



# PRIME FOCUS

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## President's Report

A big hello and welcome to all our members and guests in attendance tonight, and I especially welcome the newer members who have recently joined us.

It seems like the year is passing by us faster than the speed of light, our Society is "booming" along with many great things happening. For instance, tonight we will be "updated" with all the news from the S.E.T.I. Australia centre and hopefully we will visit the University's "Space Sciences Lab" for a peek at the live feed coming downline from the Parkes Radio Telescope.

This will all be made possible by our special guest speaker Dr Frank Stootman, chairman of the "S.E.T.I. Australia Centre". On behalf of our Society I thank Dr Stootman

for taking time to talk to us tonight.

## Last Month's Meeting

What a great turnout last month and a big thank you to Zane Hammond who showed himself to be one of Australia's most accomplished amateur astrophotographers. His talk inspired me to seek and shoot the Catpaw and Gum Nebula, and try my hand at Barnard's Loop, and of course I believe an overnight stay at the "Magellan Observatory" would be definitely on the agenda!!

## Wow! What a Night

The recent field night at Oakdale farm on August 26th was just fantastic. About a dozen of us froze in amazement at the clear dark skies, and at last I saw Bob Bee's new telescope. "What a great piece of astronomical equipment." Well done Bob.

Lou Timpano's new scope should produce fantastic photographs and I was intrigued by its slide focusing system in which the secondary mirror is moved, very nice indeed!!

Dick Everett's at it again. He has made a huge binocular stand, with pivot arms and counterweights, it towers over me... not hard to do.

Just like our members our telescopes come in all shapes and sizes and to see them all on show was truly excellent.

Look up in the sky!!!! it's a bird, a plane !! No! it's shooting stars and they were a dime a dozen. At one point several members yelled "Did you see that?" I yelled "Where?" Attila's wife Andrea replied enthusiastically, "Up there." This brought much good humoured retorts as the sky is a mighty big place and I was seeking a more definitive

response, like 'just left of Alpha Centauri.' Well, would you believe later on another group of members got very excited indeed. This time the location was just left of the star Achernar. A mighty fireball that flashed huge green shadows and left a tail about 10 degrees long for a minute, in which time we all could see it plain as day, **WHAT A SIGHT!!! WHAT A NIGHT!!!**

### **Goes Around, Comes Around**

One time at Cobbity, it was very late and very dark indeed, with my telescope packed for my homeward journey I happened upon a flat tyre. Unfortunately it was attached to my car. Without Peter Druery's assistance I might still be there. Well, a fate bestows itself. The last Oakdale Farm night at 2am daylight saving time, I came across one very flat battery, which refused to offer assistance to the engine of my car..... stuck again. Drat! So operation rescue Noel took effect, if you can picture this scene taking place.

1. Flat battery and two very frozen stargazers with numb fingers.
2. No tools or jumper leads and no lights..... I don't count the plethora of red flashlights we have, as bitter experience has now taught me, at times they are b\*\*\*\*\* useless when you need to see what you are doing, like changing car batteries in the dark!

3. This is a recipe for disaster, bad battery out, good battery in, start car, swap good battery back to owners car and replace bad battery back to my car, don't stall car big trouble, and spend say 1 1/2 hours doing all this and get to bed at 4am.

So what have I learnt? Well, I'm very glad I lent Michael Fisher my camera cable. In return Michael did all the hard work as I was worried about getting electric shock therapy. Thanks Michael. I owe you **BIG TIME.**

Goodbye for now and remember to keep your batteries charged.

Noel Sharpe ■

### **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

**Next Meeting is on  
16<sup>th</sup> October**

### **SPECIAL ANNOUNCEMENTS**

For information of our members, please be advised that Terry Storey has changed employment and no longer works at York Optical. On behalf of the Society I thank Terry for his support of our club and I wish him all the best for the future.

### **FIELD NIGHTS**

Sat 23/9 Airfield.  
Sat 30/9 Oakdale Farm.  
Sat 21/10 Airfield.

**OUR NEXT SPEAKER** in October is **Dr Fred Watson** from the Anglo-Australian Observatory.

**Cawdor Public School** talks were a great success. Well done John R and John K.

M.A.S member John Rombi was our representative when N.A.S.A scientist Dr Jackie Davidson (not Jack... sorry Noel, JR) was here. Thanks John R.

Another upcoming public event, this time a Retirement Centre. Check with John Koster if you are interested in helping out.

**Final bit:** Wollongong Amateur Astronomical Society may join us on the 30/9 at Oakdale Farm.

Noel Sharpe ■

## Spaced Out: A Date with Sofia's Sister

Dear reader, you might be asking what the above heading has to do with astronomy. Well, it all started after our August meeting at the Uni. Noel asked if I was available the next day (Tue 22nd) to act as an unofficial, official representative of the Society.

I was to bring my telescope to the Uni to be used as a backdrop for a photo shoot with Australian scientist Dr Jackie Davidson. She is currently involved with N.A.S.A on the S.O.F.I.A. (STRATOSPHERIC OBSERVATORY for INFRARED ASTRONOMY) project.

I was introduced to Dr Davidson by Carol Oliver of U.W.S. Dr Davidson immediately put me at ease by saying to me "Please call me Jackie." Carol informed us that she had to return to her office to attend to something and would be back in fifteen minutes.

Jackie's first question was "Tell me about yourself." My jaw dropped to the ground. Here was an eminent scientist interested in what I did. We talked about the new observatory and the different tasks it would be used for, and also the affiliation between the Society and the Uni. She asked about the different interests within the Society. I

mentioned that astrophotography and Messier hunting had taken off in a great way. Jackie asked "What sort of computers do you use for tracking the objects". Her jaw dropped when I told her that our members only used star charts and star hopping. She paid us all a compliment by saying that without a computer controlled telescope, she would find it difficult to locate objects in the sky.

After the one hour photo session at the observatory, Jackie readied herself for her lecture. As I said at the beginning, Jackie is one of the scientists on the S.O.F.I.A. project. The following information is from Jackie's lecture and the printed leaflets made available by N.A.S.A.

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**...her jaw dropped when I told her that our members only used star charts and star hopping...**

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The Stratospheric Observatory for Infrared Astronomy (S.O.F.I.A.) is a premier observatory of N.A.S.A. and D.L.R. (the German Aerospace Centre) for infrared and submillimetre astronomy into the next century. A 747-SP aircraft will carry a 2.5 metre telescope designed to make sensitive infrared measurements of a wide range of astronomical objects. It will

fly up to 15,000m where the telescope collects radiation in the wavelength range from the 0.3 micrometres to 1.6 millimetres region of the electromagnetic spectrum, which is important for the following astrophysical reasons:

1. Most fundamental absorption and emission lines and bands of astrophysically and astrochemically significant molecules occur in this region;
2. Most of the luminosity of our galaxy and other galaxies emerges in this wavelength region;
3. Low dust extinction at these wavelengths permits unbiased and potentially complete observations of statistically large samples of objects;
4. Formation of galaxies in the early universe and the crucial stages of formation of stars and planets can be best studied in this range of wavelengths;
5. The origin and evolution of solar system bodies can best be studied in this wavelength region where most of their radiation is emitted.

SOFIA will provide a sensitive platform for both imaging and spectroscopy at wavelengths longer than the 200µm limit of the Infrared Space Observatory and SIRTIF. SOFIA complements the newly commissioned Keck telescopes in Hawaii and other large ground based telescopes scheduled for operation in the next decade. SOFIA provides imaging beyond 30mm, allows



spectroscopy in the regions between atmospheric windows, and unique high resolution spectroscopy of absorption and emission lines of molecules, including biogenic material, from 3 to 300mm. SOFIA'S spatial resolution in the far infrared will match those of the sub-millimetre 10 metre class ground based telescopes such as the Caltech Sub-millimetre Observatory and the James Clerk Maxwell Telescope in Hawaii.

### FIRST LIGHT

The world's largest flying astronomical observatory, SOFIA will see first light in late 2002, and is planned to make more than 140 scientific flights of at least 8 hours duration per year. SOFIA is expected to operate for at least 20 years, primarily from Moffet Field in California, but occasionally from other bases around the world, especially in the Southern Hemisphere. SOFIA will fly at an altitude (typically 15,000m) which will ensure less than ten microns of precipitable water vapor allowed at the zenith. The SOFIA observatory operations will be conducted by USRA through the SOFIA Science and Mission Operations Centre (SSMOC), located at NASA Ames Research Centre, in California, USA. The SSMOC will be housed in the same hangar as the SOFIA aircraft. The SOFIA program will support approximately 50 investigation teams per year.

Investigations will be grouped into "flight series". These will be defined by the science instrument being used, and will typically have a duration between one and three weeks. Each week will have four scheduled flights, each flight ranging in duration from 8 to 12 hours, depending on the season and quantity of water vapour present.

### CURRENT STATUS

Work on SOFIA has been carried out in the USA and Germany. The aircraft has undergone pre-modification test flights to verify and document its performance. The flight tests indicate that SOFIA's performance is significantly better than its predecessor's, the Kuiper Airborne Observatory (KAO).

Detailed test and analysis have resulted in several design changes. The telescope will now be built with a hydrostatic bearing rather than an air bearing. Changes in the aircraft door design have led to improved telescope and aircraft performance.

The SOFIA primary mirror was cut from a blank of Zerodur by Schott Glaswerke in Mainz, Germany. Developed by Schott, Zerodur is a glass ceramic material that effectively has zero thermal expansion characteristics. The blank was over 3 metres and has been trimmed to 2.7 metres for use on SOFIA. Final mirror weight is about 880 kilograms.

I hope this information has been of interest to you, if you would like to know more there is a web site, it is called **SOFIA ON LINE:**  
<http://sofia.arc.nasa.gov>.

In closing I would like to say what a privilege it was to meet Dr Davidson, and what a breath of fresh air she is, in what can sometimes be a profession that is somewhat dry and humourless.

John Rombi ■

### **A Trip to the Future**

Recently John Koster and I were invited to give a talk to the children at Cawdor Public School. We arrived at this beautiful rural setting and were greeted by children all dressed up as their favourite book characters. We had arrived in the middle of Book Week!

After meeting the staff we were directed to the library to set up for our talk. John had researched and rehearsed his information thoroughly, and with the help of some very cleverly constructed solar system models and a slide show, we were ready. The first session was the 5 to 7 year olds. John and I called this the **WOW!!** Group. Every slide of our great universe was greeted this way. The questions were very advanced for this age. The one that comes to mind first is "Why is the planet Uranus blue?" Ask yourself if you know the answer to this.

The second session were older, 8 to 11 yrs. We were able to be a little more technical with them. The questions were "How many moons are there in the solar system?" "Why is Mars red?" These and other thought provoking questions were worthy of Dr Jackie Davidson's lecture the day before.

It was great to see the enthusiasm and the wide eyed innocence of the children (and adults) when challenged by the information they were seeing and hearing. The future of science in this country is in great hands.

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### It was great to see the enthusiasm ...of the children...

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Whilst sport has always been promoted as the major achievement in this country, let's not forget that the cerebral achievements of our children, and the people that have gone before them: eg Dr Andy Thomas, Dr Paul Scully-Power, Dr Jackie Davidson and the many others that have made significant contributions to science, should also be treated with the same Gold medal respect that our sporting heroes have attained.

### MESSIER UPDATE

Well the hunting continues, and there are some additional

scalps in the bag. They belong to Randall Press 45, Attila Kaldy 30 and Noel Sharpe, who only started on the 3rd Sep at The Airfield and bagged 10 in one night. To all of you **WELL DONE!!**

John Rombi ■

### What's to See This Month: 18<sup>th</sup> Sep – 15<sup>th</sup> Oct

To paraphrase 'Poltageist II' – "They're baaaaack!!!". There is a plethora of conjunctions this month, particularly in the latter half of September. So mark them on your kitchen calendar, get out there and enjoy. (Or even better, photograph.)

**Mercury:** before it reaches its maximum elongation (26°) on 6<sup>th</sup> October, Mercury gives us some nice conjunctions in the evening twilight. e.g. on 21<sup>st</sup> September, Mercury forms a close triangle with Venus and the star Spica (in Virgo). **Photo Opportunity**

In fact, Mercury (mag. -0.7), Venus and Spica are mixing it in different combinations from 19<sup>th</sup> September to 24<sup>th</sup> Sep. and beyond. On 23<sup>rd</sup> and 24<sup>th</sup> Sep., Mercury will be 2 moon diameters (1°) from Spica. Can you pick which is which? (Hint: Spica is a white star.)

Then, to make it more interesting, the crescent Moon makes the trio into a quartet on 29<sup>th</sup> & 30<sup>th</sup> September. This should make for a

spectacular scene if the clouds are kind. **Photo Opportunity** Then Mercury continues high in the western sky until about 18<sup>th</sup> October.

**Venus** is very viewable in the evening twilight this month, at mag. -3.9 looking like an army flare in the western sky. While combining with Mercury (see above), it has some close brushes with Spica (2.5° on 19<sup>th</sup> & 20<sup>th</sup> September.) Then it continues high after sunset well into October. Unfortunately, Venus is almost 'full on' with very little crescent showing so in binoculars or telescope it just looks like a great milky glob (not cluster.)

On 7<sup>th</sup> October, Venus will be less than 1° from  $\alpha$  Librae, a wide binocular double with mag. 2.8 and 5.2 components. Venus will be much brighter – see if you can see and split the double.

**Mars** is still a morning object, rising only an hour before the Sun. If you are keen enough to get up that early, you will spot it in Leo. (Personally, I would rather be lion in bed at that hour.)

**Jupiter & Saturn** are rising earlier but it's still very late. The month starts with Saturn (mag. 0.0) rising at 11:45pm (Daylight saving Time) and Jupiter (mag. -2.5) at 12:30am. Both Saturn and Jupiter are in retrograde motion now. For an interesting alignment, on 15<sup>th</sup>

October, an almost Full Moon, Saturn and Jupiter form a line equidistant from each other, with Saturn in the middle.

Both planets are hanging about in Taurus all month so some nice arrangements with Aldebaran should occur, especially when the Moon is thrown in around 15<sup>th</sup> to 17<sup>th</sup> October.

**Uranus & Neptune** are still up there all night – you just need to know where to look. The answer is – in Capricornus. From night to night, you really need the spotting chart provided in *Astronomy 2000* but it's worth the look. Last Star Night, Dick Everett showed us where to look and, behold, a blue-green disc that definitely was not a star (Uranus). Quite exciting to see a planet that you don't usually get a squiz at. It's not as exciting to view as Jupiter or Saturn, but knowing the vast distance and coldness, it has a definite 'Wow!' factor.

### Miscellaneous:

There are numerous NGCs and Ms to see up there this month. Where to begin?

**Vulpecula** (the Fox) is not easy to see in itself as its stars are so faint (mag. 4.4+) but it contains some interesting objects. It's one of those constellations not shown on an average star wheel, so a book or Star Chart is handy. You'll find it between Cygnus and Sagitta (also not on my Star Wheel.) Sagitta is

relatively easy to find as it lies beneath (i.e. north of) Aquila, featuring that trio of stars with Altair at the centre. Sagitta looks like an arrow, or dart and it points generally from west to east.

So what's in Vulpecula? Two things of interest to amateurs. Firstly, **M27**, a very nice planetary nebula called **The Dumbbell Nebula**.



This is actually visible in binoculars, but appears fairly small. It is best viewed in a scope with magnification around 50x or 100x. I was fortunate enough to find it at the Oakdale Farm in my 9.25" and it was great – it actually looked like a dumbbell. (I suspect the more light you collect with long exposure, the less it looks like a dumbbell and more like a planetary nebula. (Feel free to disagree.) M27 is conveniently located exactly 3° due north of the star  $\gamma$  Sagittae, the point of the Arrow. An easy way to find it is to mentally rotate the arrow anti-clockwise around its point for 120°. Where the centre star of Sagitta would end up, that's where you'll

find M27. For your info, M27 is a mere 1,000 l.y. away.

Another brilliant (but faint) object to observe is one of those optical peculiarities in the sky. (Much like the Face on Mars, you can see anything up there if you look long enough.) I am referring to Collinder 399, Brocchi's Cluster or, more popularly, the **Coathanger**. When I first saw this, I thought someone was having me on and checked for something stuck over my binocular lens.

The Coathanger is certainly best enjoyed in binoculars or, at most, a very low magnification telescope. To find it, again locate Sagitta (the Arrow). Imagine a line from the arrow's tip running west about 30° below the arrow's length. Less than 2 arrow lengths along this line you will see the unmistakable shape of the Coathanger.



(Photo by Jerry Lodriguss)

Six stars in a dead straight line with a perfect hook sticking up from the centre of the six. It's uncanny.

It's called an 'asterism', which the dictionary defines as 'a group of stars.' But it's not a genuine cluster. ■