June 2008
Volume 13 Issue 6

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Presidents Report

John Rombi

Good evening, and welcome to our June meeting.

Last month we were taken on a trip through the Universe searching out "Magnetars" by world renowned Australian astronomer Professor Bryan Gaensler.

Before our meeting Bryan joined members of the committee for dinner at The Catholic Club in Campbelltown.

We discussed many aspects of Astronomy, but the most bizarre admission by Bryan was that he presented his thesis for his degree dressed in a "Star Trek" Federation uniform.

Now that would have been the place to be. Apart from Bryan's serious scientific side, he admitted to being a "Trekkie" like a lot of members in our club, and a sci-fi buff in general.

It's good to see he's "One of Us"

Bryan has sent me a list of his staff (all astronomers) that would be able to pay us a visit. Bryan has also accepted my invitation to return to M.A.S. either at the end of "08" or early "09"

Stargard & The Forest

Unfortunately both of the recent nights were abandoned due to the inclement weather. Better luck next time!!

Membership

The membership deadline ended at May 30th, so if you haven't renewed by now the application fee ($10) on top of the membership fee will have to be paid.

If you joined M.A.S. from October 1st 07, your fee will not be due until March 09.

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T-shirts

Due to the poor demand for these items, I will not place the order for the 15 received so far until the end of July.
So if you would like to place an order, please let me know.

Tonight

I would like to welcome Dr Laszlo Kiss from Sydney University. His presentation will be on "Exploding stars: why are they interesting?"

Since the discovery of the "Nova Stella" in 1572 by Tycho Brahe, the "new stars" never seen before have astonished astronomers by their mysterious nature. During the last few decades we have learnt that stellar explosions represent some of the most powerful processes in the Universe. Interacting binaries with accretion disks, sudden death in single and binary stars and binary mergers are the keys of understanding the powerful energy bursts that can overshine whole galaxies for a short time. In this talk I will focus on the three types of "novae": dwarf novae with accretion disk instabilities, classical novae with thermonuclear runaways and supernovae, in which whole stars are destroyed. While these alone provide important clues on how matter behaves under extreme circumstances, they also offer invaluable applications of measuring distances and revealing the nature of the Universe.

Finally

Next months meeting will be a little different. I will be screening the recently released movie "In the shadow of the Moon" A comprehensive and personal account by the people that were there, on one of the greatest feats of humanity, The Apollo Program.

I hope to see as many of you on our upcoming observing nights.

Clear Skies, John

Observing Dates

June
16/06/08 General Meeting
28/06/08 Stargard

July
5/07/08 The Forest
21/07/08 General Meeting
26/07/08 Stargard

August
2/08/08 The Forest
18/08/08 General Meeting
23/08/08 Stargard
30/08/08 The Forest

September
15/09/08 General Meeting
20/09/08 Stargard
27/09/08 The Forest

October
20/10/08 General Meeting
25/10/08 Stargard

November
1/11/08 The Forest
17/11/08 General Meeting
29/11/08 Stargard

December
20/12/08 Stargard
27/12/08 The Forest
TBA - Xmas Party

Shakespeare's Twinkle Twinkle – Bob Bee

In Column 8 on 6th June, a reader sent in this version of *Twinkle Twinkle*, supposedly recited to him as a child by a classically literate parent. See if it works for you.

Scintillate, scintillate, globule vivific,
Fain would I fathom thy nature specific,
Loftily poised in the ether capacious,
Closely resembling a gem coruscatious…

Yes, the translation works, but it seems to be lacking something…

Lasers Now Restricted Goods

Roger Powell

In addition to the State Government being poised to ban the possession of laser pointers without 'reasonable excuse' (see last month's Prime Focus), the Federal Government passed a new regulation on 29th May to 'ban the importation of high intensity laser pointers.'

"This new law will make it an offence to import high powered lasers without a permit," according to the Minister for Home Affairs, Bob Debus. "It means anyone seeking to import a laser pointer stronger than 1mW will have to have an appropriate exemption, which will work in the same way as for other restricted goods."

The import ban will take effect on 1 July 2008 and will allow legitimate users (including surveyors, the construction and mining industries and astronomers) to apply for an exemption from the ban.

Importers will need to obtain police authorisation and an import permit, so you may have problems buying one over the internet.

"Hundreds of aircraft across Australia are targeted every year and we need to work together to reduce the number of incidents," said Mr Debus.

So there we have it.

> According to the Federal Government, low-powered laser pointers rated as low as one milli-watt are 'high intensity' and capable of bringing down aircraft.
> According to the State Government, laser pointers of any size are 'dangerous implements' capable of 'mass murder'.

Just when I thought it couldn't get any sillier, I found out that the State Government is going to legislate even further to classify 'certain high-powered laser pointers' as prohibited weapons. It was already an offence to point a laser at an aircraft. Now the useful tools used by astronomers and others are going to be restricted goods, dangerous implements, prohibited weapons and goodness knows what else!

Whatever the outcome of all this is, amateur astronomers are going to have to abide by the law. It may become harder to buy a hand held laser pointer and if you are found in possession of one, the onus will be on you to prove 'reasonable excuse.' Provided you keep your telescope and laser pointer together and you act responsibly, there should be few problems (hopefully) but that doesn't make this flurry of 'over the top' legislation any less unnecessary.

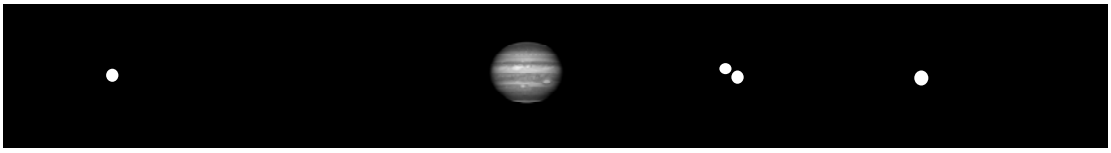
If the pointer is permanently attached to a telescope, my understanding is that it is not a hand held device and is therefore not even covered by the NSW ban on possession.

There is an on-line petition at http://www.gopetition.com.au/petitions/anti-laser-ban.html and I urge members to sign it.

Observation Reports:

By the Light of the Binary Moons - Bob Bee

While out at Stargard (the Oaks) on Saturday 21st May, waiting for the stars to return from their sojourn behind the clouds, the hardy few were struck by the display from Jupiter of what was dubbed by a wit as 'a binary Moon'. No, it wasn't a telescope badly in need of collimation, but a chance occultation of two of Jupiter's moons. It was very striking and we kept returning to it in the hope they would come closer and even 'join'.

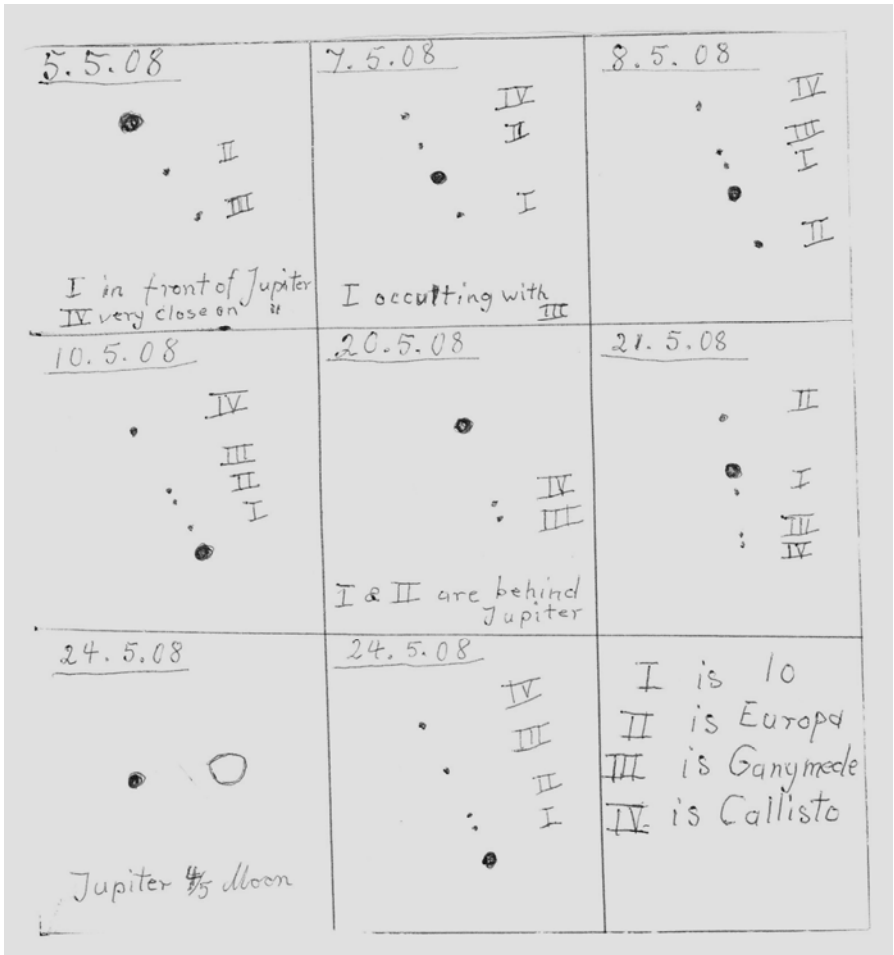


They didn't (at least before yours truly left for home around mid-night).
The representation above is shown to approximate scale (except for the size of the moons which weren't quite that large compared to Jupiter). From *Astronomy 2008*, the moons were, from left to right: Callisto, Europa, Io, Ganymede.

Considering the ducks & drakes we played with the clouds and stars that night, this was a highlight of my evening. The others present can speak for themselves.

Dancing of The Moons - Ursula Braatz

Jupiter is wonderful to see in the East after 9.00 pm. So I took the opportunity to observe with my little Tasco Telescope. I don't have to go outside; we have a sun room with a shop window looking toward East. I am sitting next to the fireplace and with the lights all off I observe Jupiter and his four Galilean moons through the shop window. With the help of the Astronomy 2008 – book I can find out which moons I can see. They are beautiful little dots like pearls on a string. So I am enjoying it without catching a cold like I did before.



Star Hopping to Messiers #5
Coma Berenices (M53, 64, 85, 88, 91, 98, 99, 100)

Bob Bee

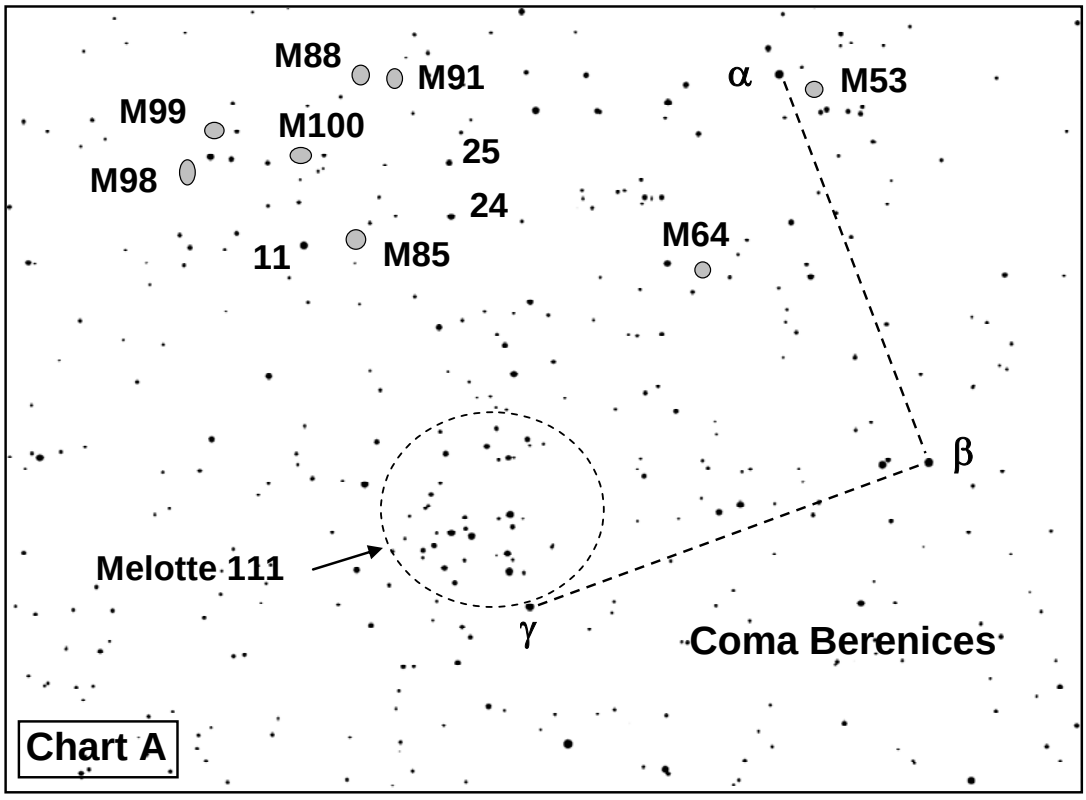
Coma Berenices is another very faint constellation, found this month directly north, immediately above Canes Venatici and about 20° west of Arcturus in Bootes. This constellation represents the tresses of Queen Berenice, the wife of Pharaoh Ptolemy III. She cut off her beautiful hair in gratitude to the gods for the safe return of her husband from war.

Coma Berenices (Com.) has two famous clusters – the Coma Star Cluster (Melotte 111) which is a beautiful sight in binoculars and the Coma Cluster of galaxies which lies about 280 million light years away, too far for our humble amateur telescopes. But it also contains some of the brighter members of the Virgo Cluster visible in our scopes. They will be seven of the eight Messier objects we'll be star hopping to in this article. The eighth, M53, is a globular cluster. Thankfully, they have some easily found star patterns to use as guides.

Remember – as always, the following charts show true sky perspective. In your finder-scope, it will probably be mirror image and inverted. Make the necessary allowances. You could always take these charts and simply turn them upside down to see the view in your finder scope.

Let's assume you have located Coma Berenices from your planisphere etc.
Note that α Com is mag 4.3, β is mag 4.2 and γ mag 4.4. As I said, faint.

Chart A below will show you the general location of the eight Messiers in the constellation. You could probably locate most of the Messiers from this chart alone.

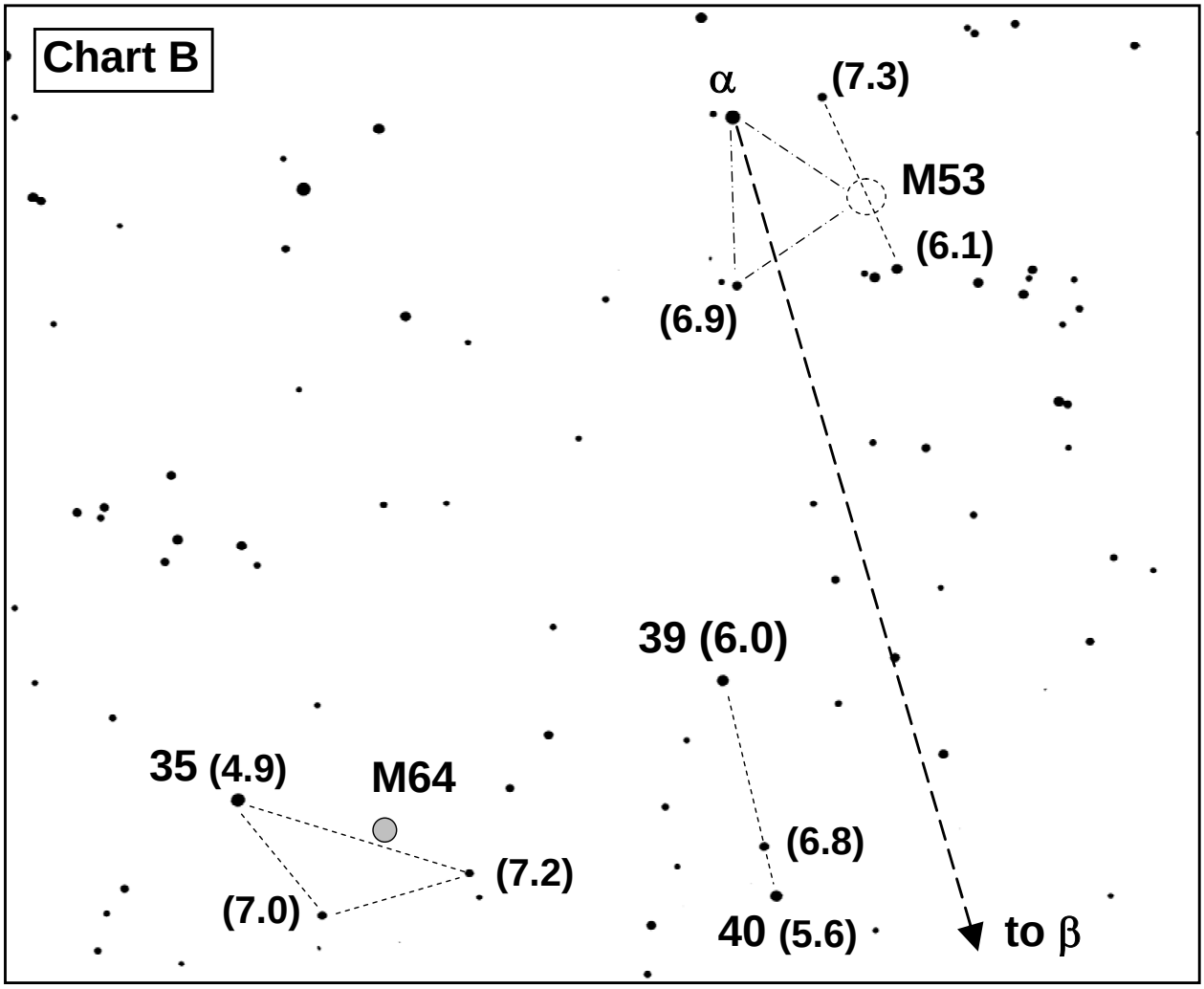


Just to assist you further, the next table gives you type, size (in arc-minutes) and magnitude of the globular and galaxies: (SG = Spiral galaxy; EG = Elliptical galaxy)

Messier	M53	M64	M85	M88	M91	M98	M99	M100
Type	GC	SG	EG	SG	SG	SG	SG	SG
Size (′)	12.6	9.3	7.1	6.9	5.4	9.5	5.4	6.9
Mag.	7.7	8.5	9.2	9.5	10.2	10.1	9.8	9.4

As you can see, the galaxy sizes range from 9.3′ down to 5.4′ and magnitudes from 8.5 down to 10.2.

Let's find **M53** first. Look at **Chart B** starting at the top right near α Com.

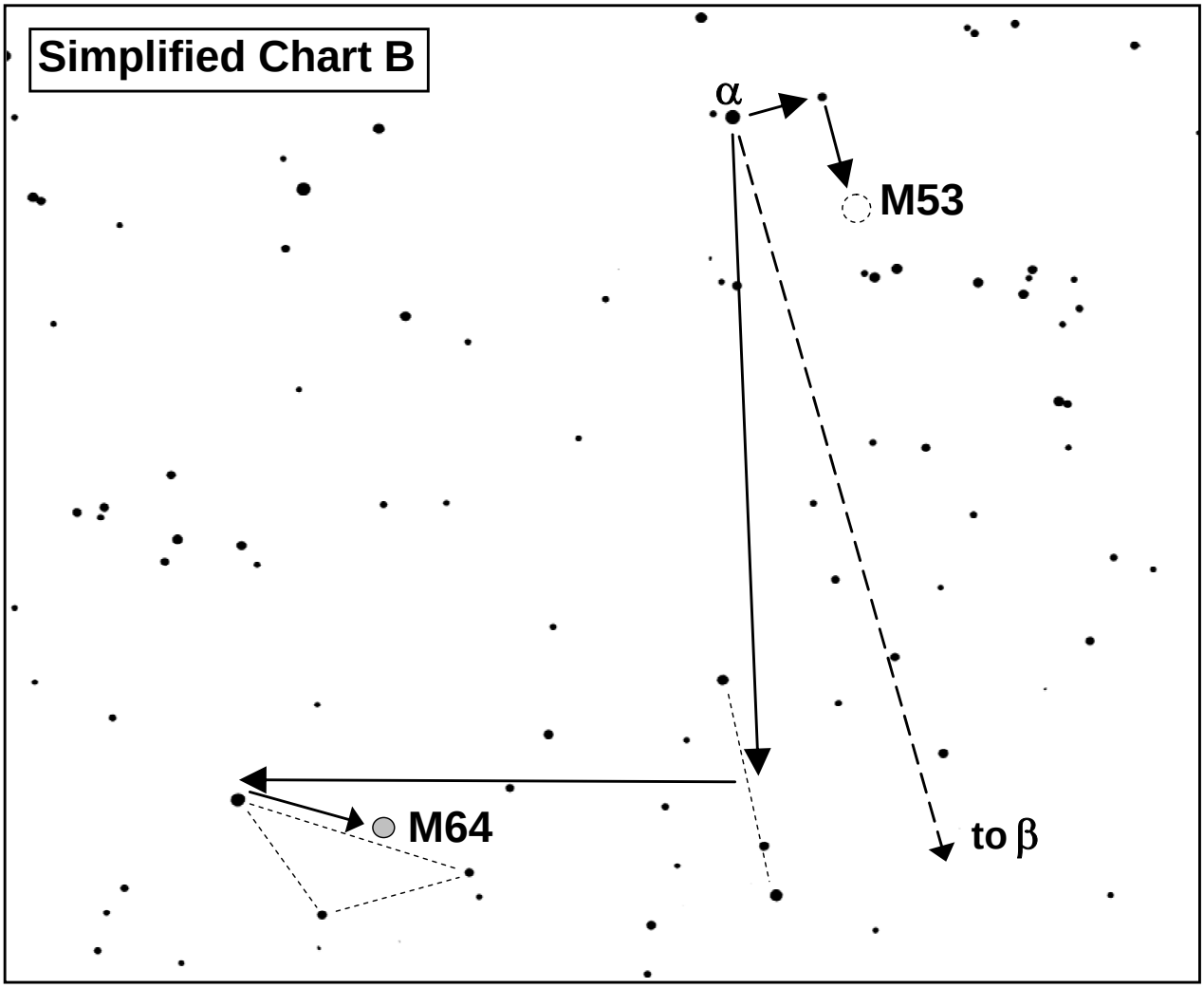


Now M53 is only 56′ from α Com. so it will be in your finder scope (f/s) FoV when you place it on α Com. Notice the mag 6.9, 7.3 and 6.1 stars nearby, all visible in your f/s with α Com. There are two simple ways of locating M53, if you haven't found it already.

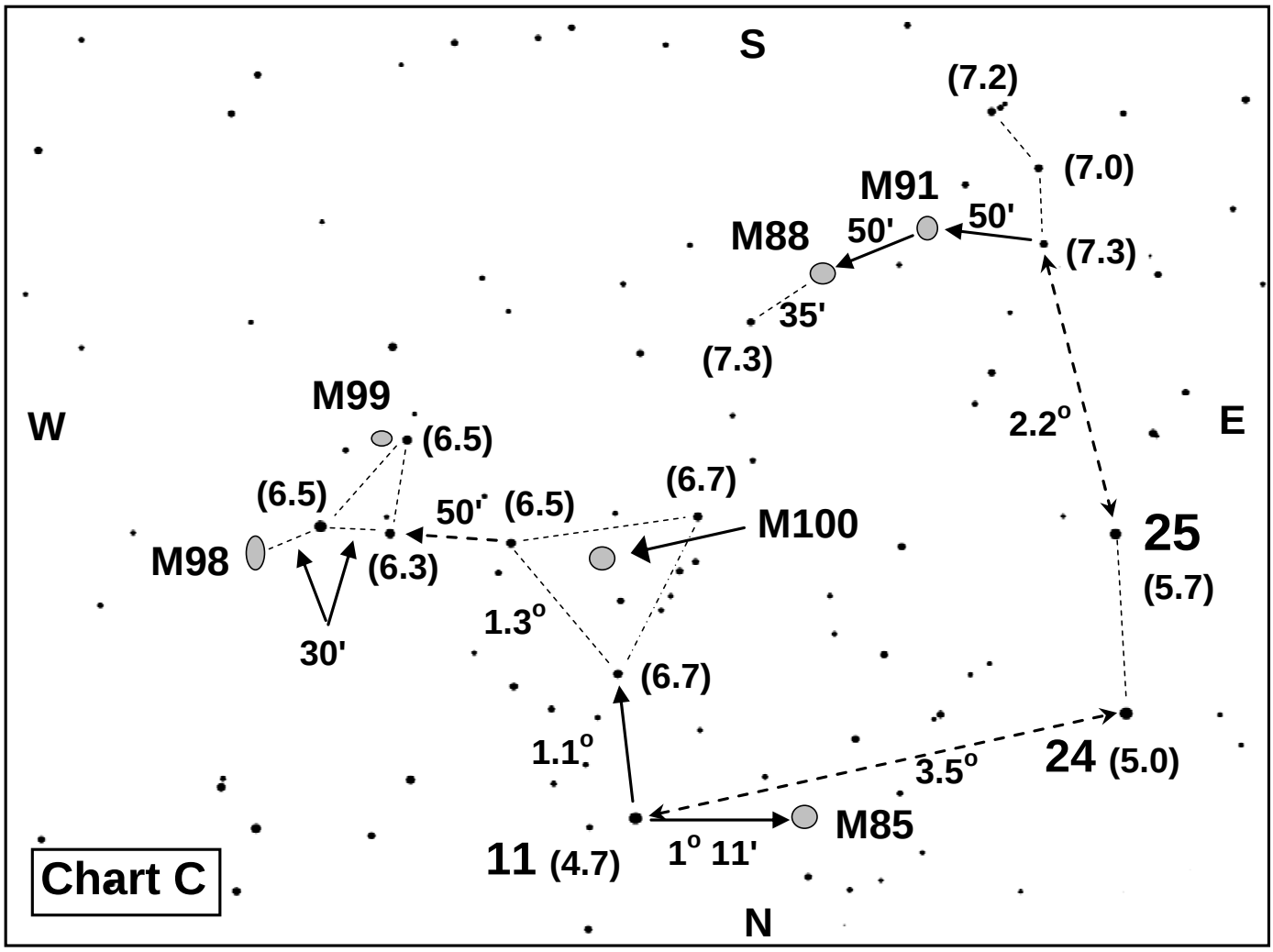
Locate the mag 7.3 and 6.1 stars to the east of α Com. in a line parallel to the α – β line. M53 lies directly on the line between them, almost mid-way. It is actually 40′ from the top (7.3) star and 33′ from the bottom mag 6.1 star. Move your f/s to that point and you should have it.
Or, form a triangle with α Com and the mag 6.9 star below it and the third corner as shown between the mag 6.1 and 7.3 stars. M53 will be at that corner.

Now for M64 (the Black Eye galaxy). Refer to Chart B again. You will see that below α Com, there is a line of three stars in parallel with and west of the line from α to β Com.. These are **39 Com** (mag 6.0), and **40 Com** (mag 5.6) with a mag 6.8 star in between. 39 Com is only 3° 45′ from α Com, so will be in you f/s FoV if you put α Com at one edge. First move your f/s to 39 Com., then centre it on the mid-point of the 39 – 40 line.
Now look at Chart B and see that there is a star **35 Com** (mag 4.9) just 3° west of that point. Move your f/s centre to that star. Back to the east and below 35 Com there are two 7th mag stars forming a regular isosceles triangle with 35 Com. They will all easily fit in your f/s FoV being only 1.5º long. As shown on Chart B, **M64** is just above (and 54′ or 3/5 along) the line between 35 Com and the mag 7.2 star.

A lot of words perhaps to describe some simple movements of your finder scope to star patterns. Once you've identified the guide stars, just follow the sequences. I've reproduced a 'cleaned up' Chart B below:



The remaining six Messiers are found using **Chart C** overpage.



Yes, I know it is a very busy chart, but remember it provides hopping paths for six objects. Take them one at a time and ignore the other details.

If you look back at Chart A, you'll notice two stars named 24 and 25 Com. These are mags 5.0 and 5.7 resp. and 1° 22′ apart and 8° west of α Com. First locate these in the sky as they are our starting point. Now go back to Chart C.

M85: Start from 24 Com, the lower of the pair. Put it on the edge of the f/s FoV and you should see a mag 4.7 star on the opposite side, 3.5º away. That's 11 Com. In the same FoV, judge the distance 1/3 the way back towards 24 Com, but a bit below the line. Put the f/s centre on that spot. You should be very close to M85. Check your scope's low power eye piece to see. The chart above is to scale so you can judge the location with respect to 11 and 24 Com from that.

M100: Centre the f/s on 11 Com. Move up (south) by 1.1° to land on a mag 6.7 star which is the bottom point of an equilateral triangle comprising another mag 6.7 and a 6.5 star. The triangle's sides are 1.3° long. In fact, 11 Com. and the triangle should all fit in your f/s FoV. Now M100 is inside that triangle located where shown with respect the top two triangle stars. In fact, it is 35′ from the left (west) star and 45′ from the right (east) star and 10′ off their line.

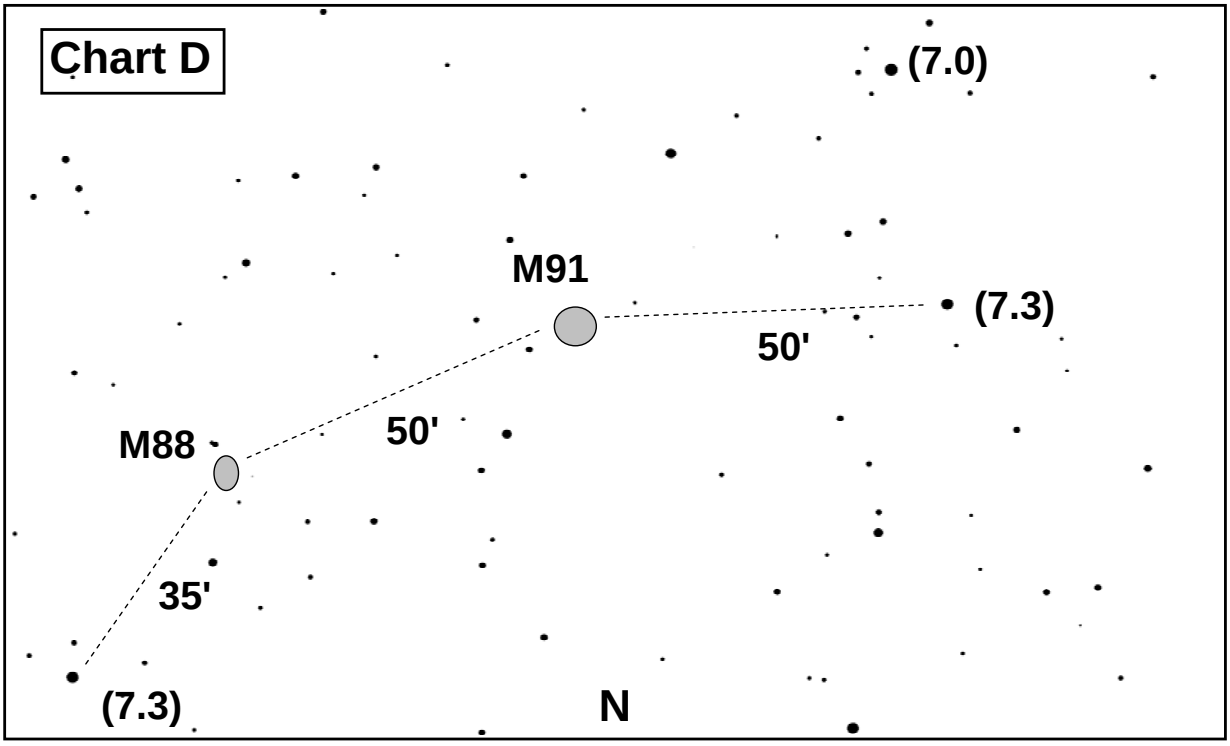
M91: Now centre on the left (western) mag 6.7 star of that triangle. You'll see that 50′ west of that is a smaller right angled triangle of stars mag 6.3, 6.5 and 6.5. The bottom side of the triangle is 30′ long. If you extend a line past the left star an equal distance (30′) and rotated down by approximately 30°, you will come to **M91**. This is a thin edge-on spiral galaxy.

M99: Now go back to the small right angled triangle and centre your f/s on the top (southern) star. 10′ immediately to the west of that star is M99. How easy is that?

M88 & M91: There are a couple of ways to approach M88 and M91. One is to start from the right hand star of the equilateral triangle we found M100 located in, and work upwards, as per Chart C. But let's try another way.

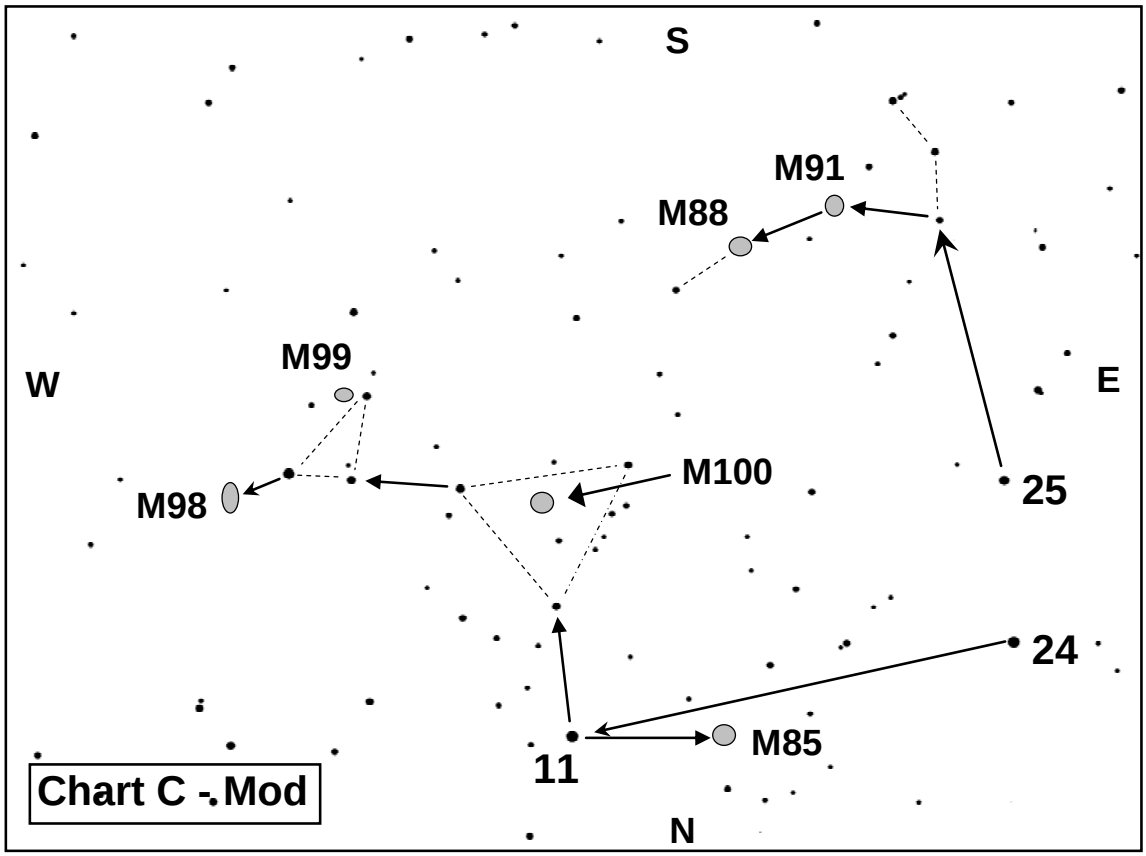
Start by going back to 25 Com. With it near an edge of the f/s FoV, you should see near the other side a trio of mag 7 stars shaped like an upright banana (or boomerang). Their spacing is 30′. The bottom one is 2.2° south of 25 Com. Centre the f/s on the lower (northern) mag 7 star. Now move left (west) by 50′ and up a tad (see chart) and you should be on **M91**. Check your main eye piece.

There aren't any helpful triangles in this area so you need to judge locations with your eye to find M88. The following zoomed chart (Chart D) may help. The idea is that there is an imaginary curve formed by the "banana's" bottom mag 7.3 star, M91, M88 and ending at the western mag 7.3 star. As indicated, M88 is 35′ south/east of the western-most mag 7.3 star.



And there are your Coma Berenices Messiers. Eight more for your Messier hunt.

I reproduce below "Chart C – Mod" without all the magnitude values etc. It may help make the hopping a bit clearer.



Good hunting!

Interested Images Wanted

Roger Powell

The Society has been approached by the Editor of the Camden Advertiser, suggesting that MAS might like to make an occasional submission to the 'Camden snapshot' feature. The Camden Advertiser runs this spot each week. It consists of a photograph contributed by a reader, preferably shot within the Camden local government area or by a Camden resident. Other than that, the terms of reference are quite open, provided there is some sort of a Camden 'angle' and it must be of interest to the general readership.

Any member who would like to submit a suitable image should do it through the Society by sending it to me at powell@exemail.com.au or PO Box 17, Minto, NSW 2566.

Please, no UFOs

Black Holes Ain't Holes

Robert Zindler

(Editors Note: Robert Zindler has kindly offered the readers of Prime Focus sections of an essay he producing. Further sections will be featured in coming editions of Prime Focus.)

An essay on the problems perceived with the concept of black holes

INTRODUCTION

Black holes

"One hundred years ago…scientists considered (the universe to be) an 'island universe'; an isolated cluster of stars surrounded by an infinite void. In 1908 the scientific consensus was that the universe was…eternal. (Laurence M. Krauss and Robert J. Scherrer, *The End of Cosmology?,* Scientific American, February 2008)

Note: My hypothesis of the finite size and infinite age of the cosmos, in essence agrees with these scientists, although I consider some aspects of their views of the island universe to be problematic. My hypothesis, therefore, re-affirms the original scientific view of the infinitely aged universe (read: the total cosmos).

In my view, it was a misinterpretation of observations (Hubble's redshift measurements and the cosmic microwave background radiation – the CMB – underscored by incorrect concepts of time (Einstein's $t = 0$, which should have read: $t_b = 0$, where b stands for 'big bang', which in my hypothesis would be interpreted as 'the expansion phase in alternative expansion and contraction periods of a cyclic cosmos with finite size and infinite age), and the inappropriate application of a thought experiment (retro-reasoning), that led scientists in the wrong direction with all its implications, even though cosmology as a whole progressed remarkably effectively, regardless of its fallacious foundations. These issues will be addressed below

"It is now 39 years since John Archibald Wheeler coined the term 'black hole' to describe the ultimate in collapsed objects under Einstein's General Theory of Relativity. The problem with black holes, of course, is that by definition, they cannot be seen. Consequently, all the data obtained so far on black holes is indirect. (By now) we start to acquire extremely powerful (but still circumstantial) evidence for the existence of black holes." (Quoted from Phil Charles, *Black holes – do they exist?*, Astronomy Now, February 1999, p 53)

Also, "In December 1967, physicist John A. Wheeler…coined the name 'black hole'…(about) objects (that) were often referred to in the literature as *frozen stars.* This frozen state is the real significance of the Schwarzschild geometry." (Jeremy Bernstein, *The Reluctant Father of Black Holes,* Scientific American Reports, Special edition, April 2007, p 11)

But also at that time: "(Robert) Oppenheimer and his students were creating the modern theory of black holes. The curious thing about the black hole research is that it was inspired by an idea that turned out to be entirely wrong." (Jeremy Bernstein, *The Reluctant Father of Black Holes,* Scientific American Reports, Special edition, April 2007, p 10)

Note: Although that report did not elaborate adequately on this statement and was probably made in a different context, but in light of my own study of black holes, I concur wholeheartedly with this statement.

From the following quotations of comments from experts in cosmology, it may be gleaned, that there has built up a considerable body of opinion that runs counter to the current status quo on black holes. These comments coincide with, and in fact, firmly support my own views, not only on black holes in general, but also on the standard cosmological model in particular.

Black holes: where and how many?

"Until (about 1999), the evidence for black holes was circumstantial." Since then "astronomers may have direct proof: energy is vanishing from volumes of space without a trace." This article by Jean-Pierre Lasota, named *Unmasking Black Holes,* (Scientific American, May 1999, p 30), offers some interesting views on black holes that have – naturally – continued the views on black holes of the early pioneers. "Throughout the universe, astronomers sense the presence of black holes. These fascinating bodies sit at the centres of many galaxies (including our own Milky Way). The most *compact* (my emphasis) objects in the universe, they contain the most extreme form of matter known to science, the concentration of an arbitrarily large mass in *something approaching a mathematical point* (my emphasis). After all, they really are black. They emit no electromagnetic radiation, at least not at the levels astronomers could ever hope to detect, …(and with masses) up to the equivalent of a billion suns. Whatever has this mass must be extremely dense, and theorists know of no alternative to a black hole. In theory, the most efficient engine possible is a black hole. All this evidence, however, proves only *the existence of some kind of compact body* (my emphasis). It does not positively identify black holes, based on any of their unique characteristics; *the deduction of a hole comes by default* (again my emphasis) (p, 31)."

It must be noted here, that even this early (1999) summing up of black holes already refers to a *'compact body' and not to any hollow object* (my emphasis again).

…… STAY FOCUSED FOR MORE NEXT MONTH……

Prime Focus Article Submission

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

Monday 14th July 2008

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…….

MAS Guessing Competition

All members are encouraged to take a book of tickets home with them tonight to sell.

Prizes include 8" Celestron Telescope, Meade Binoculars and a signed Fred Watson book.

Ticket prices are $5 each or 3 for $10

The Competition will be drawn at the next General Meeting July 21st 2008.

Please return tickets and money to Kate Johnston or a committee member.