**MACARTHUR ASTRONOMICAL SOCIETY** Inc.

**Journal**

# PRIME FOCUS

**Volume 7 Issue 1** **January 2002**



## President's Report

Well, another year over and a new one just begun. My wish is that everyone had a happy and safe festive season, not only for yourselves but also to your families, loved ones and friends. The recent bushfires were a major concern and I hope no one suffered any property damage as a result. Certainly all that smoke was terrifying and bad for one's health. As the society rolls into the start of its 7th year, it's probably a good time to think about our activities and plans for the year ahead. One of our longer term plans has been to find a truly dark sky site for us to observe from. Happily I can now confirm that the Society has been successful in negotiating the use of the International House site at Berrima which is about an hour from here. The site has overnight accommodation in the form of a Log Cabin, complete with fireplace, beds, kitchen and toilet facilities. It's a fantastic place and for those who have been part of the Star Nights down there I'm sure you would agree.

As always the scheduling of events has to be carefully considered and upon speaking to many members we have decided to go with a quarterly program for Berrima. Speaking of schedules we are still working out the Public Open night dates bearing in mind our own members' nights at The Oaks and the new Berrima program. More on this next month when we can confirm some dates.

### Last Year

Many thanks to the Guest speakers who made November's meeting very entertaining, I've been approached by some members to suggest that we should encourage more of our membership to speak to us on Astronomical subjects and I certainly agree. Our Xmas party was the best yet and was very well attended with over 20 enthusiastic party goers. It was just great to see all the wives and kids enjoying a great night. The change in location due to cloud cover could not be avoided but what a great little place to have a BBQ. Many thanks to Ragbir for organising the court yard near the Information Centre. Well done all.

The members observing night at The Oaks on the 15th of Dec was another case of unkind weather and I would assume that no one went there. For myself I was enjoying some excellent Italian cuisine, some fine wine and great conversations with good friends. Did I miss staring up at a sea of relentless cloud cover?...NO.

The Summer Science School Observing night on the 12th of December was cancelled due to the unkind weather. Peter Druery spoke at the University on Astrophotography to selected High School science teachers on the 3rd of December and Daniel Ross held an Open Night at the school where he teaches, which went very well. Many thanks for all those members who contribute to making MAS one of the most active and recognised societies in providing public education in Astronomy. What can I say!

**Tonight and this Month**

We have only recently decided to hold a January meeting. I remember on one occasion it was raining and very bleak. However a good few of us turned up anyway, but as we are just getting over the festive season I'm expecting a rather low key approach tonight. No doubt some of our members will be on hand as our speakers for tonight. At time of writing another Oaks night is arranged for the 12th of January. Fingers crossed.

**Other Matters**

Dick Everett is organising an Astronomy daytime talk to the Liverpool Probus Club on the 13th of February and our speaker for our February meeting will be Peter Druery. We had a call from an American tourist who was very keen to observe some of our Southern Hemisphere gems. We arranged an observing night on 22/12. Sadly the cloud cover again made a cancellation necessary, but Dick Everett and I were mad enough to go out and spent a few hours. Not only did I get a free collimation of my telescope but also some cheese, crackers and a few glasses of Cabernet Sauvignon. I also I discovered a rich field of stars in Canis Major. Not a bad nights work really and I thank Dick for his company.

Kind regards
Noel Sharpe

## Playing Chicken with Armageddon

The Earth has had significant hits in its history, the most well known are the Tunguska explosion in central Siberia, Meteor Crater in Arizona, even Australia has not escaped a hit, with a crater in Western Australia.

If ground zero for any of these impacts had been a city instead of the desolate area that was hit, the devastation would have been complete. If any of these objects landed in an ocean huge tsunamis would be created, they would flood a significant coastal and inland strip.

These impacts occur once every 300 years on the Earth's total surface or about 1 in 1000 years on land. Even if only 10% of the land on our planet was densely populated, this is equal to one hit on a city in 10,000 years.

As most of us are aware there have been many near Earth objects of large dimensions discovered over the years, and many of them have come too close for comfort. So how well prepared are we as a world if we find *"The One"* with our name on it?

As usual the politicians give anyone with an idea of a planetary defence system the big flick. According to them there are not any votes in spending huge amounts of money on this. My question to them is what spacecraft are they going to use to escape this Earth?

We need, as ordinary citizens, to put pressure on our political masters to take this matter more seriously and make available the money and resources needed to set the whole thing in motion. Apart from the professional scientists and astronomers, we as the amateurs of this world must try to bring to the general public the urgency of this project, but also in a way that does not panic the uninitiated. After having seen for ourselves what a large object like Shoemaker-Levy 9 can do to a planet as large as Jupiter, we should not be complacent.

If we wish for our world to continue we must start looking outward into space

and leave behind the petty squabbles of our past and present.

John Rombi.

## Woomera

Australian born Dr Andy Thomas is the main driving force to sell the idea to our federal government to use the old Woomera rocket site as an emergency landing field. In the event of a catastrophe the escape pods on the International Space Station would have another prime site in which to land.
J.R.

## Stargate

Sorry that it took so long for the answer. Where is the Stargate situated? **Answer:** Corvus, 1 degree from The Sombrero Galaxy. It is a small asterism of stars, which can be seen with binoculars.

## Astrophotography: How to Improve your Film's Performance

We have all looked through magazines and books and seen those brilliant images of galaxies, globular clusters, planets etc. The most critically acclaimed astrophotographer is David Malin; we were very privileged to see his exhibition at the Campbelltown Gallery in June 2000.
So how do we go about getting the best out of our photos. Firstly, a properly aligned and collimated scope is essential. The how and why will not be covered in this article because of the length involved.
I'm sure that the photographers in our society have come across this example. A roll of film is picked up from the processors and with anticipation you open the packet only to find that the galaxy or nebula you have photographed lacks the crispness and colour you were expecting and the grain is the size of tennis balls.
Sometimes the neg you're looking at has no image at all, even after a long exposure. The slower films have good colour saturation and have higher contrast, but unfortunately they are too slow for astrophotography, right? Wrong. For many years these slower films have been given substantial boost with a process called **Hypersensitization.** It's more commonly known as **Gas Hypering.**

The main reason for hypering is to remove the impurities found in all film. The film is placed into a well-sealed container, and then a pump is used to extract all the air. The next process is to heat the film to a predetermined temperature, this forces out the oxygen and moisture that is trapped in the film during manufacture. The next step involves forcing a gas mixture (92% nitrogen, 8% hydrogen) into the tank; it permeates the film and fills in the area left behind by the impurities. The result of this action is that the film is a better recorder of very faint objects.

About the most widely acclaimed film used is Tech-Pan 2415 it is mainly available in 4x5 inch sheets, but limited supplies of 35mm and 120/220 are manufactured, this is a B&W film. When this is hypered the speed increase is ten fold, for most 100 I.S.O. slide films the increase is from five to eight times.

First you will have to purchase the kit. It consists of a tank for holding the film; there are different sizes according to your needs. Next is the pump necessary to evacuate the air, a thermometer, pressure gauge and a cylinder with the forming gas completing the kit.

The process to hyper the film is not complicated; you must first load the film into the canister in total darkness, then in daylight you extract the air and heat the film. You allow the film to cook for two hours before adding the gas, then the film must continue to cook for a further 12 to 150 hours. This is dependant of temperature and film used. When this is completed it must be reloaded into the film container (in the dark) and stored in the freezer. Its shelf life is approx 2 weeks before the gas leaches out of the film and it reverts to its old self again. Tech Pan has a shelf life of 1 month.

The starting kits are about $800-$1200. If you are a mad shutterbug and have come to terms with all the other tribulations of Astrophotography, you're definitely ready for the next step.

John Rombi.

## What IC This Month
**January 21 – February 17, 2002**

### Highlights
All planets in evening sky except Venus
Comet Linear (WM1) low in southwest mag 6.0
24/1 Saturn Aldebaran and Moon
26/1 Beautiful Jupiter and almost FM early evening

### Evening Sky Planets
**Mercury** rising in Sagittarius moves to Capricornus and inferior conjunction in front of the Sun. From late Feb to mid-March will be the best views when it will be furthest from the Sun (27°) in a dark sky. On 10/2 a thin crescent Moon will be 7° above, and then 25/2 Neptune and Mercury will be 0.5° apart.

**Urinus** (pronunciation) and **Neptune** set in the twilight and will reappear late Feb in the morning sky.

**Venus** is so close to the Sun as to be invisible in the glare but will appear as the Evening Star in Late Feb.

**Mars** rises in Aquarius/Pisces during daylight. It will set about 9 pm. On 17/2 it will be 5° from a waxing crescent Moon.

**Saturn** is still in Taurus within 4° of Aldebaran. It is a great sight with the rings tilted up and the planet's disk is 25% bigger than last year. On 24/1 it will be just 3° from a waxing Quarter Moon.

**Jupiter** is back in the evening sky in Gemini, larger and brighter than ever all night long. There will be a great photo on the 26/1 in the early evening when the almost full Moon is still yellow from the atmosphere. Jupiter will be just 5° away gleaming whitely. *Any Jupiteronians who are looking our way on Jan 1st will see the Earth and Moon transit across the face of the Sun.*
Presently at opposition and about 50% larger in size then 2001, Jupiter will set about 1.30am in early Feb.

### Did You Know?
Although there are 12 signs in the Zodiac, there are 13 constellations in the Ecliptic Path of The Sun? Between Sagittarius and Scorpius the Sun traverses Ophiuchus for two weeks. Practically no mention is made of this in either monthly observation charts or astrology.

### Favourite Star
Our final favourite stars are two of the best known in the southern sky. **Eta Carinae** is the favourite of Stephen Hutchinson and Gehad Saleh. **Eta** is a variable star embedded in a nebula. It is estimated to be 100 times larger than Sol and 400 million times brighter. Surrounded by a shell of dust it is unstable and a possible supernova real soon. Stephen thinks it amazing and Gehad just likes the complexity of it.
Secondly **Sirius** is the favourite of John Rombi. Brightest star in the sky, John has been watching it for 30 years. Its name means 'scorching' and at mag –1.4 its brilliant white light outshines and over powers its white dwarf companion star at only 8.5. To see the companion we will have to wait till 2025 when they are well apart.

### Comets
**Linear (WM1)** is still visible at mag 6.0 if you have a good SW view between Indus and Ara. You will have to be looking soon after the Sun sets. It will fade to mag 8 after perihelion on 22/1 and move into Sagittarius in the morning sky. On 18/2 it will be just 3° from M55

### Meteors
From the 1st to the 24th January a small shower called the **delta Cancrids** produce about 3 zhr from near Cancer in the evening.
The **alpha Centaurids** is a better show from 28/1 to 21/2 with a max on 8/2. Fireballs and coloured slow trains at 5-10 zhr would be good to see. Go away clouds!

## Constellation of the Month

**GEMINI – The Twins**
Many cultures since ancient times have seen this constellation as pairs of gods, humans, animals or plants. The Greeks named the two bright stars Castor and Pollux after the twins born to Leda a goddess seduced by Zeus, hatched from an egg. These twins sailed with Jason and the Argonauts and played a large part in saving the ship from a storm. Sailors therefore consider the star Castor a good omen. The Jews called them Simeon and Levi, the Romans Romulus and Remus the founders and guardians of Rome. In India they were called the two Horsemen or the Boy and Girl and the desert dwellers of Nth Africa saw them as the forepaw of an ancient huge Lion. The Chinese named them Yin and Yang and Ovid a Greek poet named them The Horseman and The Pugilist.

Looking like a large rectangle north and east of Orion the two brightest stars, exactly 4.5 deg apart, are the heads of the twins with an extended line of six stars at the feet. Many of the main stars are unequal doubles.

α (Castor) The Horseman is a multiple system of six stars. A small telescope will show two blue-white stars at 2.7, 3.7 mag. with a wide red dwarf companion. Both the blue-whites are binary doubles and the red dwarf is also a double. Astronomers even up to recent times knew Castor as Apollo.

β (Pollux) The Boxer is a 1.1 mag orange star still used in navigational tables. It is thought that Castor may have dimmed over time making Pollux brighter, or was Bayer just careless in allocating his letters?
γ (Alhena) one of the feet stars midway between Pollux and Betelgeuse is a 2.2 mag bright white star

δ **Gem** (Wasat) is a yellow-red (or white and purple) mag. 3 and 8 double. While Clyde Tombaugh was looking here in 1930 he exclaimed 'Wasat' and saw Pluto sailing by. Just 2.5 deg east of Wasat is **NGC2392 'The Eskimo / Clown face Nebula'** like a face framed in a fringe. A mag. 8 blue green ellipse for most of us, but large scopes show the 10th mag central star.

η **Gem** (Propus meaning – in front of) is an orange / red double varying slightly over a year. It was near here that William Herschel discovered Uranus (Yoo-rin-us) in 1781.

Between η and ι making a triangle is **M35** a large 5th mag loose open cluster of 200 stars in curving chains. It is visible to the naked eye with clear skies and the same size as the full moon. Low power is recommended.

Just above to the left is a rich open cluster **NGC2158** seen as a small faint patch of light

Good seeing IC

## Fiery Plume on the Moon

Human eyes witnessed the creation of the most recent impact crater on the moon. The young crater named Giordano Bruno was blasted out in front of the eyes of Gervaise a monk at Canterbury Cathedral in 1178. He wrote of a fiery fountain erupting from the Moon in his diary. You can find it when lunar libration is very favourable. North of Crisium, midway between Cleomedes and Messala, go to Gauss an elliptical crater about 100 miles long on the edge. Further east on the extreme eastern limb is a small crater. That's GB!

Within the last six months a US researcher has claimed Gervaise must have seen something else, as a crater impact would have blasted a highly visible meteor storm of dust in the direction of Earth. No mention of any meteor sightings exists in records of cultures ranging round the world at that time. I don't know, it does not seem conclusive to me, I still favour Gervaise. I.C.

## John Harrison – The Longitude Man

You've read the book (or you should have), you've seen the mini-series. Though Michael Gambon played John Harrison beautifully, he didn't really look like that. If you really want to know what JH looked lime, look no further than below.


## Cosmology Discussion Group

Are you interested in talking about cosmology and associated subjects with others of like interest?
Robert Zindler would like to start a small discussion group to do just that. It would have to be outside normal meeting times so you can chew the cosmological fat in a relaxed mode.
If you are interested, talk to Robert at a MAS meeting or call him at home on (02) 95215212.

## SECTION LEADERS

The following are the coordinators of these special interests in particular fields

**DEEP SKY**:
Pete & Bobbie Elston
Phone 02 46474491; e-mail: eclipse@lightstorm.com.au

**ASTRO COMPUTING**:
Daniel Ross (02 9790 5838)

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**TELESCOPES : NOVICE/INTERMEDIATE**
Noel Sharpe
**ADVANCED**: Peter Druery.

**ASTROPHOTOGRAPHY: NOVICE**: Noel Sharpe
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**PLANET ADVICE**:
Phil Ainsworth

## Greek Alphabet

| | |
|---|---|
| α (alpha) | β (beta) |
| γ (gamma) | δ (delta) |
| ε (epsilon) | ζ (zeta) |
| η (eta) | θ (theta) |
| ι (iota) | κ (kappa) |
| λ (lambda) | μ (mu) |
| ν (nu) | ξ (xi) |
| ο (omicron) | π (pi) |
| ρ (rho) | σ (sigma) |
| τ (tau) | υ (upsilon) |
| φ (phi) | χ (chi) |
| ψ (psi) | ϖ (omega) |

## Borrowing MacDob

**The Society's own telescope, a 6" Dobsonian, is available for loan to financial members. It is easy to transport, set up and use. If you would like to borrow MacDob for a month, speak to Bob Bee (at Meetings or on 46251623) who is its custodian. Though there is no hiring fee, members are invited to make a donation of their choice which will go towards the upkeep and upgrade of MacDob**

## Prime Focus

Here we are at the start of a new year. Another 10 issues of Prime Focus to come for 2002. It occurred to me, as I prepared this issue, that the light we now see from the magnitude 9.6 Barnard's Star (the next furthest star after Alpha Centauri) left there at about the same time our first issue of Prime Focus hit the street in January 1996.

In anticipation, I'd like to thank Noel, John Rombi and Ian Cook for their regular contributions to PF. I'd encourage all other members to put their hand to writing articles to increase the variety and scope of information shared. Preferred format is on a floppy disc in Word, but WordPerfect is also OK. Either hand to me or email to **robert.bee@tg.nsw.gov.au**

RB