

MACARTHUR ASTRONOMICAL SOCIETY Inc.

Journal



PRIME FOCUS

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President's Report

Good evening and welcome to all members and guests. Last month you may recall that we held our Annual General Meeting, and as is required the reports, recognitions and acknowledgements were duly conveyed to the membership. The AGM is also the time where a new Management team is elected to lead us through the year ahead. In that regard it is both an honour and privilege to receive your endorsement for the position of President, for your information the following members were also elected.

Vice President: John Rombi
Secretary: Ian Cook
Treasurer: John Koster
Committee member: Bob Bee
Committee member: Lloyd Wright

I'm sure you will join me in passing on my congratulations

to the above mentioned members and also to wish them well with their duties and responsibilities.

At the end of last month's AGM Dr Ragbir Bhathal enthralled us with the Mathematics associated with Astronomy. This was followed by Peter Druery's latest news and discoveries, Peter also acted as the returning officer for the elections. To Peter and Ragbir, please accept our appreciations.

Tonight we enjoy the company of Bob Bee who will speak to us on "Cosmology." This seems to be a subject of immense controversy to many members, but I might suggest that any "Fisty Cuffs" that may develop be taken into the car park afterwards, by order of The President!

Next month we will have the 2nd chapter of the discussion

groups and the subjects are as follows.

Tektites and Meteorites:

Ned Pastor

Cosmology: John Casey

Astro-computing:

Daniel Ross

Basic Telescope

Information: Noel Sharpe

Recently I spoke about our society's activities in Public Education and already the ball is well and truly rolling. Last month the Macarthur Girl Guides Association asked us to hold a night for them at their campsite at Austral.

Friday the 26th of April saw Phillip Kidd and his daughter Samantha, together with Ian Cook accommodate their request. On behalf of the society, please accept our appreciation for a job well done, especially given the short notice. In September a Girl Guides Jamboree is being held at Kentlyn and our

assistance with a Star Night may be requested for that event as well.

The Observatory Public Night was planned for last Saturday night the 18th. As it was only a few days ago I cannot put pen to paper to report on it. However, I'm sure it will be spoken about tonight. Also the next Observatory night is the 15th of June which is before our next meeting, and don't forget the Belanglo Dark Site on the 8th of June.

The members' nights at The Oaks continue and we have the Full Scale Rehearsal for the International Astronomical Union General Assembly night at North Sydney oval. We must see Bob Bee for details as our involvement together with all the other Astronomical Societies is crucial for its success. The night is on 22nd June, the Saturday after our next general meeting,

I'm feeling a tad confused with all the comings and goings. It seems like we are entering into a very busy period so its important to read the "Bunch of Dates" section elsewhere in PF.

A few members headed out to the Airfield on a clear dark night on the 6th of May. Unfortunately I wasn't one of them as I had a very nasty cold and had to keep indoors. I'm crossing my fingers that future conditions will be favourable so I can use my

Telescope. I've forgotten what it looks like!

Kind Regards

Noel Sharpe – President ■

A Bunch of Dates

International House Dark Site - Belanglo State Forest

08/6/02; 07/09/02; 07/12/02.

Observatory Public Night

15/06/02; 17/08/02; 12/10/02.

The Oaks

06/07/02; 13/07/02; 10/08/02;
14/09/02; 05/10/02; 02/11/02;
09/11/02; 14/12/02.

General Meetings

20/05/02; 17/06/02; 15/07/02;
19/08/02; 16/09/02; 21/10/02;
18/11/02.

22/6/02:

North Sydney Public Night

At a Glance up to September.

8/06/02	Dark Site Belanglo
15/06/02	Obs. Public Night
17/06/02	General Meeting
06/07/02	The Oaks
13/07/02	The Oaks
15/07/02	General Meeting
10/08/02	The Oaks
17/08/02	Obs. Public Night
19/08/02	General Meeting
07/09/02	Dark Site Belanglo
14/09/02	The Oaks
16/09/02	General Meeting

What IC This Month May 20 – June 16, 2002

Diary

- 24/5 Western horizon will have Saturn, Mars, Venus and Jupiter inside 10° circle just after sunset
- 26/5 Eclipse of the Moon
Venus cosy with Jupiter
Mars closes with M35
Comet visible near Uranus

Evening Sky Planets

Mercury will gather with 3 other planets in Taurus on the western horizon before speedily moving into the glare of the Sun on the 27/5 and then returning to the morning sky early June. On 3/6 it will be 3° south of the Moon

Venus rises in Gemini and has some close passes with several objects this month.
22/5 Within 1° of M35.
30/5 It will be 4° from Jupiter before moving into Cancer to visit the swarming bees.
Venus and Jupiter will both be less than 2° from the crescent Moon during 3-5 June.

Mars is still in Taurus, but will follow Venus into Gemini. It will be setting just one hour after sunset but can be seen close to M35 on 31/5.

Saturn also in Taurus and setting one hour after the Sun. Moving into the Sun's glare in early June, it will return to be visible in the morning sky at the end of the month

Jupiter remains within the borders of Gemini joined by Venus late May. Be ready for your friends' questions about those two 'bright lights' in the sky. Early June they will be lower in the north-west sky to form a rectangle with Castor and Pollux. On 13/6 a very thin crescent Moon will be 4° away, but before that it will pass very close to δ Gemini. Delta Geminorum was the star Clyde Tombaugh was focused on when he found Pluto 72 years ago this month.

After 20/5 both **Neptune** and **Uranus** will rise before midnight. Neptune is in Capricornus and Uranus in Aquarius.

The Moon

26/5 Full Moon

3/6 Last Quarter

11/6 New Moon (Dark sky)

18/6 First Quarter

The Earth will be at Winter Solstice on 21/6 with the Sun at its most northerly.

Comets

Less than one degree from Uranus in Aquarius the comet **7P/Pons Winnecke** could be visible in binoculars at 11th mag.

Constellation of the Month

Boötes – The Herdsman

Some stories represent Boötes as a hunter on the track of the Great Bear. Yet it was once known as Arctophylax, which means the protector of the

Bear. Perhaps it was the Romans who changed his role, for they called him Venator Ursae: the Bear Hunter accompanied by his two dogs Asterion and Chara, the "Canes Venatici".

Nowadays Boötes is generally considered to be a Herdsman (French: Le Bouvier), as he eternally shepherds the stars around the North Pole. The constellation was known in antiquity, being mentioned in Homer's Odyssey. The constellation is compact, squeezed between Canes Venatici and Hercules, with Virgo to the south.

Arcturus is the brightest star in the constellation and means "Guardian of the Bear". A line from Spica in Virgo through Arcturus, will guide you to the tip of the Great Bear's Tail, low on the horizon during May/June. This orange-red giant is about 20-25 times the size of the Sun and 35.4 light years away. The Sun will probably balloon to the size of Arcturus in another five billion years.

The constellation has a fine collection of **Double Stars**,

Zeta Boötis is a fast binary with a highly eccentric orbit of 123.4 years. The companion is less than 1' away.

Epsilon Boötis 2.5, 4.9, is a bright yellow with a blue-green companion. The orbit is very large and current separation is 2.8'.

Kappa Boötis is a gorgeous double yellow and deep blue. The separation is 13.4'.

In the same field is **Iota Boötis** 4.9, 7.5, separation 38.5'

Mu Boötis is a triple system. AB 4.3, 7.0, separation 108'. The component B has a close companion C (mag 7.6) with an orbit of 246 years, current separation is 2.1'.

Pi Boötis is a pleasant binary of two blue-white stars (4.9, 5.8, separation 5.6').

Xi Boötis is a rapid binary (4.7, 7.0) with orbit of 151 years. The primary is yellow, and the companion a white-pink. Currently the companion is found at 6.8' separation.

Struve 1785 is another attractive binary, with an orbit of 155 years. The companion is at 3.3' separation.

Struve 1909 (44 Boo) another double has an orbit of 225 years. Presently the secondary is at 2.2' separation.

There are no Messier objects in this constellation. Two of the better deep sky objects are: **NGC 5248** a very compact spiral galaxy in the south-western corner of the constellation, 10° south of Arcturus and 1.5° west.

NGC 5466 is a large but quite dim globular cluster. It's found 9° north of Arcturus

and one and a half degrees west. (M3 is 5° due west in Canes Venatici.)

Good seeing IC

Peering into the Core of a Globular Cluster

Astronomers have used NASA's Hubble Space Telescope to peer into the centre of a dense swarm of stars called Omega Centauri. Located some 17,000 light-years from Earth, Omega Centauri is a massive globular star cluster, containing several million stars swirling in locked orbits around a common centre of gravity.

The stars are packed so densely in the cluster's core that it is difficult for ground-based telescopes to make out individual stars. Hubble's high resolution is able to pick up where ground-based 'scopes leave off, capturing distinct points of light from stars at the very centre of the cluster.

Omega Centauri is so large in our sky that only a small part of it fits within the field of view of the Wide Field and Planetary Camera 2 (WFPC2) on the Hubble Space Telescope. Yet even this tiny patch contains some 50,000 stars, all packed into a region only about 13 light-years wide. For comparison, a similarly sized region centred on the Sun would contain about a half dozen stars.

The vast majority of stars in the Hubble image are faint,

yellow-white dwarf stars similar to our Sun. The handful of bright yellow-orange stars are red giants that have begun to exhaust their nuclear fuel and have expanded to diameters about a hundred times that of the Sun. A number of faint blue stars are also visible in the image. These are in a brief phase of evolution between the dwarf stage and the red-giant stage, during which the surface temperature is high. The stars in Omega Centauri are all very old, about 12 billion years. Stars with a mass as high as that of our Sun have already completed their evolution and have faded away as white dwarfs, too faint to be seen even in the Hubble image.

The stars in the core of Omega Centauri are so densely packed that occasionally one of them will actually collide with another one. Even in the dense centre of Omega Centauri, stellar collisions will be infrequent. But the cluster is so old that many thousands of collisions have occurred.



(Photo by Hubble ST)

What happens when stars collide? The Hubble images were taken to help answer that question. When stars collide head-on, they probably just merge together and make one bigger star. But if the collision is a near miss, they may go into orbit around each other, forming a close binary star system.

Searching for a needle in a haystack, scientists have found two binary star systems in the Hubble images that may have had such an origin. Both of them are close pairs in which one component is a white dwarf that pulls gas off of its companion. When the gas falls onto the surface of the white dwarf, it is heated to the point that it emits ultraviolet light. These unusual emissions enabled scientists to pinpoint these two faint stars among the myriad of other faint stars in the cluster.

Omega Centauri is the most luminous and massive globular star cluster in the Milky Way. It is one of the few globular clusters that can be seen with the unaided eye. Named by Johann Bayer in 1603 as the 24th brightest object in the constellation Centaurus, it resembles a small cloud in the southern sky and might easily be mistaken for a comet.

(Article from Hubble Heritage Project website.)