

Journal

PRIME FOCUS June 2000

Volume 5 Issue 5

PRESIDENT NOEL SHARPE

VICE PRESIDENT DANIEL ROSS

SECRETARY PHIL AINSWORTH

TREASURER JOHN KOSTER

EDITOR BOB BEE Ph 46 251623

President's Report

Last Month's Speaker

It was incredible to think that last month's meeting reignited my passion for astronomy.

The opportunity to have heard from a professional research astronomer should not be missed by anyone. Dr. Russell Cannon is currently on assignment at the Anglo-Australian Observatory (AAO) at Siding Spring his current work is mapping the Universe using the 2DF instrument which is bolted to the top of the 4 metre AAT Telescope.

Dr. Cannon's very detailed report was centred on the various instruments that enable the mapping to be accomplished, such as the 400 fibre optic cables collecting individual starlight from precoordinated galaxies, the robot that glides upon magnetic lift principles to individually place the cables for the next session.

MAS : Postal Address PO Box 17 MINTO 2566 Phone (02) 9605 6174

The amount of work associated with the 2DF (2 degree field) is immense. With several astronomers involved, it ties up a great deal of allocated observing time and deservedly so. This is research that rivals the Hubble Space Telescope and as a society it was an immense privilege to have someone with Dr. Cannon's credentials personally visit our society. It was appreciated by all.

Membership Fees

Renewals are well past due, so you have until the end of this month to pay and remain financial members. After that date (June 30) joining fees will be required if you are seeking to belong to the Society.

Exciting News

Many members have been asking me if we could have some involvement in the Night Skies exhibition of world famous astrophotography by David Malin being held at the Campbelltown Bicentennial Art Gallery 16th June to the 23rd July. The answer is YES ! And I can report the following information:

On Thursday 29th June from 6.30 pm:

- David will be in attendance that night as special guest to talk about his photography and the exhibition ..
- Open public night with viewing from our own telescopes set up near the Japanese Tea Gardens.
- A small speaking role by the President of the Astronomical Society.
- Ragbir Bhathal as director of the Campbelltown

Rotary Telescope will also be talking.

- Hot food and drinks available on the night
- No admission fee, free public event.
- Afterwards the observatory will be open at sometime around 8.30 or 9.00 pm for the general public viewing.
- Our Society networking with other local organisations.

The above-mentioned is a working plan and subject to variations. I will have a meeting at the Art Gallery on the 17th June to confirm the event and the plans.

I believe this night will combine many of our objectives into one package. i.e. To hear David Malin talk about his amazing astrophotography, public education, publicity for our Society. Who knows, we may grow with some new members. This will be a high profile event and I urge every member not to miss it!

Just Quickly

At last we have had some great field nights, plenty of stars and plenty of cold. I also had the opportunity to snap a few photographs through the 12" Observatory telescope. The results proved that you must have a wedge construction which will basically put a polar axis tilt onto the scope. The present arrangement is alt-azimuth which is great for electronic drive viewing and fantastic go-to capability, but with the time exposed film type astrophotography, the field rotation is a problem, and I have the photos to prove it!

Finally, it's great to see one of our longer term members get really involved in our field nights. Randall's Celestron 11" Ultima gives very very impressive views of the night sky. Also I'm looking forward to taking a peek through Bob Bee's new telescope, another Celestron, this time a 9 ¼" SCT on a Losmandy equatorial mount and a Meade tripod. Hmmm...Nice!

These telescopes are a great addition to the ranks and I wish everyone well with their astronomical interests in whatever form you wish to pursue them.

Noel Sharpe – President 🔳

Borrowing MacDob

The Society's own telescope, a 6" Dobsonian, is available for loan to members. It is easy to transport, set up and use. If you would like to borrow MacDob for a month, speak to Phil Ainsworth who is its custodian. Though there is no hiring fee, members are invited to make a donation of their choice which will go towards the upkeep and upgrade of MacDob

Articles for Prime Focus

I realise now (silly me) that the main reason why most of you who want to give me articles for Prime Focus can't is... you don't know how to get them to me. Here is how:

* Either type it up on a computer and save it on a floppy in Word or Word Perfect, but even better in Plain Text. Give it to me at a meeting or mail it to me at: 27 Old Kent Rd RUSE 2560.

* or Send the PC file to me by e-mail at: robert.bee@tg.nsw.gov.au

* or type it on a typewriter and give it or mail it to Phil Ainsworth who will type it up on PC for me.

* If all else fails, give/send your handwritten article to Phil who will type it up.

* If you have photos for Prime Focus (please, please) either scan them and put on Word Document and e-mail, or give them to me at a meeting or, if you dare risk it, mail them to me.

There, now I can stand back and wait to be inundated with exciting personal astronomy anecdotes and observations.

Can't I?

Bob Bee - Editor

What's To See This Month 19th June - 16th July

This is not a good month for the minor planets. After its maximum elongation on 9th June, **Mercury** is now setting earlier in evening twilight and returns to the morning twilight on 6th July and stays low all month.

Venus is virtually unobservable until next 'month' towards the end of July. Mars... forget it! It is coming from a conjunction with the Sun and will stay low in morning twilight all month.

Things fare a bit better with the major planets.

Jupiter and **Saturn** are still about 3° apart, with Saturn in the lead this time, but are visible in the morning sky.

Saturn rises about 4.30 am on 19^{th} June, then continues to rise earlier each day till it rises about 2.50 am on 16^{th} July. Jupiter rises on 19^{th} June about 4.35 am and continues to rise earlier till it rises about 3.15 am on 16^{th} July. Jupiter is mag.-2.0 this month, while Saturn is mag. +0.2.

There will be a very nice arrangement of Jupiter, Saturn and the Moon on 29^{th} June when a thin crescent moon (26 days old) will be only 2.6° from Saturn and 4.5° from Jupiter. Should fit neatly in the 5° field of binoculars. Now is a great opportunity to observe those long neglected planets – **Uranus & Neptune**. Both are approaching opposition (Uranus on 11th August and Neptune on 28th July), they rise mid-evening in June and earlier progressing to July. Ideal viewing times.

Uranus is mag. 5.7

(borderline naked eye from a dark site) and has a diameter of 3.7". As *Astronomy 2000* points out, this is about the same angular size of Mars which is seven times closer. Never forget that Uranus, though a shrimp compared to Jupiter, is still **very big**.

Neptune is mag. 7.9 (visible in binoculars) with a smaller (naturally) angular diameter of 2.33".

Though visible in binoculars and telescopes, they are not easily distinguishable from stars so you need to know where to look. The following table gives you some clues:

Date	Rise	R.A. & Dec
Uranus		
17/6	20:59	21 33, -15°16'
24/6	20:31	21 33, -15°21'
1/7	20:02	21 32, -15°24'
8/7	19:34	21 31, -15°29'
15/7	19:05	21 30, -15°33'
Neptune		
17/6	19:50	20 34,-18°31'
24/6	19:22	20 33,-18°33'
1/7	18:54	20 33,-18°36'
8/7	18:25	20 32,-18°38'
15/7	17:57	20 31,-18°41'

(R.A. and Dec are given to the nearest minutes.)

Constellations:

If you haven't already noticed (how could you not?), this is the ideal time of the year for observing Scorpius and Sagittarius. They are both very high at more comfortable viewing times (i.e. before midnight) and are both rich areas for viewing. I have provided a major article on Sagittarius in this issue. All you Messier scalp hunters – go get'em.

Though it is easy to be blasé about Crux and Centaurus (ho-hum, not the Jewel Box or Omega Centauri again...), some of us still gain a tingle of excitement viewing these marvellous objects through our scopes (I can say that now) or binoculars. And they are very high and observable in the sky this month.

Also, very well placed to the north is the much neglected Ophiuchus. It doesn't matter how you pronounce it, check it out. You'll find the 7th mag. Globulars M10 and M12 and a 9th mag. planetary nebula NGC6572 (appears as a tiny blue-green ellipse.)



(M10 or NGC 6254)

Good Seeing -

Bob Bee

The Red Planet – Part 2 by Attila Kaldy

In the previous article, I constantly stipulated the question: could life have found a way to survive on Mars? I also gave examples where terrestrial life had found a way to flourish or survive under living extremes. All is good, but if there were or still is life on this barren red world, where did it originate?

If we were to set foot on Mars today, we would find a desolate environment littered with rocks, sand dunes and craters (especially the southern side), not to mention the strange geological formations of Cydonia and in the Elysium Quadrangle. And who could pass by the Valles Marineris that makes the Grand Canyon look like Mr Peabody, Olympus Mons at three times the size Mount Everest, and the Hellas, Argyre and Isidis craters (Hellas being the largest with a depth of 5 kilometres and a diameter of 2000 kilometreswhich was most likely the cause of the Tharsis Bulge that protrudes on the NW side of the planet like a giant pimple).

In other words, this terrain would look impossible to sustain any form of life, let alone create it. However, images taken by *Viking* and *The Mars Global Surveyor* with its high resolution camera indicated abundant evidence of water erosion on geological landmarks. Some of the most conclusive features were large dry valleys (possibly caused by flooding) riverbeds and shorelines. These dry valleys show streamlined walls, a result of wide spread flooding. Other interesting features are the teardrop shaped islands, situated within these valleys. Layered deposits formed by large lakes have been found on many different locations on the planet. In certain areas, these deposits are as thick as 5,000 meters, confirming previous existence of water and a much warmer climate where of course water had been able to maintain a liquid state.

Going back to the fossilised microbiological organism found on meteorite ALH 84001 (in previous article), it had been dated at around 3.6 billion years old, with the rock itself at more than 4.5 billion years. So far the evidence proves that the rock had been ejected of the Martian surface due to some form of interstellar collision between 10 and 15 million years ago. There is a good chance that the same thing may have happened to our planet. sending debris and possibly micro life forms with it to the neighbouring planet. Taking this into account, the reverse of this "exchanging saliva between planets" is also probable.

"The chances against anything man like on Mars are a million to one," he said?

Orbiting SpaceGrams

If the cost of space travel is too rich for your pocket, why not send your voice instead?

For a few dollars your message to all the green men out there can be included on the first compact disc in orbit. The Cooperative Research Centre for Space Systems has pioneered the SPACE GRAM.

Mounted on the outside of the FEDSAT, Australia's scientific microsatellite which will be launched from Japan next year, people are being given the opportunity to relate tales of Australia circa 2000. You can talk on any subject or topic with no particular restriction on length. The CD will also contain what is believed to be the first Australian song in space; *From Little Things Big Things Grow* by Paul Kelly.

It is expected that SpaceGram messages will orbit the Earth for 100 years.

To leave a SpaceGram call 1902 974 00 by the end of July. It costs \$3.95 a minute so be brief.

Ian Cook



The Next Meeting will be held on Monday 17th July

Latest News

Mars Polar Lander: It is believed now that the major cause of failure for the spacecraft came from the engines cutting off prematurely and thus causing the craft to plummet and crash into the Martian surface.

Mercury: The planet nearest the Sun is being currently studied and observed by Boston astronomers. A region previously unmapped is being scanned and other previous landscape is being looked at. One such finding is a large scale basin in the northern hemisphere.

Io: The tiny Moon which orbits gigantic Jupiter is being studied very closely by the Galileo spacecraft. In its last flyby the Moon, more volcanic eruptions were visible. The count for volcanoes is now 81 with scientists believing up to 300 could be active. The smaller volcanoes are monitored and seen to only be actively spewing out plumes and lava for 2-3 weeks, whereas the larger volcanoes are active for several years. One such volcano has spewed forth Lava over 4,000 kms. Also a huge caldera has been seen and its walls are 2.8 kms high and it has a slope of 70 degrees.

Pluto: The planet that may be a planet ? Anyway at present I regard it as a planet and this tiny world is being studied and for the first time temperature variations have been detected. Pluto ranges from a cool -218° C in the darker, warmer regions to a chilly -238° C in the lighter cold areas on Pluto. (Remember, absolute zero is -273°C.) Not my idea of a place for a holiday resort, (Not even for skiing).

Phil Ainsworth

M.A.S.C.C&P.D.G

No dear member, this is not the name of the latest Japanese car to grace our shores, it is the NEW section of our Society, it stands for: MACARTHUR ASTRONOMICAL SOCIETY COFFEE CLUTCH & PADDOCK DISCUSSION GROUP Inc.

I feel that at the next monthly meeting a motion should be brought to the members to change the name of our Society. (SEE ABOVE) You may ask WHY ???

Well the Macquarie dictionary defines Astronomy as: "the observation and study of celestial bodies and their motions." To any diehard astronomers out there, and let me tell you, there are a few desperates in our Society, (to protect the guilty I won't mention names. Pssst here's a hint: NS AK LW IC LT JR.) You will have noticed that on the 10 official observing nights since December we have had 100% cloud cover on each occasion.

This has taken our attention and discussion to more earthly matters, eg: How to identify and avoid cowpats in the dark; how to toilet train your young son so that his aim is always straight and true; Religion, politics and also the Biggie, the creation and future of our Universe. I must also mention that steely nerves and good identification skills are needed when dealing with the local wildlife, bulls and rogue rottweillers, just ask Noel.

Well I think I've doddered on enough, I can see the men in the white coats coming for me. Oh!!!! for a clear sky, stars, nebulae, plan... why are you putting... mumble... that white coat on me??????... Aargh!!!!!!!!!!

The Optimist (or is that someone that checks your eyes) JR.

P.S. On the 10th April Attila, his wife Andrea and I were given permission to use the University observatory site, we were fortunate to have an injection of clear skies. These few hours of observing certainly did calm the savage beast within, we were also entertained by Andrea as she did the Dance of the Sugar Plum Fairies around the Observatory domes, or was she just jogging to keep warm?

The Long Journey by John Casey

I am writing this journal now, as I near the end of our epoch making journey to the far end of our galaxy. We have survived a voyage that many said was doomed to failure but we proved them wrong! Our automated systems worked perfectly, and manoeuvred our ship to clear all the large masses in our way. The series of shields that we sent ahead of us, shaped like giant meshed umbrellas took the brunt of the stuff that we could not avoid, but still let through the small amount of hydrogen gas that we collected to fuel our ion drive thrusters. Their efficiency was the key to our success. Not much thrust, but enough to deliver 1G acceleration for as long as we needed.

We certainly have come a long way! We skirted the dense star clustering near the galactic centre by a large number of course corrections, and headed out to the spiral arms on the far side. All about us is new to us, for none of the light from here ever made it to our home planet. There is a bit of a commotion up on the control deck, so I had better check it out!

Great news! We have found what we were looking forelectromagnetic radiation with

carrier waves that could only come from intelligent life. Luckily, we have picked up these transmissions early enough so we need to make only slight changes to our course and deceleration rates to arrive there at minimal speed. But even at this great distance away we can identify the source planet, and at extreme range, our sensors detect ozone emission spectra from the outer atmosphere,-so we will be protected from that sun's UV radiation when we reach the surface of the planet.

All aboard are excited. At last we have found intelligent life! We certainly have proven those pessimistic scientists at home wrong! They scanned the universe for hundreds of years, looking for electromagnetic signals that might show life elsewhere ... and found nothing! We chose to take the hardest route, and the furthest to go, and into completely uncharted regionswhere dense clusters of stars and dust in the centre of the galaxy obscured what was beyond ... and we succeeded! It is even possible that this is the only other source of life in our galaxy. Well, it is a pity that we cannot just tell them "I told you so!", for they are by now all long dead

We have come a long way in more ways than one! Yes, from the first simple single cells that grew in those hot seas! We owe it all to the weird properties of carbon. It was the carbon atoms desire to link with more carbon units that drove the whole thing! Yes, it was the carbon that pushed the increasing complexity of life, and ultimately we, with intelligence evolved to become the dominant species.

When you look back from afar, it becomes so clear- all life was based on carbon, and carbon drove the chemistryof course with a little help from liquid water, and the heat from the sun. For a while there was talk of silicon based life, but no, only carbon has those necessary properties built in.

And even the first clues to life elsewhere was carried by carbon- the black tarry matter in comet debris. No life there, but the complexity was present- all it needed was the right environment and a little time.... And 10 billion years is time enough!

I had better send a signal home, just in case.., we didn't drop off all those relay transmitters during the journey for nothing. It seems such a long time ago that we left- but is only just 2 years ago that we started up our ion drive, and literally crept away from our parking orbit. The concept was good, and our continuing good health shows that acceleration at 1G was no different physiologically to the 1G we experienced on the surface of our home planet. Yes, we started up the ion drive, and accelerated at 1G for one whole year, then turned the craft around and decelerated at 1G for the next year... and here we are, almost back to conventional speed, and at the far side of the galaxy!

I suppose I had better send my message home, but it hardly seems worth it, no one may now be there to receive it. I still find this relativity stuff hard to fathom- for us on the ship it is a 2 year journey, but for those at home ... a million years! But the physics has been known now for a long time,.. but here we are, living proof that time does slow down as your speed approaches that of light! No one has done this before- at least, we never got messages back from those that tried earlier, and none have ever returned! Why would they return to a doomed planet?

The first and last parts of the journey didn't have much effect at all, we were travelling too slow then, but those months around the one year mark, boy did the clock slow down for us. But we did not notice any difference within the ship, but looking outside, everything was changing rapidly.

Funny thing though, all we ever had was our normal gravity of 1 G and occasional course corrections. Not much when you think of the 10 G we experienced to get up to the parking orbit from our planet's surface... that seemed the worst bit of the whole journey up till now. And the 2 years.... well, they felt like ... 2 years of sheer boredom.when you are on a fully automated ship like ours. Still, much better than in the space station and waiting to go back down to the surface -after nature takes control again.

I wonder if those we are about to meet are far ahead of us, similar, or even less advanced than us? Probably way ahead of us, when I think back over our own history. There were those constant wars over who owned the resources, the unnecessary pollution, squandering of resources, the different living standards between the haves and the have nots. The meddling with nature, genetic engineering gone mad, the wiping out of whole continents when the arrogance of the scientists tried to outdo nature, and the revenge of the bacteria, like in medieval plagues. A few survived by using life boatsthe space stations, whilst the rest perished. Oh Yes, they will be far ahead of us, living in harmony and in tune with the environment! Oh, what a

lot they will be able to teach us if we ever can learn!

Hey, What is that alarm? Mmm, there is a small space craft just ahead of us, transmitting at very low power levels. Hah, that shows me that they are more advanced, even we would hardly be able to pick up that transmission from way back at that planet! And that probe is well beyond that star system too. I will release a probe of our own to intercept it because we are still moving too fast to stop.

OK, interceptor probe locked on, Eject! Autofind. Enter. Hey, why is it that I have to do everything around here myself. Any time there is something to do, the others make themselves scarce! Gee, 2 years with them is like a million with someone else. Joke, Ha Ha. Mmm, maybe I'm cracking up.

That's better, I now have a visual sighting onto that weird spacecraft. Certainly not streamlined like our ship. No life aboard- automated.., radioactive power source, but not responding to my greetings. Has strange markings on its side. I cannot understand the symbols- I will copy it exactly so we can try to crack its code.

It says "We came in peace for all mankind." Whatever that means.

And there is a sketch, Oh, I see, the planet location, third from the star,.... and something else- Oh No! It must be a depiction of what they look like.... Two types, and both UGLY!, and they each only have two eyes! How can they be more advanced when they only have two eyes!

Dances With Stars

It's been a long time since I've traversed the high country and when the last survey expeditions failed due to weather conditions I knew that this was my only hope.

The vast openness and vistas that present themselves on the Oakdale Farmlands hold much promise, with my trusted companion "John, sitting in chair" we made camp and set up our instruments. Luckily for me "Two Socks" kept me warm despite the freezing conditions.

What joy I beheld at the magnificent sky that shone down on us that night. Our instruments were attacked by gale force winds and snow. However we stood our post and awaited reinforcements.

My spirits soared when we were joined by "Ian Sees Like An Eagle" and "Attila The Brave". This was a great night indeed despite waging a constant battle with wind and snow.

Whilst completing our sky surveys our concentration was broken by the sounds of a small herd of Buffalo. They were nearby in the next paddock. We did not panic and quietly resumed our work. Losing interest the herd dispersed.

With our work now completed we hurried to report our findings on overland telegraph. We were fortunate to employ the services of Randall "Looks With Big Mirror" Pressman.

Before retiring "Two Socks" and I gazed upwards for the last time and I danced for joy under the stars.

Noel Sharpe

News Flash!!!!!!!!

MAS have been able to obtain Dr Fred Watson, Astronomer-in-Charge at the Anglo-Australian Observatory, to be our guest speaker at our October meeting. Those who have heard Fred speak will know him to be a dynamic speaker with loads of 'real astronomy' to talk about. Mark your calender NOW! October 16th.

Movie Review

Calling all Mars and Science Fiction enthusiasts: A new Movie on Mars is out on video called "Escape From Mars". I was expecting with this title, a B-grade Sci fi movie which had the same old theme of aliens being big, ugly scary monsters. However, to my surprise I was most impressed with the whole movie. I even liked it more than "Mission To Mars" which was a much bigger production and I loved that movie.

The movie starts out with the count down and launch of The Mars crew. During the film a few catastrophes hit the crew, naturally they survive (or do they?). The acting was a little cardboard, the plot a little thin, but the Martian landscape was awesome, for a moderately budged video movie.

Look for a surprise actor that all Stargate viewers will know. That is all I'll say except for a video movie it gets an 8.5/10. Is life found on the Red Planet? You'll have to watch the movie from the video shop.

"Escape From Mars can be borrowed from Camden Video Ezy (1 copy in store only), and it always seems out, plus Ingleburn Video Ezy (1 copy only). I'll be borrowing it again, so be quick if you wish to view this incredibly great movie.

Phil Ainsworth

Field Night "The Oaks"

For ease of future reference I shall refer to our two new observing sites as "The Oaks Airfield" and "Oakdale Farm", We were at the Oaks Airfield on the 3rd June.

John Rombi organised the early shift and I arrived with the second wave so to speak, The new red flashing road markers worked well and upon nearing them we dimmed our headlights so as not to blind everyone.

Upon opening my door it became very urgent that all available clothing be utilised. I felt like I was The Michelin Man, but by this time I didn't lock myself inside the car, as I remembered from a previous occasion and deactivated the child-proof locks.

In the early part of the night John assisted our new members with some basic stargazing which was really great. Following on from that I assisted with placing a lower magnification eyepiece (25mm Kellner wide angle). The results were superior when compared with the 12.5 mm eyepiece.

A basic guide to all new telescope users is that the higher the number on the eyepieces i.e. 20, 25, 30mm, will give brighter and larger fields of view than 6.7, 9 or 12.5 and for now please don't use your Barlow lenses until you are more experienced. This way you will get much better results from your telescope.

Upon setting up I realised it would be a good night for photography and of course accurate polar alignment is essential. Many things can go wrong when you're out in the cold. It was great that Peter had alignment in minutes but with severe icy cold conditions, his camera lens became an ice rink. He was not alone. Nearly all telescopes iced over, even Lloyd's 10" fogged its primary mirror. However, all was not lost as a stiff wind began blowing. A handy tip by Peter Druery is to angle your telescope into the wind which effectively clears the glass. It worked a treat and observations started again.

I was assisting Attila with his photography. Unfortunately results were not forthcoming as he didn't have spare film in his camera. Hours of work for no result. Peter also was halted by icy conditions and maybe some camera transport difficulties.

What worked well was that Peter, Attila and I were placed together at one end of the field and general observers were at the other. This worked because general observers were Messier hunting and locating new objects Also they enjoyed a common purpose. The photographers were busy with aligning, tracking and exposure times. It was much easier to help someone that's next to you than at the far end of the field.

Many other great sights were seen. The sky was mostly dark enough for deep sky work, excellent south to west but light polluted to the east. The sky glow is less than at Cobbitty. The airfield is a much preferred site as acknowledged by the members present. For myself, I had my best technical night. Nothing went wrong at all and I took about 16 Astro-photos.

I would like to share with you some points that could assist:

- When not in use, point the telescope groundwards.
- Put the lens cap on the scope, when using it just for piggyback photography
- Employ dew shields around the telescope and finder scope.
- A plastic soft drink bottle that's cut at both ends and spray painted black makes an excellent camera lens shield which helps against stray light and dewing.
- Be very patient. If something isn't working, just stop and start again. Try it a second time. If still unsuccessful, seek help or move onto something else. i.e. be productive.

It was a great night with 15 brave souls enduring the coldest of conditions in what was a very memorable experience.

Luke Skyhunter

Mansion of Man in the Moon

One of the earliest attempts at stellar science was to track the moon through its cycles each month by naming prominent star asterisms. The 'houses of the moon' or 'resting places' each month enabled some cultures to track times and seasons. They are thought to have been in use before the general constellations or even the zodiac.

They are mentioned in the literature of the Greeks, Egypt, Persia, Mesopotamia, India and China; although their origins are in dispute. Magellan found them in use around the Malay peninsular and even Newton charted them in detail.

They lay for the most part along the celestial equator or in the zodiac supposedly measuring the length of the moon's daily motion in its orbit. Sometimes 27 in number but usually 28 to agree with the lunar month..

Originally they started with the Pleaides, but because of precession the starting point is now Aries, like our Right Ascension.

The lunar mansion is typically $13^{\circ} 20'$ in length, and takes in some constellations which are not part of the zodiac, such as Orion and Ophiucus.

For your interest the Lunar Houses of the New Moon for the next few month are July 2 – Orion, July 28 – Gemini (Blue Moon?), and August 29 – Leo

Ian Cook

Mount Stability.

No, this is not the name of a new mountain range, it is the bane of any astronomer with a pair of binoculars or a telescope. The purchase of a complete telescope or just a mount, whether it is an equatorial or alt- azimuth can create a problem. How stable is this if I add extras like a camera, larger eyepieces etc? Well, up to now the advice has been to centre a bright star in the evepiece and to gently tap the focuser, if the image stabilises in less than 3 seconds your mount was adequate. The only problem with this system is that the tap given has no uniformity, so each person's test will vary greatly.

A uniform test has been created by world famous astronomer Roger Tuthill, his recommendation is: "Use a string to hang a 500g weight on your scope's focusing knob. While viewing a bright star with a 12mm eyepiece, cut the string and time how long it takes for the image to stabilise. If your scope stops vibrating in 3 seconds or less you can consider it acceptable," he says.

If you find your mount inadequate, the solution is to

hang a weight (approx 2-4 kilos) from the centre of the tripod. Quite a few of our members have tried this and found it to be a great help in keeping the image stable in the eyepiece. One final thing that I have found very helpful, the addition of spikes on the feet of your tripod, being able to anchor the tripod better in the ground adds greatly to the image stability.

John Rombi

Catching Mars on the Net

NASA has put more than 25000 photographs of Mars by Global Surveyor on the Internet.

Beginning in August 1997 and ending in September 1999, the images span one year in the life of Mars, 687 earth days, and give good detail in colour.

This is the biggest one time release of images for any planet in the history of solar system exploration.

You can access the site at www.jpl.nasa.gov/mgs

Ian Cook

Frosty the Snowman Meets M.A.S

Well, what can I say except BRRRRRR!!!!!!!. On Saturday May 27th, a few brave (or is that demented) members of our Society attended one of the bi-monthly observing nights, this one being held at Oakdale. This was our first chance to evaluate this site under clear skies and the consensus from all involved was WOW!!!!!. The extra travel time is well rewarded with the magnificent views, especially of the Milky Way at this time of year.

Noel, Randall, Ian, Attila and new members Peter and Jenny plus yours truly were greeted not only by a great sky but by the most adverse weather conditions in 30 years, the BRRRR!!!!! factor as I found out the next day was: 100km/h winds, temp 4° C with a wind chill factor that took it below zero. As we all stood around watching the amazing sky above, one thing became clear, that the clothes we were wearing were not enough. So out came all the extra coats, beanies, gloves etc, anything to stay warm. At this point I must stress to all the members that have not been to an observing night in winter, is that it gets VERY COLD and that adequate clothing, food and HOT beverage is a must!!!!. Now on with the observing.

After setting up the scopes, Noel and Attila busied themselves with photographing the wonders above and I'm sure that by now you have seen the fruits of their labour.

Ian, Randall and myself continued the Messier Hunt. We were all successful in adding to our list. Ian has hit the magic 30, mainly using binoculars, whilst Randall racked up his first 10,.WELL DONE!!! guys. My search started this time last year, I am currently up to 62.

The one humorous thing on an otherwise bitter night, was the attempt by the gentleman above to answer the call of nature, I won't get into the specifics after all this is a family publication, suffice to say that when you're wearing 3 or 4 layers of clothes the outcome can be rather amusing.

Well I hope to see you, YES YOU, on the next observing night, remember you don't need binoculars or a telescope, the most important thing to bring is your curiosity and enthusiasm.

John Rombi

Next field nights are: 24th June The Oaks Airfield 1st July Oakdale Farm 8th July The Oaks Airfield 29th July Oakdale Farm

SECTION LEADERS

The following are the coordinators of these special interests in particular fields

DEEP SKY: Pete & Bobbie Elston Phone 02 46474491; e-mail: eclipse@lightstorm.com.au

ASTRO COMPUTING: Daniel Ross (02 9790 5838)

AMATEUR TELESCOPE MAKING: Dick Everett Phone 02 96051564

OBSERVING SITE: Phone Noel Sharpe for conditions. Mobile 0410 445 041.

TELESCOPES : NOVICE/INTERMEDIATE Noel Sharpe ADVANCED: Peter Druery.

ASTROPHOTOGRAPHY: NOVICE: Noel Sharpe ADVANCED: Peter Druery

PLANET ADVICE: Phil Ainsworth

Messier Website I

While surfing Altavista for "Messier List" I came across a great site. It is: <u>http://seds.lpl.arizona.edu/</u> messier/Messier.html

It has a poster of all the M objects. Just click the one you want and, bingo, a large colour picture. It also has a lot of historical info re Charles Messier and stacks of links to other Messier related sites.

Aliens On The Way

Scientists and particularly one named Frank Drake of The SETI Institute believes it's fast approaching the time (within 10 years) when aliens will be heard on radio dishes all over the world and that we will no longer have to believe we are alone.

Aliens may look similar to human beings or Klingons. Let's hope they don't resemble Cardassians and act like Q. Seriously, when aliens contact us they are more likely to be far in advance of us.

I believe that in the forefront of observing for aliens are the Australian scientists and that they may be the first to find the elusive ET.

What type of life forms will mankind find. Most likely I believe Carbon Based and most likely they will show appendages similar to our (eyes, ears, nose etc.) At least I hope, and that they don't look like giant spiders or even worse cockroaches.

As Frank Drake says, aliens will probably have four arms, especially to carry the groceries. However they look, humans will become the new species on the block, and will have much to learn from these technically advanced races.

Advancements in radio astronomy are leaping forward and with these advances we must soon contact some one or some species, providing they are on our radio transmissions. The latest seems that SETI is also looking and possibly will view lasers and messages will be contained in them. Maybe we will soon hear some of their TV shows, hopefully more interesting than our "I Love Lucy" which would be now far out into the galaxy.

I believe that if mankind did hear from an extraterrestrial race, it would give us a new perspective on life and maybe, just maybe we would work together as one race, one world.

In America Aricebo does a lot of SETI searching. In Australia it's the Parkes Observatory which is affiliated with our own Western Sydney University where we hold our meeting. The University is linked with Southern Serendip CSIRO Australian Telescope and The University of Berkeley Telescope. Over 5 years of listening, Australian scientists will hear up to 72 million channels simultaneously, hoping for a pattern that is not being produced naturally.

To be involved in SETI hook up with a small computer software package from the home page from SETI and start searching for ET every time your computer is on.

SETI started over 40 years ago and no signal has yet been detected, but I believe within 10-20 years with NASA's planet search and SETI we will view an Earthlike world and hear from its inhabitants.

Phillip Ainsworth

Scorpion or Crocodile?

When Ragbir gave his talk on Aboriginal astronomy, it reminded me of some material I had on the subject. One of the most striking of their star groups is that of Ingalpir, the Crocodile, as told by people from Arnhem Land. (However, the meaning of this star group varies between different local tribes.)

At this time of the year, the forbidding shape of the crocodile is very dominant in the sky. The four stars in a line at the northern end represent the base of Ingalpir's tail and his straddled hind legs.



The long curve and 'hook' represents his powerful torso and snapping head. This constellation has many rich meanings to various tribes. Can you spot the crocodile? What? It's Scorpius, you say. You must belong to a different tribe.

Bob Bee

Sagittarius The Archer

This has to be one of the most interesting and object packed constellations in the sky. Sagittarius is our window to the galactic centre – the very core of The Milky Way. But even that window has its curtain partly drawn – the Great Rift mocks our attempts to see the very nucleus of our Galaxy's centre where, radio astronomy tells us, stars are jam packed together at distances measured in 100s of astronomical units, not parsecs. Instead we have tantalising glimpses of the hub, with stars so numerous, they look like spatter painting gone berserk.

But that's another story. In this article we will be looking at the stars and deep space objects seen within the constellation Sagittarius itself. Due to the vast number of interesting objects (Messier numbered a staggering 15 objects in Sagittarius), this treatment has to be relatively brief. However, I would recommend additional reading to obtain a fuller picture. (A very detailed account is given in "The Constellations" by Lloyd Motz and Carol Nathanson, available in Campbelltown Library, 523.8 MOT) and of course the old faithful, Burnham's Celestial Handbook..

Sagittarius (The Archer) represents, in traditional terms, a centaur (half man-half beast) with a bow and arrow aimed at Scorpius. If you use your imagination, you can see such a figure in the map provided here. (Hint: The bow is marked by λ , δ and ε Sagittarii.)



However, there is a more popular image in the stars, which I must admit I find easier to visualise and follow. That is – The Teapot. ("I'm a little teapot, short and stout..."). Use the same stars, connect the dots differently, and ...voila! The confusing thing is that some book accounts of the names of stars etc jump between one image and the next. One moment they're talking about the tip of the arrow and the next about the spout of the teapot.

So, to remove (or add to) the confusion, I have provided another sketch, with the stars connected in Teapot mode. Take your pick. (By the way, in each sketch I've shown the curve of the crown in Corona Australis. This does not fall into Sagittarius, but it's a good reference point in the sky.) Sagittarius defies the convention of having its brightest stars numbered in order of the Greek alphabet. Thus, Alpha (α) Sagittarius (Sgr) is not the brightest star. In fact Epsilon (ϵ) is. More of that later.



Let's look at some of the stars. (And I mean that. Don't just read this article. Take it and a red torch outside and look at the stars, with binoculars or scope. You'll be surprised what you will see.)

 α Sagittarii (Sgr) – called Rukbat (Archer's Knee). This is mag 4.0, a blue-white star 275 ly away. As you can see, it's a long way from the Teapot, and is in that nice little triangle of stars, near Corona Australis.

 β Sgr – called Arkab (Tendon) is an interesting naked-eye double. It is located in that triangle. β^1 (called Arkab Prior, Arabic for Archilles tendon) is a bluewhite star, mag 4.0, 190 ly. In a small telescope, you should be able to see its mag. 7.2 companion, separated by 28.5" of arc. β^2 about 180 ly away, is a mag 4.3 white star. This banana duo are not related by gravity. They just happen to be in line of sight, though only 10 Ly. apart.

(It's interesting that Burnham does not list α or β in his Celestial Handbook. I have no idea why. Maybe because they are so far south of the main part of Sagittarius (-40° & -44°) next to Corona Australis, that he couldn't observe them? If anyone knows, please share it with the rest of us.)

 γ Sgr is called Alnasl (the point of the arrow). It is also the tip of the teapot's spout. At mag. 3.0, it is a yellow class K giant, about 130 l.y. distant. γ offers us a hint of the direction of the Milky Way core. The bright starry region just north of γ gives an indication of the direction of the core.

δ Sgr is called Kaus Media (or Meridionalis), meaning the middle of the bow. It also forms the top part of the teapot spout. δ is an orange giant, mag.2.7, about 80 ly away. It has a luminosity 60 times that of our Sun

 ε Sgr is called Kaus Australis (southern part of bow.) It's also the bottom of the spout. ε (Epsilon) is the brightest star in Sagittarius, mag. 1.8. A blue-white giant, with a luminosity 250 times that of our Sun, it lies about 100 l.y. away. 3.3' to the NNW binocs should pick up a 7th mag. companion star.

λ Sgr is Kaus Borealis
(northern part of the bow). It's also the top of the teapot lid.
Mag. 2.8, a yellow-orange

giant about 70 l.y. away and is placed such that the background sky comprises numerous stars from the galactic hub.

 σ Sgr (called Nunki). A bluewhite star about 250 l.y. away, mag 2.0, it has a luminosity 1100 times that of our Sun..

 φ Sgr joins the handle top to the teapot. It's a class B8 giant, 600 l.y. away, and shines as bright as 1600 Suns.

There are more interesting stars (some binaries) in Sagittarius than there is space in this article. ζ (Zeta) is a binary, though a close one. η (Eta) a mag 3 red giant, has 9th mag white companion. ξ (Xi) is a naked eye binary. And so on.

Here's a location list for your use:

α	19h 24m, -40° 37'
β	19h 22m, -44° 27'
γ	18h 3m, -30° 26'
δ	18h 21m, -30°
ε	18h 24m, -30°
λ	18h 25m, -25°
σ	18h 52m, -26°
Ø	18h 45m -27°

Messier Objects.

Now we get down to it. As I said earlier, there are 15 M Objects in Sagittarius. They are M8, 17, 18, 20, 21, 22, 23, 24, 25, 28, 54, 55, 69, 70 & 75. Their approx. positions are shown on the map. We'll have a look here at some of the better known ones.

M8 (Lagoon Nebula) NGC

6523. A good target for binocs or scopes (also visible to naked eye), appearing as a milky white nebula, with a dark rift down its centre (the lagoon). Of course, the beautiful long exposure pictures show it as red. The nebula itself covers an area of about three Moons. Look for the star cluster (NGC 6530) within the nebula. M8 is about 5200 ly away.



M17 (Omega, or Horseshoe Nebula) NGC 6618. (Also called the Swan). A popular object. Visible in binocs as a wedge shape (about full moon size). Larger scopes reveal an arch shaped nebula, like the Greek letter Omega Ω . It can also look like a (short necked) swan. About 5,700 ly away.

M20 (Triffid nebula) NGC

6514. Looks better in photos than by eye, but still worth a peek. Triffid it may be to some, but it still looks like a pansy to me. The three dark dust lanes neatly trisect the glowing ionised gas, lit by the multiple star (HN40) within it born from the gas cloud. In the same field of view, you should also see M21 (NGC6531), a loose open cluster of about 50 stars. M20 is about 5,200 ly away.



M22 (NGC 6656) is a great globular cluster, ranking just behind Ω Centauri and 47 Tucanae. Visible as a faint fuzzy star to the naked eye, it looks good in binocs and better in a scope. (Can you detect a slightly elliptical outline?) Contains about $\frac{1}{2}$ million stars, and is about 10,000 ly away.



M23 (NGC 6494) is an open cluster. Barely resolvable with binocs, there are about 150 stars widely spread over a ¹/₂ degree field. Fairly elongated in shape, with some stars forming arcs. M23 is about 2,200 ly away.

M24 (Small Sagittarius Star Cloud) is a rich Milk? Way star field. It appears grainy and shimmering in binoculars. Measuring about 2° by 1° it is one of the most prominent parts of the Milky way to the naked eye. This star cloud (it is not a nebula) contains. millions of Milky Wav stars. Photos show a pair of 'black eyes' caused by two dark nebulae near the top. It also contains a small tight cluster of 50 to 100 stars (NGC 6603).

M25 (IC 4725) contains about 50 loosely scattered stars. Good for binocs with mags from 6 to 10. Interesting because of the presence of U Sgr, a yellow supergiant Cepheid variable star (varies from mag 6 to 7 in1 week). Its existence in an open cluster is unusual and helpful for astronomers' calibration of their Cepheid P-L charts.

M55 (NGC 6809) is a globular cluster (7th mag) which in binocs appears rather nebulous. You may be able to resolve individual stars in small to larger scopes. The central condensation of the cluster is hard to spot. M55 is about 17,000 ly away.

Great Sagittarius Star Cloud, Barnard 86 and NGC 6520.

Just north of γ Sgr., Eke steam from the teapot, there is the spectacular Great Sagittarius Star Cloud, millions of stars lying near the central hub of our Galaxy, some 30,000 ly away. Included in that cloud, is Barnard 86, a famous dark nebula (18h, -27° 50') and in the same field of view, an open cluster NGC 6520. If you look at RA 17h 46.1m, -28° 51' you would be looking towards (but unfortunately not seeing) Sagittarius A which is an intense radio source that marks the exact centre of the core of our Galaxy.

Where to find the Messier objects in Sagittarius:

M.No.	RA & Declination
8	18h 1.6m, -24° 20'
17	18h 18m, -16° 12'
18	18h 18m, -17° 8'
20	18h 1m, -13° 2'
21	18h 4m, -22° 30'
22	18h 33m, -23° 58'
23	17h 54m, -19° 1'
24	18h 15.5m, -18° 27'
25	18h 31m, -19° 14'
28	18h 24m, -24° 52'
54	18h 54m, -30° 28'
55	19h 39m, - 30° 57'
69	18h 30m, -32° 21'
70	18h 42m, -32° 17'
75	29h 3m, -22° 4'

As you can see, Sagittarius is a gold mine of things to see, both with the naked eye, binoculars and telescopes. Go get 'em.

Bob Bee

Taking the Mickey Out of Pluto

Ask any science student the name of the 9th planet and they will answer Pluto. Correct?

Recently, a number of astronomers have questioned whether Pluto, named after the Greek God of the Underworld (sorry, it was NOT named after Mickey Mouse's faithful dog) is really a Claytons planet – a planet you're having when you're not having a planet.

It is timely to consider this now, as on 2nd June, Pluto was in opposition. That is, at a mere 4,300 million km away (30 times further from the Sun that Earth), Pluto was at its closest to us this year.

Don't bother to try and see it unless you have at least a 200 mm telescope. It is far too faint.

Why are they trying to downgrade Pluto from planet status? Mostly because of its size and position. At 2,300 km diameter and 1/500th the mass of Earth, Pluto is smaller than 7 of the other planets' moons, including our own. Its width would only reach from Sydney to the West Australian border.

Secondly, Pluto is located outside the orbit of Neptune in the vicinity of a swarm of 70,000 other fair sized objects called the Kuiper Belt. Many astronomers believe that Pluto is just the largest of them. They argue that if Pluto had been discovered today, and not in 1930 by American Clyde Tombaugh, it would simply be classified as a large Kuiper Belt object and not a planet. Planets are hard to define, and in many ways Pluto just doesn't cut it.

However, astronomers recognise that 70 years of tradition are hard to undo. Until they discover another Kuiper Belt object equal or larger than Pluto (and this is highly likely), Pluto can stay a planet. But watch that space!

Bob Bee

(The above is a reproduction of my recent column in the Chronicle. It seemed to raise a few hackles so I reproduce it here. Nothing like a good controversy. – Ed.)

Messier Website II

Another great site I found was <u>www.asrto.wisc.edu/~dolan/</u> constellations/messier_list.html

There are more images of the 110 M objects. Plus, if you go to the end of the site, there is a link back to the original "constellations" page which gives drawings and details of all 88 constellations.

After this site, there are still 434,305 Messier related web sites to visit, according to Altavista.