

Journal

# **PRIME FOCUS**

# Volume 2 Issue 1

PRESIDENT PHIL AINSWORTH (02) 9605 6174 VICE PRESIDENT NOEL SHARPE (046) 253 051 SECRETARY DAVID MCBEAN (046) 559725

TREASURER N ROBBIE CHARLTON (047) 749 331 EDITOR BOB BEE (046) 251623

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# **President's Report**

Welcome and Happy New year to all our members and guests. With much pride I must say 1996 was a great inaugural year for our Society. Many different and exciting things happened. Some of these are listed below.

1. Many local and guest speakers were all very interesting and made every monthly meeting an enjoyable, relaxing and sociable occasion.

2. Star Nights, even with them being a tiny bit unorganised at first. I believe we improved with time and finished off at Wilton on a Star Camp (More on this in Noel's report later in the Journal.). Many thanks to Carol who let us use her house and facilities.

3. The Christmas Barbeque went well with some members participating in a local cricket match and enjoying the beautiful day.

This year our format will be the same or very similar to 1996. Our meetings will be held at the same location unless a change of venue is forced upon us at the last minute. Many thanks to Carol Oliver for allowing us to use the room during 1996.

#### (President's Report - Cont'd)

#### Membership Fees:

Anyone with a spare \$10-\$20? Yes, in March-May we have our annual fees due. All those who joined before September 1996 have these due. If you joined after Sept. '96, fees are not due till March 98. The fees are important as they help maintain the club and let us buy the occasional book. Hopefully we may buy a slide projector this year as I and some other members have been asked to talk at various schools, clubs and functions and do not have any slides or a projector.

#### Astronomy '97 Book:

Members who have their name down for the Astronomy '97 year book can pick these up tonight for \$12.50, they are \$17 in the shops. I have 2-3 spare so first in gets them.

It has been proposed that with our yearly injection of funds and after insurance is paid, we try to purchase a small telescope for society members to borrow. This needs approval from our members and the committee.

# This year we have planned star camps every two months with a hands on workshop.

1997 started off in great style with the usual few hardy souls battling the cold night air at the site that we are graciously allowed to use with Sutherland. It was a magnificently clear night and we wasted no time in setting up and viewing the night sky. Noel decided to setup for the Northern Hemisphere by putting his telescope together upside down. Many of the objects viewed included Saturn, Pleiades, Omega Centauri, Alpha (A & B) Centauri (triple star system 4.1 light years away with Proxima a smaller red dwarf which cannot be seen with our scopes. Betelgeuse (a Red Giant), the Large & Small Magellanic clouds, Eta Carinae (a good article in the January edition of Astronomy on Eta Carinae), any many other great celestial bodies. A fabulous night was had by all (Sorry Pete I know you were sick in bed.)

This year we have planned star camps every two months with a hands on workshop. This is so all members can view the sky, learn about how to use their telescope or which type to buy first, and find there way around the night sky. Our first will be on 15th March.

## LATEST NEWS

#### Global Surveyor

The Mars probe Global Surveyor launched successfully on November 7th 1996 and is currently 14.79 million km from Earth and is travelling at the incredible speed of 31.3 km/sec. It will arrive at the red planet on Sept 12th, 1997. The most recent status report is that it has just gone from inner cruise mode to outer. This means basically that it's well on its way. So far, despite a small hiccup caused by the launch, the high gain antenna is working well and is now pointed toward Earth so it can send and receive signals. (Part of the antenna broke off, but with some clever designing this should not effect its transmission.)

#### Mars Pathfinder

Launched Dec 4th on a Delta rocket as was Global Surveyor. It will reach Mars around July 4th, 1997. So far the probe is running smoothly. It has a small rover which will look over the surface and gather samples for at least 30 days or until its battery runs out. On January 10th the NASA team did a successful burn of its engines to correct its flight path which was put off line because of the launch.

## (President's Report - Cont'd)

SUPERNOVA SN1987A which was spectacular back then, is brightening again as the debris rapidly expands the cloud from the original explosion and slams into an enormous ring of hydrogen gas encircling the dying star. (Excerpt from Space Frontier News, Vol.4 issue 1, 1997, National Space Society Of Australia).

SKYWATCHER-- Watch for Saturn setting earlier each night. It is still a spectacular sight with a small telescope. Titan and another smaller moon are visible with careful viewing through the eye piece. Mars is rising earlier each night and by 12-1am is an exciting sight through the scope. In a scope 8" and above, surface marking can be seen especially in the region of Syrtis Major and the polar cap. Mars will be up around 9.30pm and be a highlight for our Star Camp in March.

# The Mars probe Global Surveyor launched successfully...

#### SPACE FLIGHT REVIEW

At Cape Canaveral Jan 12th, 1997 in the early hours of the morning (in Australia) Space Shuttle 'Atlantis' was launched successfully. STS81 only had a window of 7-10 minutes, but the weather was kind and it took off with a near perfect launch.

The prime directive (I mean objective, thinking Star Trek again), during the ten day mission for the 6 crew members was to dock with the Russian Space Station MIR (means 'peace'). This is the fifth mission to change over astronauts and resupply the station with food and other necessities. On January 12th they successfully docked with MIR.



#### Upcoming missions

Feb. 23rd, Shuttle 'Discovery' will perform the second repair mission on the Hubble Space Telescope and fit it with a different type of camera and some new gadgets (more in next issue of the Journal). There will be seven crew members aboard this mission.

April 19th Columbia goes for 16 days with the micro-gravity lab.

### Prime Focus

Finally, anyone wishing to contibute to Prime Focus, please forward the manuscript 3 weeks before the next meeting so it can be edited and typed up. Otherwise, deliver 1.5 weeks before to myself or Bob Bee on a disk in Word Perfect or Word format. A good suggestion for an article is writing a review on an astronomy book you have recently read. I will in the next few issues be reviewing Ragbir's book 'Australian Astronomers'. See Bob's article in this Journal for other ideas.

#### **PS - NEWS**

Anniversary of Apollo 1. Who can remember it and who were the astronauts? Answer in March issue. Also how many years since it launched? It's more than 25.

President--- Phil Ainsworth





# A Detailed Look at Jupiter (Part 2)

#### by Steven Manos

Name	Distance from Jupiter		Orbital	Radius	Mass	Bulk
	103 km	Jupiter Radii	Period (days)	(km)	(planet = 1)	Density (kg/m3)
Metis	128	1.79	0.29	10	5 x 10 -11	0 ×
Andrastea	129	1.80	0.30	20	1 x 10 -11	
Almathea	181	2.55	0.50	130 x 80	2 x 10 -9	3000
Thebe	222	3.11	0.67	45	-4 x 10 -10	-
Io	422	5.95	1.77	1820	4.7 x 10 <sup>-10</sup>	3530
Europa	671.	9.47	3.55	1570	2.6 x 10 <sup>-5</sup>	3030
Ganymede	1070	15.10	7.16	2630	7.8 x 10 <sup>-5</sup>	1930
Callisto	1883	26.60	16.69	2400	5.7 x 10 <sup>-5</sup>	1790
Ledo	11,094	156	239	8	3 x 10 <sup>-12</sup>	1) S
Himalia	11,480	161	251	85	5.0 x 10-9	1000
Lysithea	11,720	164	259	20	4 x 10 -11	
Elara	11,737	165	260	40	4 x 10 <sup>-10</sup>	-
Ananke	21,200	291	631 (r)	15	2 x 10 -11	
Carme	22,600	314	692 (r)	20	5 x 10 -11	~
Pasiphae	23,500	327	735 (r)	20	1 x 10 <sup>-10</sup>	
Sinope	23,700	333	758 (1)	20	4 x 10 -11	8

## The Satellites of Jupiter

Jupiter possesses an entourage of a least 16 moons, the brightest and largest of which were first discovered with a telescope by Galileo. The four 'Galilean' moons are Io, Europa, Ganymede, and Callisto.

**Io:** Io has a thin atmosphere with a surface pressure of only 10-10 atm. Its atmosphere gives off a yellow glow from the emission of sodium atoms. These surround Io out to a distance of about 30,000km. This cloud extends about 200,000 km along Io's orbit, forming a partial ring of gas around Jupiter.

In part, volcanic eruptions produce Io's sodium cloud. Io is the most volcanically active body in our solar system, it has at least 11 active volcanoes. The volcanoes eject plumes of gas and dust to heights of 250 km at velocities if up to 1000 m/s. In contrast Earth's large volcanoes spit out material of about 50 m/s. On a nearly airless body like Io, the volcanic gas and dust crest like a fountain and then spread and fall in a dome shape.

Io's volcanoes are not shield of cones like those commonly found on terrestrial planets. They instead resemble collapsed volcanic craters from which lava simply pours from a crater and spreads out for hundreds of kilometres. Multicoloured lava lakes surround the volcanoes. The red, black, yellow, orange and white colouration comes from sulphur and sulphur compounds. No impact craters appear on Io because volcanic flows cover them up. Its surface is the youngest in the solar system, probably less then 1 millions years old.

And why is Io's interior so hot? Io's gravitational interaction with the other Galilean moons force it into an eccentric orbit, so that its distance from Jupiter changes significantly. These changes in the distance cause large variable tidal forces of Jupiter to act on Io, whose heats up from the conditional internal stress from these tidal forces.

## The Satellites of Jupiter (Cont'd)

**Europa:** The surface features of Europa consist of bright areas of water ice among darker orange-brown areas. The surface is criss-crossed by stripes and bands that are filled fractures in the icy crust, giving it that 'cracked eggshell' appearance that we're familiar with. Some of these cracks extend for thousands of kilometres, with splitting widths of 50 to 200 km but reaching depths of only about 100 m. Europa's surface cannot be a primitive one because it is almost devoid of impact craters. This suggests that the crust must have been warm and sometime after formation to wipe out any evidence of the early, intense bombardment.

**Ganymede:** With a radius of 2630 km, Ganymede ranks overall as the largest moon of Jupiter and the largest moon in the solar system. Its face looks vaguely like our own Moon. It also has huge fault lines along its surface, as Europa does.

Ganymede has two basic types of terrain: cratered and grooved. Craters of up to 150 km in diameter mark the 4 billion year old cratered terrain. Compared to the ones on the Moon and Mercury, the craters are shallow for there size, and some actually have convex father than concave floors. Many of the craters on Ganymede have white rays extending from them, suggesting their formation by impacts on an icy surface.

There are no large mountainous regions or large basins that exist on Ganymede, and relief doesn't amount to more than 1 km anywhere on the moon. This suggests that the surface is somewhat 'plastic', most probably from the large fraction of water ice. The grooved terrain separates the cratered terrain into polygon shaped segments. Long cracks, where the surface has moved sideways for hundreds of kilometres is evident. Ganymede's bulk density implies that its interior contains about half water and half rock. Some ridges and grooves overlie others, and indicate that there have been many episodes of crustal deformation.

Callisto: This is the furthest out of the Galilean moons. Callisto has a surface riddled with craters of a wide range of sizes. Some are filled with ice and others have bright ice-rays. The craters are shallow, less than several hundred metres deep. The surface slowly flows, flattening out any relief, as it is a mixture of ice and rock. Some interesting features that Callisto contains are the eight multi ringed basins, the largest of which is Valhalla. Its central floor is 600 km in diameter, and is surrounded by 20-30 mountainous rings having diameters up to 4000 km. The rings are simply frozen wave, formed by the impact which spread out water which then quickly froze in the 100K (-173° C) surface temperature; frozen blast waves, you could almost say.

Asteroidal Moons: Jupiter's other moons are asteroid like bodies, and are most probably captured astreroids. There are 2 groups of four moons each, one group at a distance of about 12 x 106 km that orbit anticlockwise (direct orbit) about Jupiter and then another group which lie about 23 x 106 km from Jupiter, which orbit clockwise (retrogade orbit). Out of these, we have only observed one asteroidal moon closely -Amalthea, which lies only 181,000 km out of Jupiter. It orbits every 12 hours, is elongated, and physically resembles Deimos and Phobos, except that it is larger. This moon's irregular shape, small size, and dark red cratered surface implies its asteroid like characteristics.

Steven Manos

Jupiter.

Photo by NASA

# Any Port In A Storm The Camp Constellation Story

Well, at long last and after several washouts, it was with great expectations that we headed towards 'Camp Constellation' stardate 141296. Upon arrival, we were greeted by a carnival atmosphere with tents erected, sausages sizzling on the barbie, a huge assortment of telescopes of all shapes and sizes and better than that - not a cloud in the sky. You beauty, there will be starry skies tonight!

What a great way to conclude a very eventful and exciting first year for the Society.

As part of the pre-match entertainment, a display on tent erection was given by a so called expert. This provided hours of amusement and gave time for people to eat their sausages and make coffee.

After the evening meals were finished, it was time to launch a few rockets and if anyone finds Eric Brown's nose cone could they please return it to him.

An important part of any camp site is where to pitch your tent and in great consideration of others a certain member decided to locate himself in isolation so his pancake making, baked beans eating and tall ship port drinking would not disturb others.

At sunset, the stars began to appear as well as the mosquitoes and the Aerogard became the essential item. It was very pleasing to see so many members present, especially the wives who were encouraging their men to go where no man has gone before.

Astronomers spend a lot of time discussing 'upper atmosphere disturbances, image excursions and thermal equilibrium' but in reality they're talking about the weather and our Camp Constellation had the best seeing conditions I've seen for months. No wind, no clouds, no worries! The newest members of our Society competently handled the sights of Saturn's rings and the Great Nebula in Orion's dagger. The Celestron SCT 8 inch and the TASCO 60mm Lumina refractor are very welcome and appreciated additions to our Society's telescope armoury.

Eric had no trouble locating several deep sky objects thanks to his 'Skyvector', an electronic guiding device. Peter decided to shoot the moon (with his camera) and was assisted by Dave and his son Phillip.

Saturn's rings were a real inspiration and with a perfect sky, one could load up the magnification and get great clarity, a very pleasing sight for anyone who has not seen the rings before.

# ...our Camp Constellation had the best seeing conditions I've seen for months.

Many discussions were held between different groups relating to various deep sky objects like the Crab Nebula and the Spiral Galaxy NGC253 in Sculptor. Also discussed was whether Peter could find his lost polar alignment.

Bob turned up and the sky remained clear, much to everyone's surprise. Bob has a great knowledge of the night sky and quickly established himself in the general repartee and conversations of the evening.

Around 11.30 pm it started to get cold and with dew starting to fall, it was time for some to call it a night and fond farewells were made. A late comer, Michael Horsley, arrived and promptly set up his scope. Peter was still searching for his lost polar alignment.



#### Camp Constellation Story (Cont'd)

We were now entering 'The Twilight Zone' waiting for Mars to rise in the East. About 3.30 am would put it high enough to see, so upon spying Eric heating his kettle on a camp stove, an ensemble gathered an a magic circle club and secret men's business was discussed.

As one does on these occasions, a special potion was distributed in the form of a little social lubrication. It was cold and getting very damp thanks to the heavy dew. So it was entirely appropriate to partake of 'any port in a storm'. Well, a smooth well rounded Tawny to be exact.

# ...more star nights are planned on a regular basis.

What was also well rounded was the planet Mars. After patiently waiting, it was time to disperse and return to our scopes. It was my first sight of the Red Planet. I've been very impressed with sightings of Venus, Jupiter and Saturn and to add Mars to the collection was a proud moment indeed.

At this time, Mars is a very small object to observe and without high magnification it would be impossible to discern any details. The magnification I used was 364x. This resolved the polar ice cap and some dark canal like markings. Also, a slightly reddish tinge was evident.

Being a Mars specialist, our president Phillip decided to leave his scope temporarily and observe Mars with Peter's more powerful Celestron 8. Phillip sat down and made himself comfortable, then collapsed with excitement and described it as a ripping good experience.

The SCTs had considerable difficulty with dew on the corrector plates, even dew shields were ineffective. At one stage, you could ring water out of the tissues used to wipe down the plates. By the sheer nature of design, Newtonian telescopes are not affected to the same degree.

Astronomical twilight was arriving and it was time to retire to our tents for a few hours sleep. I was awoken by the sweet smell of pancakes and maple syrup and with the coffee freshly brewing, thought I was in heaven.

Tales of the previous evening were discussed and we pondered if one of the many shooting stars we observed was in fact Eric Brown's rocket making a reentry.

In fact the discussions around the breakfast table were as animated as the Magic Circle Club the previous night. One member who led a lively debate on UFOs (unidentified frying omelettes) decided to refresh herself with a cool early morning dip in the pool.

We'd like to extend our greatest appreciation to Carol for kindly granting us the use of her property at Wilton for our star nights. Following the success of the night, more star nights are planned on a regular basis with an emphasis given on providing a learning environment for our members. After many requests, telescope workshops will be arranged on site which I'm sure will be of assistance to those of us who are less experienced.

Elsewhere in the Journal, you will find a short technical quiz as well as details as to when the next 'Camp Constellation' will be held.

Regards,

Noel Sharpe



# **TAURUS** - The Bull



Taurus, the Bull, is getting ready to visit that big corral over the horizon, so this would be a good time for us to take a last look for '97 until it reappears again about November (for evening viewing, anyhow).

I'm sure the majority of us have studied Taurus many times, even if we were not aware of it. That's because those much loved clusters Hyades (the "Big V" with the evil red eye, Aldebaran) and Pleiades (the Microdipper) form part of Taurus.

As you can imagine from the diagram of the constellation, Hyades forms the face of the Bull, with Aldebaran  $\alpha$  (Alpha) Tauri as one of its eyes. Taurus is graced by two exceedingly long horns tipped by  $\beta$  (Beta) and  $\zeta$  (Zeta) Tauri. Below the face, there is only the shoulders and front legs. Part of our legacy of living in the Southern Hemisphere is that we look at most constellations 'upside down' and so don't immediately recognise the shapes the ancient astronomers saw and named. So for Taurus, we see the legs up and horns down.

Taurus is a rich field of interest but not all of it accessible to binoculars and smaller telescopes.

a (Alpha) Tauri is Aldebaran, a red giant of Class K5. It's actually an irregular variable that fluctuates from mag. 0.75 to 0.95. Its name means 'The Follower'. Although it's the most prominent star in the Hyades cluster (the Big V), in fact it is not actually part of the cluster. At 68 l.y. it is only a line of sight member of Hyades, which is 150 l.y. away.

 $\beta$  (Beta) Tauri is also called Elnath which means 'The Butting One', being one of the horn tips. 145 l.y. away, Elnath is a blue white giant, mag 1.7.

#### Taurus - The Bull (Cont'd)

 $\zeta$  (Zeta) Tauri is the other horn tip. At mag 3.0, it's not as bright as Elnath and is a blue giant, 520 l.y. away.

 $\theta$  (Theta) Tauri is an obvious double, consisting of white (mag 3.8) and yellow (mag 3.4) giants. They are resolvable with binoculars, or on a good dark night, naked eye. At 150 l.y. away. Theta<sup>2</sup> is actually the brightest star in the genuine Hyades cluster.

There are a number of other doubles, visible to either naked eye (ne), binoculars (b) or small telescopes (st). Can you spot & resolve them? They are:

κ (**Kappa**) **Tauri** (ne/b) a white star of mag 4.2 doubles with 67 Tauri (mag 5.3). Part of the Hyades, though outlying.

# Taurus is a rich field of interest...

 $\lambda$  (Lambda) Tauri, an Algol type eclipsing binary. Fluctuates from mag 3.4 to 3.9 every 4 days. 330 l.y. away.

 $\sigma$  (Sigma) Tauri (b) is a wide double of white stars mags 4.7 and 5.1. 150 l.y.

 $\varphi$  (Phi) Tauri (st) consists of a mag 5.0 orange giant and a mag 8.4 white star. 280 l.y. away.

 $\chi$  (chi) Tauri (st) is 360 l.y. away. It has beautiful blue and gold components of mag 5.4 and 7.6.

The Hyades: This cluster extends outside the distinct V shape. It contains about 200 stars all travelling through space together. Because the cluster is so close (150 l.y.) and its distance measurable by parallax and other indirect techniques, it is a valuable first step in determining the scale of. galactic distances.

The Pleiades (M45), also known as The Seven Sisters or, to some, the Microdipper. This open cluster is worthy of its own separate article. (Another time perhaps.) It is arguably the brightest and most famous star cluster in the sky and is about 410 l.y. away. Used as an ancient eye chart (can you see seven with the naked eye?) binoculars explode this number towards its actual total of about 100.

The brightest Pleiades star is  $\eta$  (Eta) Tauri at mag 2.9 with other prominent members ranging from mag 3.6 to 5.5.

Pleaides is relatively young (about 50 million years) and so contains many young blue giant stars. Sources differ on the nature of the faint reflection nebulosity that immerses the cluster. Some say it's the remnant of the cloud from which the stars formed, others that it simply occupies the same region of space. Watch this space!

The Crab Nebula (M1, NGC1952). The remnant of a supernova explosion that was seen in 1054 A.D. It's snuggled up against  $\zeta$  Tauri and can be spotted in binoculars on good dark and clear nights. However, for binoculars and small scopes, it looks nothing like David Malin's gorgeous pictures, appearing only as a wisp of faint nebulosity about mag 8. It takes long exposure photography to reveal the name-giving crab shaped nebula.

Though not visible in amateur size telescopes, at the centre of the nebular is a pulsar, the remains of the exploded star. M1 and pulsar are about 6500 l.y. away.

Bob Bce



After taking his Christmas holidays in the Bermuda Triangle, Sherlock Holmes a Court was refreshed and ready to front the Royal Commission with the much anticipated Evidence 'D'.

Part 3 - The Conclusion.

As all previous evidence has been tabled it would be a waste of taxpayers money to reprint the material. However, the main points covered were:

a) Atomic bomb testing ground White Sands.

b) The Tunguska River Valley, Siberia.

c) Comet Shoemaker - Levy.

Under the Government Freedom of Information Act, you can research last year's journals to obtain full details of the abovementioned.

As promised, Sherlock had to deliver the facts. We have waited 92 days to discover Evidence 'D' as this was the proof that we were indeed invaded by a very large destructive force.

# "So what? All you've given us is a big hole in the ground and a large falling rock...

Evidence 'D' is as follows: In 1978 an important discovery was made by Louis and Walter Alvarez of the University of California. What they found was Iridium. Iridium is a metal only found in meteors. Heavy concentrations of this metal are found in sediments between the Cretaceous and Tertiary eras, dating back 65 million years. According to fossil remains, the dinosaurs perished at this time. Evidence of a global tragedy can also be found world wide as layers of soot, apparently from forest fires, are imbedded in these sediments. The amount of Iridium measured confirms the fact that our Earth was invaded by a meteor 10 km wide. The judges of the Commission began yelling at Holmes to prove his accusations or be silent, but Holmes continued undaunted.

In 1991 a crater was discovered 177 km across and buried 1 to 2 km below the coast of Mexico. Geologists have determined the impact was caused by a meteor 10 km wide that unleashed a destructive force of 100,000,000 megatons of TNT.

It is important to take into account that despite being relatively small (ie 10 km) the energy expended upon impact is mainly kinetic, (ie force in relation to motion). On entering the Earth's atmosphere and travelling at 72,000 kph the surrounding air causes friction and slowing of velocity. It takes 10 seconds to reach the impact site and an immense explosion takes place.

The judges rudely interrupted Holmes with cries of "So what? All you've given us is a big hole in the ground and a large falling rock that would only have killed any poor old dinosaur who happened to be underneath it."

There was lots of laughter until Holmes slammed the table with his fist and yelled "Doomsday." Holmes had their attention. He continued. "Doomsday, gentlemen, doomsday. A gentle breeze sways the canopy of the massive rainforests of the Earth. The seas are calm and the rulers of our planet are not human. A bright star appears, casting a shadow that grows larger and larger. Then it strikes, murder most foul."

Immediately the explosion is 5 billion times the explosive yield of the atomic bomb that destroyed Hiroshima. The instant effect is a concussive wave vaporising all in its path. A split second

## (Who Murdered the Dinosaurs? Cont'd)

later, an immense amount of rock and dust is excavated and blown into orbit around the planet.

After about 30 minutes, gravitational forces return the heavier material back to earth in the form of massive fireballs which ignite the world's rainforests, as well as the global firestorm.

Tidal waves many kilometres high devastate coastal areas. The lighter material already suspended in the atmosphere combines with the smoke from the fires to circle the globe. The mixture blocks out all sunlight, photosynthesis stops, plant life dies and the food chain is broken.

Nuclear winter is in action and the temperature drops and acid rain falls. Hen sunlight returns, it carries deadly radiation as the ozone layer has been destroyed.

Very few species could survive multiple catastrophes on a global scale and the complete breakdown of nature is evident. Nature is a fragile thing.

The Royal Commission held a minutes silence, then pronounced the meteor guilty of murdering the dinosaurs. The judges turned to Sherlock and said "Well done, Holmes, well done!".

Holmes replied, "My Lords, I've given you the murderer. Now I only have one last statement to make - be afraid, be very afraid."

Crime Correspondent - Noel Sharpe.

# The Next Star Camp

The next Camp Constellation is planned for 15th March 1997.

Remember, if you are camping overnight, bring warm clothing and your own supplies. Directions to the Camp site can be found on the notice board.

For those involved in the workshops, we will observe the following:

- \* The Moon which sets at 10.30 pm.
- \* Mars
- \* M44 Beehive Cluster
- \* M67 Galactic cluster
- \* Constellation of Cancer
- \* Southern Cross, Jewel Box, Omega
- Centauri globular cluster.

Practical Tips with Hands-on Instruction:

- \* How to get a rough polar alignment
- \* Finder scope alignment
- \* Balancing your telescope
- \* Correct magnification to use
- \* Some exercises on astrophotography with some Lunar shots actually taken.

Experienced astronomers will be on hand to assist even the youngest members with hands on advice. So please, bring your telescopes no matter what size.

If cloudy, the Camp will still be on as it could clear later. A more detailed worksheet will be provided on the night.

Noel Sharpe



# From The Editor's Desk

# The Year Ahead...for the Society:

The Society has grown, and matured, considerably in its first year of existence. It has moved from a group of strangers who shared only a common interest in the subject of astronomy to a reasonably coherent group of people who can now call themselves friends.

This group has tentatively identified the talents, skills and resources of its individual members. It has established its credentials as a society in the amateur astronomy community and has already made its presence felt in the local and wider community.

The year ahead, our second year, can only be a bright one.

Though the activities of the Society can be planned, co-ordinated and implemented by the executive and your committee, their successful outcomes and the consequent success and status of the Society can be assured only by one person. YOU!

# The question now is... where from here?

The executive is planning 'Bigger & Better' programs for 1997, aimed at providing MAS members with greater challenges and enjoyment, and also at fulfilling an educational role to the Macarthur community.

If we all get behind them and participate whenever possible, who knows where our Society will be in 12 months time? But you'll never never know...etc

So jump on board the MAS comet for the ride of your life.

# The Year Ahead...for Prime Focus:

A funny thing happened on the way to the photocopier...

The inaugural 2 page MAS Newsletter grew during 1996 to a 20 page Journal 'Prime Focus'. Obviously this didn't happen overnight (and the 20 page issue <u>was</u> an 'end-of-year' special). It was slowly built up in size and quality as members gained confidence (or audacity) to contribute technical or 'news' articles in areas of their special interest. Sometimes it took 'persuasion' by the Editor for the articles to be written. Sometimes the Editor had to barricade the doors. Often he had to write his own (...good grief, I need an extra page and a half to fill it).

However, I think we can be justifiably proud of our Journal.

The question now is... where from here?

I think the answer to that question is closely linked with the previous subject : 'The Year Ahead for The Society'. The contents of the Journal, as well as containing stand-alone technical articles to inform members, should reflect and advise others about the core activities of the Society. i.e. amateur astronomy. It should be able to report on the <u>astronomical</u> activities of our members, either as individuals or collectively on Star Nights.

So, what is my 'wish list', as Editor, for 1997?

\* More articles from a broader range of members, about technical or semi-technical topics. Yes, Phil, Noel, Peter, Steve... I still want yours and plenty of them. But I'm sure other members can contribute as well.

#### From the Editor's Desk (Cont'd)

\* Reports on the Society's Star Nights, with a special emphasis on <u>what</u> was seen, using <u>what</u> instruments, under <u>what</u> circumstances. Social details are welcome too, but please - let's focus on the stars.

\* Personal star gazing observations. Share a viewing experience - it needn't be earth shattering. Let us share your experience or thoughts. Even negative outcomes may be of interest to others Let's learn from each other, even from our mistakes.

\* Helpful Hints or Tips. Remember, we're all learning and most have less practical experience with telescopes than others. What's obvious to you in the practical use of a telescope or star identification may be a revelation to others.

\* Photographs I can legally print. Copyright is an amateur society Editor's bane, severely restricting what pictures I can print to provide visual interest in the Journal. So far I am limited to copyright free NASA and HST photos off the Internet. And limited is the operative word.

So if you have a photo of you and your telescope, or of a group at a Star Party (even if it's only cooking the pancakes at breakfast), please submit it.

"But, most particularly, if you have had a go at astrophotography, please submit your humble efforts to the Editor for possible use. No guarantees are given - it will depend on how well they'll come out in a B&W print - but it will be your photo in our Journal. Full acknowledgment, with description of object, telescope, exposure etc, will be given. \* Book Reviews. If you've read a good (or not so good) astronomy book lately, why not share it with us? Reviews, long or short, praising or damning, will be gratefully received. If the book is from a library, give the library and reference number. Others may be looking for a book on just that topic.

But please - no science fiction books.

\* Letters to the Editor. If you've got something on your mind about the Society (good or bad - we've got broad shoulders), or about astronomy generally and you want to express it, why not write a letter to *Prime Focus*. However, be prepared to have your name published with the letter.

# Share a viewing experience - it needn't be earth shattering.

So that's my wish list. I'm confident that with over 50 Society members, *Prime Focus* will continue to grow, if not in size, then in quality of content and interest.

Good Seeing

Bob Bee (Editor)

This could be your photo of ...?

# Some Christmas Observations

Well, a Happy New Year to all you keen amateur astronomers. I trust that you enjoyed many opportunities to 'get out there' and observe the skies during the break. I know I did, even though I had only my eyes and a pair of 12x50 binoculars to assist me (Santa decided I can wait another year for that Newtonian or SCT).

Despite the 'seeing' disadvantages (or advantages?) of night skies seen from a coastal location, I had the opportunity to observe the late December/January skies from a south coast beach with near perfect uninterrupted horizons (except to the West, of course, where the odd gum trees made their presence felt).

The awe of such a dark sky was heightened by the constant soundtrack of waves rising and crashing. Mercifully, from the beach, the street lights were hidden by the trees in the reserve. In fact it was so dark I had to use my reddened torch to find my way down the bush track to the beach, momentarily giving a pair of lovers a bit of a start.

# Even in the binoculars, the Orion Nebula is awesome.

Obviously, with only my binoculars, I wasn't going to see anything spectacular. But I had set a target of my holiday break to reinforce and further my star and constellation recognition skills, as well as 'see what I can see.' I think may have achieved a reasonable increment in my knowledge, even if only a minor one.

At the risk of boring you, what did I discover? **First, the negatives:** 

\* Never start stargazing from the beach on a night when the moon is due to rise over the watery horizon. Kablooey! - there go the stars. Nice view of the moon, though.

\* The constellations aren't that easy to identify without those lines drawn on the sky like in the books.

\* The Star Wheel gives you a very distorted view of the sky. One has to allow for the curved dome of the celestial hemisphere over our head. A straight line on the wheel translates to a curve in the sky, especially as you get close to the South Celestial Pole. Common sense, I suppose, but still needs to be remembered.

\* Always use the Aerogard.

## Second, the Positives:

\* I re-acquainted myself with our old friends Aldebaran (Hyades), The Pleiades (Hi, girls), Sirius, Betelgeuse and Rigel (Orion) as well as the fabulous Orion Nebula. Even in the binoculars, the Nebula is awesome.

\* I was able, with the aid of the Star Wheel and the Stellar Sphere from the December issue of 'Sky & Space', to confidently locate and identify the following stars:-

**Canopus** (Alpha Carinae) - The 2nd brightest star in the sky after Sirius, so I suppose I shouldn't miss it. The aim of the exercise was to know where to look (with respect to the other stars) and confidently say "Oh, yeah, that's Canopus". Which then allows you to find the <u>rest</u> of the Carina constellation, including NGC3372, the spectacular nebula containing star Eta Carinae. I found NGC3372 about one third of the way from the Southern Cross to Canopus, following the imaginary -60° line. Quite spectacular, even for binoculars.

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Christmas Observations (Cont'd).

Achernar (Alpha Eridani) - I 'nailed' this one by following the imaginary -60° declination line westward from Canopus. I also discovered the interesting (but fairly useless) fact that the constellation Eridanis (the River) effectively starts at Beta Eridani (right next to Orion's Rigel) and meanders down 60° of the sky to Achernar. The rest of the river is guesswork without a sky map.

Fomalhaut (Alpha Piscis Austrini) - This was a little tricky, as there were no immediately recognisable constellations (at least, for me) in the area of sky to link it to. However, repeated consultation with the Star Wheel and estimated angles rotated about the sky from the other major stars convinced me I had found it. Just needs practice.

At this stage of my project, the skies failed me. The last ten days of my south coast holiday were characterised by cloudy days, dumping surf, and even cloudier nights. I'm glad I wasn't paying for observation time at Siding Spring.

Despite my disappointment of not completing my target of observations, I still felt that I had achieved something positive. I had gotten 'out there' and had given myself a sense of confidence in identifying a small but significant repertoire of stars, upon which I can build further.

Bob Bee.



Saturn. Photo by



# **Quiz on Camp Constellation**

Q1: You can't see through your telescope. Is it because:

- a) The lens cap is on.
- b) You're wearing sunglasses.
- c) The telescope is pointed at the ground.
- d) Dew has condensed on the lens.

Q2: One of the planets under observation was:

- a) Pluto
- b) Planet Hollywood
- c) Mars
- d) The Daily Planet.

Q3: As Phillip observed Mars with Peter's telescope, a loud ripping sound was heard. Was it:

a) Phillip bending over and tearing his pants

b) A video tape of Ripping Yarns

c) The stitching on Peter's canvas chair.

Q4: What did Peter Druery lose on the night.

- a) His Aerogard
- b) His polar alignment
- c) The maple syrup
- d) His patience.

Q5: What do astronomers discuss:

- a) Their apertures
- b) The size of their mounts
- c) Who brought the cheese and crackers
- d) The weather.

Q6: What zone was entered late at night.

- a) The loading zone
- b) The neutral zone

c) The Twilight zone.

Q7: What was observed on Mars:a) The pyramid and sphinx of Egypt.b) The Martian Chroniclesc) Polar ice capd) H.G. Wells

Q8: What was arriving when it was time to retire:

a) Santa Claus

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- b) Mr Sandman
- c) Astronomical twilight

Q9: What was debated at Breakfast:

- a) The very soggy cheese and bacon rolls
- b) The shortage of pancakes and maple syrup
- c) Unidentified frying omelettes
- d) Dianna's swimming costume.

Q10: The location of Camp Constellation is:

- a) The Great Sagittarius star cloud
- b) The Milky Way
- c) A Mardi Gras in Oxford Street
- d) Wilton.

Noel Sharpe



