

PRIME FOCUS

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PRESIDENT'S REPORT

Hello and welcome to all our members and guests. Our Society is growing and we now have over 50 members. My goal for our first year was 50 members and we achieved that. We will soon have more as some members have still not quite paid their membership fees. A reminder that as from 1st September a \$10 joining fee was introduced. Thank you to all those who have paid their membership.

Thank you to all our members and guests who helped out and attended the University Open Day and Star Night. It would not have been the success it was with out your excellent participation.

MACQUARIE NIGHT on the 19th October (yes only 2 days ago) went well. Members of the Society came out in force. Other societies such as Sutherland participated, together with a stunning visual display and talk on the Hubble Space Telescope by Sky & Space's Jonathan Nally, who incidently will be speaking at our Society early next year. Steve Manos will now be speaking on March 17th on the topic Siding Spring and the Anglo Australian Telescope. April 21st is yet to be confirmed but should

be a guest speaker, possibly Jonathan Nally. Other tentative guests have been asked but not confirmed.

COMING UP: Tonight we are privileged to have a guest speaker, Rolando Demichiel from Sutherland Astronomical Society. He is going to talk to us on the very debatable topic 'Cosmology and the Big Bang Theory.'

On **November 18th** (last for the year), we will have our very own Ragbir Bhathal of the SETI Institute talking to us about his new book *Australian Astronomers*.

On **February 17th** (our first in 1997)

Chris and Robbie are showing us computers in relation to Astronomy. Also in February we will be having our **Annual General Meeting** where we vote for positions. This should not take all night but a short • hour. If everyone attends then no one will miss out on voting, or standing for a position. Please come.

Please note: There will be no meetings in December and January.

POSTCODE SATURN-- Anyone wishing to have their name put onto a CD-Rom and flown out to Saturn can do so by signing the Macarthur Astronomical Society's postcard. See me for details. Chris Barnett and myself thought it a good idea for the

Society to do this as a whole. IT MUST BE SIGNED THIS MONTH.

STAR NIGHT-- This will be held with members and their families on **Saturday, 16th November**. It will be at Robbie Charlton's place (thanks, Robbie) at 63 Mersey Road, Bringelly (off the Northern Road). Bring your telescope, binoculars, or just yourself and family.

TELESCOPE FOR SALE-- Well it was and I bought it from Noel Sharpe. No longer does your president not have a scope and I might say it's great being able to go out and view the night sky with a telescope. Thanks Noel. Our Vice president has also purchased a new 8" scope. I look forward to seeing through it on our next star night.

CAMP CONSTELLATION IS OFFICIALLY OFF for 1996. Hopefully a site or property can be arranged in 1997 for a star camp.

CHRISTMAS PICNIC-- Christmas is coming sooner than we think and our little get together will be upon us before we know it. All those coming **PLEASE** write your name on the notice board. It is BYO everything and there will be a portable BBQ facility. Swings and a large play area are available for children. There will be a small presentation to some outstanding achievers in our club.

VOTING FOR AWARDS --Please give your voting slip to any of the committee members at latest at the November meeting. It is not compulsory, just very much appreciated and will make our day that much more fun if a lot of members have had there say in who they believe should pick up an award.

PUZZLE-- Thank you Bob for a most absorbing puzzle. I know I had difficulty with it but finally struggled to complete it

by only looking at one answer. (Well maybe two). Hope you found the astronaut on the Moon puzzle just as absorbing. Answers in the Journal.

JOURNAL NEWS -- Just a reminder that old Journals can be picked up from Noel Sharpe at the Macarthur Square branch of the Commonwealth Bank. Free to members, 50c for non-members. New members can buy one for \$1.00 if they are just visiting or free if they join on the night. -- Thankyou for everyone who contributed to the last Journal.

THANK YOU NOEL--A big thank you to Noel for his very entertaining magic show - I mean comet talk. It went over very well especially with the younger audience of the night.

LIBRARY REPORT-- Thank you to Terry for donating some books toward the library. Your contribution is greatly appreciated.

FOR SALE-- A small telescope, well looked after and sells for only \$150. It is a 60mm TASCOS refractor, and comes with finder scope, 2 eye pieces, 1 Barlow lens, 1 alt-azimuth mounting, stand and instruction booklet. I believe this to be a real bargain. Ring if interested Mr and Mrs Houseman at Camden on (046) 55-8317.

LATEST NEWS:

* The Space Shuttle Atlantis has finally picked up American Astronaut Sharon Lucid after her American record breaking 6 months in space. When the Shuttle finally landed she insisted on walking out of the ship and did so comfortably. She is undergoing medical tests but appears very healthy and strong.

* **Next Month** Mars 96 launches and Global Surveyor - look at previous Journal for dates.

(Phil Ainsworth - President)



A HARD DAY'S NIGHT

No, this is not a story on the Fab Four but rather a story about the University's Open Day at Macarthur, held on Sunday, 8th of September.

It was an important day for the Society and a very good impression was made by the excellent display stand organised by Robbie Charlton, Chris Barnett and Phil Ainsworth. Several computers were on hand in which information about planets and the solar system were displayed. These were printed out at the request of the many people who frequented the stand.

The three gentlemen previously mentioned owned and operated these computers throughout the day and ere later joined by Steve Manos.

Our President decided to show another side to his many talents - well actually it was his backside that was showing. With head down and rear end up, Phil displayed his prowess with a shifting spanner and muffler bandage. Unfortunately for Phil, his car dropped its tailpipe and developed a roar that would do a space shuttle proud. Hasty repairs were made courtesy of the local tow truck company who well and truly gave Phil's car the jack.

There were many activities to enjoy that day: Dr Ragbir Bhathal's talk on Mars; the Careflight helicopter; the British Astronomical Society's telescopic viewing of the Sun; and of course the many free hotdogs supplied courtesy of radio station 2WS.

It was a huge day with many of the university's facilities open for inspection. Also, information concerning the courses at the university was made available to the public.

With the day's activities drawing to a close, it was time for the telescopes to make an appearance. It was decided to make camp on a hill and several astronomers decided to play with small pieces of red cellophane, just to amuse themselves.

We had the best turnout of telescopes (I counted six) and 'thank yous' must go to Eric, Peter, Michael and Mario and the scope supplied by York Optical and operated by Terry Storey.

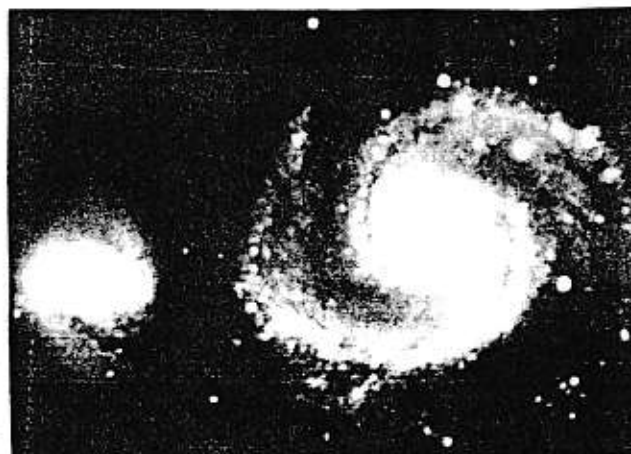
Many members of the public braved the wind and the cold to catch sight of Jupiter and its moons, Alpha Centauri, the Jewel Box etc. Indeed, the conditions were not favourable and Phillip's opening address was cut short when a couple of children developed frost bite from the chilling winds.

As far as a promotional opportunity for our society was concerned, the day and night was a big success and we've gained new members as a result.

I hope I've mentioned everyone who contributed, but if I've missed anyone, please accept my apologies.

I do know the University was very appreciative of our contributions and I'm sure that many opportunities will come our way in the future.

Regards,
Noel Sharpe (Vice President)





THE MESSIER OBJECTS

(Written by Bob Bee)

Charles Messier (1730-1817) was a comet hunting French astronomer (he is credited with 13 independent comet discoveries) who was the first to compile a systematic catalog of nebula and star clusters. The irony is that he wasn't aware of the nature of what he was cataloging. He just knew that they were blurry sources of celestial light and that THEY WERE NOT COMETS. He compiled a list of these blurry objects so comet hunters, such as himself, would not waste time with them.

Little did Messier know that his list of 103 objects (later extended to 110 by others) would become the best known and most referred to catalog of 'deep space' objects in astronomy.

Bien cuit, Charles!

Each Messier object is identified with a number preceded by the letter M. eg M1 (Crab Nebula), M31 (Andromeda Galaxy).

Below is a complete list of the 110 Messier objects. The corresponding New General Catalog No. (NGC) is shown, along with the Right Ascension and Declination coordinates. Most of these are visible in binoculars or small to medium telescopes. How many can you find in your telescope?

A good source of detailed information about the features of each Messier object is the book 'The Constellations' by Lloyd Motz (Reference 523.8 MOT) in Cambelltown Library. Refer to the Index under M for page references to each Messier object.

(Abbreviations used: GC=Globular Cluster; OC=Open Cluster; Gal=Galaxy; Neb=Nebula. Distance = xx ly. Age = xm yrs (x million years), xb yrs (x billion years)).

M1 (NGC1952): RA 5h31m, dec +21°59'
Crab Nebula. in Taurus. 3,500 ly.
M2 (NGC7089): RA 21h33m, dec -0°49'
GC in Aquarius.
M3 (NGC5272): RA 13h39m, dec +28°38'
GC in Canes Venatici
M4 (NGC6121): RA 16h20.6m, dec -26°24'
GC in Scorpius. 6000-10,000 ly.
M5 (NGC5904): RA 15h16m, dec +2°16'
GC in Serpens. <27,000 ly. >10b yrs old.
M6 (NGC6405): RA 17h36.8m, dec -32°11'
OC in Scorpius. 1300-2000 ly. 100m yrs old.
M7 (NGC6475): RA 17h50.7m, dec - 34°48'
OC in Scorpius. 800 ly. 260m yrs old.
M8 (NGC6523): RA 18h1.6m, dec - 24°20'
Lagoon Neb. in Sagittarius.
M9 (NG6333): RA 17h16m, dec - 18°28'
GC in Ophiuchus. 26,000 ly.
M10 (NGC6254): RA 16h54.5m, dec - 4°2'
GC in Ophiuchus. 16-22,000 ly.
M11 (NGC6705): RA 18h48m, dec -6°20'
OC in Scutum. 5,500 ly. 500m yrs old.
M12 (NGC6218): RA 16h46m, dec -1°57'
GC in Ophiuchus.

M13 (NGC6205): RA 16h40m, dec +36°33'
GC in Hercules. 27,000 ly. 10b yrs old.
M14 (NGC6402): RA 17h35m, dec -3°13'
GC in Ophiuchus. 70,000 ly.
M15 (NGC7978): RA 21h29m, dec +12°10'
GC in Pegasus. 40,000 ly.
M16 (NGC6611): RA 18h16m, dec -13°48'
OC in Serpens. 8,000 ly. 800,000 yrs old.
M17 (NGC6618): RA 18h18m, dec -16°12'
Omega, or Horseshoe Nebula in Sagittarius.
M18 (NGC6613): RA 18h18m, dec -17°8'
OC (with 12 stars) in Sagittarius.
M19 (NGC6273): 16h59.5m, dec -26°11'
GC in Ophiuchus. 20,000 ly.
M20 (NGC6514): RA 18h01m, dec -23°2'
Triffid Nebula in Sagittarius. 5,216 ly.
M21 (NGC6531): RA 18h04m, dec -22°30'
OC (50 stars) in Sagittarius.
M22 (NGC6656): RA 18h33m, dec -23°58'
GC in Sagittarius. 10,000 ly. (1/2mill. stars)
M23 (NGC6494): RA 17h54m, dec -19°01'
OC in Sagittarius. (About 100 stars)
M24 (NGC6603): RA 18h15.5m, dec -18°27'
Small Star Cloud and OC in Sagittarius.

MESSIER OBJECTS (Cont'd)

M25 (IC4725): RA 18h31m, dec - 19°14'
OC in Sagittarius. (~3.5° SE of M24).
M26 (NGC6694): RA 18h44m, dec - 9°24'
OC in Scutum. (Like jewelled horseshoe)
M27 (NGC6853): RA 19h59m, dec +22°43'
Dumbbell Nebula in Vulpecula (The Fox).
M28 (NGC6626): RA 18h24m, dec -24°52'
GC in Sagittarius.
M29 (NGC6913): RA 20h23m, dec +38°31'
OC in Cygnus.
M30 (NGC7099): RA 21h38m, dec -23°25'
GC in Capricorn. 40,000 ly.
M31 (NGC224): RA 0h40m, dec +41°0'
Great Andromeda Galaxy. 2.2 million ly.
M32 (NGC221): RA 0h43m, de +40°52'
Elliptical satellite galaxy of M31.
M33 (NGC598): RA 1h31m, dec +30°24'
Pinwheel Galaxy (Class Sc) in Triangulum.
M34 (NGC1039): RA 2h38.8m, dec +42°34'
OC in Perseus. 1,500 ly. 100m yrs old.
M35 (NGC2168): RA 6h6m, dec +24°20'
OC in Gemini. 2,200 ly.
M36 (NGC1960): RA 5h32.9m, dec +34°7'
OC in Auriga. (~60 stars).
M37 (NGC2099): RA 5h49m, dec +32°33'
OC in Auriga. (~150 stars). 200m yrs old.
M38 (NGC1912): RA 5h25m, dec +35°48'
OC in Auriga. (~100 stars).
M39 (NGC7092): RA 21h32m, dec +48°26'
OC in Cygnus.
M40 : RA 12h20m, dec + 58°20'
Double Star in Ursa Major.
M41 (NGC2287): RA 6h46m, dec -20°44'
OC in Canis Major. (~150 stars).
M42 (NGC1976): RA 5h32.9m, dec -5°25'
Great Nebula in Orion. 1,600 ly. 3×10^5 yrs.
M43 (NGC1982): RA 5h33.1m, dec -5°18'
Nebula in Orion, companion to M42.
M44 (NGC2632): RA 8h37.5m, dec +19°52'
Beehive Star Cluster in Cancer. (>350 stars).
M45 (NGC1432): RA 3h45m, dec +24°6'
The Pleides, Open Cluster in Taurus.
M46 (NGC2437): RA 7h39.6m, dec -14°42'
OC in Puppis. (~150 stars). 3200-5000 ly.
M47 (NGC2422): RA 7h36m, dec -14°29'
OC in Puppis. (~45 stars). Near M46.

M48 (NGC2548): RA 8h11m, dec -5°38'
OC in Hydra. (~50 stars). 1,700 ly.
M49 (NGC4472): RA 12h27m, dec +8°16'
Elliptical Galaxy in Virgo. Largest known.
M50 (NGC2323): RA 7h2m, dec - 8°21'
OC in Monoceros.
M51 (NGC5194): RA 13h28m, dec +47°27'
Whirlpool Galaxy (Spiral) in Canes Venatici.
M52 (NGC7654): RA 23h24m, dec +61°37'
OC in Cassiopeia. Rich and dense. 3,000 ly.
M53 (NGC5024): RA 13h10m, dec +18°26'
GC in Coma Berenices. 65,000 ly.
M54 (NGC6715): RA 18h54m, dec -30°28'
GC in Sagittarius.
M55 (NGC6809): RA 19h39m, dec -30°57'
GC in Sagittarius.
M56 (NGC6779): RA 19h16m, dec +30°11'
GC in Lyra.
M57 (NGC620): RA 18h52m, dec +32°58'
Ring Nebula in Lyra. 2,000 ly. 15,000yrs old
M58 (NGC4579): RA 12h35m, dec +12°5'
Barred Spiral Galaxy in Virgo.
M59 (NGC4621): RA 12h27m, dec +13°6'
Elliptical Galaxy in Virgo.
M60 (NGC4649): RA 12h34m, dec +11°33'
Elliptical Galaxy in Virgo.
M61 (NGC4303): RA 12h19m, dec +4°45'
Spiral Galaxy (face-on) in Virgo.
M62 (NGC6266): RA 16h58m, dec -30°3'
GC (irregular) in Scorpio. 26,000 ly.
M63 (NGC5055): RA 13h16m, dec +42°2'
Spiral Galaxy in Canes Venatici.
M64 (NGC4826): RA 12h54m, dec +21°57'
Black-Eye Galaxy in Coma Berenices.
M65 (NGC3623): RA 11h19m, dec +13°6'
Spiral Galaxy in Leo.
M66 (NGC3627): RA 11h20m, dec +13°0'
Spiral Galaxy in Leo. Companion to M65.
M67 (NGC2682): RA 8h48m, dec +12°0'
OC in Cancer. 2,500 ly. 10b yrs old.
M68 (NGC4590): RA 12h39m, dec -26°45'
GC in Hydra.
M69 (NGC6637): RA 18h30m, dec -32°21'
GC in Sagittarius. 36,000 ly.
M70 (NGC 6681): RA 18h42m, dec -32°17'
GC in Sagittarius.



MESSIER OBJECTS (Cont'd)

Though all the M objects are interesting in their own way, some are more interesting than others. It all depends on how large your binoculars or telescope is.

On this page, I have attempted to select some of the better known (and better seen) Messier objects and provide some additional information to that in the previous table. The following is by no means exhaustive. Again, the advice is - if you want more info, try the library - it's all there.

M1 - CRAB NEBULA. This is a celebrated object, the remains of a supernova in 1054 AD with a pulsar at its centre. On clear dark nights it can be glimpsed thru' binocs. Only a whisp of nubulosity in a small scope.

M3 - A beautiful Glob.Cluster. 100mm+ scopes can resolve some outer region stars.

M4 - Like a large wooly ball in binocs. It's not as concentrated at centre as other GCs.

M6 - Sometimes called the Butterfly Cluster.

M7 - Its central stars are in an X-shape against the Milky Way's cloudy background. Both M6 & M7 are excellent viewing for binoculars and small scopes.

M8 - A famous gaseous nebular, great for binocs and small scopes.

M13 - Brightest GC in North sky. We can just see it above North horizon around July.

M17 - Moon sized though binocs, better still through small to medium scopes.

M22 - Third largest GC known, next to Omega Centauri and 47 Tucanae. Excellent in binocs, better in small scopes.

M31 - Andromeda Galaxy - low on North horizon - best seen on low magnification.

M41 - Suitable for low power viewing and also naked eye in good conditions.

M42 - A most celebrated object. Visible to naked eye, great in small to medium scopes. Contains new born stars in Trapezium.

M44 - A misty spot to naked eye, a 'swarm' of bees in a low power scope.

M45 - Pleiades, an ancient eye chart. Known to some as Seven Sisters, or Microdipper.

M48 - Fine sight in binoculars. Triangular formation. Good in small scope.

M49 - One of the largest know elliptical galaxies. Only half Milky Way's diameter but five times as massive.

M57 - Ring Nebular. Low on the horizon and a 150mm or larger scope needed.

M67 - small dense GC. Oldest known. A misty ellipse in binocs and small scopes.

M74 - A 'classical' face-on spiral with multiple arms. Dust lanes visible in small scopes but > 150mm needed for best view.

M83 - Beautiful face-on spiral. Visible in small scope. Can trace arms with 150mm +.

M88 - Near edge-on, OK for small scope.

M100- Largest spiral galaxy in Virgo cluster. There was a supernova in 1979.

M104 - An 8th Mag. Side-on spiral. Has a large nuclear bulge, 'Saturn' looking. Scopes 150mm+ can show the dark dust lanes. In, but not part of, the Virgo Cluster.

So, with all that - **GO GET 'EM.** Maybe some of our scope equipped members could give us a report on some of their sightings of the above and other Messier objects in a future 'Prime Focus'.

(Bob Bee)



"A ROYAL COMMISSION" INTO WHO MURDERED THE DINOSAURS - PART 1.

(By Noel Sharpe - Crime Correspondent)

It was announced today that State Parliament will be recalled to discuss the Terms of Reference for the upcoming Dinosaur Death "Royal Commission". Such Commission will be headed by the Right Honourable Sherlock Holmes a Court. Unfortunately the earlier choice of Ace Ventura proved to be a really dumb and dumber choice as he wore just one mask too many.

The Terms of Reference will be: Who, What, When, How, Why and did anyone get the number of the truck that hit me?

Now Sherlock -can I call him Sherlock? - has tabled a rather unique - and some say totally unrelated - piece of information for the Commission to ponder. We shall mark this as 'Evidence A'.

EVIDENCE A: White Sands Missile Base, July 16th, 1945.

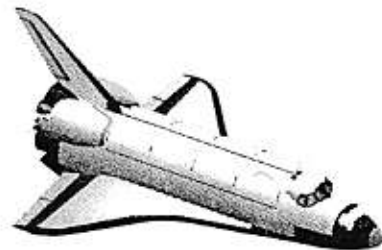
This caused a double disillusion of Parliament as it took a whole 3 years and \$25 million to come up with just Evidence A. So what is this evidence?

Well, it appears that it was the first atomic explosion and it is important for the Commission to understand the meaning of the word 'scale'. At White Sands, which is in the New Mexico desert, the scientists of the day did not know what would happen if they let rip with an atomic bomb. It had never been done before, so a few days before the test they needed a calibration, or a guide, to see how big is the bang. They stacked 100 tons of TNT very neatly on a tower above the desert floor. To make it all fit together, a couple of good belts with a sledgehammer did just the trick. I'm no

rocket scientist, but these guys were nuts. Anyway, they ran into the desert and pressed downward on the plunger. No, not the coffee plunger - that one's broken - but the other one. Then BOOOOOM!!! A very nice little mushroom cloud resulted that equalled 100 tons of TNT.

A few days later - the first atomic explosion. The yield of that was 21,000 tons of TNT. The same yield was dropped on two Japanese cities which caused a fair bit of death and destruction and the rest is history.

Sherlock says we must keep in mind the 'scale of things' or 'how big is big'. This will become apparent as the Commission drags on and on. Stay tuned for the next sitting when we will present Evidence B on - Who Murdered the Dinosaurs?.



SHUTTLE PRIVATISED

As from the 1st October, the US Space Shuttle program will be privatised. NASA has signed an \$8.88 billion contract with a private group, United Space Alliance Consortium. This Group already runs maintenance operations at the Kennedy Space Flight Centre in Cape Canaveral, Florida.

The deal will allow ASA to cut costs, which totalled more than \$4 billion for the 1996 Fiscal year, according to Space Agency estimates. (Phil Ainsworth)

GYPSY MAGIC



A wandering gypsy child
chanced upon a man
with telescope pointed to the stars.

Oh gypsy boy
the stranger spoke
You of persecuted race
banished from town and village
from riverside and meadow.
Wandering over ancient plains
Through scattered ruins
of Turkish history.

You my child
of ancient heritage and wisdom
child of mystic ancestry and arts.
You are closer to the Gods
than many will ever be.

Come child - the stranger spoke -
View the wonders of our Universe
Behold the Masters work.
See distant worlds - the stars -
and sacred moon
Such sights as few have seen.

Who is this man?
The Gypsy asks
Upon the desert plain.
No wanderer like me

His very presence vibrates peace and
harmony.



Nervously the boy approached
to place his eye upon the magic metal tube.

To see such sights
took his breath away
Such craters - valleys -
and mountains reaching high.
His eyes grew wide
with wonder.

This whirling mass of other worlds.
The rings of Saturn.
Jupiter and her moons.

He covered his eyes with dusty hands
as if to wake from just a dream.

Who to tell his story to?
Who would believe this ragged gypsy boy?
He hears those mocking voices even now.
Bah - away with you -
wretched child

You and your gypsy lies
Before we tan your hide.
Best keep such wonders to himself
and others KEEP their precious ignorance.

A million thanks kind stranger
for sharing such a sight.
It is the greatest gift
since the day that I was born
He stretched his hand in grateful thanks
But the magic eye and man
were gone.

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SOLUTION TO PUZZLE No.2

1. Oxygen (Most pressing survival need)
2. Water (replacement for tremendous liquid loss on lighted side)
3. Map (Primary means of navigation)
4. Food concentrate (for energy)
5. FM receiver (for communication with mother ship)
6. Nylon rope (for climbing cliffs)
7. First-aid kit (For medicines, vitamins, treatments. The needle fits a special aperture in NASA suits).
8. Parachute silk (Protection against sun's rays).
9. Raft

10. Flares (to signal mother ship when sighted.)
11. Pistols (Means of self propulsion)
12. Dehydrated milk (bulkier duplication of food concentrate)
13. Solar powered portable heating unit.
14. Compass (worthless, magnetic field on Moon not polarised.
15. Matches (no oxygen on Moon: virtually useless).

This order does not necessarily constitute my beliefs in the order the items should be. It in the answer sheet and apparently came of the NASA web page. (Phil Ainsworth)

A GLOSSARY OF CONSTELLATION NAMES AND MEANINGS.

The following is a listing of the generally accepted abbreviations for the names of the 88 constellations. This glossary is most useful when referring to star wheels and impressing at parties. The listing is in order of **Abbrev(Constellation)(Genitive Ending)(Meaning)**.

And(Andromeda)(-dae)(Chained maiden)	Leo(Leo)(-onis)(Lion)
Ant(Antlia)(-liae)(Air pump)	Lmi(Leo Minor)(-onis-ris)(Small Lion)
Aps(Apus)(-podus)(Bird of paradise)	Lep(Lepus)(-poris)(Hare)
Aqr(Aquarius)(-rii)(Water bearer)	Lib(Libra)(-rae)(Scales)
Aql(Aquila)(-iac)(Eagle)	Lup(Lupus)(-pi)(Wolf)
Ara(Ara)(-rae)(Altar)	Lyn(Lynx)(-ncis)(Lyria)
Ari(Aries)(-ictis)(Ram)	Lyr(Lyra)(-rae)(Lyre)
Aur(Auriga)(-gae)(Charioteer)	Men(Mensa)(-sae)(Table[Mountain])
Boo(Bootes)(-tis)(Herdsman)	Mic(Microscopium)(-pii)(Microscope)
Cae(Caelum)(-aeli)(Chisel)	Mon(Monoceros)(-rotis)(Unicorn)
Cam(Camelopardus)(-di)(Giraffe)	Mus(Musca)(-cae)(Fly)
Cnc(Cancer)(-cri)(Crab)	Nor(Norma)(-mac)(Square)
Cvn(Canes Venatici)(-num)(Hunting dogs)	Oct(Octans)(-ntis)(Octant)
CMA(Canis Major)(-is,-ris)(Great Dog)	Oph(Ophiuchus)(-chi)(Serpent Bearer)
Cmi(Canis Minor)(-is,-ris)(Small dog)	Ori(Orion)(-nis)(Hunter)
Cap(Capricornus)(-ni)(Sea Goat)	Pav(Pavo)(-vonis)(Peacock)
Car(Carna)(-nae)(Keel)	Peg(Pegasus)(-si)(Winged Horse)
Cas(Cassiopeia)(-peiae)(Lady in Chair)	Per(Perseus)(-sei)(Champion)
Cen(Centaurus)(-ri)(Centaur)	Phe(Phoenix)(-nicic)(Phoenix)
Cep(Cepheus)(-phei)(King)	Pic(Pictor)(-ris)(Painter's Easel)
Cet(Cetus)(-ti)(Whale)	Psc(Pisces)(-cium)(Fishes)
Cha(Chameleon)(-ntis)(Chamaeleon)	PsA(Piscis Austrinus)(-is -ni)(S Fish)
Cir(Circinus)(-ni)(Compasses)	Pup(Puppis)(-ppis)(Poop [Stern])
Col(Columba)(-bae)(Dove)	Pyx(Pyxis)(-xidis)(Compass)
Com(Coma Berenices)(-mae-cis)(B's Hair)	Ret(Reticulum)(-li)(Net)
CrA(Corona Australis)(-nae-lis)(S Crown)	Sge(Sagitta)(-tae)(Arrow)
CrB(Corona Borealis)(-nae-lis)(N Crown)	Sgr(Sagittarius)(-rii)(Archer)
Crv(Corvus)(-vi)(Crow)	Sco(Scorpius)(-pii)(Scorpion)
Crt(Crater)(-cris)(Cup)	Scl(Sculptor)(-ris)(Sculptor)
Cru(Crux)(-ucis)(S Cross)	Sct(Scutum)(-ti)(Shield)
Cyg(Cygnus)(-gni)(Swan)	Ser(Serpens - Caput)(-ntis)(Serpent - Head)
Del(Delphinus)(-ni)(Dolphin)	- Cauda - Tail
Dor(Dorado)(-ni)(Swordfish)	Sex(Sextans)(-ntis)(Sextant)
Dra(Draco)(-onis)(Dragon)	Tau(Taurus)(-ri)(Bull)
Equ(Equuleus)(-lci)(Small Horse)	Tel(Telescopium)(-pii)(Telescope)
Eri(Eridanus)(-ni)(River Eridanus)	Tri(Triangulum)(-li)(Triangle)
For(Fornax)(-acis)(Furnace)	TrA(Triangulum Australe)(-li -lis)(S Triangle)
Gem(Gemini)(-norum)(Heavenly Twins)	Tuc(Tucana)(-nae)(Toucan)
Gru(Grus)(-ruis)(Crane)	UMa(Ursa Major)(-sae -ris)(Great Bear)
Her(Hercules)(-lis)(Kneeling Giant)	UMi(Ursa Minor)(-sae -ris)(Small Bear)
Hor(Horologium)(-gii)(Clock)	Vel(Vela)(-lorum)(Sails)
Hya(Hydra)(-drae)(Water Monster)	Vir(Virgo)(-ginis)(Virgin)
Hyi(Hydrus)(-dri)(Sea-Serpent)	Vol(Volans)(-ntis)(Flying Fish)
Ind(Indus)(-di)(Indian)	Vul(Vupecula)(-lae)(Small Fox)
Lac(Lacerta)(-tae)(Lizard)	

