**MACARTHUR ASTRONOMICAL SOCIETY** Inc.

**Journal**

# *PRIME FOCUS*

**Volume 11 Issue 11** **November 2006**

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## President's Report

Well, here we are at our last meeting for the year. I don't know if it's just me but the year has flown by at light speed. In looking back over the year I would have to say how pleasing it was to have such a great response to our "Macastro" public star nights out at The Oaks sports ground. They were a real highlight for the Society.

Overall I cannot recall a year in which we have had so many great guest speakers. The year started of course with Fred Watson and concludes tonight with one of this country's most highly regarded educators, namely Dr Timothy Bedding. Dr Bedding is the Associate Professor in the School of Physics in the Faculty of Sciencé, University of Sydney.

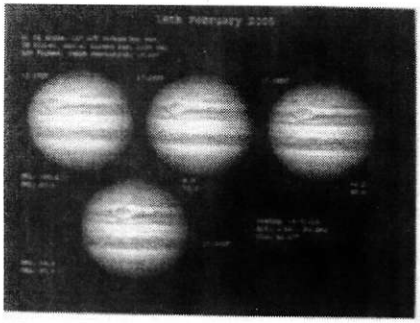
His topic tonight is Star Quakes. His talk may give us some added information following on from the talk given recently by Paul Francis, Paul's topic was "Listening to the Universe". I think it should be a great night and we appreciate Dr Bedding for taking the time to visit us.

### Last Month

We had George Descala give us a talk and his subject was how amateur astronomers can contribute to professional astronomy. George is the senior physics teacher at Prairiewood High school.

This was a very informative and enjoyable talk. As well as running the Double Helix Club

at the school George has his own Observatory, takes students to dark sky sites for observing and does research into Variable and Eclipsing Binaries. We received a lot of information as to the websites to get into to post observations and I know of several members who have keen interests in Transit Lunar Phenomena and Solar Flair activity.



**(George's images of Jupiter)**

The Society thanks George for a great night.

As I have mentioned we have had some great speakers all throughout the year, so just to recap a little I have taken the liberty of detailing the speaker list below.

## Guest Speakers

**16th January**: Astrophotography of solar system objects by MAS member Ned Pastor and photography of deep space objects by another member Martin Ferilto. Some very impressive work was shown and the results can be seen on the Society's website. We are fortunate to have many great photographers in the ranks. Well done guys.

**20th February:** Dr Fred Watson, Astronomer in charge Anglo-Australian Observatory, his talk was about Gravity, Albert Einstein and stars that bend space and time.

**20th March:** Professor Mike Dopita, Australian National University Canberra, topic was Star Formation throughout cosmic time.

**17th April**: Ian Cook, MAS society member. Talk was on double star observing, various double star catalogues and prominent historical astronomers who contributed to this field. It was an excellent presentation, well done Ian.

**15th May:** Don Whiteman, head technician from Bintel. Talk was on overseas trips to the Meade and Nagler factories in the USA, as well as his experiences at Stellaphane, site of the world's first official star party and birthplace of amateur telescope making.

**19th June**: Melissa Hulbert from Sydney Observatory and Sutherland Astronomical Society. Presentation was on imaging using film and digital cameras as well as web cams.

**17th July**: Professor Ken Freeman Australian National University Canberra. His topic was the formation of Galaxies and included topics like cold dark matter, transparent dust and chemical tagging.

**21st August**: Doug MacEachern. Doug is a member of the Society and his presentation was on imaging celestial objects with high dynamic range processing using photo shop CS2 . Well done!

**18th September**: Paul Francis from the ANU Canberra. His topic was listening to the universe. Paul played us various sounds of celestial objects, which can help us to further our understanding in a way that visual

observations cannot. Paul was a very accomplished and enthusiastic lecturer who commented about how well our members asked questions on the night.

**16th October:** George Descala, senior physics teacher at Pairiewood shared his expertise as how amateur astronomers can participate and assist the professional astronomical community.

## Speakers for Next Year

We will start the year in January with just a casual meeting, no guest speaker is planned at this stage, however it will be a good chance to catch up after the Christmas and New Year break. No doubt we will have something planned to entertain the troops.

Our guests for next year will include Mike Salway in February. Mike is the founder and administrator of the Ice and Space community forum. You must check out "Ice In Space" on the web.

In March it gives us much pleasure to announce Rev Bob Evans as our special guest speaker. Bob, of course, is renowned worldwide for his many super nova discoveries.

In May Melissa Hulbert pays us a return visit, Melissa is keen to present "The Sun Gods and the Day of Darkness".

I must congratulate John Rombi for all his hard work in getting such great speakers for us. Well done John.

## The Dates

25/11/06 Stargard Field
02/12/06 Christmas Party
08/12/06 Campbelltown Rotary Observatory.
16/12/06 The Forest.
15/01/07 General Meeting

Watch out for any Critical MAS emails as we may from time to time hold some off scheduled field nights. These would be mostly held at the Airfield. At time of writing I cannot list any other activity dates as I am waiting for the Astronomy 2007 yearbook to arrive. This indispensable guide tells us the date of the New Moon and what is happening in the night sky.

So anything important will be on a Critical MAS email, or information will be given in January's Prime Focus.

## Christmas Party

This year members and their families are welcome to attend a get together at my house. I will provide the BBQ, some salad and bread rolls. Please bring your own meat or chicken or whatever you would like to cook on the BBQ. Also please bring your own drinks and some chairs or picnic tables.

For privacy reasons I would prefer not to make my address public so if you could contact me personally on my email to confirm your attendance then that would be appreciated.

We would be looking to start around 5pm on Saturday the 2nd of December, please contact me at astrosharpe@bigpond.com.au

## Stargard Field Telescope

Well, the paperwork side of the application is now finally completed, our application carries endorsements from three local high schools as well as Pat Farmer, Member for Macarthur.

Whilst it's been a lot of work to get this far it's also been a lot of fun as well, just talking to people and discussing the pros and cons of such a large telescope has been exciting and enjoyable.

The application went in just before I went on holidays. I am writing this report up ahead of time as deadlines are tight. Unfortunately there will be a time frame of between 6 to 8 weeks before we have an answer to our application.

I have spoken to Peter Read from SDM telescopes and we have enough time as the mirror is still waiting to be reconfigured, hopefully everything will come together at the same time.

I think if we get approved I will faint and fall over backwards. I hope I do that under a dark sky somewhere so when I regain consciousness I would see stars, real ones that is!

Just in closing I wish to sincerely thank all those members who have contributed in making MAS such a great success this year, also please accept my best wishes for a Merry Christmas and a Happy New Year to all members and their families. Enjoy and stay safe!

Kind Regards
Noel Sharpe ■

## Hubble's Repairs out of this World

The world's favourite eye on the sky, the Hubble Space Telescope, is to receive a makeover, dramatically upgrading its power to spy on distant corners of the universe.

NASA is expected to announce that a shuttle crew will be dispatched in 2008 on a cosmic house call to overhaul the telescope, extending its life until at least 2013.

Besides carrying out vital repairs on Hubble, which has been orbiting since 1990, the astronauts will install advanced new instruments to "expand greatly the scientific power of the telescope", boosting its performance in some areas by 10 to 70 times.

The high-flying service call will have its risks. If the shuttle's fragile heat shield is damaged, the astronauts will not be able to reach the international space station and use it as a safe haven until help can arrive.

The mission was first proposed years ago. However, after the shuttle Columbia was destroyed during re-entry in 2003, killing its crew, the Hubble flight was cancelled, deemed too risky.

NASA's chief, Michael Griffin, is on record as saying he regards overhauling the telescope as "a very high agency priority". Before any Hubble flight could be launched, the shuttle would have to perform two consecutive flights without any significant heat-shield damage. That has been achieved, with flights returning safely since Columbia's loss.

In case something goes wrong, the Hubble repair crew will carry supplies to stay in space

for at least 25 days, long enough for a rescue shuttle to be launched.

If everything goes as planned, the astronauts will perform up to five space walks. The overhaul includes installing rechargeable batteries to power the telescope, and gyroscopes to keep Hubble pointed in the right direction. A new thermal blanket will protect the telescope from the harsh temperatures of space. A spectrograph, which failed in 2004, will be fixed.

Two sophisticated instruments will be installed: the Cosmic Origins Spectrograph to explore the formation of galaxies and stars, and a camera to snap spectacular views of our solar system's planets, as well as distant bodies on the solar system's fringe.

(From Richard Macey,
Sydney Morning Herald)

## Magnitude of an Astronomical Object

"Visual magnitude" is a scale used by astronomers to measure the brightness of a star. The term "visual" means the brightness is being measured in the visible part of the spectrum, the part you can see with your eye (usually around 5500 angstroms).

The first known catalogue of stars was made by the Greek Astronomer Hipparchus in about 120 B.C. and contained 1080 stars. It was later edited and increased to 1022 stars by Ptolemy in a famous catalogue known as the "Almagest". Hipparchus listed the stars that could be seen in each constellation, described their positions, and rated their brightness on a scale of 1 to 6, the brightest being 1. This method of describing the brightness of a star survives today. Of course, Hipparchus had no telescope, and so could only see stars as dim as 6th magnitude, but today we can see stars with ground-based telescopes down to about 22nd magnitude.

When astronomers began to accurately measure the brightness of stars using instruments, it was found that each magnitude is about 2.5 times brighter than the next greater magnitude. This means a difference in magnitudes of 5 units (from magnitude 1 to magnitude 6, for example) corresponds to a change in brightness of 100 times. With equipment to make more accurate measurements, astronomers were able to assign stars decimal values, like 2.75, rather than rounding off to magnitude 2 or 3.

There are stars brighter than magnitude 1. The star Vega (alpha Lyrae) has a visual magnitude of 0. There are a few stars brighter than Vega. Their magnitudes will be negative.

Astronomers usually refer to "apparent magnitudes", that is, how bright a star appears to us here at Earth. Apparent magnitudes are often written with a lower case "m" (like 3.24m).

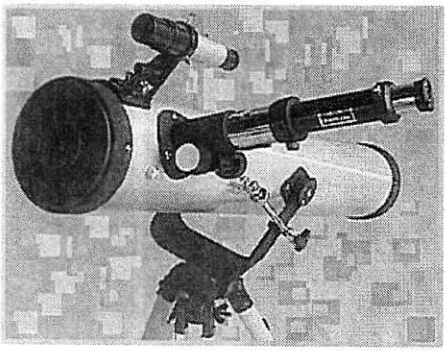
The brightness of a star depends not only on how bright it actually is, but also on how far away it is. For example, a street light appears very bright directly underneath it, but not as bright if it's 1/2 a km away down the road. Therefore, astronomers developed the "absolute" brightness scale.

Absolute magnitude is defined as how bright a star would appear if it were exactly 10 parsecs (32.6 light years) away from Earth. For example, the Sun has an apparent

magnitude of -26.7 (because it's very, very close) and an absolute magnitude of +4.8. Absolute magnitudes are often written with a capital (upper case) "M".

(Anon.)

Beginning any new project presents its challenges. Amateur astronomy is no different; but, with some useful input from an *old hand*, my 'little Tasco' (76mm x 700mm) is now a reasonable little reflector telescope. (Thanks Lloyd).



It is amazing what a difference can be made to an off-the-shelf piece of equipment with the addition of a few dollars worth of better class apparatus. All it took to improve my telescope were two reasonably priced, Plossl Eyepieces – a 15mm and a 20mm, a decent 6 x 30mm Finder Scope, and a 'stumpy' Meade x 2 Barlow.

The Finder Scope presented some minor 'engineering' difficulty in that the original mount had to be removed to allow the new scope to be fitted. In addition to this, a little bit of packing was required to allow the new Finder Scope to be fully adjusted one way or the other. Once all that was completed, the scope could be lined up with ease – and has remained spot-on ever since. This is a vast improvement on the original finder scope, which could be knocked from its correct position by a light wind.

In the course of buying this extra equipment, I also had to delight of discovering The Bintel Shop – oh what an Aladdin's cave! I even went to the added expense of buying a night vision red light torch whilst on the premises – such self-indulgence!

Having attended MAS monthly meetings over the past six months, I have learned quite a bit about the various tasks one can set one's self in pursuit of widening one's astronomical knowledge. Having a smaller telescope does restrict one somewhat, however, I have found the Moon to be quite a source of inspiration for the beginner.

Having purchased a few books and Moon Maps, etc, I had intended to familiarise myself with the Moon's topography. In browsing the Internet, I came across just the project I needed to kick-start my Moon Quest, at the following address:

www.moonsociety.org/certificate/geologytes.html

Not only is there some interesting factual information, accompanied by an Open Book Test, but there is also a List of Objects on the Moon to be Observed – complete with a ninety-task log book – all in downloadable PDF format. If one feels so inclined, upon completion one can send all the paperwork to an address in the USA and receive a 'Lunar

Certificate'. I'm not sure I'll bother with that bit – but the project looks fun anyway.

It occurs to me, with the plethora of knowledge that exists within the ranks of the MAS membership, any number of projects of this nature could be put together for the advancement of new members as they join the ranks.

If anyone is interested in putting together some form of club resource collection, I would be only too willing to do the donkey work / paperwork under a bit of expert guidance. I can be contacted at meetings or my email address is: dbjones@bigpond.net.au

Regards – Davy Jones

## Young Universe was surprisingly structured

From Internet I found by "Google" the website "Universe Today" - www.astronomyonline.com.au . A team of European astronomers have discovered a highly structured cluster of thousand galaxies at an incredible 9 billion light years away. This structure was highly evolved only a few billion years after the Big Bang. Some of the cluster galaxies are red and elliptical which would indicate that they were already quite old.

Very Large Telescope and ESA's XMM-Newton X ray Observatory astronomers have discovered the most distant, very massive structure in the Universe so far. The discovery of such a complex and mature structure so early in the history of the Universe is highly surprising. Indeed until recently it would have been deemed impossible.

I think it is doubtful that the big bang was 13.7 billion years ago, or was it a "little bang" and stars and galaxies have been there before and the Universe was not empty?

Ursula Braatz

[ Thank you Ursula for challenging the conventional wisdom of astronomers and cosmologists regarding the age of the Universe. We need to keep those people on their toes. Ed. ]

## Police Those Star Parties!

The star parties staged by our astronomy club have become unruly and chaotic. Perhaps you've noticed the trend in our observing sessions. Our typical group nights consist of telescopes careening rapidly from one bright object to another - a minute on M13, another minute for the Andromeda Galaxy, a brief glimpse at the Ring Nebula? Observing at excessive speeds is a common infraction. Another is the stunting that some observers revel in. They claim to see targets like Palomar 4, a magnitude 14 globular cluster, in a 4-inch telescope and then have the nerve to boast for all to hear, "But it's real easy to see!"

Another insidious practice that is becoming more widespread occurs when lazy observers rush over to see an object that a more disciplined amateur has found after spending half the night star-hopping to its obscure location. Such thievery of photons is unconscionable. What's more, these parasitic observers then glance through the victim's finderscope or Telrad finder so they can sight the location of the target and quickly sweep up the same object in their telescopes. They

then add insult to injury by claiming to have found the object themselves. Such claims are illegitimate in our minds. Guilty parties should be stripped of their Messier badges.

The disorderly conduct was becoming too much to handle. The trend had to stop. To stem the tide of unruly observing, our club has formed a much-feared but effective **Observing Police**. Their job: bring discipline and good observing skills to the uncontrolled night time mob. It was a tough job, but someone had to do it.

To enforce order, our Observing Police will regularly patrol our star parties. Armed with red flashlights, they will inspect observers and hand out fines for any observing they feel does not conform to the high standards we are attempting to instil. Fines that the Police will issue include:

**OBSERVING TOO QUICKLY** - A speed of 5 objects per hour is in force at our observing site. All objects must be sketched and sketches must be available for inspection during random spot checks. PENALTY: Confiscation of eyepieces.

**OPERATING A TELESCOPE IN AN UNSAFE MANNER** - Includes bonking people on the head with the tube of a long refractor or wiring a telescope tube to a high-voltage generator to create a giant "dew-zapper" effect. PENALTY: Observing with said telescope.

**STUNTING** - Such as claiming to see invisible objects. PENALTY: Thirty days Solar observing. A further crime is claiming to actually see detail in invisible objects. PENALTY: Immediate promotion to club president.

**RECKLESS OBSERVING** - You're guilty if you think you see objects not actually being viewed. (such as exclaiming that "the Cocoon Nebula is really bright!" when the telescope is pointed at the Andromeda Galaxy). Also includes viewing objects with inappropriate filters and magnifications (such as scanning the Pleiades at 900X with an O III filter). PENALTY: One night in the Coma-Virgo galaxy cluster with a 60 mm telescope and an old Norton's Star Atlas as your only guide.

**IMPAIRED OBSERVING** - On one occasion an observer was caught trying to find an apparently interesting object called NGP. "But it's marked right here on my atlas!" he protested, not realizing the object was, in fact, the North Galactic Pole. Carefully searching for deep-sky objects with a sub-aperture planetary mask in place over a Dobsonian is also subject to ticketing. TYPICAL PENALTY: Tracking down all the Messier objects - in numerical order.

**IMPERSONATING AN OBSERVER** - Infractions include arriving at an observing site in July with a 20-inch telescope with the intention of observing the Orion Nebula. Or owning a 20-inch telescope with digital setting circles and never looking at anything except the brightest Messier objects. PENALTY: A mandatory one-night Messier Marathon-WITHOUT the digital circles. Our Observing Police have also found a lucrative method of raising money for Club activities - mostly to purchase Nagler eyepieces for all the club executives. We now require that all observers buy observing licenses. We set the highest fees for the brightest objects. This discourages people from partaking in the tiresome and unproductive practice of observing the same bright objects over and over again.

Our license fee structure is as follows:
Moon $1000.00
Planet $500.00
Galaxy $20.00
Planetary Nebula $10.00
Orion Nebula $1000.00
All other diffuse nebulae $2.50
M13 $1000.00
All other globulars $1.50
Open clusters and double stars FREE
Comets and Meteors 3 for $1.00
In addition, novice observers must obtain a learner's permit, at a cost of $50.00.

By enforcing these regulations we hope that our star parties will be much easier to manage. What will disappear is the boisterous, uncontrolled enthusiasm of the past. The chaos will be replaced by a quiet, disciplined observing that is a credit to amateur astronomy. We hope other clubs will follow our lead.

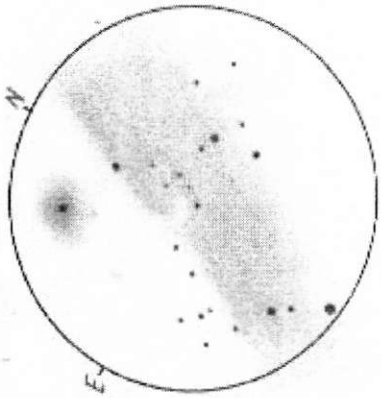
For the Observing Police Squad (Anon.)

"What a wonderful gift that anyone, even in the center of a city, can gaze up and see a star that has a planet", says Geoff Marcy, a member of Reffert's group.

(From Sky & Telescope, Nov 06) ■

## The Horse Head Nebula

The Horsehead nebula is a real deep-sky challenge. Good optics, solid observing skills and excellent conditions are required to meet the challenge. You might be surprised to hear that large aperture is not required. The Horsehead is a dark nebula (B33) seen in the foreground of a delicate emission nebula (IC 434). IC 434 is not very bright so the contrast between it and the Horsehead is quite low. As long as the optics, seeing and transparency are good, a 6-inch aperture is up to the task.




**(As seen with a 10" scope)**

The Horsehead is located 31' south of Alnitak, the easternmost star in Orion's belt. NGC 2024, an emission nebula with a wide dark channel running north-south through the middle, should be visible about 15' east of Alnitak. This is the Flame nebula and is sometimes mistaken for the Horsehead. If you can't see the Flame nebula, don't even bother with the Horsehead. Both Alnitak and the Flame nebula are outside the field of view in the previous sketch, which presents an 82X view in my 10-inch Newtonian.

Twenty-three arc minutes southeast of Alnitak, NGC 2023 is visible as an island of nebulosity surrounding 7.8 magnitude HD 37903. IC 434, a corridor of north-south running nebulosity is just barely visible west of NGC 2023. The Horsehead is located 15' southwest of HD 37903. It appears as a notch of darker sky within IC 434. To say the Horsehead is subtle would be a gross understatement. The Horsehead is framed by

a handful of 12th magnitude GSC stars forming a "stair step" asterism. You can use these to identify the field.

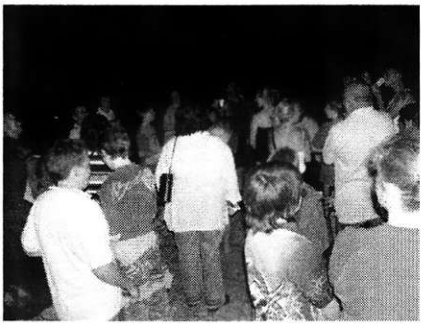
When you go after the Horsehead, look first for the Flame Nebula and NGC 2023. If they're not visible, the Horsehead won't be. Then look for IC 434. Same deal, if it's not seen, don't bother trying for the Horsehead. Then, look for those five stars that frame the Horsehead. Once you know where to look, finding an object becomes much easier. An H-beta filter will enhance IC 434 and make the Horsehead easier to detect. Good luck.

## At the Oaks

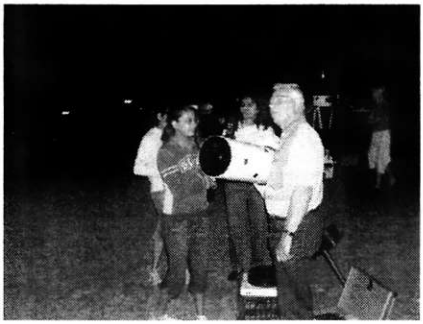
On 14th October, there was a public night held at the Oaks. As has been common for us this year, a reasonable crowd turned up but so did the clouds. We had a good number of members with scopes present, ready to dazzle the public with the starry delights, but the clouds chose to spoil that.
Undeterred, our President Noel gave an excellent introductory talk about astronomy to the group, including many children. See the two photos below.

Then Noel handed over to Bob Bee who was going to give a talk on binocular astronomy, but at this stage the stars, or at least those objects with binocular candidates, went behind clouds so Bob, too, gave a fairly general talk. People then were sent to the telescopes to see what could be seen.

Thanks to all those who came with their scopes. One of these nights we'll get a good sky.



Below we see Ian Cook talking to a young family at his scope.



Remember the next public night is at the Campbelltown Rotary Observatory domes on Friday 8th December. ■

## Quo Vadis Voyager - A Short Story

The freezing water with its hapless denizens streamed off the deck through the gunnels on its journey back to the ocean's bottom from which the SS Voyager had just emerged.

The surfacing ship glistened in the sun like a huge multi-eyed whale, venting fumes stored during its four hour excursion into the depths of the ocean trench. Sombre grey stabilising fins and pressure resistant shielding slowly retracted to reveal the festive colours of a Pacific cruise ship, once more suited for surface level pressures.

As the deck dried and robot servants scurried to erect deck chairs and umbrellas, passengers emerged to see the Sun again, as if a long lost friend.

"Struth, that beat scoring the winning goal against Liverpool," exclaimed a tall athletic man leaning over the railing, watching the last of the phosphorescent water sink out of sight. Brad Calder, known to his world-wide soccer fans as "Lightning," selected a cocktail from a passing tray held by a scantily clad waitress and contemplated making a pass of a non-soccer ball type.

"I wouldn't bother," drawled the chisel faced man who had joined Calder at the railing. "They haven't ironed out the glitches in the Pentium 10 Eros chip in that model yet."

Calder eyed the departing waitress's undulating posterior, shrugged, then turned to his fellow passenger, Joseph F. Riche. Those in the know thought the 'F' stood for 'filthy,' which could be taken whichever way you wanted.

"And how would you know, Joe? Personal experience?"

Riche flinched at the crude abbreviation of his name. "Yes, but not the kind you mean. My company makes most of the word's robots. We've had a few million returned with complaints about the ... responsiveness... of that model. Cost us heaps in warranty."

Calder grinned. "What's a few hundred million to your billions..?" He paused, noticing Rice's amused smile. "Trillions?"

Bored with this direction of conversation, Riche cast his glance around the deck. A large throng of sun-seeking passengers were occupied in 3 Ss of cruise pursuits – sunning, sipping and sleeping. His manner brightened instantly. "Ah, 22nd century technology can't beat the real thing. Here's Celeste." He quickly checked his reflection in a saloon window, fluffed his cravat into a more jaunty arrangement. "Don't you have some goal posts to polish? I have company."

Calder admired the beautiful redhead approaching. "It's a free deck, I'll stay. Besides... Joe... I believe Miss duPree has company of her own."

"Who on Earth..?" Riche stared at the pale skinned man talking animatedly to Celeste duPree as they walked towards him.

"Not a clue," answered Calder, "though I've seen him about ship. An odd one if you ask me."

"Odd?" Riche couldn't take his eyes off Celeste. He'd been captivated by her the first time she performed on the cruise. While billed as a cabaret singer, she was far more than that to Riche. She was... what? More than the most talented multi-voicer he'd ever heard, her dulcet second and third altos joining her exquisitely pure soprano in harmonies that thrilled his long lost soul. She was... the most beautiful woman he had ever seen. And she was going to be his. He had trillions of reasons for absolute confidence, and he had a ring worth an emperor's ransom waiting for her perfect finger. "Why odd? Ah... I see."

Celeste's pale companion had suddenly dropped to the deck, turned onto his back and slithered beneath a life boat, poking his head into the flare of its anti-grav drive. His muffled voice could be heard in snatches of frustration, then amazement. Celeste stood bemused, then saw Riche and Calder. She strolled over, her smile driving another arrow through Riche's smitten heart.

"Joseph, Lightning. Have you met Ulysses?" She gestured back towards the life raft, where only a pair of sandalled feet could be seen poking out.

"Ulysses!" both men blurted. "And what's he doing over... or under... there," Riche continued. "Checking out the engine of the good ship Argo?"

"Probably," Calder agreed. "That's what I was saying before. Ever since he came on board, he's had his head into every bit of machinery. Anyone would think he's never seen an anti-grav drive before. And the way he eyes the robo-waitresses... and the waiters, come to think of it. Do you suppose he might be bi..."

"Forget whats-is-name," Riche said. "Celeste, I wanted to ask you..."

"Shostak," Celeste said.

"What?"

"That's his name. Ulysses Shostak. He's a pilot."

"A pilot who's never seen an anti-grav drive? No, he's a con artist, Celeste. Avoid him. Look, let's have a quite drink, I have something to ask you."

"First I have something to ask you, Joseph." Celeste stared at the beautiful diamond ring on the table. "Do you think it possible for two people to meet for the first time, on a cruise, people from worlds apart, and to genuinely fall in love and be together forever?"

Riche's heart pounded with realisation of unhoped for joy. He had expected his wealth to win her body, but her heart as well? "Of course I do, Celeste."

"Thank you Joseph, you've made me so happy." She touched his hand. "I will marry him then."

"Celeste, you've made... what?"

"I'm going to marry Ulysses."

"That pale skinned, ignorant pilot who doesn't even know what century he's in? I can show you the world, take you to tops of mountains, meet kings and presidents. What can he show you?"

Celeste picked up the ring and handed it back to Riche. "Before yours and my grandparents were born, Ulysses Shostak left Earth in the first star ship, travelled at near light-speed to distant stars and civilisations, and now, thanks to Einstein's relativity, is back only ten years older. After this cruise, he's taking me back to Tau Ceti. I think that trumps your mountains and presidents."

Celeste kissed Riche gently on his forehead, then walked gracefully from the salon toward the sunshine, her beautiful trio voice trilling a joyful song in her wake.

(Copyright 2006 - Robert Bee) ■

This is my final issue as editor of Prime Focus. It has been a fantastic experience over the past 11 years and over 110 issues.

I'd like to give my thanks to all of you who have contributed to Prime Focus in the past – you have helped make the journal what it is.

Now I ask you to get behind your new editor – Kate Johnson – who I am sure will add new life to Prime Focus ... with your help.

Bob Bee

**Happy Christmas to you all**