

ന

Vol 16: Issue 9, Oct '11

Page 2 President's Report Page 3 Member Profile Page 4 Secretary's Column Page 6 'Theoretically Speaking' Page 8 'Pour, Oh Pour the Pirate Sherry' - Pt 2 Page 10 A Plethora of Double Star Catalogues - Pt. 3 Page 13 "The Dish" - 50th Anniversa Page 13 Our Oceans Page 22 theSkyNet - grid computin Page 24 This month's Speaker Page 26 Australians in Science Page 27 Astronomers Sense of Humour Page 28

From the Editor

Welcome to the October 2011 edition of Prime Focus.

Prime Focus is the Society's monthly electronic journal, containing information about Society affairs and on the subjects of astronomy and space exploration from both members and external contributors.

We are constantly seeking articles about your experiences as an amateur astronomer and member of MAS, on any astronomy-related topic about which you hold a particular interest. Please submit any articles to the Editor at **editor@macastro.org.au** at any time.

The larger "print" version of this October edition is now available at the "*Members/Prime Focus/2011*" menu link on our website at:

http://www.macastro.org.au for members to download.

Other astronomical societies, as well as industry-related vendors, may request a copy of this edition of Prime Focus in electronic form by sending an email to **secretary@macastro.org.au**.

If amateur astronomy-related vendors would like to advertise in Prime Focus from next month, then please send an email to the Secretary with your details, and we will endeavour to come back to you with a suitable plan.

Please enjoy this October edition - our fifth in the new-look *Prime Focus* series.

Clear Skies! Chris Malikoff

macarthur astronomical society

President's Report

Trevor Rhodes

Welcome to Prime Focus!

There are a few items of news I need to tell you about this month.

Shortly we will be sending out updated membership forms to all members. This is being done to update a couple of items. Some people move house, change email addresses or phone numbers and without these details, we find it harder to communicate with you. Not everybody uses the same form of communications, so we need all avenues covered. Many attempts at communications are now being returned to us. I urge you to fill in these forms when you receive them, with your up-to-date details, and get them back to us as soon as possible.

Another item is fees for The Forest. As our fees rise, so must the amount we charge those who attend. So, from the beginning of November, members will be charged \$15 per night and invited non members \$20. For the dark skies this site provides, it is still well worth the price.

You may have heard the news that we were considering a change of venue for 2012 and that we had trialled Blair Athol Community Centre last month. Well, that is behind us now after a positive response from UWS. We will now have a room at the University for free over the next year. There are still details to be worked out regarding room allocation, but this should not be a major hurdle. I would like to thank UWS for working with us on this matter.

Please keep the following dates clear for our viewing nights: The Forest - 21st/22nd October and Stargard - 29th October.

Another date to be conscious of is 5th November. We will be participating in a Bunnings family event. Volunteers are needed to man the stall as well as telescopes. Please talk to Tony Law regarding your involvement on the day.

The fun keeps coming. On 12th November we are taking part in a Public Outreach Event at Glenfield. I have four volunteers providing telescopes on the night and am happy to have more. Please contact myself if you wish to take part.

Recently we held a very successful Sausage Sizzle at Bunnings. I would like to take this opportunity not only to thank the volunteers who helped out on the day, but in particular Tony Law whose organisation of the event at short notice brought it all together.

This month's Macarthur Astronomy Forum Speaker is Gary Kopff from Wildcard Innovations. His talk will be about The Argo Navis Telescope Computer and I know there are a number of members interested in this system.

November's Forum will see our Society's Patron return. Prof. Bryan Gaensler will be talking to us about his recently published book, 'Extreme Cosmos'. Please, bring your copy along on the night for Bryan to sign. If you haven't already purloined a copy for yourself, they can be purchased at the following address:

http://www.unswpress.com.au/code13/p1112

Looking forward to doin' it with you in the dark...

Trevor Rhodes

Page 3

My first grasp of anything to do with space/astronomy/ technology was the launch of Sputnik-1 in October 1957 – I remember my father taking me outside to view one of it's transits of Kent. Of course this event led to the 'space race' of the 1960's and exploration into the 1970's. The images of the planets sent back by the various craft sent out to the Moon, Mars and beyond were exciting.

In August 1965 I was visiting my penpal in France and we were taken out to a camp site (an old airfield) about 150km south of Paris for our 'education'! One night a group of us escaped from the dorm, that night as we supped a few beers, lying out on the airfield, I saw my first meteor shower. The skies were so clear, the star fields were brilliant and we saw the Perseids give a spectacular performance. I always dreamed of having my own telescope from that day on.

Moving to South Africa in 1981 I was exposed to the Southern skies for the first time. My frequent trips to the Kruger Park gave me my first views of a 'dark' sky. No lights for hundreds of kilometres in every direction. Visits to the Planetarium followed keeping the dream alive.

We moved to Australia in 1989, the following year the Hubble Space Telescope was launched and eventually the pictures produced blew us all away. Now I not only wanted a telescope but wanted to take images too! The dream was maintained for 38 years in total until it became a reality when I purchased a Meade LXD55 8" SCT with a 'go-to' mount in October 2003! It took me 6 months to realise I had no idea how to use it and I joined MAS in May 2004. What a great help you have all been, at least I know what polar alignment is all about now the main reason I couldn't 'go-to' anything when I set up the Meade myself!

Member profile - Tony Law

My venture into imaging over the last two years has been the steepest learning curve ever! I replaced the Meade mount with an EQ6 and Synscan controller. Added a Skywatcher ED80 and a QHY5 CCD camera for guiding. Using a Canon 40D DSLR for imaging (see pic). That's only the start of it, went to AAIC2011 to learn about the imaging software – now have Star Tools, PixInsight and Photoshop CS5 to contend with – have received great encouragement from Chris Malikoff and Deb Taylor throughout this journey.

The latest news is that I have a Meade 6000 130mm triplet APO Refractor on order – the SCT will be consigned to planetary imaging with the new Orion Autoguider/ Planetary CCD camera I won as a door prize at AAIC2011.

Tony

Secretary's Column Roger Powell Committee Matters...

Before getting on to committee affairs, I want to mention that this month, Australian astronomers have introduced an exciting new grid computing system that is well worth supporting, called "The SkyNet". It will process astronomy data from professional Australian astronomy sources. It runs on your home computer in the background, using your computer's idle processing time.

I've been a grid computing enthusiast for many years and I know some other MAS members share this interest. Grid computing works on the simple concept that thousands of personal computers, already connected to the internet, can donate their computer's idle processing time to do the data processing work that would otherwise require a single mega-computer.

As many of you know, new telescopes coming on line are generating huge amounts of raw data, creating a problem for the scientists charged with the processing of so much data. When the SKA comes on line, in a decade from now, it will produce colossal amounts of raw information and I have no doubt that some of its data processing will need to be carried out by people like you and I, using our home computers.

Why not join "The SkyNet" now? Go to http:// www.theskynet.org to create an account and you will be immediately contributing to Australian astronomical research. It's that simple. Once joined, you can also join an "Alliance" and we have set up an alliance called "*Macarthur Astronomical Society*" for any members and friends of MAS to join. By joining forces, we can make a serious contribution to Australian astronomy and promote MAS at the same time.

Membership of the Society relieves members who own laser pointers from applying for police firearms registration and paying fees to do so, and I wrote in last month's column that it is in the interests of members with such devices to register them with the Society. This month the committee has reviewed the situation and has decided to make it a condition of membership that laser pointers are registered with MAS. We feel it is in our members best interests to do this.

The last few months have seen certain financial concerns hanging over MAS but this month some of the committee's worries have dissipated. Despite our lack of success in selling advertising space in Prime Focus and on our Macastro website, two other matters have eased our worries.

For several months now, the committee has been pursuing a suggestion from member Bob Bee to hold a fund-raising Sausage Sizzle at a Bunnings Warehouse. Bob had suggested we could make up to about \$700 profit, whilst placing our name in the public spotlight with our "galactic burgers". It took a while to get MAS approved by Bunnings but when it happened, it happened very quickly.

We were given a fortnight's notice to organise a barbecue at Bunnings Narellan, and MAS members owe a debt of gratitude to Tony Law and Stewart Grainger for the fantastic job they did in ordering food, equipment and manpower. Tony and Stewart's efforts turned this very first attempt at major fund-raising by MAS into a huge success with an astonishing profit of \$1,175.94!

The other recent factor in easing our financial worries was the receipt of confirmation from the University of Western Sydney that we can continue meeting at UWS during 2012, without charge. This process took two months of form-filling and negotiations but the early submission of our 2012 application has resulted in a surprise continuation of the existing arrangement. UWS have attached no conditions but it is important to recognise the support that UWS has given MAS over the last sixteen years and we will continue acknowledging this publicly.

The only bad financial news we are left with now is the need to increase fees for The Forest, from next month, to \$15 per member per evening. (\$20 per invited nonmember). We are hoping this will result in The Forest breaking even over the course of the year but if necessary the Society will fund any shortfall because The Forest is our premier observing site. The last opportunity for a Forest observing night at the old price is coming up on Friday 21st and Saturday 22nd October, so this month you can still make the most of the excellent facilities there at only \$8 per evening.

As announced at the last Macarthur Astronomy Forum, the committee is hopeful that it can sell printed copies of Prime Focus but whilst several members expressed an interest, there were insufficient willing to commit to paying enough to get it. Instead, as a trial, we propose to have twenty printed copies available at the next meeting for members to purchase at a cost of \$6.00 each. If they are all sold, then we will continue to make them available to be picked up at the monthly Forum meetings.

Society Schedule

17/10/2011 Macarthur Astro Forum 21/10/2011 The Forest 22/10/2011 The Forest 29/10/2011 Stargard

November 2011

19/11/2011 Stargard 21/11/2011 Macarthur Astro Forum



2013 Hawaiian Sojourn

Tony Law

MAS Field Trip

For MAS members, we are arranging a trip to the 'Big Island" of Hawaii in 2013.

Tentative itinerary is for 4-5 nights viewing on Mauna Kea, Hawaii (Hilo) and four days on Oahu (Honolulu). Hilo is the the start point for visiting the major telescopes on the summit and observing from the Onikuza Visitors centre. A trip to the Kilauea Volcano is also envisaged.

On Oahu we will stay in Waikiki and visit Pearl Harbor, the Polynesian cultural centre, Pipeline (surf beach), etc

The anticipated total cost will be around \$1,250.00 for airfares, \$1,000 for accommodation and \$500.00 for food etc. Another couple of hundred for transport so about \$3,000.00 in total. Add a couple of hundred for incidental tours. We'll provide more details much closer to the time.

To help MAS Members save for this trip, we have set up a special bank account. You may pay in whatever and whenever you wish by direct debit or by cash over the counter. You must ensure that you include your name in the reference when you make the deposit so that it can be refunded if required. This is a non-interest-bearing account. We look forward to hearing from all interested.

Call Tony on **0419 215199** if you have any questions or would like to know the bank account details.



"Theoretically Speaking..."

Davy Jones

In today's world, we are used to hearing the term modelling; the modelling indicates this – or the modelling shows that. The general public feeds hungrily on such trite phrases and pseudo-information, thrown at them by a flood of people using jargon and big words. Such people sought out by the media and politicians for their opinions, must be, by default, unquestionably regarded as experts.

On hearing the word – modelling - we routinely think of computer modelling; however, modelling takes many forms. One may construct a physical scale model, be it landscape or buildings - model the economy, based on spreadsheets and graphs - model fashion - or design an accurate computer simulation; conversely, an attempt can be made to construct a larger predictive model, based on known data and human conjecture. Without wishing to enter a contentious terrestrial area of debate - the current, socalled, climate science debate, is a most obvious example. The current computer predictive models being used are constantly updated as additional valid data becomes

available; fine-tuning to reflect continually unfolding reality. This does not render computer modelling useless, quite the contrary; using the latest technology gives modern scientists an edge never before experienced in history. However, as with all science and things scientific, such modelling must always be open to challenge – rather than be treated as the absolute truth.

Throughout history, one of the more fascinating types of modelling has been, mental modelling, more popularly known as the thought experiment. Adapted accordingly, thought experiments have served a number of disciplines, most frequently philosophy, science and physics. Such experiments may be described as being a form of mental exercise, carried out to consider a hypothesis or opinion; the aim in science or physics, being to determine the probable consequences of the theory in guestion. No matter how one describes the method there can be no denying its importance in bringing about conceptual change in science. One of the earliest examples of a thought experiment dates back to Lucretius (99 BC-55 BC). Attempts were made at that time to demonstrate that space is infinite: If there was a supposed limit to the universe, a spear could be tossed at it. If the spear flew through, no such limit existed; if the spear bounced back, there must be something beyond the hypothetical limit of space - a cosmic wall that stopped the spear - a wall that is

space itself. Either way there is no limit to space; thus space is infinite. The logic is beautiful in its simplicity and, understandably, beyond practical testing. Nevertheless, the example serves to demonstrate the deductive power that allows the thinker to step outside the 'square of reality'.

Galileo is recognised as a key character in the progression of thought experimentation into its modern form. He is responsible for the 'mathematization' required in creating an idealised illustration, and then linking that illustration back to the real world. Whilst this might sound a bit vague one must consider how all thought experiments after undergoing the mental processes of the experimenter - are then described to the world at large in a narrative form. The translation to story form makes the concept under discussion more acceptable and apparent, even to the uninitiated. For example, consider how Galileo asked that two different sized objects made of the same material, be dropped from a height. He then supposed the two objects be 'tied together' - with a thin, almost immaterial string (notice the intricate detail). Galileo then indicates the two objects must fall both faster and slower, than as individual objects. The two should fall faster, he stated, because the body has now become heavier: and should fall slower because

the slower object should retard the motion of the faster (or heavier) object. What Galileo elegantly exposed with his thought experiment were the discrepancies and uncertainties surrounding medieval thinking in regard to the differences in the speed of falling bodies, in relation to their weight. Incidentally – on July 26th, 1971, astronauts on the Apollo 15 Moon

mission carried out this same experiment using a hammer and a feather, on the surface of the Moon. http://www.youtube.com/watch?v=5C5_dOEyAfk

In September's issue, I indicated two examples of thought experiments; these being Schrodinger's cat and Maxwell's demon. These of course are two of the more well-known modern paradoxical examples of such experiments. Considering these, I began to wonder exactly how such experiments featured in Einstein's work, and how they so convincingly came together to present such an uncannily correct set of data.

Allegedly, Einstein's papers on Special Relativity grew from a thought experiment, performed when he was only sixteen years old. Autobiographical notes recall how Einstein once daydreamed about chasing a beam of light as it sped through the universe. He thought that if he were able to fly next to the beam of light, at the speed of light – he should be able to

Spiritual prophets may allow one to see the light. Einstein allowed mankind to see beyond the light.

watch the light frozen in space as an 'electromagnetic field at rest though spatially oscillating.' Sic

I find such vivid living detail in a daydream quite revealing in itself. For Albert Einstein, at least, this thought experiment proved that for his imaginary observer - 'everything would have to happen according to the same laws as for an observer who, relative to the Earth, was at rest.'

In yet another thought experiment, Einstein asks that we think about a magnet and a conductor in relative motion. There are two possible methods by which a current might be produced. First, the magnet is at rest and the conductor is moving; according to electromagnetic theory, the motion of the conductor through the magnetic field produces and electromotive force that creates a current in the conductor. In the second case – the conductor is at rest and the magnet is moving. Again, according to the theory, the motion of the magnet creates a changing magnetic field that induces an electric field, which in turn induces a current in the conductor.

However, with respect to the relative motions, it makes no difference whether it is the magnet or the conductor that is to be considered to be in motion. Whilst it is beyond the scope of this article to go into the detail of such results - suffice to say the results did not correspond to earlier conclusions reached by one James Clerk Maxwell. Certain elements of Maxwell's Equations relied upon the concept of the aether and consequently, took the effects of the elusive aether into account on reaching conclusions and developing his famous equations. In the course of his thought experiments, Einstein rejected the aether as needless and predicted the existence of a fixed speed of light, independent of the speed of the observer.

History records that Maxwell's equations were an essential component in the development of Einstein's paper on Special Relativity. However, in the opening paragraph of his paper Einstein refers to the thought experiment relating to the magnet and conductor in support of his own hypothesis - as opposed to Maxwell's conclusions.

One thing seems certain; all thought experiments contain common features. As noted above, by the time it is related to the community the thought experiment is in a narrative form - no matter how bizarre the situation might be in its presentation! The assumption is that the experiment could be executed, and the chain of events would take place as in the real world. Any thought experiment symbolises explicit suggestions concerning the hypothesis under investigation, and exposes contradictions or reveals paradoxes that arise under a variety of applied circumstances. By the time it is presented to the world at large, the experiment always works and is often more convincing than most real world experiments. Rarely do we get to see the failed thought experiments - which probably far outnumber successful ones.

Being in a narrative form, abstractions from real world experiences are possible. Certain features that would occur naturally can be removed including the colours of surroundings or the physical characteristics of an observer. The scene is always pre-set according to the needs of the experiment. There may be a need to include some quite intricate details to reinforce vital aspects of the experiment. In one version of Einstein's chest or elevator – experiment, Einstein even depicts the physicist as being drugged and then awakening in the container. This point underpins the necessity for the observer being rendered unaware of the environment in which the experiment is taking place – thereby maintaining the integrity of the experiment.

Human imaginative prowess has been central to the development of scientific thought. Without human curiosity and the questions: "What if" or "Why" - we might still be at a very primitive scientific and technological level. Certainly, in our own time, the formation of such deep abstractions as quantum mechanics would be most unlikely without the primary role played by the thought experiment. Can computer modelling or simulation replace – the thought experiment? My feeling is definitely: NO. Computers are too restrictive, whereas, human imagination knows no bounds. Nevertheless, I see no reason why one day, computing power will not widen our options in unravelling the mysteries of the universe and further augment the already fertile human imagination.

Refs:

Brown, J. R. (1996, December 29). Thought Experiments. Retrieved September 4, 2011, from Stanford Encyclopedia of Philosophy: http:// plato.stanford.edu/entries/thought-experiment/ #ComFeaThoExp

Fowler, M. (2009). Galileo and Einstein. Retrieved June 2, 2011, from Uva Dept of Physics: http://galileoandeinstein.physics.virginia.edu/

Jupiter Publishing. (1997). The Bible According to Einstein . New York: Jupiter Scientific Publishing Company.

Nersessian, N. Why Do Thought Experiments Work. Princetown New Jersey: Princetown University.

Norton, J. D. (2005, February 15). Chasing a beam of light: Einstein's most famous thought experiment. Retrieved September 4, 2011, from John D Norton: http://www.pitt.edu/~jdnorton/Goodies/ Chasing_the_light/

Wikipedia. (2011, August 25). Maxwell's equations. Retrieved September 5, 2011, from Wikipedia the Free Encyclopedia:

http://en.wikipedia.org/wiki/

Maxwell's_equations#A_Dynamical_Theory_of_the_El ectromagnetic_Field

Wikipedia. (2011). Thought Experiment. Retrieved September 3, 2011, from Wikipedia the Free Encyclopedia: http://en.wikipedia.org/wiki/ Thought_experiment

"Pour, Oh pour the Pirate Sherry" - Part 2

The voyage to the Zzurags' home world, Zzenda, was without cause for great discomfort, particularly after the consequences of the Zzurags' offered food had been sorted out, or more accurately flushed down. During the relativistically short trip, Zzlugg had explained to Jack the nature of the war that the G&S Society was expected to win for them.

The sworn enemies of Zzenda were the occupants of the sister planet Tzenda, the Tzing.

"For reasons long lost in history, Jack", Zzlugg tumbled, "but assuredly good and sound reasons, our two planets have waged

continuous war for over three centuries. It has been terrible. The price too heavy, so we, the Zzurags, have taken this action to end it, to subdue the Tzing and enforce peace."

"Three centuries", said Jack, feeling a grudging sympathy for his captors. So far, being a prisoner of Zzenda hadn't been too hard. Except for the food... and the nausea from the warp-drive... and the unexpected and disconcerting attention of a pink-orificed Zzurag named Zzuzy. "Your people must have suffered many casualties in that time."

"Casualties?" Zzurag raised his blue-eye brows.

"Yes, you know, killed in the war."

"Killed? You mean, life-ended? What a horrendous thought. Why on Zzenda would there be?" Zzlugg's red eye blinked furiously at Jack. His rumbling voice clearly distressed, Zzlugg drew his weapon and placed it in his chest orifice, his finger finding the trigger.

"Wait," yelled Jack, shocked, but he was too late. Zzlugg pulled the trigger twice while Jack squeezed his eyes shut. Nothing happened. Jack opened one eye to see Zzlugg reholster his weapon.

A short story by Robert Bee

"What kind of race are you?" demanded Zzlugg. "Too kill in a war. What foul falsehood."

Jack dragged his eyes from the weapon in Zzlugg's holster and raised them to his still intact torso. "Um... why... how... did you do that?"

"Do what?" blinked Zzlugg.

"Never mind", said Jack. "If you don't... kill each other, how do you and the Tzing wage war?"

"With resolution manly", tumbled Zzlugg. "And trade blockades, bans on cultural exchanges, jamming of all communications and entertainment channels and other dastardly privations."

"You don't fight? Have battles – physical battles?"

Zzlugg tumbled a low sigh. "We are the Zzurag. We are incapable of such uncivilized behaviour. We could no more do that than zzliggic a quuakzzanger."

"What ..?"

"Sorry, that doesn't translate to Earth-speak. Believe me, we just can't do it", said Zzlugg.

"But you have weapons." Jack pointed to Zzlugg's twin ray-guns. "You weren't shy at threatening me with that."

"Threaten?" Zzlugg drew a weapon and aimed it at Jack's head and pulled the trigger. "I was offering you a drink, a gesture of peace." A syrupy blue stream jetted into Jack's open mouth. "These are our fluid dispensers for field trips."

Jack snapped his mouth shut to stop the flow of foul liquid... Foul? He cautiously moved his tongue amongst the entrapped substance. Sweet, tingly... was that a hint of peppermint, lychee perhaps? Definitely mulberry and peaches. He swallowed. Aaaah! Smooth. Nice aftertaste on the upper pallet. Suggestion of alcohol. "Could you refresh me again?" he asked Zzlugg.

While savouring his second mouthful, which certainly put a new spin on 'a shot of alcohol', Jack contemplated what he had been told about the war between Zzenda and Tzenda. It was weird, he concluded. If the Tzing were anything physically like the Zzurag, and he had no information to suggest they were, and if there had been no physical casualties during this three-century war, then the Tzing were also incapable of fighting, or to translate Zzlugg's phrase, tzliggicing a quuaktzanger.

Jack looked across the theatre at his troupe of players. They had calmed down after the initial shock, but they remained huddled together on the stage. They had found food in the backstage dressing rooms. Now they simply could be described as nervous, wary and scared witless. But otherwise they were holding up alright.

Then Jack remembered Zzlugg's earlier pronouncement – "you are going to win us a war." Oh no. *Ooooohhh nooooo....*

"Wait one moment. Where do we come in on all this?" Jack asked. "We aren't going to do your killing for you. The last time we killed anyone was the audience at our disastrous Spring production of Ruddigore."

Zzlugg's chest orifice went into a paroxysm of flapping and smacking. "Oh calamity, your suggestion nauseates me." He quickly shot himself in the chest. "A Zzenda-Tzenda show-down has been arranged, to settle this war once-and-for-all. And yes, you will fight for us, but with a most devastating weapon which we Zzurags and Tzings don't possess. Your weapon. A weapon that will not kill but drive our enemies to their knees, cowering, begging for mercy, screaming for permission to surrender. Then we will have peace... on Zzenda's terms."

Jack stared at Zzlugg. Our weapon? What on earth did he have in mind? "Ah, Zzlugg, my friend. Shoot me again and explain."

The battle was to take place on a neutral moon of the system's third planet, an uninhabitable gas giant. The moon possessed a life supporting atmosphere but nothing else. The Campbelltown Gilbert & Sullivan Society and their orchestra, accompanied by Zzlugg and the entire Zzurag force, were transported to a flat rise on the surface. This would give them a strategic position from which to do battle.

The orchestra members tuned their instruments, while the troupe limbered up their vocal chords. Ken Burton had been persuaded to extract his digit and assume an upright position, fully resplendent in his police sergeant uniform. Peter McIntyre brushed the feathers in his Pirate King hat while Graham Turner buffed his Major-General helmet. Then they practiced the weapon they would use on the enemy, the Tzing. They didn't have to wait long. On a similar rise, only one hundred meters away, an alien landing craft did what it did best. It landed. From the craft poured a phalanx of creatures which, apart from scale colouring, were similar to the Zzurags, right down to a necklace of ancestral skulls. They formed up in ranks, and made rude gestures, or so Jack Hobden assumed, at the Zzurags.

"Enough," bellowed Zzlugg, who clasped Jack on the shoulder, then dramatically pointed towards the Tzing. "Engage the enemy."

Jack looked at his troupe, caught the waiting eye of the orchestra conductor, shrugged fatefully, then nodded. The baton came down and the orchestra burst into music that launched itself across the gap. On cue, General Stanley hurrumphed ferociously then started his patter, but at three times his normal volume.

"I am the very model of a modern Major-General I've information vegetable, animal and mineral I know the kings of England and I quote the fights historical,

From Marathon to Waterloo, in orders categorical..."

And so it continued, for all three verses, with the full troupe providing vigorous choral support. The society had never given such a boisterous performance, nor had they ever received such a response from their audience. The Zzurags, with for-knowledge of the weapon, had covered their aural orifices, but the Tzing were devastated. Howls of anguish and pleas for pity cascaded across the void between the two parties, and Jack saw many Tzing knees wobbling towards the ground.

Throwing aside his aural protectors, Zzlugg roared in victory. "Surrender, you Tzing, or suffer-on. We've more musical jingoism where that came from." He turned a victorious red eye upon Jack.

His elation was premature.

"Incoming," shouted Zzuzy.

But it was too late to reach for their discarded aural protectors. The return salvo was already upon them.

Return salvo? What can it be? How will Jack and his troop survive? Will they ever get home? And how do you zzliggic a quuakzzanger? Stay tuned for the concluding episode of 'Pour Oh Pour the Pirate Sherry.'

Copyright © Robert Bee, 2008

A Plethora of Double Star Catalogues

Part 3

Bob Bee

This article continues to explore the lives and achievements of the astronomers after which some of the double star catalogues, as listed by Burnham in his Celestial Handbook, are named. The intention is to provide some context and 'flavour' of the origins of a strangely prefixed double star you may find on a star chart.

T.E.Espin = Es

The Reverend Thomas Henry Espinell Compton Espin (28 May 1858 – 2 December 1934) was a British amateur astronomer. He was the son of Thomas Espin, Chancellor of the Diocese of Chester.

Espin became interested in astronomy at the age of sixteen by the appearance of "Coggia's Comet" - C/ 1874 H1 – which was by all accounts quite spectacular. He became an avid amateur astronomer and



skilled observer. In 1876 he met Rev. Thomas William Webb. This resulted in him assisting with the compilation of the famous book *Celestial Objects for Common Telescopes*. Eskin then published expanded 5th and 6th editions of the book after Webb's death.

Apart from his discovery of many nebulae and variable stars, he found more than 2500 double stars. He also excelled by doing extensive searches for red stars and published a catalogue of them.

He became a Fellow of the Royal Astronomical Society in 1878 and was awarded the Jackson-Gwilt Medal of the Royal Astronomical Society in 1913.

The crater Espin on the Moon is named after him.

It was by the inspiration of Rev Espin that the Liverpool Astronomical Society was formed in 1881, after he wrote to the journal "English Mechanic" proposing the formation of an amateur society aimed at organising and coordinating astronomical observations. (Sounds familiar?)

Rev. T. E. Espin

W.J.Hussey = Hu

William Joseph Hussey (10 August 1862 – 28 October 1926) is the astronomer mentioned in the earlier account of Rossiter when Hussey and Lamont, life-long friends, determined to establish a new observatory in South Africa to survey the southern stars. Tragically Hussey died while on voyage to South Africa and never saw its fruition.

Prior to this, he had established himself as a great astronomer and studied variable stars while working at Lick Observatory. He was well known for his work in northern hemisphere double stars, especially close binaries. Part of this work was the re-observing of all the binary stars discovered earlier by Otto Struve. He was most exacting in his work, making at least three observations of each binary pair. While meticulous, he was also

very efficient. In one night he observed 80 binaries, and totalled 1,920 binaries in one year.

In 1897, his prestigious position in astronomy led him to be elected president of the Astronomical Society of the Pacific.

When he concluded his double star program in 1905, he had discovered and measured 1,327 new close binaries. As a result, in 1906 he was awarded the LaLande medal, sharing it with R.G Aitken.

Crater Hussey on Mars is named in his honor.





R.T.Innes = I

Robert Thorburn Ayton Innes (10 Nov 1861 – 13 March 1933) was born in Edinburgh. Innes is a classic case of an amateur astronomer who was so accomplished that he eventually joined the ranks of professional astronomers.

He moved to Sydney, Australia, at an early age and worked as a wine merchant. He was self-taught in mathematical astronomy and became a friend of Walter Gale (another successful Australian amateur astronomer). As passionate amateur astronomers they both visited Tebbutt at his Windsor Observatory. Innes was involved with Gale in forming the NSW Branch of the British Astronomy Society, Australia's first amateur astronomical society.

Innes was a natural at observing (i.e. splitting) double stars. He was so good at his mathematical treatment of matters astronomical, he had at one time great hopes, even reasonable expectations, of



obtaining a post as Director at Perth or Adelaide Observatories, but due to lack of vacancies at the right time, they fell through, much to his disappointment.

'On the rebound' and such was his reputation, in 1896 he was offered and he accepted a position as a professional astronomer at a the Cape Observatory in South Africa. He subsequently made his place in astronomy history in 1915 by discovering the star Proxima Centauri, the red dwarf companion to the binary Alpha Centauri. Proxima is actually the nearest star to our Sun.

During his career in South Africa, he discovered some 1600 new pairs of double stars. The lunar crater Innes and the asteroid 1658 Innes were named in his honour.

R. T. Innes

T.J.J.See = λ

Thomas Jefferson Jackson (T. J. J.) See, (19 February 1866 – 4 July 1962) was an American astronomer who received his Ph.D. in mathematics from the University of Berlin in 1892.

See specialised in the study of binary stars, particularly in determining their orbits. He initially found work at the University of Chicago, where he worked as an instructor under George Ellery Hale. Unfortunatley, See had an abrasive personality and didn't get on well with people, both his staff and his superiors. This was to characterise his personal history. For example, he left Chicago in 1896 after failing to receive a promotion. Then he was fired from Lowell Observatory in 1898 for his arrogant attitude towards the staff. As well as his arrogance, he often suffered from erroneous scientific results arising from carelessness.

When he departed Lowell Observatory, See joined the staff of the United States Naval Observatory in 1898. This led to a highly dramatic saga after his earlier study at Chicago of the famous binary star 70 Ophiuchi. See's proposal of a third companion, published in the Astronomical Journal was criticised in 1899 by another astronomer. See took huge offence and wrote an abusive letter to the Journal from which he was then banned from future publications. A very prickly character. Sadly, due to his endless conflicts, he suffered a breakdown in 1902. However, his astronomical activities and eccentric ways were to continue including a massive 700+ page work published in 1910 entitled *Researches on the Evolution of the Stellar Systems, Vol. II, The Capture Theory of Cosmical Evolution.* In it he colourfully describes his task to "brush aside the erroneous doctrines heretofore current, as one would the accumulated dust and cobwebs of ages.."



In 1913 William Larkin Webb published a *Brief Biography and Popular Account of the Unparalleled Discoveries of T. J. J. See.* Webb was a newspaper publisher and amateur astronomer, and a long-time admirer of See. Many contemporaries of See regarded it to have been written by See himself. This and the book itself effectively destroyed any remaining credibility he had in the astronomical community. A review of the book ridiculed its extraordinary hyperbole, which included such material as: "The infant See, we are told, first saw the light on the 393rd anniversary of Copernicus's birth, ...[and] showed himself "every inch a natural philosopher" by speculating on the origins of the sun, moon and stars at the tender age of two, never so much as dreaming that he should ... one day become "the greatest astronomer in the world".

Such was See's ego, he made caustic attacks against Einstein and his theory of relativity, which Einstein essentially ignored. The scientific community also ignored See's criticisms of relativity.

Yet, through all this, See did make valuable observations of double stars and hence his catalogue.

T. J. J. See

C.Rumker = Rmk

Christian Carl Ludwig Rumker (18 May 1788 - 21 December 1862), astronomer, was born at Stargard, Mecklenburg-Strelitz, Germany

In 1821, Sir Thomas Brisbane, the 6th Governor of NSW, arrived in Sydney. Brisbane was a keen amateur astronomer, so he brought with him many astronomical instruments and two astronomical assistants – Charles Rumker (a professional) and James Dunlop (an accomplished amateur). The ensuing careers of these two were to clash and overlap.

Brisbane quickly built a private astronomical observatory (he was quite rich) close to the Government House at Parramatta. This was known as Parramatta Observatory and was in service in time for the observation of the return of Encke's Comet in 1822. (Encke's Comet has a period of 3.3 years, the shortest known.) This event was scientifically important as it was only the second time the predicted return of a comet had been verified, the first being Halley's in 1758.

There appears (in various accounts) to be some ambiguity as to who first spotted Encke's comet – Rumker or Dunlop. As it turned out, it was Rumker who was awarded the Silver Medal and £100 by the Royal Astronomical Society and a Gold Medal by the Institute of France. Brisbane bestowed on Rumker a grant of 1000 acres at Stonequarry Creek, Picton.

Unfortunately, in the period soon after, Rumker fell out with Brisbane over both private and professional matters, as well as some animosity with his co-worker Dunlop.

In June 1823, Rumker resigned from Parramatta Observatory and returned to his Picton property, which he had named Stargard after his birthplace. There he kept up his astronomy and, among other things, discovered two more comets. He was the first to discover a new comet from Australia.

It is a matter of historical record that Dunlop and Rumker were unable to work together. After Brisbane left in 1825, leaving Dunlop alone at Parramatta Observatory, Rumker was recalled to the observatory by the new Colonial Secretary in May 1826.

In September 1826, Rumker discovered a new comet.

In 1827, Dunlop returned to Scotland to work in Lord Brisbane's private observatory in Roxburgh, Scotland. In December 1927, Governor Darling appointed Rumker as the First NSW Government Astronomer.

It was during his earlier period working with Dunlop and later without Dunlop that he discovered his southern double stars. Surprisingly, Rümker found only 28 doubles. Only 16 are now deemed as real discoveries by him. 5 of these were discovered earlier by Dunlop. i.e. RMK 1, 5, 6, 7 and 21. Another 7 are either missing, wrongly identified, or are single stars.

In 1829 he went to London on astronomical business, obtaining supplies and to publish his astronomical observations. Unfortunately in 1830, he ran afoul of powerful people who eventually had him dismissed from Government service, including his position as NSW Government Astronomer.

In 1831, he accepted the post of Director of Hamburg School of Navigation and later Director of Hamburg Observatory. He never returned to Australia, dying in 1862 after a distinguished career.

Rumker, it seems, was a man of great integrity and diligence, an extremely competent astronomer, but he was head strong and had a somewhat violent character.



head strong and had a somewhat violent character.

When, in 1854, the Royal Astronomical Society gave him its Gold Medal, the Astronomer Royal Sir George Airy, said that Rumker's dismissal was "the greatest misfortune that happened to Southern astronomy". Many consider that comment did less than justice to James Dunlop.

There is a crater (and mountain bulge) on the Moon named Rumker Crater in his honour.

C. Rumker

(To be continued)

The Dish's 50th anniversary...

An Australian icon turns the big five-oh.

The weekend of Friday 7th to Sunday 9th of October 2011 saw seventeen intrepid MAS members venture to Parkes to witness the radio telescope's 50th anniversary of operation.

Famous for its part in transmitting live streamed television images of Neil Armstrong's descent to the lunar surface in July 1969, the "Dish", as it is affectionately known, has engrained itself in the psyche of everyone who is old enough to have witnessed the Apollo programme live.

Taking a tour bus from Campbelltown and picking up groups along the way, we drove to Dubbo on Friday to arrive in time for dinner at the motel. This was followed by a short hop to Dubbo Observatory - to be met by a wall of cloud. The evening was called off and our only parting memory was in the form of a few trinkets some bought at the observatory gift shop. There was some chat about UFO's and the Earth swapping geological poles again. For some reason this topic keeps following me around. The next day, we awoke to a hearty breakfast and made a beeline to Peak Hill gold mine, not too far from Parkes. A collection of nicely-maintained and rather large holes in the ground told the story of the amount of work involved in the gold business of yore. Lots of work for not too much gain, it seems.

After the mine we continued on to the dish of the day - the Parkes Radio Telescope. The 50th celebrations were in full swing when we arrived. There were hundreds of people already there enjoying lunch. The crowds were a fair amount smaller than I had anticipated, and before we know it our group had split into two teams to take the tour of the Dish's internals.

Following this, we took in a display at the far end of the complex that showed us one of the Pathfinder (ASKAP) telescopes and discussed the technology that would be required in order to see it all come to fruition.

A great time was had by all.



(The group: Sarkis, Lyn, Tony, Bob, Henry, Stewart, Penny, Ivan, Bob, Dick, Val, Wayne, Steve, Lloyd, Ned and David. (Chris: taking the photo!)



Peak Hill gold mine



Our second group through

Aimed at the horizon

Stewart climbs

Electronics rack

Clues to Creation of Oceans

Space Observatory Provides Clues To Creation Of Earth's Oceans WASHINGTON -- Astronomers have found a new cosmic source for the same kind of water that appeared on Earth billions of years ago and created the oceans. The findings may help explain how Earth's surface ended up covered in water.

New measurements from the Herschel Space Observatory show that comet Hartley 2, which comes from the distant Kuiper Belt, contains water with the same chemical signature as Earth's oceans. This remote region of the solar system, some 30 to 50 times as far away as the distance between Earth and the sun, is home to icy, rocky bodies including Pluto, other dwarf planets and innumerable comets.

"Our results with Herschel suggest that comets could have played a major role in bringing vast amounts of water to an early Earth," said Dariusz Lis, senior research associate in physics at the California Institute of Technology in Pasadena and co-author of a new paper in the journal Nature, published online Oct. 5. "This finding substantially expands the reservoir of Earth ocean-like water in the solar system to now include icy bodies originating in the Kuiper Belt."

Scientists theorise Earth started out hot and dry, so that water critical for life must have been delivered millions of years later by asteroid and comet impacts. Until now, none of the comets previously studied contained water like Earth's. However, Herschel's observations of Hartley 2, the first in-depth look at water in a comet from the Kuiper Belt, paint a different picture.

Herschel peered into the comet's coma, or thin, gaseous atmosphere. The coma develops as frozen materials inside a comet vaporize while on approach to the sun. This glowing envelope surrounds the comet's "icy dirtball"-like core and streams

Comet Hartley 2 observed by ESA's Herschel

behind the object in a characteristic tail.

Herschel's HIFI instrument detected the signature of vaporized water in this coma and, to the surprise of the scientists, Hartley 2 possessed half as much "heavy water" as other comets analyzed to date. In

heavy water, one of the two normal hydrogen atoms has been replaced by the heavy hydrogen isotope known as deuterium. The ratio between heavy water and light, or regular, water in Hartley 2 is the same as the water on Earth's surface. The amount of heavy water in a comet is related to the environment where the comet formed.

By tracking the path of Hartley 2 as it swoops into Earth's neighborhood in the inner solar system every six and a half years, astronomers know that it comes from the Kuiper Belt. The five comets besides Hartley 2 whose heavy-water-to-regular-water ratios have been obtained all come from an even more distant region in the solar system called the Oort Cloud. This swarm of bodies, 10,000 times farther afield than the Kuiper Belt, is the wellspring for most documented comets.

Given the higher ratios of heavy water seen in Oort Cloud comets compared to Earth's oceans, astronomers had concluded that the contribution by comets to Earth's total water volume stood at approximately 10 percent. Asteroids, which are found mostly in a band between Mars and Jupiter but occasionally stray into Earth's vicinity, looked like the major depositors. The new results, however, point to Kuiper Belt comets having performed a previously underappreciated service in bearing water to Earth.

How these objects ever came to possess the tell-tale oceanic water is puzzling. Astronomers had expected Kuiper Belt comets to have even more heavy water than Oort Cloud comets because the latter are thought to have formed closer to the sun than those in the Kuiper Belt. Therefore, Oort Cloud bodies should have had less frozen heavy water locked in them prior to their ejection to the fringes as the solar system evolved.

"Our study indicates that our understanding of the distribution of the lightest elements and their isotopes, as well as the dynamics of the early solar system, is incomplete," said co-author Geoffrey Blake, professor of planetary science and chemistry at Caltech. "In the early solar system, comets and asteroids must have been moving all over the place, and it appears that some of them crash-landed on our planet and made our oceans."

Herschel is a European Space Agency cornerstone mission, with science instruments provided by consortia of European institutes. NASA's Herschel Project Office is based at the agency's Jet Propulsion Laboratory in Pasadena, Calif., which contributed mission-enabling technology for two of Herschel's three science instruments. The NASA Herschel

HIFI

Science Center, part of the Infrared Processing and Analysis Center at Caltech in Pasadena, supports the U.S. astronomical community.

For NASA's Herschel website, visit: <u>http://www.nasa.gov/herschel</u>

For ESA's Herschel website, visit: <u>http://www.esa.int/SPECIALS/</u> <u>Herschel/index.html</u>

MAS Shop

Our Merchandise Officer, Stewart Grainger, currently has the following official MAS merchandise items on sale:

It's buyin' time!

'**Astronomy 2011**' is a must have book - available now. \$25.00 (members \$20.00).

MAS coffee mugs: now available for \$12.00 (members \$10.00).

m a g n i t u d e][: Our second DVD - \$14 (members \$10)

MAS polo shirts: available in navy, black or white (mens or ladies, various sizes): \$40.00 (Members \$35.00).

MAS baseball caps: \$25.00 (Members \$20.00).

MAS beanies: \$20.00 (Members \$15.00).

MAS sew-on badges: (105 mm x 60 mm) available in white on black and black on white: \$10.00.

'Ice In Space '2009 Compendium': a timeless compilation of astrophotographs by members of IIS in an 80-page coffee table book - (retails \$50) \$25

Starwheels: ("Planispheres") large \$25.00 and small \$15.00.

'Heaven's Above - A Binocular Guide to the Southern Skies': a top-selling book by MAS member Bob Bee: available on public nights for \$18.00.

'Emu Dreaming': a book about the interpretation of the southern sky as seen by the Aboriginals: was \$15.00 - now reduced to only \$10.00.

These items are on sale at general meetings, or by arrangement. Please contact Merchandise Officer Stewart Grainger - either by Private Message via the website forum or by email to:

merchandise@macastro.org.au

Let him know what you want to buy and make arrangements to pick it up from him. Please note, it is not possible for Stewart to bring every stock item to every meeting.

Members Observing Nights

Make sure you remember to bring your woolies... it's still cold!

On observing nights, at any venue, you must arrange your own transport and please try to arrive well before sunset, to enable you to familiarise yourself with the surroundings before darkness sets in. If arriving later, make sure that your approach to the final gate is only with parking lights and ask someone to guide you into the observing area from the gate. It is essential - for your own safety and that of others - that you bring a red torch with you to observing nights. If weather conditions look doubtful, please check the website "What's On" page before leaving home. If Stargard is cancelled, sometimes an unscheduled observing night will be held later that week.

During the course of the evening, please consider the needs of others around you, especially when using laser pointers, camera screens, computer monitors, car boot lights etc. Please read our Field Etiquette page on our website for reference.

Stargard nights are free to members and invited guests. Please contact the President before inviting anyone. Beginners are encouraged to observe at Stargard before progressing to the Forest.

To cover our costs, the charge for The Forest is \$8.00 per member per evening, whether attending just for the evening or staying all night. Experienced amateur astronomers who are non-members may be invited to attend the Forest subject to prior clearance from the President and will be charged \$12.00 per person per evening. **From November, this will rise to \$15 per night, per member, and \$20 per invited non member.** Please see Ned Pastor on your arrival to make your payment and please try to have the exact amount. Limited sleeping accommodation is available but not guaranteed. 240vAC field power is available as are kitchen and washroom facilities.

theSkyNet

What is the Sky Net?

Connecting 100s and 1000s of computers together through the Internet, it's possible to simulate a single machine capable of doing some pretty amazing stuff. That's what theSkyNet is all about - using your home computer's spare computing power to process radio astronomy data.

theSkyNet is a community computing project dedicated to radio astronomy. Radio astronomers use radio telescopes (of course) to observe the Universe at radio wavelengths. All day, every day, signals from distant galaxies, stars and other cosmic bits and pieces arrive at the Earth in the form of radio waves. Once detected by a radio telescope the signal is processed by computers and used by scientists to support a theory or inspire a new one.

The Computer Bit

When you join theSkyNet your computer will help radio astronomers process information and answer some of the big questions we have about the Universe. As a part of theSkyNet community, your computer will be called upon to process small packets of data, but you wont even notice it's going on. The key to theSkyNet is to have lots of computers connected, with each doing only a little, but it all adding up to a lot.

At the heart of theSkyNet is the website, theSkyNet.org where you'll find alliances you've joined stacking up against others. The more data you and your

alliance processes, the more status you'll have within theSkyNet community.

As theSkyNet project evolves they'll be adding more features to explore. In the pipeline are visualisation tools to help you understand the data you're processing, and even an opportunity to help identify and catalogue radio wave sources.

The Guts of the Sky Net

theSkyNet is powered by background task software called Nereus. Data collected by one of several radio telescopes is sent to your computer as a small data packet ready for processing by the Nereus client. Once processing of the data packet has taken place it is sent back and the process begins all over again. By repeating this process across thousands of computers, it is possible to simulate a single powerful machine capable of doing real and relevant scientific research.

theSkyNet Data

What exactly is your computer doing when it's donating to theSkyNet? To start, theSkyNet will be used as a 'Source Finder.' So, your computer will be scanning data from telescopes and searching for sources of radiation at radio wavelengths that could be coming from stars, galaxies and other objects throughout the Universe.

The data theSkyNet is processing will come from a range of projects.

HIPASS

To prove how good theSkyNet might be, in terms of reliability and accuracy, the first task will be to process data that many others have analysed before. By comparing the results generated by theSkyNet with the results of others they'll show that the code and algorithms under the hood of theSkyNet are working as designed.

The data chosen for this purpose is the HI Parkes All Sky Survey (or HIPASS), taken from observations of the Southern sky made by the famous Parkes radio telescope (see Radio Astronomy in the Resources section for more details). HIPASS is a survey of all the hydrogen gas that Parkes could see in the Southern sky.

Once the accuracy and reliability of theSkyNet has been demonstrated they'll be ready to begin the work of processing new data sets and refining the source finding techniques for radio astronomers.

ASKAP

The Australian Square Kilometre Array Pathfinder (ASKAP) is a next-generation radio telescope currently being built in the West Australian desert. When complete it'll be one of the world's best radio telescopes (for more info see ASKAP in the Resources section.)

Once ASKAP starts observing the Universe, data will start to flow from it at an alarming rate. Supercomputers faster than anything available to astronomers at the moment will be needed to sift through all the data, and theSkyNet aims to help out. Once theSkyNet has proven itself by processing the HIPASS data, cubes of ASKAP data will be simulated, artificially populated with radio sources and made ready for processing. theSkyNet will then process these cubes of data to prepare for ASKAP's completion. This will allow ICRAR researchers to figure out and overcome the challenges in managing, processing and extracting science from ASKAP before ASKAP starts operation, so everything is ready to go from the beginning.

During ASKAP's first five years at least 75% of its time will be used to survey large parts of the sky for large Survey Science projects. ASKAP's unique design makes it perfect for observing large areas of the sky very quickly over and over again, in search of the 'flash in the pan' that might mean a new discovery. At the moment ten of these survey projects are planned. Some of them, including two named DINGO and WALLABY, involve ICRAR's researchers.

As the telescope becomes operational, supercomputers located in and around Perth will begin processing the huge volumes of data that begin to flow. As such, there will be a big demand for supercomputers from scientists wishing to process their data in different ways to suit specific science goals, which is where theSkyNet comes in.

By having theSkyNet available this data can be processed in many different ways which means scientists can experiment and make discoveries that might not have been possible otherwise. **DINGO** is a deep HI survey that will use the Australian SKA Pathfinder (ASKAP) to study hydrogen gas, like HIPASS, but look much further out into space. The aim is to study the evolution (changes in structure and location) of the neutral atomic hydrogen from now back a few billion years until the Universe was only two thirds as old as it is now (about 9 billion years old.) DINGO will study a few key areas of the sky and observe each area for a longer time to peer further out into the Universe.

WALLABY will adopt a shallower `all-sky' approach than DINGO, so it will look at larger sections of sky, but not see as far away. It will survey two-thirds of our Southern sky and measure the neutral atomic hydrogen properties of about half a million galaxies, which is more than any other survey!

DINGO stands for 'Deep Investigation of Neutral Gas Origins' and WALLABY comes from 'Widefield ASKAP L-band Legacy All-sky Blind surveY'

Some other ASKAP surveys are:

EMU (Evolutionary Map of the Universe),

POSSUM (Polarization Sky Survey of the Universe's Magnetism),

FLASH (First Large Absorption Survey in HI),

VAST (An ASKAP Survey for Variables and Slow Transients),

CRAFT (The Commensal Real-time ASKAP Fast Transients survey),

 $\ensuremath{\textbf{GASKAP}}$ (the Galactic ASKAP Spectral Line Survey) and

COAST (Compact Objects with ASKAP: Surveys and Timing.)

MAS on the Sky Net

If you'd like to join, go to:

http://www.theskynet.org

and register. You may then join our own 'Alliance' i.e. *Macarthur Astronomical Society*. At the time of writing our alliance team is ranked 27th in the world!

Wildcard Innovations was founded in 1996 and designs and manufactures electronic consumer products.

Its co-founders and directors, Gary Kopff & Mai Tran, have between them over 50 years continuous industry experience in design, management and sales of embedded electronic consumer appliances.

In April 2001, Wildcard announced the introduction of the **Argo Navis™** telescope computer. Argo Navis™ provides an observer the ability to accurately point their telescope to any co-ordinate in the sky and to locate or identify celestial objects from a detailed database of tens of thousands of objects. Identification of objects occurs in real-time as the user moves the scope. Argo Navis™ utilises a 32-bit Motorola ColdFire™ CPU - considerably more powerful than those found in most other handheld consumer devices.

In March 2003, the Astronomical Society of New South Wales bestowed their highest award to Wildcard's Gary Kopff and Mai Tran when they presented them with the McNiven Medal for 'Contributions to Amateur Astronomy'.

Heavens Above!

It is a very common misconception by people on the fringe of amateur astronomy that you absolutely need a telescope to "see anything interesting".

This book comprises 158 pages and contains over 80 diagrams of the sky viewed from the Southern Hemisphere

In the book, the author takes you through all the constellations visible from the Southern Hemisphere which have objects visible through binoculars.

The planets and many globular clusters, open clusters, gaseous nebulae, galaxies, double stars and asterisms can be found with your humble field glasses.

This book contains:-

- charts showing 56 of the 88 constellations with the locations of binocular objects they contain and description and details of each object.
- maps of each month of the year showing the location of the constellations in the sky to the north and south

This is an excellent introduction to observational astronomy for beginners of all ages.

Advertisement

To purchase your copy of this excellent book please forward your cheque or postal order (made out to Robert Bee) for AU\$19.50 to the author at the address below.

This includes postage and handling (within Australia).

Please contact Robert Bee at rmbee99@hotmail.com for more details about the book or Direct Deposit information.

Robert Bee,

8 Joseph Banks Court,

MOUNT ANNAN, NSW, 2567

About the Author:

Robert Bee lives at Mount Annan on the south-west outskirts of Sydney, NSW.

Robert's passion for astronomy began in his teens and has deepened over the ensuing years. With degrees in Electrical Engineering and Science, he enjoys both observing the starry sky and understanding the physical laws behind what he sees.

Robert is a member of the Macarthur Astronomical Society (MAS) and has edited and contributed to the Society's monthly journal "Prime Focus" since it commenced in 1996 up to 2006. He has carried several positions within the Society during that time.

He shares his passion for astronomy with the people of the Macarthur Region through a fortnightly column called "Heavens Above!" in the Macarthur Chronicle newspaper. This column commenced in 1998 and is aimed at those with no background in science or astronomy, just a sense of curiosity and a willingness to step outside the back door and have a look at the sky.

Robert also enjoys writing fiction, with a preference for science fiction and fantasy, and has had a number of short stories published in periodical magazines and successes in short story literary competitions. He currently has a children's science fiction novel, with an astronomy theme of course, in progress.

Robert enjoys talking to the public about astronomy and guiding them around the sky, both at public nights run by MAS and also at clubs, societies and schools.

Australians in Science

The 2011 Nobel prize in Physics 2011 has been awarded to Perlmutter, Riess and Schmidt - "for the discovery of the accelerating expansion of the Universe through observations of distant supernovae" with one half to Saul Perlmutter and the other half jointly to Brian P. Schmidt and Adam G. Riess. Brian Schmidt of course is at the ANU / Mount Stromlo Observatory.

Congratulations Brian - and also a wonderful result for Australia.

See http://www.nobelprize.org/

Another young Australian Astronomer has also won a prestigious Physics prize:

Today, the University of Melbourne's Professor Stuart Wyithe was awarded the 2011 Malcolm McIntosh Prize for Physical Scientist of the Year for his work on the origin of galaxies.

The multi-award winning physicist was described by Princeton University Observatory's Professor Edwin Turner as "the best young scientist with whom I have ever worked in almost 35 years".

See:

http://theconversation.edu.au/back-to-where-we-started-tracing-the-origins-of-galaxies-3776?utm_source=The +Conversation+Daily+updates&utm_campaign=b0c8fbe7ba-DailyNewsletter&utm_medium=email

Astronomers Sense of Humour

Roger Powell

We've all done it. We've all read astronomy articles on websites and magazines and been faced with the mind-blanking acronyms dreamed up by astronomers to give their projects and collaborations an abbreviated name. Some acronyms make it easier to remember the project, others achieve nothing but more confusion. Sometimes they are serious, sometimes I think they are just having a laugh at our expense.

Our patron, Professor Bryan Gaensler, is the Director of **CAASTRO**. I can easily remember that particular acronym, and also that it is aimed at revolutionising wide-angle astronomy. However I can never remember that it stands for the "ARC Centre of Excellence for All-sky Astrophysics". I'll just stick with CAASTRO, because it works for me, even though it's roots as an acronym seem somewhat mystifying.

POSSUM sounds good and is actually a pretty reasonable acronym for the "Polarisation Sky Survey of the Universe's Magnetism", and we have all heard of **SOHO**, the "Solar and Heliospheric Observatory", but what about some of the other devilish names these astrophysicists have dreamed up for their pet projects? What is **FATBOY** and where did the intriguing acronyms **GADZOOKS**!, **FROG** and **SOUP** come from?

I have sometimes wondered about **GOD** and I have now discovered that it stands for another astronomy project called "Gravity One Dimension". Obviously, it's a project that requires plenty of faith. Who would like to get acquainted with **MONICA**, **MICHELLE**, **AMANDA**, **MAMA** and **KARMEN**? We may think we know who DEBRA is but did you know it stands for "Diffuse Extragalactic Background RAdiation"? **TANGOinPARIS** wins a special award for being an extremely easy to remember acronym, derived from an extremely nonmemorable and convoluted name for a science project; "Testing Astroparticle with the New Gev/tev Observations Positrons And electRons : Identifying the Sources". If it was me, I would have just stopped at TANGO.

I particularly like **HIS/HERS**, which stands for "High Intensity Spectrograph / High Energy Range Spectrometer", but you can work out for yourself what the acronym is for "Super Huge Interferometric Telescope"?

If you want to know more about **ARMPIT**, **POOPSY** and even **BIGASS**, go to https:// www.cfa.harvard.edu/~gpetitpas/Links/Astroacro.html which is the "*Dumb Or Overly Forced Astronomical Acronyms Site*".

Yes, as you can guess, this site does have it's own acronym: **DOOFAAS**.

