

ם ח

n o

>

()

ပ ၀

ഗ

ທ

4



In this issue:

Page 2 President's Report Page 3 Secretary's Column Page 4 Space Camp Page 5 The Quest Continues Page 7 Scale of the Solar System Page 8 Life's a Beach Page 10 Saturn-Porrima Double Page 10 Saturn-Porrima Double Page 11 Alone in Space Page 12 Planetary Alignment Page 14 Binocular Object for June Page 16 June's Speaker

From the Editor

Chris Malikoff

macarthur astronomical society

Welcome to the June edition of the new Prime Focus.

A thank you

A very large "thank you" must go out to Geoff Young for continuing to improve on the production of "prime Focus" - our flagship publication up to this point. Geoff stepped up to the plate and re-developed what was a paper hardcopy offering into a fully electronic product that is undoubtedly the way of the future.

A completely new Prime Focus

After Geoff's outstanding contribution to this publication, I've now taken on the additional challenge and role of Editor, Prime Focus. My mission will be to transform this monthly journal into a full-colour magazine which will also be sent to other astronomy-related societies and groups to show them what Macarthur Astronomical Society is all about. I hope that we may see some of these parties return the gesture, and reciprocate with their own journalised perspective on our chosen hobby.

Prime Focus will also determine the look and overall feel of the Macastro.org.au website in due course. The plan is to consolidate our brand image such that there is consistency and professionalism in everything we present to the world in which we operate. We may only be a small society at present, yet to those astronomy professionals (who we encourage and love to visit us) as well as prospective members and other associates, we are truly able to present ourselves as a society worthy of becoming involved with.



President's Report

Welcome to the June edition of Prime Focus.

Firstly, I would like to remind everyone that as the 1st June has come and gone, we are now officially governed by our new Constitution. This document is available on the website for those interested.

You will no doubt have noticed, this months Prime Focus has taken on a new look. As our previous editors will be able to confirm, getting the Prime Focus ready and out on time can be a difficult job under the best of circumstances, so please consider making submissions to future editions. We all have stories to tell.

It was with great regret that I had to cancel our last Stargard Night. I felt even worse when at 8pm I looked outside and the sky was clearing. A bad case of the "if only's" quickly followed. The Forest started well on Friday 3rd with a good night and finished with cloud on Saturday night. Hopefully our luck will take a turn for the better soon and we'll all be out there with scopes and smiles.

Last months Macarthur Astronomy Forum gave our Speaker Liaison, John Rombi, a bit of a worry when speaker, Dr Andrew Hopkins had to cancel at the last moment. Fortunately for us Dr Hopkins was able to send a replacement in Prof. John Peacock, who gave us a talk on "Slipher, and the Discovery of Galaxies and the Expanding Universe". The Professor certainly generated some thought as the questions were coming thick and fast at the end of the night.

The Macarthur Astronomy Forum will this month welcome Dr. Lisa Harvey-Smith, who will be making a return to the Society after a three year gap. Lisa last spoke to us in 2008, with a presentation titled: "Massive Stars: Live Fast, Die Young" which many members will recall. This time, Lisa will be talking about "A New Generation Telescope - The SKA." Please keep an eye on the website for room allocation.

Our July Macarthur Astronomy Forum is on Monday 18th with Guest Speaker, Dr Mike Ireland (Sydney University).

Trevor Rhodes

Looking forward to "doin' it" with you in the dark...

Trevor Rhodes

Macarthur Astronomy Forum **Next Meeting:** Monday 20th June 2011 at 7.30 pm Lecture Room 6, Building 21, University of Western Sydney, Campbelltown Campus Guest Speaker: Lisa Harvey-Smith, Astronomer & SKA Project Scientist (CSIRO).

Topic: A NEW GENERATION TELESCOPE - THE SKA

Secretary's Column M.A.S. Aspirations

Roger Powell

In last month's column, I mentioned the formal aims of the Society, as listed in our Constitution and since then the Committee has moved on to considering our aspirations for the next five years, if the Society is to continue to strengthen. Put simply, if we are to aspire to greater things down the track, our financial situation, whilst healthy for our current purposes, would need to be enhanced enormously if we are ever to manoeuvre the Society into a position where it could contemplate purchasing advanced astronomical equipment and the property in which to house it. Accordingly the committee is looking at alternate ways of improving our financial situation - without increasing membership fees.

We have also resolved to look at ways of improving the practical expertise of our members, because in a Society where so many members own their own telescopes, there must be a very good reason for us to invest large sums on Society owned property. Saying we want one because we want one is not good enough to justify any form of expenditure.

Since the Society was formed, financial growth has been slow but steady, whilst membership growth slowly climbed. However, we've had a fifty per cent membership increase over the last two to three years and for the first time we have been able to invest some capital. We now have some new assets which we hope to sell ñ website and Prime Focus advertising, as well as potential sponsorship of our newly named Macarthur Astronomy Forum. Will they sell? I honestly don't know but the committee will be giving it a good try. If they do, then we may be able to set our sights higher.

With the influx of new members have come some young people starting out in astronomy. They need to ask questions of the experienced members, who in turn need to pass on their experience. The committee has resolved that we need to point our compass towards basic amateur astronomy for a while and will be looking for experienced amateur astronomers from inside and outside the Society who would be prepared to talk at the Forum next year -or submit articles for Prime Focus. Polar alignment, dew heating, eyepiece selection, collimation, choice of telescope, mirror cleaning - if you feel you could contribute a talk about any of the basics, please talk to John Rombi, who has been appointed Speaker Liaison. John will also be looking to continue attracting top professional astronomers to address the Forum.

One of our members, Robert Leonard, contacted the Committee about Campbelltown Council's decision to install uplights in Mawson Park. Whilst it would be a fulltime job to start campaigning against every breach of the outdoor lighting standard that we see, the Committee decided that public lighting in a high profile location such as this ought to set an example to the community. We resolved to bring this to the attention of Council and so a message has been sent to the Mayor (Cr Lake) about it and we will see what comes of that in due course.

Members are reminded that observing weekends at The Forest consist of Friday and Saturday evenings and I took full advantage of this at the last Forest weekend. I was gearing up to go on the Saturday night but after checking the weather outlook, I realised that Friday was the best opportunity for clear skies and so it proved to be. I know it's difficult for many to travel down on a Friday but for those that can it is a good idea to check the weather and if you only wish to go for one night, pick the best of the two.

Our new Constitution came into force on 1st June, so that is the end of a twelve month process to modernise our rules. One of the outcomes of this is that from next year, the three month period of grace for members to renew their membership has been reduced to two months.

The committee noted a very high membership renewal rate this year. As at 1st June 2011, total membership of the Society stood at 89, whilst in June 2010 it was 78 and in June 2009 it was 62. Hopefully we will top the hundred mark for the first time before the end of the year. Now that will be a milestone!

Observing Schedule

June 2011

25/06/2011 Stargard

July 2011 1-2/07/2011 The Forest 18/07/2011 Macarthur Astro Forum 23/07/2011 Stargard 29-30/07/2011 The Forest

Students go to Space Camp

MAS sponsors our next astronauts

Macquarie Fields High School

MACQUARIE Fields High School students think Macarthur Astronomical Society is out of this world after a much-needed donation from the organisation.

The society has donated \$500 to the school to help 10 students travel to Alabama, in the US, for a space camp in September.

Society president Trevor Rhodes said members decided to pitch in after hearing about the school's fundraising efforts for the space camp students.

Mr Rhodes said he hoped the appeal would generate a lot of support in the Macarthur area community in support of the students' bid to undergo supervised astronaut training.

Four Macquarie Fields High School students attended the society's April meeting to receive the cheque.

The students were also offered a free one-year membership to the society and provided with show bags of astronomy merchandise.

The society also offered to hold an astronomy night at the school in addition to its original donation.

Anyone wishing to donate to the school's fundraising efforts should phone Macquarie Fields High School on 9605 3111.





The Quest Continues - June 2011

Davy Jones

The historical events that guaranteed the demise of the Ptolemaic model are probably familiar to most readers. Many famous historical names were coupled to that demise - Copernicus - Brahe - Kepler -Galileo Galilei - to mention a few. Nevertheless, it should be remembered that many others, less well known, also contributed to the scientific progress that took place over this particular period of history. Such is the nature of human advancement.

Even with the combined proofs provided by the aforementioned notables, culminating with the conclusive evidence offered by Galileo Galilei, the Catholic Church still refused to abandon its policy that the earth was set at the centre of the universe.

In 1623, history seemed to swing in favour of sanity and science, when Cardinal Maffeo Barberini, was elected to the papal throne as Pope Urban VIII. The new pope and

Galileo were old associates, having attended the same university in Pisa. This long-time friendship led

to Galileo clarifying his theories in, what proved to be, one of the most divisive books ever penned in the history of science: 'Dialogue Concerning the Two Chief World Systems'. (Available on the Internet in both eBook and PDF)

The Dialogue took ten years to reach the publishing stage, and whilst it had originally won papal endorsement - the intervening years had changed both the political and religious environment. The consequences of these changes, coupled with mischief created by fellow astronomers aggrieved by his recognition, combined to ensure Galileo's downfall. Shortly after the Dialogues' publication, the Inquisition ordered Galileo to appear

before them on a charge of 'vehement suspicion of heresy'. This led to his trial in Rome, in April of 1633. By the end of the trial, Galileo was forced to abandon and deny the truth of his argument; and so one of the darkest chapters in the history of science was brought to an ignominious end.

Galileo was confined to house arrest – a relatively light sentence given the savage reputation of the Inquisition. He eventually lost his sight in 1637, possibly as a result of observing the sun through his telescope. Galileo died on January 8th 1642. In a final act of bastardry, the Catholic Church refused to allow his burial in consecrated ground. The Inquisition added the Dialogue to its Index Librorum Prohibitorum (List of banned books); where it stayed until Pope John Paul II issued an apology and finally lifted the proclamation in 1992.

Humanity scarcely batted an eyelid at the passing of Galileo; however, with advances in technology over the following century, the world slowly came to accept the heliocentric model. Another consequence of the passing of time is the passing of those with more conformist views; those who had opposed changes to the Ptolemaic system. With their passing, a gradual realisation permeated the church hierarchy; it realised continued opposition to the new 'reality' made it look silly. The church eased its position towards both astronomy and science; a new period of

intellectual freedom was finally under way.

These periods in history – the Enlightenment, followed by the Industrial Revolution – gave rise to meteoric changes in our understanding of the world around us and the world beyond our earthly limits.

Supernatural myths that had held sway for centuries crumbled. Philosophical mistakes and religious doctrine were replaced with precise, rational, demonstrable, natural explanations. Science blossomed as discoveries opened our eyes to the true wonders of the natural world that surround us.

In spite of all this frenetic scientific activity, no one seemed keen to address the ultimate question: how had the universe been 'created'? The question itself seemed off-limits as scientists restricted themselves to explaining natural phenomena. The 'creation' of the universe was the final bastion of the supernatural. A bizarre mutual respect developed between science

'Holy Writ' was intended to teach men how to go to Heaven, not how the heavens go.

Galileo (1564-1642)

and religion which allowed this position to remain throughout the eighteenth century.

Indeed, such was the strength of this position that serious debate was entered into regarding the actual date 'God' might have created the universe. Mankind, in spite of some amazing scientific advances, seems almost wedded to a need for the supernatural.

That need for a spiritual element was never more evident than in the quest to confirm a 'start date' for the 'creation' of the universe. Scholars sifted through endless lists of biblical quotes and references. Royalty, church authorities and scientists alike contributed to a growing speculative inventory of possible dates. Alfonso X of Castile and Leon suggested a very precise, 6904BC, whilst Johannes Kepler favored, 3992BC.

James Ussher – later the Bishop of Armagh – after an enormous effort finally pronounced the exact date for the 'creation': Saturday, 22nd October, 4004BC – at precisely 6:00pm.

Such was the authority of this pronouncement that in 1701, the Church of England officially recognised Ussher's assertion. Thereafter this date was published in the opening margin of the King James Bible all the way through until the twentieth century; even scientists and philosophers accepted Ussher's dates well into the nineteenth century!

Naturally, all this tomfoolery with dates couldn't prevail in the face of mounting evidence to the contrary. Ussher's date, whilst happily accepted by religious authorities, only put the earth at some six-thousand years old. With the publication of Charles Darwin's - Origin of the Species – promoting an excruciatingly slow system of evolution, requiring millions or billions of years to occur, the inadequacy of Ussher's date and time became very clear. Once again, religion and science were heading for a clash – a clash still unresolved to this day in many minds!

By 1897, Lord William Kelvin had developed a technique, which produced a result showing the age of the earth to be at least 20 million years old. Within a few years, John Joly (1857-1933) took a different idea again, when he suggested that the world's oceans had started off as pure water. From that point he attempted to estimate how long the oceans would have taken to reach their current salinity levels. His results implied an age of approximately 100 million years.

In the early twentieth century, physicists demonstrated how radioactivity could be employed to date the earth. By 1907, refinements to this new technique increased the estimated age of the planet to over a billion years. Clearly, each new development amplified the age of the earth With these rapid changes in the dramatically. awareness of earth's age came the obvious association relating to the age of the universe itself. An 'obvious conclusion' began to form amongst scientists - if the earth was over a billion years old, then the universe must be infinitely older! The general consensus in fact was that the universe might be 'eternal'.

The new modern age was dawning – the more questions that were answered produced ever more complex unanswered questions. Cosmologists developed an array of tests and models which they hoped would provide some of the answers to the growing list of puzzles. Amongst these questions were – what materials did the universe consist of and how did they behave? What was gravity, and how did it effect interactions between the stars and planets? What was 'space and time'? Most significantly, answering these elementary questions would only be possible once the speed of light itself had been determined!

Human arrogance is often highlighted by those quick to criticise the human race; some seeing it as a negative aspect of human nature. On reflection, I suggest, without 'human arrogance' - one person would never offer an opinion that he or she thought was 'better' than the existing one. It is arrogance combined with confidence and self-belief that has driven many individuals onward in the face of massive odds; even to the point of giving their lives to prove a point. Of course, there is a negative aspect – the sort of arrogance which suggests 'might is right' - and the more powerful the ally the greater the chance of winning the argument. What greater ally than a supernatural one that can neither be seen, nor argued with.

Refs: Koestler, A. (1959). The sleepwalkers. New York: The Macmillan Company. Singh, S. (2005). Big bang. London: Harper Perennial. The Free Resource. (2011). Galileo: Fun facts, quotes, and resources. Retrieved May 3, 2011, from TFR Educational Resource Center: http://www.thefreeresource.com/ galileo-fun-facts-quotes-biographical-timelineresources.



Scale of the Solar System

Roger Powell

A journey through our Solar System, from the Sun to Pluto, is a long trip - but I am going to shorten it a little by scaling it down.

The Sun itself is 1,392,530 km in equatorial diameter and it's mean distance from Earth is 149,492,000 km. Now, imagine a model of the Solar System reduced in size by a scale of one in a hundred million. The Sun could then be represented by an imaginary sphere (admittedly a rather hot one) with a diameter of just fourteen metres, about the height of a four storey building.

Where would the planets be located on this scale? If we place our imaginary (four storey high) Sun on the platform at Campbelltown Station (right near the footbridge) we can try to picture a journey to Pluto, using a suburban train instead of a spacecraft, making the (admittedly rare) assumption that every planet including Pluto is aligned in one direction.

Mercury would be a 50mm diameter plum, located just over five hundred metres north of the station. Venus would be found in the vicinity of the bridge at Campbelltown Road and would be the size of a small grapefruit.

Moving on, Earth would be a slightly larger grapefruit, positioned well on the way to Leumeah and you would spot Mars as a kiwi fruit sized sphere as you sailed past the Campbelltown Sports Ground.

The spaceship on rails would then speed through Minto (remember, you are imagining this) and Jupiter would be seen as a large beach ball (1.4 metres diameter) as the train approached the suburb of Ingleburn.

Saturn would be a slightly smaller beach ball (1.2 metres dia) but you wouldn't see it until the train reaches Glenfield Tip. So we reached Saturn whilst still remaining just inside the boundaries of the City of Campbelltown - but the rest of the journey is considerably further.

Uranus and Neptune are both over-sized pumpkins (500mm), with Uranus at Riverwood. Neptune is not seen until you pass Redfern (our spaceship of the imagination is a City via Sydenham train).

That's the planets, now what about poor old Pluto? you won't see that particular ex-planet without changing at Central and catching a North Shore Line train, like I used to do daily on my way to work. Pluto is not so easy to spot. It's a mere 25mm diameter grape and you would only see it if you stayed on the train until it reaches Chatswood.

It sounds like a pretty quick trip across the City Rail network but don't forget your speed will be scaled down too. Imagining yourself travelling at the scaled down speed of light, our City Rail journey from the Sun (at Campbelltown Station) to Pluto (at Chatswood)) would take five and a half hours, covering about 3 metres per second. Sounds like the City Rail we all know and love.

Beyond Pluto, where's the Oort Cloud? On our scale of 1: 100,000,000, it is not on the City Rail Network. It's not in Brisbane or even Tokyo. In fact it's not even on this planet, it's one fifth of the way to the Moon.

So that's the Solar System in context. If the Sun is a giant ball at Campbelltown Station, then the Earth is a grapefruit at Leumeah (I just knew it - I have a grapefruit tree in my Lemeah backyard) and Pluto is a grape at Chatswood.

To put the position of the Solar System itself in context, the nearest Star, Proxima Centauri would be beyond the Moon on this scale. The Apollo astronauts actually went to the Moon in about three days. At the (scaled down) speed of light, you would be crawling along at a speed of just eleven kilometres per hour for 4.2 years to get there.

At night, life's a beach Windy, cold, wet... and so worth it

Turimetta Beach is a small 350m long strip of sand between Turimetta and Narrabeen Head backed by 20 to 30 m high shale bluffs. The beach receives waves averaging 1.5m which break close to shore, and often has a heavy shore break. Two or three rips usually form at each end of the beach and in the centre amongst the rocks.

This beach is a favourite amongst photographers for the interesting rock formations and the way the waves break over them. Particularly interesting during "golden hour" (the first and last hour of light during a day), you'll see serious photographers up at all sorts of strange hours to get there for a morning or afternoon shoot.

Fellow MAS member Humayun and I drove north in the early evening on May 14th to capture the scene at night under a near-full moon. Coincidentally, the planetary alignment was in full swing at the time, so we decided to experiment with moonlight beach photography and see if we could capture any of the alignment whilst we were at it.

Moonlight beach photographs require very long exposure times. Our Canon EOS 5D Mark-II cameras were ideal for this purpose because of their high sensitivity and incredibly low noise characteristics. Set on tripods for exposures of 900 seconds at ISO200, a steady camera catches the waves as they blend into a eerilysmooth fog at the base of the rocks - even though they were breaking and foaming some 3-4 metres in the air.

These two images were taken just before midnight. Star trails in the first image shows the length of exposure required to capture the scene in this low light.

Turimetta Beach - by Chris Malikoff





The Saturn-Porrima Double

If you've just come back from a 6 weeks holiday down a coal mine, you may still be unaware that there is a very pretty naked eye offering in our northern sky this month. In the constellation Virgo to be precise. It's even prettier in binoculars and has a lot to offer again in a telescope. What more can you ask for?



At the moment Saturn is nestling nice and close to the star γ Virginis (Porrima), virtually due north-west at around 8.30pm. It has been like this all of May and June and will continue so into July, though by then their angular separation will be widening out. Their location is shown in the chart below, though they tend to stand out like proverbial rock perching shags. That's how I first became aware of it, being guilty of not having checked my Astronomy 2011 for May's offerings. (TIP: Do so in future!).

What makes it very eye catching and also attractive is the unexpected 'double' nature. You look up in the area of Virgo and see a wide 'double star' that you don't expect to be there (if you are familiar with the night sky). At present (20th June) they are only about 19' apart, just over half a Moon diameter. Saturn is brightest at mag. 0.8 while Porrima is at mag. 2.7. They reached their closest on 9th June at 15' 26" separation and are now widening out.

In binoculars, the conjunction is quite a pretty sight, with another Virgo star, mag. 5.9, joining in to make a neat triangle, as shown below:



Bob Bee

Obviously, if you can achieve a low power magnification in your telescope so the field of view is less than 20 arc-minutes, you should be able to get Saturn and its rings in the same view as Porrima. Nice!

As an added treat, Porrima itself is fairly famous, being a very close binary star. At 39 light years away, it has two matching white stars, each mag. 3.5. They orbit each other every 169 years. Closest approach was in 2005 when the duo was separated by the same distance Jupiter is from the Sun or about 800 million kilometres. When farthest apart around the year 2080, they'll be twice Pluto's distance from each other and about 6" separation. The orbital chart below gives an indication of their separation over the years.



At this moment, they are 1.7" apart, which is pretty close by amateur telescope standards. But not impossible. I estimate anything over 180x should start to do it, the more the better. How's your collimation?

Here's an image (Credit: Damian Peach) of Porrima at 2003 when it was closer than it is now.

A challenge for our binary star fans. How about reporting back to Prime Focus how you fare?





Alone in space

Astronomers find a new kind of planet

"Although free-floating planets have been predicted, they finally have been detected, holding major implications for planetary formation and evolution models" This artist's conception illustrates a Jupiter-like planet alone in the dark of space, floating freely without a parent star. Astronomers recently uncovered evidence for 10 such lone worlds, thought to have been "booted," or ejected, from developing solar systems.

The planet survey, called the Microlensing Observations in Astrophysics (MOA), scanned the central bulge of our Milky Way galaxy from 2006 to 2007. It used a 5.9-foot (1.8-meter) telescope at Mount John University Observatory in New Zealand, and a technique called gravitational microlensing. In this method, a planet-sized body is identified indirectly as it just happens to pass in front of a more distant star, causing the star to brighten. The effect is like a cosmic funhouse mirror, or magnifying lens -- light from the background star is warped and amplified, becoming brighter.

Based on these results, astronomers estimate that freefloating worlds are more common than stars in our Milky Way galaxy, and perhaps other galaxies too.

Credit: NASA/JPL-Caltech

http://planetquest.jpl.nasa.gov

My planetary alignment experience

Bob Bee

Bo The planetary alignment of May 2011 has been and gone, but not forgotten.

Like many of you, I'm sure, I made the supreme effort to get out of a warm bed at 5.30am to see what I could see. I wasn't expecting any result as my front lawn's eastern horizon is slightly uphill, with houses and trees to boot. Still, I decided to halt my astronomical backsliding and have a go.

On Thursday 12th, I tossed on my dressing gown and went out into the chilly (2°) morning. I looked east and saw... nothing, just pre-sunrise sky. Then I scanned northwards and there, Io and behold, directly between two large trees bordering two houses, were a bunch of UFOs hovering above the E-N-E horizon. Only they weren't UFOs of course but the planets a'gathering.

Beautiful! The Mount Annan developers, bless their money making hearts, had placed the two adjoining properties' boundary line directly beneath the point of rising of the planets. My personal equinox.



I stood there, shivering somewhat, just taking the majestic sight in. I had to wait a few more minutes for Mars to creep over the horizon (actually, it was over the lower row of neighbourhood trees) at which time the Sun's glow was starting to make its presence felt.

Then I dashed inside, grabbed my 12x50 binoculars and stood staring a while longer, gaining a hint of the planetary discs of Venus and Jupiter. Obviously I couldn't resolve Mars of Mercury. After soaking up the sight, I happily went back to my warm bed.

"I tried again the next morning but a low cloud bank beat me. Back to a warm bed."

It was very pleasing to receive a few emails from people who had read my Chronicle article giving a heads up to this planetary conjunction. One gentleman, John Spicer from Picton, even attached some photos he had taken over three consecutive mornings on 11th, 12th and 13th. He admitted to me he was no great shakes as a photographer but he had a go. I have no idea if the camera was hand held (using 4 second exposure) or if he rested it on a fence post. The planets' images are a bit 'shifted' but they still give a good impression of the prettiness of the conjunction. His best image (of the 12th May) is shown here. You can just make our Mars below the other three, just above the right hand tree. Thanks John.

I'm sure MAS members have taken many more great photos of this 'conjunction to remember' and I'm looking forward to seeing them.

I'm glad I made the effort to drag my bones out of my warm bed. It helps bring back my original passion for things astronomical.



Endeavour Close Up

This image of the space shuttle Endeavour's starboard wing was taken by the Expedition 27 crew during a survey of the approaching STS-134 mission prior to docking with the International Space Station. As part of the survey and part of every mission's activities, Endeavour performed a rendezvous pitch maneuver, or back-flip, so that the shuttle could be photographed from a variety of angles. The image was photographed at a distance of about 600 feet (180 meters).

Endeavour

Image Credit: NASA

Binocular Object of the Month

Omega Centauri

One of the standout binocular objects in the sky is the great globular cluster in Centaurus – Omega Centauri. Even in a sky with modest light pollution, such as from an average suburban backyard with the ubiquitous street light out front, you can still see this large fuzz ball in binoculars. In fact, on a dark night with a clear sky, you should easily see it as a 4th magnitude fuzzy star with your naked eyes. That is why it has a star name (ω Centauri). Also why it is very easy to find in binoculars and telescope.

Globular clusters are one of the fascinating classes of deep sky objects. There are over 150 of them in a spherical halo about our Milky Way galaxy and all

other galaxies should have their own haloes of globular clusters – or 'globs' – as they are believed to be a key part of the process of galaxy formation.

Omega Centauri is considered the emperor of the globs. The biggest and brightest of them all. The estimated number of stars it contains varies depending on your source, but there are well over one million, possibly up to three million stars in it.

Most stars in a globular cluster are very old, even the oldest in the Universe. So remember that when you are admiring Omega Centauri through your binoculars. You are looking at some of the most ancient of stars.

Omega Centauri is 17,000 light years away, so you are looking 17,000 years back in time.

To find Omega Centauri, refer to the chart.

First find the two Pointers and the Southern Cross, Crux. The closest Pointer to the Cross is β Centauri. Move north of β in a line roughly parallel to the length of the Cross and just over a Cross length. This will take you to a 2nd magnitude star, ϵ Centauri. Continue along that line by another Cross length and you will land on Omega Centauri (ω Cen.).

Bob Bee

What's it look like to you? A chalk smudge on the celestial black-board? A swarm of Bogong moths around a street light? A motor-cycle light coming out of a fog?

Enjoy! And remember... the oldest stars in the Universe.



(Bob's "Binocular Object of the Month" contributions may be found on our website under the "Articles" menu.)

Omega Centauri - by Tony Law





June's Speaker Dr Lisa Harvey-Smith

macarthur astronomy

The Macarthur Astronomy Forum will this month welcome Dr. Lisa Harvey-Smith, who will be making a return to the Society after a three year gap. Lisa last spoke to us in 2008, with a presentation titled: "Massive Stars: Live Fast, Die Young" which many members will recall.

This time, Lisa will be talking about "A New-Generation Telescope - The SKA."

Dr Harvey-Smith is the CSIRO Project Scientist for the SKA and is an astronomer whose research interests include the origin and evolution of cosmic magnetism, supernova remnants, the interstellar medium, massive star formation and astrophysical masers. However, the SKA project currently drives the day-to-day focus of her work.

In this talk, you will learn what the SKA will look like, how it will work and hear about the exciting discoveries it could make about the Universe. You will also learn some of the many ways in which Australia and New Zealand are leading the way in science and technology development for the SKA.

Ursula Braatz

There is an article on ABC Science that states "some black holes maybe older than time". Astronomers always find something new about the universe. Now there are black holes older than our universe! These black holes must have come from a previous universe and were already there before the Big Bang, or Big Crunch before time. They say, if the universe contracts in cycles of big bangs or big crunches, some primordial black holes may survive. I found an article which I printed already in December 2004:

Mysteries of the Cosmos

ABC online: "Spacecraft sees infant galaxies in aging universe." The closest of these baby galaxies are a mere billion light years from Earth, 9 billion light years closer to Earth than the baby galaxies scientists observed previously.

Was there a big bang younger than the one 13.7 billion years ago, and coming from another direction? The Cosmos is full of big bangs like bubbles. I have this fantasy - nobody knows how it really is, and if you solve one problem, there comes another.



Right time, right place ... an airline passenger shoots a shuttle launch with their mobile phone from a commercial airliner.