MACARTHUR ASTRONOMICAL SOCIETY Inc.

Journal

PRIME FOCUS

Volume 11 Issue 2 **February 2006**

President's Report

A Big Night Out

It gives me great pleasure to introduce to you our very special guest speaker Dr Fred Watson. Fred is the Astronomer in charge of the Anglo-Australian Observatory at Siding Springs and is one of this countries most respected and eagerly sort after astronomers. For a heads up on tonight's talk Fred has kindly emailed me with some details as follows:

"What's Happening To Gravity?
We all take gravity very much for granted as the mysterious force that sticks us onto the Earth and stops us flying off into space. In fact, we owe gravity much more than that, for we now know that it has been the single most important force in shaping the Universe. Our understanding of gravity has gone through two quantum leaps, with Newton's Principia in 1687, and Einstein's General Theory of Relativity in 1915. But today there is another revolution taking place. Physicists all over the world are probing gravity at the quantum level, while astronomers are recognising that there is something more than just irresistible attraction going on out there in the Universe."
Fred Watson will explore these themes and more in this entertaining and fully illustrated talk. On behalf of the Society I thank Fred for taking the time to visit us tonight.

Last Month

Our band of keen astro-photographers strutted their stuff with some excellent images. Ned's collection of Solar System objects was very impressive. Martin showed us some deep space objects and discussed the whys and wherefores of how he captures those images. It was a great night and I thank both members for a very enjoyable presentation.

We mentioned last month that membership fees are now due, so please pay up as soon as you can. We also mentioned about the upcoming Annual General Meeting and

having nomination forms made available for the management and committee positions. You will find those forms in the back of the attendance book should you wish to nominate for a position within the society.

Next Month

Our speaker for next month will be Professor Mike Dopita from the Australian National University Canberra. Professor Dopita's talk will be on star formation. Please find below a summary of his talk which he has kindly supplied.
"Without star formation, we would not have galaxies. I'll review where and when star formation occurred throughout cosmic time, and in all sorts of galaxies, show how we can determine what star formation looks like at the different wavelengths observed with the Great Observatories (GALEX, SPITZER, HST etc) and how we can determine exactly how much has been going on".

This should be an excellent talk and I urge all members to come along, remember guest are most welcome to attend so spread the word!

The Dates

25/02/06 The Forest
04/03/06 The Oaks Airfield
20/03/06 Normal Meeting, our regular room.
24/03/06 Campbelltown Rotary Observatory.
25/03/06 The Forest
01/04/06 Keep The Stars Shining Family Camp, held at Tara Girl Guides field at Silverdale, near Warragamba
17/04/06 Annual General Meeting

Please be aware that I have only provided a short list of dates, we are still formulating our plans for the year, as such please check either with myself or any one from the committee before heading out, but for the next 2 months or so they should be OK.

If in doubt email astrosharpe@bigpond.com.au or my mobile 0410 445 041 or call John or Lloyd.

Other things.

I am still progressing forward with the Stargard Observatory idea, and I am currently waiting on some correspondence to come back to me about that. I won't go into any great details here but please see November's Prime Focus for more information. I will certainly keep everyone up to date when it is possible to do so.
Also I am almost ready to make some announcements about our junior club, again just waiting on some outstanding items but hopefully I might be able to get this idea up and running next month.

Almost Signing Off...

Please remember to pay your fees, perhaps after the meeting so as we don't slow things down too much, but we will play that by ear. Remember that we must vacate this room by 10pm at the very latest. Remember it's back to the old room for the rest of the year, AGM is coming up in April, nomination forms in the back of the attendance book. Watch out for date changes, watch out for being tired when driving back from long nights, watch for kangaroos and wombats and above all try and watch the stars, weather permitting of course.

...Now Signing Off

It is coming up to be a very busy period for the society. Thankyou for reading my report and thanks for all those members who give their time, enthusiasm and commitment in helping to run the society. Good stargazing!

Regards Noel Sharpe President

Internet News January 2006

Physicsweb – Closing in on Charon 4. 1. 06

New observation of Charon, Pluto's moon, have revealed that it may not have an atmosphere as it was previously suspected , Charon blocks out light from a distant star. The results from studying Charon indicate that Charon virtually has no gaseous mantle. That is what two international teams of Astronomers led by James Elliot of Massachusetts Institute of Technology in the US and Bruno Sicardy of the Observatoire de Paris in France found out. Charon is big, about half the size of Pluto, but because it has no atmosphere, it must be a moon and not a planet, that is what scientists think

Spiegel online – German Magazine 11. 1. 06

Polaris, the Northern Polar Star, which belongs to the constellation Ursa Minor is not by itself, it has two companions. One of them "Polaris B" was discovered in 1780 and you can see it with a small telescope. The other one "Polaris Ab" was discovered a short time ago with the Hubble Telescope. The first photos give evidence that the Polar Star "Polaris Aa" 430 l.y. away is part of a triple star system. The distance between Polaris Aa and Polaris Ab is only three billion km, and the distance between Polais Aa and Polaris B is more then 380 billion km. Polaris is 2000 times more luminous then our Sun..

Astronomer com – another link: STL.today 11. 1. 06: Washington: Galaxy appears to be merging with Milky Way.

A previously un-recognised galaxy appears to be merging with the Milky Way, bringing hundred and thousands of stars, that no one has noticed until now into our home galaxy , astronomers have announced. The huge diffuse structure does not fit with other parts of the galaxy.

Robert H. Lupton of Princeton University told a meeting of the American Astronomical Society on Monday that the most likely interpretation of the structure was that it was a dwarf galaxy merging with our galaxy.

STL.today - Images reveal an active Uranus. 14. 1. 06

I make this article short and write only that there are two more rings on Uranus and two moons "Cupid" and "Mab" discovered. Now Uranus has 13 rings and 27 moons. "Uranus is one of the most disruptive systems in the solar system" Mark Showalter of the Center for Search for Extraterrestrial Intelligence Research, said.

Physicsweb – Pulsar breaks speed record. 14.1. 06

Astronomers have found the fastest spinning neutron star, or pulsar, to date. It is a binary system and discovered in a globular star cluster called "Terzan 5" by Jason Hessls of McGill University in Canada and Colleges in Canada and the US. The pulsar is spinning in a rate of 716 Hz compared to previous record of 624 Hz. The speed indicates that the star is less than 16 km across.

Ursula Braatz ■

Wot IC This Month
February 20 – March 19, 2006

Bright Stars at 8.00 pm
Orion the mighty Hunter rules the evening with Taurus the Bull and the seven sisters. Under the legs of Orion is Lepus the Hare and Columba the Dove. Way to the north Algol the Demon Star blinks his baleful red eye, while below the horns of Taurus Capella blazes in multi colours with the Gemini twins above and to the right.

Look straight up for Sirius and the two dogs with the Unicorn (or is it Rhinoceros) and the cloudy clusters of the great ship Argo (Carina, Puppis and Vela).

Moon Diary
22/2 Last Quarter Moon
28/2 New Moon
07/3 First Quarter
15/3 Full Moon
17/3 Full Moon close to Spica in Virgo

Evening Planets
Mars appears in Taurus glowing orange near the Pleiades as the sky darkens. Setting between 12 midnight in February and 10 pm in March it continues to shrink in apparent size and brightness. Disappointing in telescopes we will have to wait another two years for a better view.

Saturn rises in Cancer between 6.30 in Feb. and 4.30 pm in March just above the Beehive cluster. An almost full moon in early March will make viewing difficult so get in early. The planet now past opposition sets around 5 am in Feb but will be gone by 2 am in March. The rings are still quite open for the next year or so but will noticeably narrow after that.

Jupiter rises in Libra after 11 pm in Feb. but once DST finishes it will be in the sky by 8.30 pm. It will stay in Libra for most of this year. . Tonight (20th February) and again on the 19th March the nearby full moon will take some of the brightness away.

Both **Neptune** and **Uranus** are too close to the Sun for any viewing this month but they will return in the morning sky in the latter half of March.

Morning Planets
Venus rises round 3.45am in Sagittarius as the Morning Star. Bright at –4.6, almost its maximum it will sink to the east moving into Capricornus for March. A very slim last quarter crescent moon will pass close by on the 25/2 again late March.

Mercury is too close to the Sun in February but will return to the evening sky first day of March for those who enjoy a low flat western horizon. It will not get more than a few degrees above the horizon before sinking out of view.

Meteors: The **delta Leonids** are the brightest at this time from 15 Feb to 10 March. With a radiant in the sickle asterism the max is on 24 Feb, hourly rate just two.

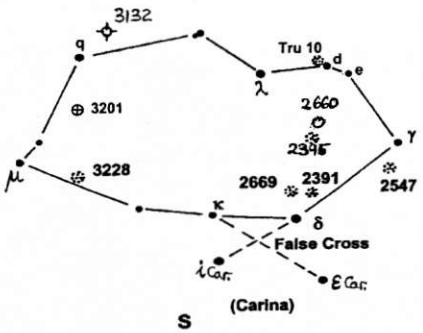
Comets: C2004 B1 (Linear) is the best we can offer. It will be cruising along the Microscopium / Sagittarius border at magnitude 10. Now there's a challenge!

Portraits in the Sky

Vela is the Sail division of Argo Navis an ancient huge ship named by Ptolemy which sailed the southern horizon, if you were in the northern hemisphere. The ship was broken up because of the number of naked eye stars and its huge size in the 18th century. Argo Navis the Ship of Jason and The Argonauts, was divided into Carina (the Keel), Puppis (the Stern), and Vela (the Sails). Because Johann Bayer originally lettered the stars of the complete Argo; the Greek letters went with the pieces when the ship was broken up. Alpha (Canopus) and Beta in Carina, while Gamma (Regor) and Delta are in Vela

Objects of Interest

The two constellations meet where κ and δ Vela join with ι and ε Carina to form **"The False Cross"**



The 'star' of Vela, and perhaps of all Argo, is Gamma Velorum, or **Regor**. Nobody seems clear about the naming of Regor, but I did read somewhere that it was named after Roger Chafee, one of the Apollo astronauts killed in a command module fire on the launchpad in the sixties. To avoid controversy they spelled Roger backwards, and so we have Regor, which has an ancient Arabic ring to it.

Regor is a spectacular star in every sense. 840 light years away, visually it is a strikingly hot blue-white, mag 1.7, and a multi system. Binoculars show an impressive hot B class companion star which is 10,000 AUs or a minute of arc from Regor. In fact the mag 4 companion is called Gamma 1, and Regor (or is it Roger) is really Gamma 2.

Through a telescope these two are breath taking, but there's more! 90° from Gamma 1 there are several faint 8-9 mag stars in a radiant. Very pretty in 26 mm. But still there's more.

If we could look from the distance of Gamma 1, the B class star, then Regor itself shows as double. Too close to be split by a telescope a hot O class giant (quite rare) and a Wolf-Rayet star (very rare) orbit each other every 78 days.

The Wolf-Rayet has blasted ¾ of its outer mass away in powerful emission radiation and is estimated to be in the last stages of supernova preparation. Together they are "the spectral gem of the southern skies".

λ (Lamda) Vela "Suhail" is an orange super-giant 300 light years away

Other Doubles in Vela

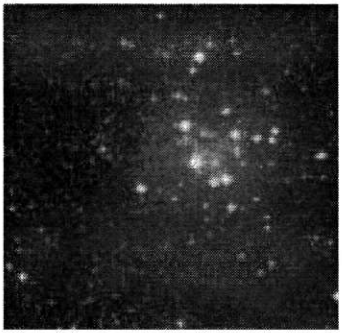
δ Vela is an easy bright white double 2.0 / 5.1.

Mu Velorum is more difficult in anything less then 10 inches 3/7, 2.8 arc", PA54°.

Dunlop has 2 doubles listed for Vela, No's 70 and 81, but there are many. See The Sky planetarium program.

Cluster in Vela

2547 An open cluster about 20' dia. 2° south of Gamma, about 17 min in size. A bright group of 50 mag.7 stars, grouped in small arcs and knots, including a small twisted cross.



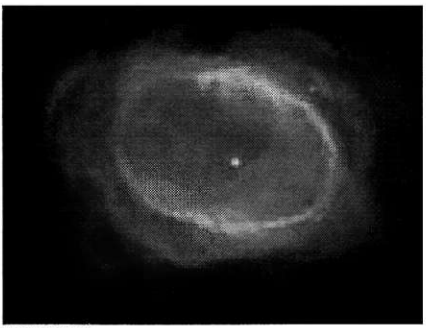
NGC2547

IC2395 Another fine open cluster about 5° east of Gamma. 30 stars grouped in 20' area dominated by a 5.5 mag star. About 3,000 ly away. **2660** is a small galactic star cluster of compressed knots 1° north of IC2395, at 7000 l.y. There are several small clusters in this area

Less than ½ way between delta – gamma just above an obvious cluster of bright stars, you can find - **IC2391** a large naked eye cluster of 50 stars. At 590ly they cluster around an interesting 3.6 mag. blue-white star o (omicron). o Vel. is an example of a Cepheid variable.

3201 is a Globular Cluster with some star lines like jets of water from a fountain.

3132 "The Eight-Burst Nebula" A blue-white mag. 9 planetary nebula 40' dia. about 10° east of Suhail. So named because of concentric rings as if there have been several outbursts of gaseous material in sequence within the oval outer circle, this is a difficult object in 200mm, and small with little detail when found.



NGC3132

There are some 40 Open Clusters in Vela and you can paddle around to you heart's content tracking them down.

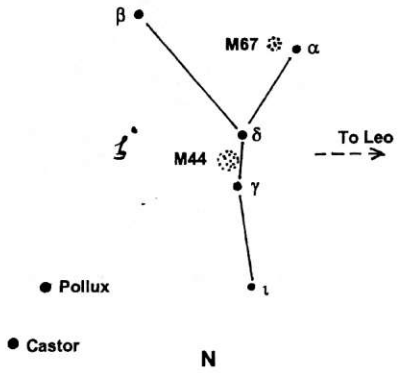
Swing to the north for some seafood tidbits with:

CANCER – The Crab

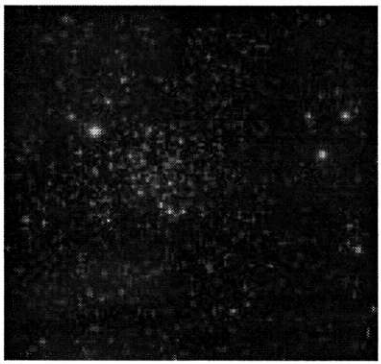
Cancer, the Crab, plays a minor role in the Twelve Labors of Hercules. While Hercules was busy fighting the multi-headed Hydra, the goddess Hera, who didn't like Hercules, sent the Crab to distract him. Cancer grabbed onto the hero's toe with its claws, but Hercules crushed the crab with his foot barely breaking the rhythm of his great battle with Hydra. In gratitude for the little crustacean's heroic but pitiful effort, Hera, gave it a place in the sky. The zone 23.5° north to the equator was known as the Tropic of Cancer in ancient times because Cancer was the location of the Summer Solstice in June.

The constellation looks like a large Y with the head of Hydra to the north of the open end. It is noted for the Beehive Cluster also called

'the manger', flanked with two donkeys Asellus Borealis and Asellus Australis.



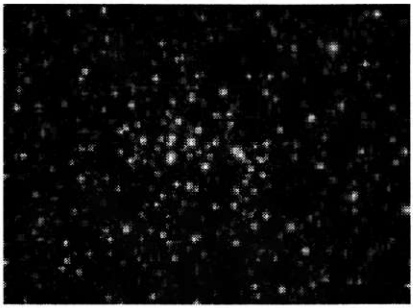
α **Cnc** (Acubens – The Claw) is a 4th mag white star on the right hand top of the Y. It has a 12th mag companion visible in 75mm scope. Just 2° to the left is **M67** a faint cluster like a misty ellipse just visible in binoculars. Too much power here can make it almost disappear.



M67

β **Cnc** is the brightest star in the constellation at 3.5 mag. on the left side of the Y nearest to Procyon.

In the middle where the arms of the Y meet is **Praesepe**, or the Manger, also known as **M44** the Beehive Cluster.



M44

It is a swarm of 50 stars 6th mag and fainter, visible as a misty patch to the naked eye. Presently playing host to Saturn it is best seen in binoculars at three time the size of the full moon and 520 ly away.

γ (Asellus Borealis) the northern donkey, is a white star while δ the southern donkey is a yellow giant.

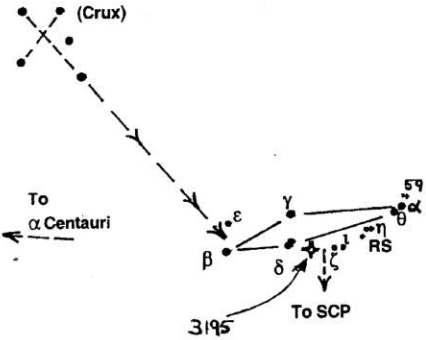
The bottom of the Y is ι **(iota) Cnc** a yellow giant about 9° north of the Beehive. This is listed as a double star as there is an unrelated blue-white companion just visible in binoculars.

10 deg away to the left of δ is ζ a binary double yellow mag 5-6. The binary can be split with 100mm and the brighter star of the duo can be divided into an equal double by larger scopes.

Now swing down to the southern pole area for a date with the lizard of Oz.

Chamaeleon -The Chameleon is a distinct asterism looking like a flattened diamond underneath Carina, to the right of Apus. First introduced by our friends, Dutch navigators, Peter Keyser and Fred Houtman in 1590 it was published on an atlas by Bayer 14 years later.

Chameleon contains a star region which is among the nearest to our own Sun, and three of the brightest stars are red, white, and blue.

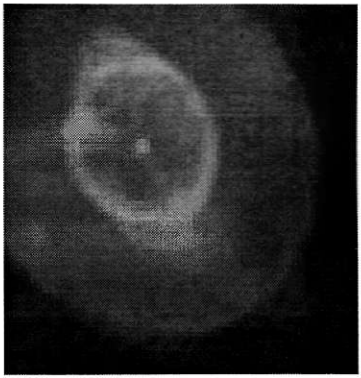


There are two interesting doubles δ and ε. You'll need 150 mm for ε, but binoculars will show the orange and blue of δ. Star number **59** just north of Alpha Chamaeleonis a wide double at 26" should jump down your eyepiece and bite you.

NGC 3195 is a faint blue planetary nebula close to δ on the Pole side, about the same size as the planet Jupiter. A number of other nebulae are visible but faint or small.

Sneak up on Chameleon for a comfortable and leisurely look one night soon!

Good seeing IC ■



NGC3195

Some January Observations

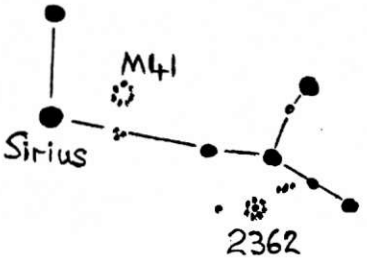
As I'm always asking for personal viewing observations from members for PF, and receiving none for January, I decided to impose some of my own upon you. Hopefully, even if you don't learn anything from them, you may gain some degree of amusement.

On Saturday 28th January, some of us (less those who went to the Camp in northern NSW) went to Belanglo Forest to enjoy its dark sky. I did my usual planning for the expected long night. Plan A - checking which Messier objects I still needed that should be viewable in January, and Plan B - scanning some references for interesting objects in those constellations that should be up that night.
I had identified 7 Messiers that I needed that should be viewable. This would bring my current Messier total from 83 up to 90 if I bagged the lot. John – start getting that "90 Messiers" certificate ready, I thought.

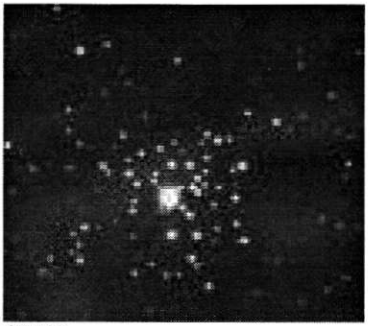
Ah, pride goeth before a fall, they say - correctly.

After initial clear skies all afternoon (in Mt Annan), by the time I got to Belanglo, there was 90% cloud cover and this remained till after sunset. The stars didn't really start to come out till around 9pm. There went my chances of seeing M34 and M76 in Perseus and M74 (Pisces) and M77 (Cetus), which were either already set or inaccessible behind the trees at the camp site. Doh! Looks like Plan B for the rest of the evening. Though I still had hopes to nail M36, 37 and 38 in Auriga.

I moved to Canis Major. Admired M41 with my binoculars, then set out to find NGC2362 which is described by *Collins Stars & Planets* as "a compact cluster surrounding the mag 4.4 blue supergiant τ Canis Majoris, which is a genuine member. Small telescopes show about 60 stars in the cluster, which lies some 5,200 l.y. away."



I found it, using a map similar to the above, with the help of the group of three small stars in a crooked line. It was a symmetrical cluster (by that I mean it didn't seem to be more or less dense in any direction from its centre, which was occupied by a much brighter star (τ CMaj). I did note that within the general area of the cluster, there were lots of nice little individual patterns (triangles, oblongs etc). Though τ is supposed to be a blue supergiant, it looked to me as white as all the others. Still, a nice little find.



NGC2362

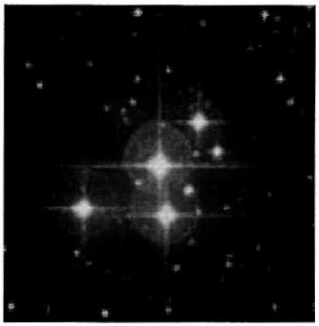
I then tried for NGC1851 in Columba. I had read about this in *Sky & Telescope* as a binocular object. I don't know what the author had been inhaling when he wrote that – admittedly he's said it was a very compact globular 44,000 l.y. away, but I found exactly where it was supposed to be with my 12x50s and all I could see was a number of small stars, any one of which could have been 1851. Oh well, I thought, I'll put my scope onto it. Yeh! Columba happened to be absolutely dead overhead. Have you ever tried to aim a Schmidt-Cassegrain directly overhead? It's murder on your knees, your back and patience. I could see where I wanted to point the scope with my naked eye, but couldn't get the scope to go there. Columba is a very obscure constellation and difficult to pick the key stars in a finder scope so I was never sure exactly where the finder scope was pointing. My knees and patience gave up. I'll wait for another night when Columba is not so overhead.

At this stage, the major frustrations of the night began. I decided to do some easy viewing of Gemini which, of course, was

lowish to the north. I could just see Pollux and Castor above the top of the trees. I thought I'd view M35 (a large open cluster of about 200 stars) and NGC2158, a nearby cluster. Also I'd try for NGC2392, the Eskimo or Clown Face planetary nebula. I moved, first with my binoculars to the supposed position of M35 and to my surprise saw... nothing. Not a star, let alone a cluster of 200. I searched for minutes than asked aloud "do you think cloud is moving in?". "Yes" were a dozen replies. It was so bad that as I watched, bright Castor suddenly disappeared. And stayed out for a long time. I gave up on Gemini.

I performed some miscellaneous random viewing while waiting for the north and western clouds to disperse. I was able to see Saturn so spent some time trying my different eyepieces on it. My 15mm gives a mag of x157 and it looked very sharp, with the rings and a few cloud bands clearly shown. What was a special treat (a few of us there enjoyed this) was that Saturn was very close to M44, the Beehive cluster, and on low power, you could get them into one field of view. It made a very pretty site.

At this stage the seeing was very bad, I was having trouble seeing the easiest of objects. I decided to explore Lepus, just to the south of Orion's feet. But I couldn't even find M79 (a small glob), no matter how confidently I put the scope on its position. The sky was just too misty. However, I did manage to locate **NGC2017**, a nice little cluster of five (?) stars. Theoretically, one should be able to split at least 3 of these into faint doubles, but the seeing was too bad. I will certainly have another go when the seeing is better another night.



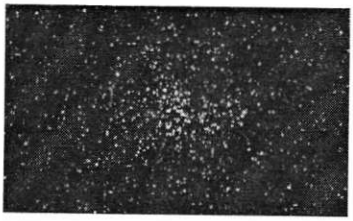
NGC2017

11:30pm - At last, the north-west sky was beginning to clear (and the southern clouding over) so I was able to revisit Gemini. Castor was back out, and I was able to nail M35 with my binoculars quite easily.

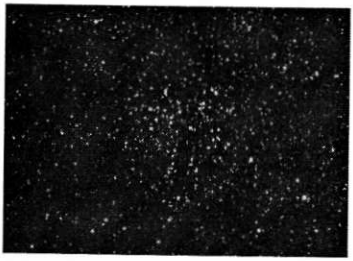
M35

Unfortunately my scope was set up in the wrong potion with respect to the trees to view it. Ditto with Auriga. I took my binoculars and walked to the northern end of the site. There, between the trees, was Auriga. M36, 37 and 38 were easily spotted in my binoculars. So at least I was able to tick them off. (Total 86 Messiers). As the reference books say, M36 and M38 are able to be resolved into stars by binoculars, but M37, while the richest of the three (in a telescope) just looks like a misty milky patch in binoculars.

M36



M37



M38

At this stage, the sky started to close over again, promising a continuing frustrating night. I decided I had enough so packed up and went home to a warm bed.

It's experience like that which make you wonder why we do it. But we do, and I'm looking forward to my next night out – hopefully (but with no guarantee) with better viewing.

Clear Skies RB

MacDob for Loan

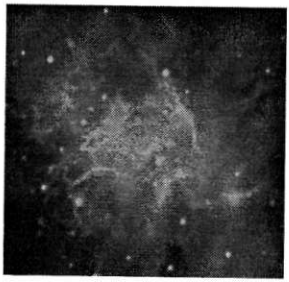
This is a reminder to members of MAS who may not have a telescope of their own that they can borrow the Society's own telescope, MacDob, for a month or two at a time.

MacDob is a 150mm (6") F8 Dobsonian that is very easy to transport in the average car and even easier to use. It comes with three sizes of eyepiece and a Moon filter.

With a focal length of 1200mm, it gives good ranges of magnification and with 150mm of aperture, is up to locating most deep space objects you'll want to catch. All people who have used MacDob agree that for a 'cheap' telescope, it has excellent optics and provides great views of the deep sky, as well as the moon and planets. With Jupiter and Saturn in good viewing positions this month, this is an ideal opportunity to see them up close and personal with MacDob.

If you want to borrow MacDob, please see me at a meeting, or call (46474335) in advance so I can arrange return by the current borrower at the next meeting. Let me encourage you to do so as we want this Society asset to get well used.

Bob Bee ■



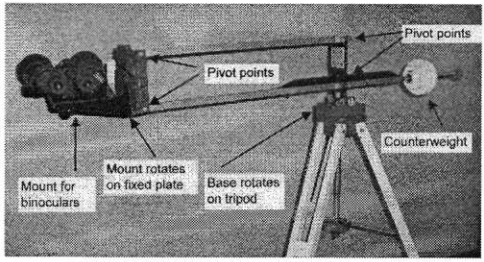
Noel... this is for you. Your favourite.. and only(?) Messier object... M1, the Crab Nebula in Taurus. Enjoy!

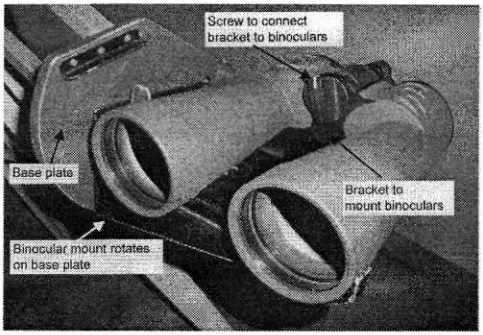
Steadying Your Binoculars

Sometimes, when using binoculars for those larger objects (or just for the heck of it), you want to be able to steady them to reduce the wobble that makes the stars shake about like a UFO in a video clip. Here are some simple and not so simple ways of doing it.

The simple method: Take a broom handle, or as shown in the photos, an extendable handle for a paint roller, attach a block of timber at top (I drilled a hole in block to insert the handle) and rest the binoculars on the block. You extend the handle to suit the elevation of the object or if you are sitting.

The fancy method, build something like this, which is Dick Everett's device.





Enjoy the sky without the shakes. RB