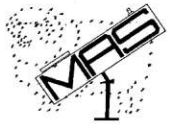
MACARTHUR ASTRONOMICAL SOCIETY Inc.

Journal



PRIME FOCUS

Volume 9 Issue 8 **August 2004**

President's Report

Previously at MAS

Many thanks to Dick Everett for giving us all the good oil on the Cassini space probe which is currently orbiting the planet Saturn. As well as being on duty in and around Saturn's magnificent rings some very exciting discoveries are being made about the second largest moon in the solar system, namely Titan. Thanks again Dick!

Speakers

Well known MAS member Ned Pastor will be our guest speaker tonight. Ned will be speaking to us on one of his favourite subjects, tektites and meteorites. Maybe he might even bring along his fantastic collection of these outer space visitors. Thanks Ned

I can confirm that Michael West from the Mars Society will be our guest for our October 18 meeting, Michael has requested to talk to us on Rocket Propulsion. He will cover existing systems and the newer Ion drives and Plasma systems and what type of propulsion is needed for more advanced spacecraft needed for any future manned expeditations to Mars. Should be a blast!

Currently I am in discussions with Dr Stuart Ryder from the Anglo-Australian Observatory. It is a possibility that Stuart will be our guest speaker next month. Unfortunately I cannot confirm this at this stage as Stuart is heading over to Germany for a conference. Upon his return I am aware that some additional responsibilities at the observatory might cancel out his visit to us at the last minute.

If that does occur Stuart will prioritise a visit to us early next year. It will certainly be worth the wait as Stuart has been researching the super nova that Rev. Bob Evans recently discovered. It is not beyond the realms of possibility to arrange for both these guys pay us a visit on the same night. It's something I am working on, fingers crossed!

Well known to many members is Mr Peter Elston who is preparing a talk on the recent Solar Eclipse. We are trying to arrange a time for this to happen and hopefully it will be in the next few months. We haven't seen Peter for a while so it will be a great chance to catch up.

Cancellations, Additions and Gremlins.

Just to make life interesting we had to cancel the lunar night of July 24. Some very stormy weather had spoilt the party. It's a shame as we were developing some good publicity around this night. Maybe the next one will be ok.

The previously advised star night for the Mount Carmel High School has been changed to this coming Thursday night. It was originally planned for the 14th of August.

Also a new date has been added, that being for Guides Australia which is being themed as a "Night Under The Stars". The venue is TARA, the Guides property out at Silverdale. It's on August 28.

As these two nights are being heavily promoted, we are expecting very big crowds, maybe in the hundreds so we need all hands on deck. John Rombi, our most esteemed vice-president, will be organising these events so please touch base with John.

As I am writing this report before I head off to the forest for the international students night I'll ask Bob Bee to write up the night's adventure, if he would be so kind. I say adventure because there's never a dull moment.

For the record I don't want it to snow again - too cold and my car skidded on the grass - or to have kangaroos bounding onto my car. I am just looking forward to a nice non-eventful night under the stars, sharing it all with good friends and eager stargazers.

REVISED DATES

19/08/04	Mount Carmel High School
28/08/04	Girl Guides Australia
11/09/04	The Forest
18/09/04	The Oaks
20/09/04	Monthly Meeting
09/10/04	The Oaks
16/10/04	The Forest
18/10/04	Monthly Meeting
23/10/04	Dudley Chesham Sportsground

Hopefully we have seen the last of the late minute changes to our schedule, sometimes it's unavoidable and I do thank everyone for your patience and support.
As always please contact John Rombi or myself to confirm if we need to cancel at the last minute due to bad weather, or if something comes up. My mobile is 0410 445 041.

Well that's about all from me. Safe travels and good stargazing.

Noel Sharpe
President ■

Great Glacial Globulars, Batman!

On Saturday 7th August, MAS members took their trusty telescopes to Belanglo Forest to introduce the international students of Sydney University to the wonders of the southern sky. It was a great turn up on both sides. Though there was no exact count, I estimate there had to be at least 40 students, plus minders.

From MAS, we had Noel, Lloyd, Ned, Paul, Dick, Daniel and myself.

Though the sky was threateningly cloudy at first, as darkness fell, the clouds cleared and we had the typical drop-dead gorgeous Belanglo sky. Even with the cabin's external flood lights on for the bar-b-que, we could see the Milky Way, the Coal Sack and the various clusters. It was going to be a great night.

And it was!

Unfortunately, time was ultimately the villain, whisking the students away (in a bus) before they could have a decent look through our telescopes. This was a combination of circumstances involving the students doing there own thing around a campfire before the bar-b-que, the b-b-q taking a very long time (well, they had to cook for and feed over 60 people – including us), a slide show and talk, and then viewing.

Thankfully, some students managed to queue up at scopes (at least, I know they did at mine – I assume they did at others as well) before the bar-b-que lights came on, and were shown the 'standard' objects. You know, Alpha Centrauri, Jewel Box, Omega Centauri.

They were a great group of students. Full of questions, quick to grasp the concepts. The first question my little group asked was: "Why do stars twinkle and planets don't?" Then there was the predictable: "Why are stars different colours?" All good questions, which inevitably led to more complex questions.

At Noel's request, I had prepared a slide talk. I talked about the Hubble Space Telescope and showed some of its great images of planets, nebulae, galaxies and the Deep Field. The cabin was literally packed with bodies – wall to wall. There were not many questions during the talk but afterwards, I found myself in the centre of a scrum of students with questions on cosmology – my favourite topic. We chewed the fat on dark matter, dark energy, Big Bang, black holes and the like for a fair while.

Then, when we went out to look through the scopes, everyone was packing up to go back on the bus. My, how the evening had flown. I hope some of the other students got to look through the other MAS telescopes wile I was talking inside.

Some students stayed on for overnight but gathered around the camp fire to talk. Turns out they were pretty smart. It was freezing at the telescopes. I did a bit of observing but my finder scope eyepiece kept fogging (or was it icing) over. The main scope optics were OK but the outer body of the scope quickly started to ice over. It was cold and slippery to touch. When I went to drive out, all my car's windows were iced up.

Despite the icing, it was a great night. Thanks to all the MASers who attended. You did our society proud.

RB

What IC This Month
August 16 – September19, 2004

Overhead at 8.30 pm

Arcturus and Spica in western sky, the menacing shape of Scorpius with Antares, its red heart, and the bright teapot of Sagittarius. Ophiuchus and Hercules with Altair due north; Vega in Lyra, and Deneb in the tail of the Swan making the Summer Triangle for northern cultures to the northeast.
In the south Crux is lying on its side to the west; Alpha Centaurus; the crooked cross of Grus, and Fomalhaut due east; bright Achenar rising from the southeast; and Canopus very low on the southern horizon.

The Moon Diary

16/8 New Moon; 23/8 First Quarter
30/8 Full Moon; 07/9 Last Quarter
15/9 New Moon

Evening Sky Planets

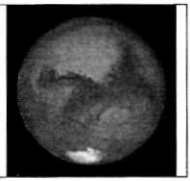
Mercury loses its fight to stay in the evening sky over this next couple of weeks and plunges into the Sun to reappear in the morning 45 mins before the Sun on 9th September

Jupiter rises in the tail of Leo during daylight and sets 1 hour after the Sun between 7.30 and 6 pm this next four weeks. A very thin crescent Moon will pass 3° south of Jupiter on 18th August. The 'chief of planets' finally leaves Leo this month moving to Virgo while in conjunction with the Sun and will reappear in the morning twilight late October. But for the solar glare, on 29th September we would see Mars Mercury and Jupiter gathered in a 1° circle next to the Sun.

Neptune the blue watery world, rises as usual in Capricornus during daylight. Past opposition now it is still visible all night setting round 4 am in the morning.

Uranus the green twin of Neptune, comes to opposition on 28th August in Aquarius rising round 6 pm and setting at 7 am. Uranus has a larger visible disk than Mars at the moment but there is 4 magnitudes difference in their brightness.

Remember Mars when it was like this last August?



Morning Sky

Venus will rise in the feet of Gemini before 4 am over the next month, and set in the daylight. At dawn on 1st September it will be 2° above Saturn as the Sun comes up.

Saturn is peeping from behind the curtain of sunlight as it moves into the morning sky shortly before sunrise.

Comets

Linear K4 is visible in Virgo heading in the direction of Spica. Faded from its best now it can still be found with persistent observation.

Meteors

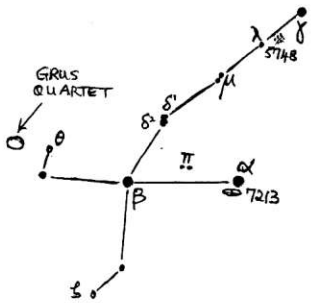
During the whole month of September the **Piscid** meteors may be chanced upon. Maximum is on the 19th but at 3 per hour I guess this is one for the patient or those who are in the right place at some ungodly hour.

Portraits in The Sky

Grus – The Crane

This distinctive star shape was introduced by Keyser and Houtman the Dutch explorers in 1590. It was named after the long necked crane, a bird that was a symbol for astronomers in ancient Egypt. It has been called 'flamingo', 'stork' even 'the fishing rod' and the Arabs made it part of their 'Southern Fish'.

It looks like a crooked cross when at culmination but takes a dramatic header to the western horizon when setting. Faint galaxies are visible to 200mm and over. The naked eye doubles are strikingly attractive, many of the faint ones, discovered by Dunlop, are good for small telescopes because of their brightness and wide separation.

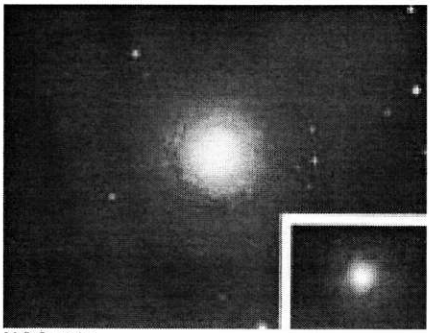


α is a large blue star about 70 times more luminous than our Sun 57 ly away called Alnair. It appears brightest because it is closest to us.

β is much larger, a red giant 800 times brighter than the Sun 140 ly distant, therefore fainter than Alnair. γ is a blue giant bigger than the others but 230 ly away.

The obvious doubles visible in the long neck of Grus are δ a pairing of two unrelated stars, one red, and the other yellow, and μ two yellow giants appearing in the same line of sight but unrelated.

Sights for medium telescopes include **NGC7213** a small galaxy that looks like a distant globular in the same field of view as Alnair. The glare of Alnair makes it difficult but careful looking and high magnification will reward you.



NGC7213

2° south of the head of the Crane (Gamma Gru) is the faint planetary nebula **IC5148** (mag. 11) discovered by a Sydney amateur astronomer in 1894. Larger mirrors than 200mm reveal a thick ring but the central star only shows on photographs.

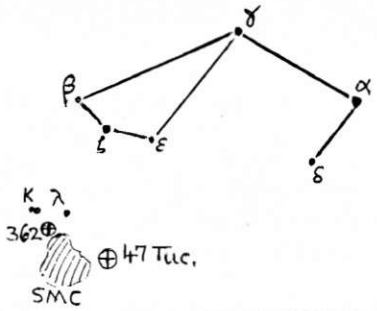
Now here's a challenge! See if you can find NGC7582/ 90/ 99/ 52 - **The Grus Quartet,** four small spiral galaxies approx. 2° away at 10 o'clock from Theta Gruis and shining mag.10 Theta Gruis is at the end of the left wing of the crane and 2° north.

Grus Quartet

Tucana - The Toucan Bird

This is another constellation invented by Keyser and Houtman in 1590 from their observations in Sumatra.

Located immediately to the south (underneath) Grus, the bird's beak is to the right, and in early maps it was drawn sitting on the Small Magellanic Cloud like a bird on an egg. Often overlooked as we zero in on the SMC there are some sights to be had here.



α. is an orange giant 120 ly away. β is a multi system B1 and B2 are two identical bananas in blue-white pyjamas. B2 has a binary companion, which will take more than 200mm to split. Close by is a white star called B3.

κ is also a multi system with a double able to be split by small scopes and another companion which is also a binary double, that can be split with 150 mm. λ is an easy double for small scopes located above the SMC.

The Small Magellanic Cloud a sister galaxy to the Milky Way is visible to the naked eye and yields many galaxies and swirling gas clouds to scopes of all sizes and binoculars. There is evidence that it is being torn apart by forces from the Milky Way and the LMC so get an eyeful now.

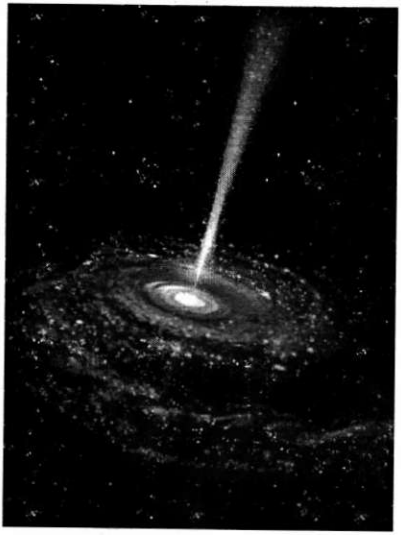
To the upper right of the SMC is the best visual GC (globular cluster) for small scopes.

47 Tuc. an awe inspiring sight, is more centrally condensed and more able to be resolved than Omega Cent.. Originally thought to be a star, hence it's name, but now known to contain more than 500,000 stars. Always reminds me of a certain Friar in Robin Hood. On the top edge of the SMC you will find **NGC362** a bright GC visible in binoculars at 7.0 mag. NGC362 is really not in the SMC at all but part of our own Milky Way

Good seeing IC

Inside a Black Hole

Space scientists have been studying black holes for more than thirty years, but they still do not have a clear idea of how they work. We can see several kinds of radiation streaming out of these objects, and even follow stars and other matter revolving near to the 'event horizon' but no one has been able to study the inner region.



All evidence for the existence of black holes is based on observing matter falling in, or orbiting around them. To do anything more would require more than 10 million times the ability of Hubble, Chandra and even the James Webb telescopes.

Plans are in process to change all that, with a fleet of spacecrafts called MAXIM (Micro-Arcsecond X-ray Imaging Mission), which will return high-resolution images of X-rays at the edge of a black hole's accretion disk before passing the event horizon.

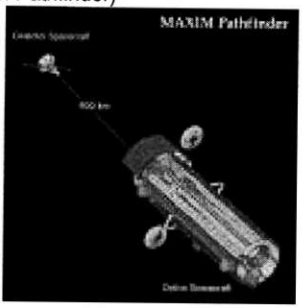
MAXIM would use 32 small telescopes flying in formation around a circle 1000 metres in diameter. A larger central telescope at the hub would collect x-rays funneled from the perimeter mirrors and relay the information to Earth. This "constellation of telescopes" would orbit the Sun several million kilometres from Earth.

Project scientists from Goddard Space Flight Centre intend to pace the technology and check they are proceeding in the right direction by flying an exploratory mission called ***Maxim Pathfinder*** with two space craft collecting X-rays with similar technology in 2015. ***Pathfinder*** will tell us where the best views and angles are to be had, for the larger design that will launch 5 years later.
While it is always hard to predict a payoff from any space mission, it is thought that a better understanding of the gravitational forces behind black holes may lead to new technological advances beyond our comprehension.

MAXIM is a long-term very difficult but achievable goal. When it started three years back there were plenty of skeptics with no respect for the concept. However it is hoped that with acceptance of the project, support will grow to bring it from concept to reality.

IC

(Maxim Pathfinder)

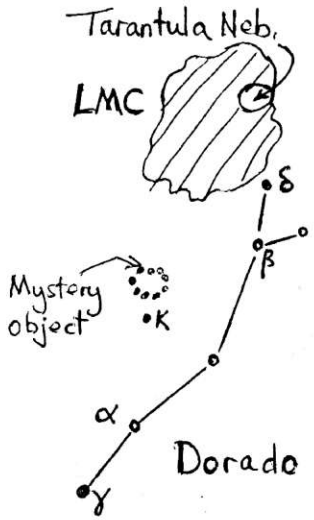


Mystery Observation

While down at Belanglo on 7th August, after the students' bus had departed and we were freezing our fingers off under a beautifully dark but quickly moistening sky, I decided to have a peek at the Tarantula Nebula in the Large Magellanic Cloud.

As my finder scope was fogging up, I had difficulty locating the Tarantula at first. I 'poked around' in the area and, much to my surprise, I found myself admiring a strange collection of nebulosity that had the appearance of a small circlet of edge-on and face-on galaxies.

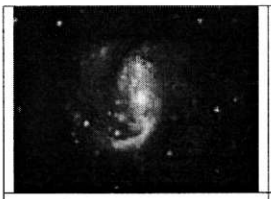
Whoa! I said to myself. What's that? And where is it? I stepped away from my scope and looked along its length to see where it was pointing. (Remember my finder scope was cactus.)



It seemed to be pointed at a point about 4° north of the LMC northern extremity. This put it in the vicinity of kappa (κ) Doradus. I must admit I can't be certain of this, I will have to have another look from a dark site without the dewing problem.

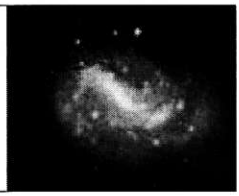
Dick looked at it from my scope, and agreed it was "definitely something". But what? "There's lots of galaxies up there he said." But they weren't on the simpler star maps, like Collin's. Something a bit fainter perhaps.

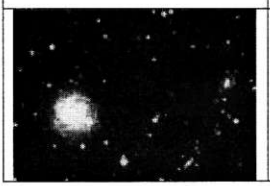
Next day at home, I checked my Bobroff Atlas and found stacks of galaxies in the general area, but only three identified brighter galaxies in a rough triangle near κ Dor. They were NGC 1672, 1688 and 1703.



NGC1672 – an 11th mag galaxy, diameter 4.8 arc minutes.

NGC1688 - an 12th mag galaxy, diameter 2.4 arc minutes.





NGC1703 – a galaxy of mag ?, diameter 3.2 arc minutes.

Could these be my mystery objects? Who knows? But it was fun finding them a challenge to finally identify it. Any ideas?

RB