our insurance bill.)

Anytime between now and the end of the July meeting, members can (for a donation yet to be determined) enter a bid for the official number of moons (or satellites, to be pedantic) around Jupiter as of 31<sup>st</sup> December 2003.

The nearest to the official current number will receive a prize, also to be decided but probably a **good** bottle of wine. (No... not Starwine!)

So start thinking of the number, but think BIG. It's a salutary warning that the references on my shelf have gone from a mere 12 to 57 since 1964.

More details (or cancellation) to be advised at the May meeting. RB

### Messier Madness

For those of you who have not yet joined the band of *Mighty Messier Hunters* (to borrow Noel's phrase,) let me issue this warning – be afraid, be verrrry afraid.

Once you start, that's it. Your life is out of control, you become obsessed, you're a person to be avoided, people will not come up and talk to you at parties. You've become a Messier Madman who does nothing all day and night except plan, plan and plan for his (or her) next M scalp to hang on his totem of NGCs.

OK, it's not as bad as all that, but the hobby can certainly become a compulsive challenge. And since I started systematically in earnest mid-last year, it has brought me a lot of pleasure. But even more – it has forced me to learn more about the night sky, the location of some of the more obscure constellations, and the art of star hopping.

It gives you a genuine pleasure to be able to record another M in your log book That's another thing I learned – keep a systematic log book with you, and WRITE IN IT every time you observe the night sky. Apart from the obvious practical benefit, it also provides retrospective pleasure, like browsing through your stamp album.

At Belanglo the other week, despite all the dewing, I was able to 'nail' an additional 10 Messiers to bring my total to 42. If it hadn't been for the dew blinding my finder scope and effectively ending my night's observations at 10.30pm, I am confident I would have identified another 5 at least. Still a long way to go, but I'm having great fun in getting there. And as I said, by logging my successes (and failures) with the star hopping steps involved, I'm increasing my 'sky smarts.'

So why not join the madness if you haven't already? You can only improve your observing skills.

RB