



PRIME FOCUS

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MAS Committee

President

John Rombi

Vice President

Martin Ferlito

Secretary

Bob Bee

Treasurer

Dick Everett

Committee Members

Lloyd Wright
Kate Johnston
Daniel Ross

MAS Postal Address

P.O. Box 17
MINTO NSW 2566

Ph: (02) 4647 4335
Web: www.macaastro.org.au

Prime Focus Editor

Kate Johnston
cyberpiggy@optusnet.com.au

Presidents Report

John Rombi

Welcome to all our members and guests.
I write this column not long out of my sick bed, damn flu season!!

Last Month

Martin continued with the ever popular workshops, this was dedicated to "drift aligning" quite a number of members are now more confident in using their EQ mounts and gaining the most out of them.

Other members enjoyed the dvd's on Stephen Hawking supplied by Lloyd (thanks mate) and others just caught up on the latest from the astronomical grape vine, over the ever present warm cup of coffee.

We have just concluded (Aug 11th) a very successful observing weekend at the forest. We had 13 members attend, the weather started out a little windy, but it calmed down to turn into a good sky. We had a great time tracking down old favourites and looking for the elusive one's that had got away last time.

Cameras where whirring, eq mounts were grinding coffee and helpful hints were echoing across the field. If you would like to know about all the other fun we had, you'll just have to join us next month!!

Tonight

Our speaker will be one of our long time members (10year) Ian Cook. Ian's presentation is called "Skyview 2007"

September

Professor Fred Watson will be our speaker in September. Tell your family and friends to come and listen and be enthralled by this very eminent astronomer.

OBSERVING DATES

20/08/07 General Meeting
28/08/07 Lunar Eclipse – The Domes
15/09/07 Starguard
17/09/07 General Meeting
06/10/07 Starguard

Well that's it for this month; I hope to see you on the field.

JOIN US AT THE DOMES TO BE PART OF THE AUGUST 2007 LUNAR ECLIPSE

Tuesday August 28th 2007

Approx Viewing Times for Sydney:

6:51pm	Moon moving into Earths Shadow
7:52pm	Totality Commences – Moon is completely within Earths Shadow
9:23pm	Moon starts to move out of Earths Shadow
10:24pm	Eclipse Finishes

THE CAMPBELLTOWN ROTARY OBSERVATORY, IN CONJUNCTION WITH M.A.S. WILL HOLD AN OPEN NIGHT FOR THE PUBLIC TO VIEW THE TOTAL LUNAR ECLIPSE ON TUESDAY AUGUST 28TH.

STARTING TIME IS 6.00PM, FINISH TIME 10.00PM.

YOU WILL NEED TO BE AT THE DOMES BY 5.30PM TO SET UP.

AGAIN, AS MANY MEMBERS AS POSSIBLE WITH SCOPES WILL BE NEEDED TO SHOWCASE THIS RARE EVENT.

MAS Workshops

Martin S. Ferlito

Hello to all MAS Members. You may recall our first workshop which took place on June 18th, which was on Collimation. I'll try and unravel this for you in the best way I can. I'll begin by saying that this was a very big step for me, not only as the new VP, but more so because it was something which I felt was needed and that we need more of. Knowing it would not have been right to come up with an idea and hope that it would somehow fall on someone else's shoulders to carry out. I felt this was the time to "talk the talk and walk the walk" no matter what, even if it was to fail miserably, and if it did, I knew that there would be only one casualty. ME!

Wouldn't you know it!!!!!! The last week towards this first workshop and the plan was suddenly side stepped to plan B due to bad weather; therefore the collimation workshop had to take place of Polar Aligning using the Drift Method which was originally to be the first workshop.

All that week I was doing a really, really good job of convincing myself that there would not be anyone there, because of the late rescheduling of these events and that all I would've needed to do was to look disappointed. NOT FOR THIS LITTLE BLACK DUCK!! As it turned out, the night finally arrived and there was a great turnout, and I was fresh out of spare underpants. It was in my eyes CHAOS, I was once again now trying

to convince myself in much less time than one week, that it would all be just fine. The time came to venture out to the foyer and try and explain this task verbally and completely unprepared. A small crowd gathered about and then more and then the shifting around of people began which now resembled the inside of a beehive. Soon it was time to do what any sane and mentally stable person would do, yes, that's right, call out for mother. However not being neither sane nor mentally stable, luckily my committee members were there to take her place.

On Ya Guys!!! John, Dick, Ian, Daniel and Lloyd helped out. The workshop then eased on as smoothly and gently as any other no pressure evening in front of the TV. Apparently I was told that the workshop was well received and some left a little more informed, some less afraid of their scopes, others a bit more confident, and some which were there but really weren't and felt like a fish out of water. My apologies to those who would prefer to listen to some great guest speakers as we very frequently have the pleasure of their company and knowledge in our great club. Never fear, there's more of that to come.

Thank God that was over, now I had one month to relax and look forward perhaps to some observing and also for the next workshop. Yep! Polar Aligning using the Drift Method. I

knew that there would only be a handful of members with EQ mounts, which would like to know how to Polar align. I have a Dream, Yes, that's right, DR. Martin Luther King and I share the same first name, so I am going to ride this baby. My dream is to have a proud club membership which can jump in and help out when new members arrive to the club seeking a little or a lot of help. Yes, even if one doesn't own an Equatorial Mount they can still be equipped with even the simple theoretical mechanics of Collimating and Polar aligning. It's a simple dream, but a dream never the less. As I quickly step off my podium, I'll press on.

July 16th finally arrived and I was really prepared, knowing that there was a pair of freshies in my bag. Well let's see, it was cold, very cold, there was a cold wind and you really needed a little more than a sweater. A few brave and dedicated to their hobby and their equatorial mounts braved the elements, and did I mention the cold? They put on their coats made the trek to the car park. A few came and went just to see if there was anything to this whole "Drift Aligning" thing and soon were convinced by the elements to return to the comfort of our meeting room

where there was really crazy things like Tea and Coffee and something called Biscuits????

The night came and quickly went, and again those whom were there I hope are now on their way to tackle something which is really quite easy as well as greatly improve their observing skills and perhaps Photography. It really is simple to do, the key is not to complicate the issue, treat it simply and simple it becomes. So look at the diagram and follow the instructions. Is as easy as 1,2,3.

If by any chance, you may receive these instructions for the first time and you don't know what Azimuth or Altitude means or where to locate it on your equatorial mount, just call me on my mobile which you can get once you have logged into the Members area in our website,

www.macaastro.org.au

or send me an email

cygnus@bigpond.net.au

and I would be very happy to help you out and helping you enjoy this great hobby.

Martins great notes from the Drift Alignment Workshop mentioned in this article can be found as a handout in the middle of this months Prime Focus

Observing Night Tips

Martin S. Ferlito

Tips for a care free and enjoyable observing night

- 1) Make up a list of all your things needed for an observing night.
- 2) Pack the car according to the list
- 3) Plan to get there well before dusk so you won't be unpacking and setting up in the dark
- 4) Factor in some extra time to greet and chat
- 5) Bring along some beverages and something to nibble on
- 6) Get the most out of the night by preparing an observing list and a Star Chart or Planisphere. You may want to start in the West to catch those objects, which will be setting and work your way towards the East
- 7) Enjoy the sky and the great company.

If you're Heading to Belanglo ... Things to bring to The Cabin

- Sleeping bag
- Pillow
- Coffee or Tea (port or wine)
- Food (Dinner) Breakfast.
- Warm clothing (Very warm clothing)
- Telescope
- Eyepieces

Things you are most likely to forget to an observing night

IF YOU DON'T HAVE A LIST

- Your Dew Heater (if you have one)
- Dew Shield (if you have one)
- Batteries if needed for your dew heater or laptop (if you have one)
- Batteries for your Telescope (if it needs batteries)
- Binoculars
- Food or Drink
- Extra clothing
- Comfortable folding chair
- Power leads (if needed)
- Observing List, Charts, sky maps.
- Torch
- Mobile Phone
- Counter weights (for your EQ mount if you have one)

PLAN YOUR NIGHT, DON'T RUSH TO GET THERE, RELAX & HAVE FUN.

Observations at Belanglo 11th August

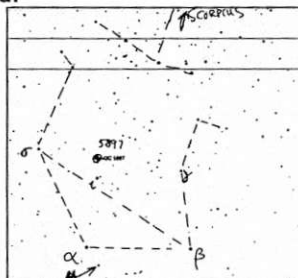
Bob Bee

Thankfully the heavy wind dropped as we started observation at Belanglo. The sky was moonless and dark and during the night we had virtually no moisture on our scopes. There may have been some light high cloud but it didn't cause many problems. It was 'game on'.

I'd decided to take my newly collimated 10" Dob and try it out in the Belanglo sky. I wasn't disappointed with the overall result. While having lower magnification than my 9 1/4" SCT (1250mm focal length vs 2350mm), most of my targets didn't require high mag (I wasn't chasing double stars like some people).

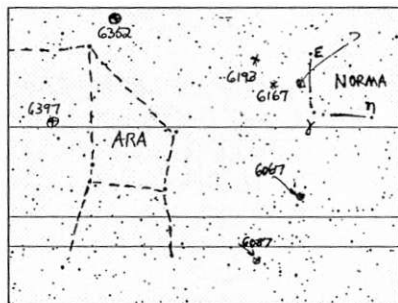
My program that night was to chase some objects in the more neglected constellations of Libra, Norma, Ara and Pavo, then collect three Messiers in Aquarius (M73), Pisces (M74) and Cetus (M77), northern trees permitting. That would take my Messier score to 97. Alas, that wasn't to be.

Starting with NGC5897, a 9th mag. globular in Libra, first I located Libra at the extension of Scorpius beyond its head.



Between β and σ , there is the 4.5 mag star iota (ι). 1 3/4° 'above' ι is the glob in the midst of a nice little grouping of 7th – 10th mag stars. It looked like a faint circular smudge at 31x. At 139x I could resolve some of its brighter individual stars and make out 'strings' of stars wending outwards to the glob's perimeter. A worthy object to start my night's viewing.

Then I switched south to Norma. Now there is a boringly nondescript constellation. What was Lacaille thinking? On the positive side, it has some nice open clusters. Norma is easiest found directly west of Ara, and looks like a capital L. (Hence 'norma', the set square.)

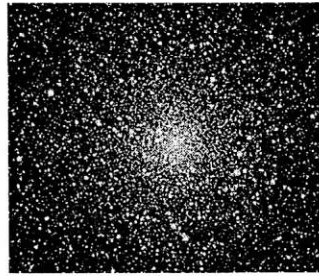


I had already located NGCs 6167, 6067 and 6087 when researching my binocular book but I wanted to see them at higher magnification. But something strange happened. While star hopping from the ϵ – γ line towards NGC6167, I came across another small cluster in the midst of an area of less dense star cloud. It was too close to the line to be 6167.

What was it? I checked with the Bobroff star chart and found a small cluster NGC6134. That must be it. It was a nice compact sprinkling of stars, like a very sparse globular.

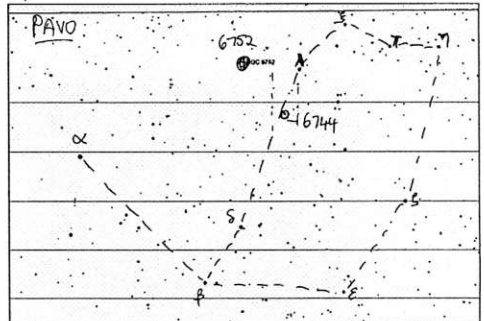
With my binoculars I went on to locate NGC6167 and while there, I located NGC6193 in Ara which is just 1.5° north-east of 6167. Dropping down 4.5° from δ Normae, I found NGC6067 and down another 4° to NGC6087. These were neat little clusters of stars. Using my 31x scope, these clusters did not appear as impressive as the stars, while brighter and resolved, were pretty sparse and it was hard to tell the 'cluster' from the background Milky Way stars. Still, by panning left and right, they were clearly clusters and each attractive in their own way.

I switched my attention back to Ara, looking for globs NGC6397 and 6352. 6397 on the eastern side of Ara is no stranger to us, of course, being a sometimes naked eye object, definitely visible as a fuzzy blob with a concentrated centre in binoculars. At 31x there was more detail with some individual stars resolvable while the central concentration is less prominent. Using 139x, it gave a lovely display of a uniform circular shape. The brighter stars appear to be in concentrically located arcs, and the central concentration was even less obvious. Overall, a lovely glob.



Its companion glob, NGC6352 was located at the top of Ara is fainter at 8th magnitude but was easily found at 31x after star hopping from the top star. At 31x, it was a faint, but distinct, fuzzy patch with no resolvable stars. 139x made it larger (of course) but no more resolvable. The glob was surrounded by distinct brighter foreground stars.

Then I switched to Pavo, the Peacock.



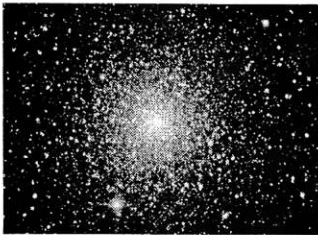
Not a prominent constellation, it can be found easiest by moving south-east from beneath Ara. I was looking for a telescope view of the beautiful globular NGC6752, already a striking binocular globular. In my binoculars (12x50), it appears as a bright patch of light with an equally bright

'appendage'. It definitely would have been a Messier object if further north.



(NGC6752 binocular view)

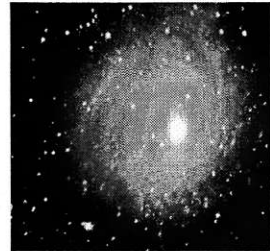
In my scope at 139x, it was a beautiful glob, coming close to rivaling ω Centauri and 47 Tucanae. It shows a small concentrated centre and a set of uniformly dispersed brighter stars moving from the centre to the outer fringe, with its fainter stars forming a cloudy mass. There is a single brighter star (maybe 6th mag foreground star?) on the fringe, this is the 'appendage' I had seen in my binoculars. A showpiece glob at this high magnification.



NGC6752 – high mag.

Then I tried for NGC6744, a face-on 9th mag spiral galaxy in Pavo. Tricky at first, even with star hopping. Ned called me over, he had it in his scope. Very faint, like one of Liz Vincent's ghosts. Back at my scope at 31x, I formed an isosceles triangle

with λ and 6752 and there it was. 6744 was at first maddeningly faint but as my eyes adapted, I could tell there was a distinct concentrated core and a suggestion of whirlpool-like spiral arms. Pumping up mag to 139x, it increased the overall size, made it a bit fainter but I believe the cartwheel-type arms were more suggestive. Quite an interesting object.

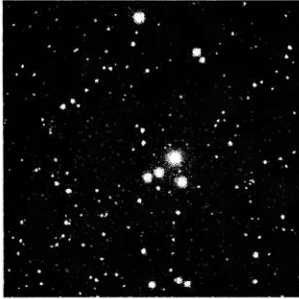


(NGC6744 in Pavo)

I then headed north, Messier hunting. Firstly to Aquarius for M73, an infuriatingly insignificant Messier object. It is located in the vicinity of ϵ Aqr. near M72, a 9th mag glob. (See the map). It took a while to get the star hopping right. The problem was, even though I knew the expected shape of M73, I didn't know how big it should look. John Rombi gave me the clue – it would take at least 80x to make the individual stars in the cluster appear. And I'd been using 31x.

So I went back to ϵ Aqr, estimated the three triangles formed by ϵ , μ , M72 which took me to a spot just short of the smaller triangle of stars (shown in map). This, by the way, was 4° from μ . After 'poking around' a bit in the 31x, I saw a star that looked 'different' from its companions, a bit

ragged. So I centred on it and switched to 139x. Bingo! Here's what I saw:



won't be rushing back to that Messier in a hurry.

I ultimately gave up on my other two Messiers. They were too low and hidden behind the northern trees. There'll be other times for them – at the Oaks perhaps without the trees. Home to bed at 2am. Overall, a very good night's viewing at Belanglo. How did the other ten or so members down there go? You'll have to ask them, though I believe Ian bagged a host of doubles.

I called John over and he confirmed my momentous observation – M73. I

MAS - Ask the Members.....

I want to encourage a new section for Prime Focus, one that will hopefully expand the knowledge of all MAS Members. I've called it MAS Ask the Members because I want MAS Members to be able to ask questions and encourage other Members to answer them

Maybe you are having trouble with a particular area of your Astronomy; send through your questions I'll publish them each month and if other members know the answers well Send them through and they too will be published. Answers only have to be brief I'm not asking for full page articles ... but I won't deny these either

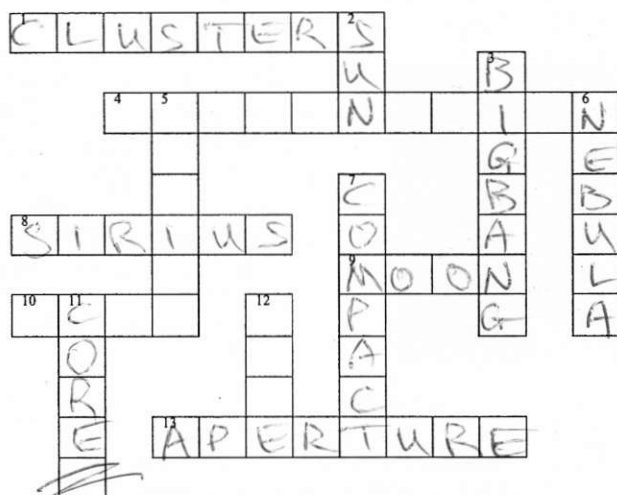
Let me start by asking my own questions?

- In simple terms what are the differences between the different types of Telescopes.... Dobsonian, Newtonian etc
- What is an Equatorial Mount? And why do we use it?
- How do you clean the mirror in a telescope?
- What do you mean by Deep Sky Object?

If you can answer my basic questions please send your answers in Likewise if you have some questions please submit them, questions can be submitted anonymously.

Crossword No 5

Ivan Fox



Across

- Galaxies that swarm together to form groups [8] ✓
- Position of two celestial bodies on the celestial sphere when they have the same celestial longitude [11]
- Dog Star [6]
- It takes a second for light to travel [4]
- Energised molecules high in the atmosphere [4]
- Controls amount of light entering a telescope [8]

Down

- The closest star. [3] ✓
- Cosmological Theory. [7] ✓
- The better these are the better the view, pl. [6]
- Huge patch of lit dust in space. [6] ✓
- A white dwarf or neutron star is this. [7]
- A path in space followed by a planet, moon, or spacecraft. [5]
- Central region of planet, star, or galaxy. [4]

Are You Calling Me Dense

Bob Bee

We're about to take a trip into the way out, some would say wacky, world of extreme objects of the universe. It is very much modern astronomy. This is pure armchair stuff, well beyond our amateur telescopes' reach. I sub-title this article "The Weird Mob". 'Weird' because everything I am about to describe is firmly believed in by scientists and astronomers but defies your and my ability to imagine it.

Let's start with simple white dwarfs. Did I say 'simple'? You *could* see a white dwarf with a big enough telescope. In fact there is one orbiting Sirius, our sky's brightest star but it is so faint it is lost in Sirius' glare. When a star of similar size to our Sun reaches the end of its life, there is a process which ultimately has the star shucking off its outer hydrogen and helium layers (to form a beautiful planetary nebula) while its remnant core of heavier elements compresses under gravity to leave a star about the size of Earth made out of very dense weird material. Enter a term called 'electron degeneracy', a fantastic creature out of quantum physics. It's enough to know that a thimble full of this stuff would weigh as much as my Toyota Camry. The star is initially very hot, around 100,000°C, thus white, but it has no internal energy source and eventually cools over billions of years until it is an invisible cinder – a

black dwarf? Our Sun will end up as a white dwarf in about 5 billion years. When Sirius' companion was originally identified as a white dwarf in the 1860s, the astronomers couldn't believe what they saw and rejected their observations. But, to paraphrase Shakespeare (Julius Caesar, Act 1 Sc.2: "The fault, dear Brutus, is not in the stars, but in our theories..." It wasn't until 1920 when electron degeneracy was theorized that the white dwarf could be understood.

It gets even weirder from here on. If the star was much more massive than our Sun, when it runs out of hydrogen at its core it won't go quietly like a planetary nebula – it will go with a tremendous bang! If it's between three to about eight times our Sun's mass, it will explode and leave behind an object that almost beggars belief. They call it a Neutron Star. The central core of the star is compressed by a mighty gravity-driven implosion that just keeps going and going inwards until, impossibly, it gets beyond the point where all the protons and neutrons are totally cheek-to-jowl. Quantum physics at work again. With a humungous 'bounce', the star explodes outwards in what we see as a supernova, and leaves the compressed core of pure neutrons, with no space between them. Neutron degeneracy, a very strange state of matter. This star makes a white dwarf look like a bag of

feathers. A typical neutron star would be about 30 km diameter with a mass that of our Sun. A thimbleful would weigh as much as Mt Everest. They give out no light and were first discovered as pulsating radio waves, called 'pulsars' with no visible light source. The explanation of neutron stars came afterwards after much theory searching.

But it gets wackier. If the original star was larger than about eight Suns, when the star finally explodes its remnant core gets compressed even beyond a neutron star, if such a thing can be imagined, to such an extreme density and minute size that space-time is bent in on itself and no form of radiation, not even light, can escape from it. It becomes totally invisible, on any wavelength, to the outside universe. A Black Hole! The stuff of science-fiction. Though invisible, they can be detected by the gravitational affect they have on the stars around them and by the

last-gasp emission of X-rays that in-falling material emits. Some, in theory, are so dense they have shrunk to a geometric point, a singularity. Physicists abhor a singularity, but no-one told the black holes.

***Sucking, sucking, hole so black
Perhaps it's not just light you lack.
Lost dimensions one, two, three
Curse that singularity.
(R Bee, 2007)***

Black holes do exist. Every galaxy has at least one. There is a monster black hole lurking at the very center of our galaxy.

If you've been able to imagine this zoo of strange objects, you've done well. Next article I will describe two aspects of our Universe that will rock your comfort zone. It comes under the quote: "The Universe is not only stranger than we imagine; it is stranger than we *can* imagine."

MAS Website

www.macaastro.org.au

JULY CROSSWORD SOLUTION

Across

- | | |
|--------------|----------------|
| 2. Aquila | 3. Collimation |
| 5. Galaxy | 6. Lyra |
| 8. Astrolabe | 10. Musca |
| 11. Orion | 13. Whitedwarf |

Down

- | | |
|---------------|------------|
| 1. Alignment | 2. Antares |
| 4. Luminosity | 7. Lunar |
| 8. Azimuth | 9. Eclipse |
| 12. Bar | |

Prime Focus Article Submission

Deadline for article submissions for the September edition of Prime Focus is

Monday 10th September 2007

All Articles can be submitted via email cyberpiggy@optusnet.com.au
Or via snail mail to the MAS Postal address

Thanks to all the contributors for this month.....