primefocus
MAS society journal

ImageCredit: Chris Malikoff

Vol 16: Issue 10, Nov '11

From the Editor

Welcome to the November 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 November 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 year, 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 November edition - our last for the year 2011.

Clear Skies! Chris Malikoff

Image Credit: Chris Malikoff

President's Report

Trevor Rhodes

Welcome to Prime Focus!

Whilst I ventured into amateur astronomy due to my love of the night sky, I find my biggest joy now comes from showing the wonders it holds to others. I can clearly remember my first visit to a school with my 12" Dobsonian.

It was St Mary Immaculate Primary School at Eaglevale. I was nervous, and had no idea how to handle what was a new telescope that I hadn't had the time to get to know. To make matters worse, I was afraid the children would ask me questions I couldn't answer.

Well, the questions were tough, but I got around it by situating myself near John Rombi and Bob Bee. Every time a question came up, I directed them to John or Bob. These days, I'm slightly more knowledgeable about what is 'out there'. That doesn't stop me from being stumped at nearly every public night or school outreach event we hold. I never cease to be amazed at the calibre of questions some of the children ask either. I look forward to doing more of these nights in the future.

By the time you read this we will have participated in two more events. A sausage sizzle at Bunnings, Narellan and the other at Panorama Estate, Glenfield. The first was an overwhelming success, so kudos to Tony Law for organising this event, and to all volunteers who helped out on the day. The Panorama Estate "*Night Under The Stars*" event was a thoroughly enjoyable night. Chris Turton ("ScrewdriverOne" on Ice In Space) was also present and told me that he had a great time and hopes to do more. The organisers were thrilled with what we do. They have never had anything before that attracted so many people as we were able to.

Due to that, they have asked if we would like to attend any further events they put on in the future. These will likely be held around the Penrith and Kellyville areas. Also, to go with the praise we received, we received a monetary donation made out to MAS. So a great big *thankyou* to all who attended and helped out on the night.

The future holds yet two more outreach events. Both are for 1st Narellan Scouts. If all goes well, we will be hosting a night for the younger children in December and then the older ones in the New Year. Anyone wishing to participate in either or both of these events is welcome to contact me, and I'll get details out to you as they are finalised.

Upcoming members viewing nights are on the 25/26th November at The Forest and 17th December at Stargard.

Please be aware that the November 21st meeting with our Patron, Professor Bryan Gaensler, is our last for 2011. We'll be back in 2012 on the 16th January.

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

Trevor Rhodes

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Member profile - Bob Monkcom

I purchased my first telescope, a TASCO 41/2 inch reflector with EQ mount in 1998 after a long interest in the stars. My first night out with the TASCO was about two weeks after I bought it. (A bit nervous of the giant leap?). I will always remember that night, because after I set up the scope on the front patio at Leumeah, I turned around to go back inside and by a million to one chance, a fireball was shooting across the sky parallel to the horizon. I only had seconds to take in what was happening as it disappeared behind the roof of our house. I tried various ways to confirm the sighting, to no avail, but just put it in my memory bank as a once in a lifetime happening.

While learning new things about the sky and planets I will always remember my first view of Saturn. The hairs stood up on the back of my neck!!!

I joined MAS in 2000 and have since added eight other telescopes and various pieces of equipment and eyepieces as the upgrades I HAD to have appeared.

My wife calls me “obsessed”, but you have to have hobbies. RIGHT???

The millions of new things I have learned over the ten years in MAS are amazing, but you realise you don’t know much in the overall picture of the heavens.

One funny incident occurred to me that I will pass on with the TASCO. It has a cap for the tube with a small 2 inch cap fitted as well for solar viewing with filter I think. However I only took off this 2 inch cap as I wasn’t going to attack the scope with screw drivers at the time. The view was unspectacular with the 2 inch aperture and I wasn’t impressed!!! I happened to be talking to BINTEL and I mentioned this and I was enlightened to take off the whole cap.

HEAPS BETTER VIEWS were had from then on. It just goes to show that to ask is NOT STUPID. We have all been in a similar boat and someone in the Society will be able to help.

Bob

Secretary's Column

Roger Powell

Committee Matters...

I reported last month that UWS have agreed to provide a room for us during 2012 at no cost to the Society. By now you will have also seen on the website that we have been allocated a UWS lecture theatre in Building 30 for November, January and February which has lift access. From March we will be in the lecture theatre in Building 21, which has ground floor access right off the car park.

This means persons with physical disabilities are now able to attend the Macarthur Astronomy Forum and some of our regular members will heave a sigh of relief that they will no longer need to negotiate two steep flights of stairs to reach them. I have expressed appreciation to UWS on behalf of MAS for their understanding and willingness to help us out in this regard.

Our November Macarthur Astronomy Forum will be the final one for the year and it is fitting that we will see the year out with another visit from our Patron, Professor Bryan Gaensler. Since his previous visit last year, Bryan has been appointed Director of the ARC Centre of Excellence in All Sky Astrophysics (**CAASTRO**). He has also become the author of a best-selling astronomy book, Extreme Cosmos. If you've read the book, you'll want to hear the talk. If you hear the talk, you'll want to buy the book!

In my Column last May, I listed the formal Objectives of the Society and posed questions about the longer term "strategic" aims of the Society. With a solid membership and our finances growing, should our long term aims be to set up the Society so that it can eventually operate an observatory of it's own?

This question of our future strategy had already been debated in considerable depth at our May committee meeting and was due for consideration a month later. Unfortunately, I neglected to report the outcome of these deliberations to members at the time, so I am taking the opportunity to do so now. At the following committee meeting, in June, committee members debated a motion to secure the Society's future strategy. Most committee decisions are made by general consensus but due to the fundamental nature of the topic, this decision was put as a formal motion and the committee carried the following resolution unanimously:

> *"That this committee aspires to achieve the financial growth and scientific excellence that will empower the future acquisition of advanced astronomical equipment and the property in which to house it. To achieve this we resolve to increase our membership; improve our practical expertise; and institute a fund raising programme, whilst still giving value for money to our members and continuing with our outreach programme."*

These may be lofty aims but only by prudent management of the Society's finances will we eventually lead the Society to opportunities of fulfilling the dream of many members, to operate a Society observatory. The committee agreed on the need to conserve existing finances; boost fund-raising; and seek out grants from governments and any other source, in order to achieve these ends. It is my belief that members will agree that we need to do all of these things in order to progress and it is the duty of each committee to improve the Society's financial position each year.

Whilst building our own finances, we also need to seek out opportunities through all tiers of government to support such a strategy. Most community organisations only progress because of government assistance. Sports clubs, the arts, volunteer service organisations etc. all benefit from governments giving them a leg up. Campbelltown Council have a magnificent Arts Centre and there is no reason why our community-based science organisation should not also be modestly encouraged in similar ways.

A great suggestion was made by Carol McVeigh at the last committee meeting, that we should explore the possibility of obtaining the use of the Dharawal National Park, about to be created right here on our doorstep. The committee enthusiastically agreed to this suggestion in principle and a meeting will be held soon with local MP, Bryan Doyle, to persuade him to lobby the government on our behalf.

There's a long path ahead, so let's see how it proceeds but my initial thought was "Why hadn't we thought of this before?"

Society Schedule

November 2011

21/11/2011 **Macarthur Astro Forum**
25/11/2011 **The Forest ($15)**
26/10/2011 **The Forest ($15)**
29/10/2011 **Stargard**

December 2011

17/12/2011 **Stargard**
23/12/2011 **The Forest ($15)**
24/12/2011 **The Forest ($15)**

Image Credit: Tony Law

2013 Hawaiian Sojourn

Tony Law

MAS Field Trip

Another reminder to 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.

Planned Itinerary

Depart: Sydney Tuesday 4th September 18.00

Arrive: Honolulu Tuesday 4th September 07.45 - we cross the dateline!

Depart: Honolulu Tuesday 4th September 11.48

Arrive: Hilo Tuesday 4th September 12.50

Accommodation: see http://www.seasidehotelshawaii.com/HotelHilo.aspx

Nights of 5-9th on Mauna Kea. See weather forecasts: http://mkwc.ifa.hawaii.edu/forecast/mko/

Thursday 6th September – Special visit to Gemini North and one of IRTF, CFHT, or the UH 2.2 meter, plus the Keck visitors observation room.

Saturday 8th and Sunday 9th September – drive Mauna Kea summit in convoy for night time viewing

Bus trip to Volcanoes National Park is 12 hours and costs $179.00 - probably not advisable as we want to do MK each night! By Helicopter 1hour $230.00. See http://www.hawaiiactive.com/activities/bigisland-paradise-helicopter.html

Depart: Hilo Monday 10th September 13.18

Arrive: Honolulu Monday 10th September 12.07

Accom: http://www.outrigger.com/hotels-resorts/hawaiian-islands/oahu-waikiki/ohana-waikiki-east#tab-prop-detail-rooms

Tuesday 11th: Pearl Harbour, Arizona, Missouri etc $70.00

Wednesday 12th: Polynesian Cultural Centre, tour, dinner and show $150.00

Thursday 13th: Shopping/sightseeing in Honolulu/Waikiki

Depart: Honolulu Friday 14th September 12.45 (or your own itinerary from here)

Arrive: Sydney Saturday 15th September 19.30 -dateline crossed!

So tentative total:

Flights $ 1200.00

Accom. $ 500.00 based on twin share

Heli tour $ 230.00 optional

Pearl Hbr. $ 70.00 optional

PCC $ 150.00 optional

Meals $ 400.00

Veh Hire Hilo $ 100.00

Total Cost $2650.00 excluding discretionary shopping!!!

In order for MAS Members to 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. Account is at the Commonwealth Bank, name is Macarthur Astronomical Society BSB 062656 a/c no. 10243417. You must ensure that you include your name in the reference when you make the deposit. Please advise me when you make your initial deposit so that we can start a spreadsheet with all those making payments.

"All that is..."

Davy Jones

Gazing into the night sky - you are observing 'all states and phases of energy and matter'. The very existence of the universe, and our inborn curiosity, lies at the beating heart of many human intellectual enterprises. Those enterprises predictably encompass religion, philosophy and science in their various forms.

Each discipline holds its own particular fascination of course, but - in my humble opinion - only one discipline provides comprehensible, yet always challengeable answers: science. The historical development of scientific thinking has been the focus of these articles throughout the year. Whilst we have only skipped over the centuries like a flat stone over water, the background research has provided an informative and enlightening year for me personally. However, I'd be the first to admit, I'm no nearer the 'ultimate answers' than I was at the beginning of the year. Nonetheless, I do now have a better grasp on the complexity of the issues that face scientists, astronomers, cosmologists and physicists in their various roles.

Intelligent life stands in awe of the universe, yet the mother of all life cares for nothing!

The men and women of science have battled a lack of technical aids throughout history; the technology it seems, always playing catch-up. They have also had to contend with another, even more insidious, trait: human incredulity. Because something appeared beyond human reason or traditional cultural belief - often in spite of significant proof - both the scientific messenger and the message were repeatedly brutally maligned. Oddly perhaps, the same level of incredulity has not been customarily applied to other disciplines - in spite of their patent lack of empirical evidence and often curious, superstitious claims. One can only speculate what progress might have been made if human foibles hadn't retarded the natural pace of scientific development.

Our Western ideas of the classical four elements - Earth, Water, Air and Fire stem from Babylonian religious mythology. Sometimes a fifth element - or quintessence - was added; named Aether (literally - light carrier). This 'element' attempted to describe that which existed beyond the physical world. Likewise, the first mention of the atom was suggested by the Ancient Greeks and is linked to one Leucippus - 5th c BCE - the founder of Atomism. The Greek word: atomos - translated means uncuttable. As most readers would be aware, the concept of the Aether (or Ether) was finally discredited by Einstein with his work on General and Special Relativity.

At great personal cost, Galileo Galilei, 1564-1642, finally exposed the myth of Ptolemaic model of our solar system, seriously challenging the entrenched religious dogma surrounding that belief.
Following this, Sir Isaac Newton, 1642-1727, created a set of scientific principles that held sway for the next 300 years. Newton, a Master of the Royal Mint circa 1699 until his death in 1727, in fact, wrote more papers on biblical interpretation and occult studies than on scientific topics. For trivia buffs, it is claimed Newton suffered from Asperger's Syndrome.

Newtonian science influenced many aspects of scientific experimentation for so many years, and great advancements predictably occurred. The Classical States of Matter were modernised into the classifications of Solid, Liquid and Gas. Each of these states of matter have their own story of scientific exploration and explicit identification. Each also has its associated scientists who focused, often for a lifetime, on the investigation of each particular state and the transformations that occur between those states.

Today we are aware of many other exotic states, described as Non-Classical States, among them: Glass - Crystals - Liquid Crystal states - Copolymers - Superfluids - Bose-Einstein condensates - Fermionic condensates - Rydberg molecules - Quantum Hall states and the aptly named - Strange Matter.

In addition to these states we now recognise the High Energy states, most commonly - Plasma, the ionized gas state now artificially produced, and regularly employed in much of today's technology. Examples of natural occurrences of plasma are of course, lightning and stars, such as our own sun.

Moving into the Large Hadron Collider (LHC) territory, states such as Quark-gluon plasma are shown to exist (baryonic material). The temperature required to produce such material is up to 2×1012 K.

This type of matter is perhaps more commonly associated with quantum or particle physics and the conditions existing shortly after the period termed - The Big Bang. Coincidentally, certain pundits suggest the term - The Big Bang - is inappropriate; I agree; it does seem misleading. This - First Event - is often introduced with the codicil indicating - 'it wasn't actually an explosion as we know it - it is better described as a very rapid expansion'. However, therein lies a story for another day perhaps.

Einstein's theory of general relativity predicted the Very High Energy State, described as the gravitational singularity state. Einstein postulated the environment for such a state may exist at the heart of a black hole. With so many of Einstein's predictions constantly being upheld - as technology advances allowing scientists to run observable experiments, disproving, or more often, proving his theoretical speculations - this claim may yet prove to be another posthumous tribute to his genius.

There are now additional proposed states of matter; these include Degenerate Matter - apparently of great interest to astrophysicists because such high pressure conditions that create this type of matter are thought to exist within white dwarf and neutron stars.

Further proposed states include such exotic sounding names as - Supersolid - String-net Liquid and Superglass. All of the aforementioned states are far removed from the Classical Ancient Greek classifications that satisfied human curiosity for so many years. Whilst Einstein certainly didn't debunk Newtonian Science in the same way as Galileo debunked Ptolemy, he nevertheless lifted the lid of Pandora's Box much wider than even he perhaps appreciated.

Given the human characteristic of accepting the status quo without question, often for many years, one cannot imagine what spectacular breakthroughs are just over the horizon. Will we ever know - all there is to know? I suspect, with the ever-increasing speed of technological advancement, science is only now on the threshold of as yet unimagined disclosures. The mystery of Dark Matter and Dark Energy are surely high on that particular wish list.

Just as a parting thought for the year; have you ever considered that the universe is simply the detritus of a mighty cosmic conflagration - The First Event?

Rather than a magnificent creation the universe is just: Ashes in a cold, cold, fireplace, swirling endlessly in a mighty celestial up-draught!

Have a wonderful Christmas and a prosperous New Year. I'm off to do some serious reading.

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"Pour, Oh pour the Pirate Sherry"

- Part 3: Final

A short story by Robert Bee

"Incoming," shouted Zzuzy.

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

"*Loudly let the trumpet bray! Tantantara, tantantara!*
Proudly bang the sounding brasses! Tzing ! Boom!…"

All around Jack's troupe, the Zzurag were withering under the relentless fire of stirring Sullivan notes and Gilbertian lyrics. It was pathetic to watch, and more so to hear as the Zzurags moaned in Lotto balls chaos.

"That's the Procession of Peers", yelled Peter McIntyre over the din. "That could only be…"

But Jack didn't need to be told. He could see, behind the rows of chortling Tzings who'd donned their own aural protectors, an orchestra and massed chorus dressed in ornate gowns of the Peers of England.

"Well, bugger me", he said. "It's Bert Grant and the North Blackpool G&S Society. They are doing Iolanthe this season. What are they doing..?" Jack chuckled softly. What's good for Zzenda, is good for Tzenda, he thought. Jack waved at his professional rival across the gap. Bert waved back, then raised both arms in an open handed shrug.

The warfare had reached an early impasse, it seemed. Each side had acquired Weapons of Gilbert & Sullivan, or WOGS, and so could only batter each other in turn with no final resolution, as neither of the G&S societies could keep singing forever. A case of Mutually Assured Gilbert and Sullivan.

The North Blackpool troupe finally ended the chorus. Within less than a minute, the Zzurags recovered and stared off their enemy across the gap. Zzlugg conferred with his warriors, keeping a cautious eye on the conductor of the opposing orchestra in case of another sneak attack.

Jack quickly called his major players together. "We have to end this farce," he told them.

"Which one?" Ken Burton asked. " 'The Pirates of Penzance' or the alien's war?"

"Quick, someone give me a sheet of paper" Jack said, ignoring Ken. "It seems the aliens are psychologically influenced by jingoistic music. The emotions in musical martial jingoism send them into fits of agony. Let's try something different. Help me here." They put their creative heads together, then wrote out some copies of their work.

"Zzlugg," Jack called, going over to the Zzurag leader. "I have an idea that will permanently end this war."

"With us the winners?" Zzlugg burbled.

"Oh yes," said Jack, fingers crossed. "Definitely." He explained his idea.

"This seems quite unaccountable. You're sure it will augment our advantage?" Zzlugg said.

"Spare me your stern denials Zzlugg", chided Jack. "You'll thank me for this."

"Then be off on your dread adventure. And Jack…"
Jack turned. "Yes."

"*Tarantara!"*, intoned Zzlugg.

"Amen to that," Jack murmured, as he called the entire South Brighton Gilbert & Sullivan Society and orchestra to follow him down the slope towards the Tzing.

Midway, they stopped. Jack called to the watching Tzing. "Oh fearsome Tzing, I call upon you to send your weapon out to meet us in single combat. If they, in their best endeavour, are greater than we and defeat us in battle, then so be it. Tantantara, Tzing Boom!"

The Tzing leader, resplendent in his green scales, consulted with Bert Grant, who nodded furiously, presumably indicating he could beat these South Brighton upstarts in any fair G&S eisteddfod.

The North Blackpool troupe and orchestra paraded down to meet their South Brighton opponents. Jack quickly explained his plan to Bert, handing him some

spare copies of paper, while the two troupes mumbled 'rhoubarb rhoubarb' in threatening tones to each other. They had decided that shaking fists at each other was a bit over the top.

"You have to be joking, Jack" exclaimed Bert on reading his piece of paper. "This will never work."

"It will if we can catch them all with their earplugs off and maintain the volume and diction at all times", said Jack.

"But with no rehearsal?" Bert protested.

"You want to see Earth again, Bert?"

"Bloody oath, I do."

"Then read it, pass it on, and get it right first time. Five minutes to curtain", Jack said. "Oh, and Bert, before we start, you need to go back to your Tzing leader…"

"No way…"

"You have to Bert. Listen. Tell him that during our combat, your music will embolden the Tzing while it cowers the Zzurags into submission, so he needs to keep his ear plugs off."

"He won't swallow that", Bert said.

"My Zzurag did. Please, just do it."

When Bert had returned from his animated conversation with the Tzing, he gave Jack a quick wink, then joined his troupe.

The two orchestras made ready, their conductors watching each other closely. Jack whispered loud enough for Brighton and Blackpool troupes to hear. "Remember everyone, diction. Oh, and break a leg." Then he yelled at the top of his voice, "Take this, North Blackpool scum. One, two, three, and…"

Both orchestras struck up in time, and on the second beat both troupes, in chorus, sang out to the rollicking tune of "I am a Pirate King". But the words were different.

"For Zzurags are like the Tzing
(for they have that common ring)
So one is blue, the other green
But colour's not the thing;
For Zzurags are like the Tzing
(it's time you stopped this stupid war thing)
So shake your hands and shoot a drink
Give peace a jolly good fling.
Hoorah, hoorah for the common ring,
The Zzurag and the Tzing."

For good measure, they sang it all the way through again, but it wasn't necessary. Midway through the second verse, both the Zzurags and the Tzing had moved towards each other, chest orifices flapping, even blubbering. There was much embracing of erstwhile enemies and much shooting with fluid guns. Jack Hobden's only concern was being able to find a Zzurag or Tzing sober enough to fly them back to Earth.

The South Brighton G&S Theatre settled gently onto its foundations. The society's troupe burst out of the doors to breath good old English smog again. By agreement, they would not speak of their adventure to anyone. After all, who would believe them?

Jack Hobden waited till all the others had left, then turned to the ship's pilot. "Thanks for the lift back Zzuzy. It was…fun, I suppose." He felt a little nervous, with Zzuzy so close and breathing heavily. "Is Zzlugg still angry with me?"

Zzuzy tumbled a tinkling laugh. "No, he knows your deception was for the best. The Zzurag and Tzing are of common ancestry, blood brothers, and the war is best over with no winner. But he asked me to pass this message to you. I believe it is from your show:

"Away to the cheating earth go you
where pirates are all well-to-do,
But I'll be true to the song you sing
And live and die a Zzurag-Tzing."

"Close enough. A Zzurag-Tzing, I like that", said Jack.

"So did the rest of Zzenda and Tzenda", burbled Zzuzy, "which is why we were pleased to return you to Earth."

"Ha," said Jack. "What else could they do? Dump us in the vacuum of space?"

"If they were feeling merciful, yes", said Zzuzy.

Jack's stomach experienced the lurch similar to when they came out of space-warp. "Huh? But, they couldn't. It would be like zzliggicing a quuakzzanger."

"Oh no," said Zzuzy, fingering her necklace of skulls. "That only applies to Zzurags and Tzings. We've slaughtered plenty of aliens in the past." Her chest orifice curved into what was probably a seductive smile as she moved a step closer. "Tell me, Jack. Do you like my sparkling eyes and ruby lips?"

If they had still been in space, you wouldn't have heard Jack scream.

*****

Please read more of Bob's short fictional works on our website under the "Articles/Members Fictional Works" menu. Copyright © Robert Bee, 2008

A Plethora of Double Star Catalogues

Part 4 - Final

Bob Bee

This is the final part of my 4 Part article on double star catalogues. By way of a recap, I repeat and paraphrase here my introduction from the first part:

As we plough the fields of the heavens above us, referring to star maps for a guide to the myriad of stars, you will often come to star numbers not following the familiar Greek letter Beyer system (e.g. α Centauri) or Roman letters (after the Greek alphabet ran out – eg z Carinae, or S Mon, a variable with a capital Roman letter) or even the Flamsteed numbers (61 Cygni, for example).

These 'unusual' designations will most likely be from some Double Star catalogue. The most commonly encountered would be prefixed with '**Σ**' for Struve, or maybe a 'h' for Herschel, or even '**Δ**' for Dunlop. But there are many more Double Star catalogues out there, each with their own prefixes. Burnham identifies 21 in all. (The astronomer's name and the prefix to his double stars are listed in Part 1.)

Some of these names will be familiar to you, others certainly not. Remember that it is believed that of all the stars in our Milky Way (and presumably other galaxies), more than 70% are in a multiple star arrangement. So there are plenty of double stars up there to be catalogued.

So many, in fact, that Google search under 'double star catalogues' will reveal a list of hundreds of designations. The 21 listed by Robert Burnham Jr. just touch the surface but I suspect they include the more common catalogues. Feel free to prove me wrong.

In this article, I will attempt to give you some background to the astronomer who compiled each double star catalogue, giving you some context to appreciate the name of that obscure star you find in the star atlas or, hopefully, in your telescope's eye piece.

Due to space available, each item will need to be unfortunately brief. I encourage you to do some extra research into the lives and history of these dedicated gentlemen.

Here are the final five cataloguers in Burnham's list.

G.W.Hough = Ho

The American astronomer George Washington Hough (1836–1909) was born in Montgomery, New York. During his distinguished career, he discovered 627 double stars. Hence his 'Ho' catalogue.

Towards the end of his career he made systematic studies of the surface of Jupiter. He was very clever with designing tools and instruments for various applications of science, particularly in astronomy, meteorology, and physics. From 1862 to 1874, Hough was director of Dudley Observatory, Albany, New York. During that period, he invented transit recording devices that revolutionised the accuracy and greatly sped up star position data collection. This involved using the electrical impulse from a pressed button to record a mark on a time chart rather than have an observer shout out 'mark' so another person could look at a clock and write the time down.

G. W. Hough

A pioneer of his time, Hough also brought into operation the Scheutz "computer", a pioneering machine for computation based on Charles Babbage's ideas.

After a falling out with the Board at Dudley Observatory due to extreme cost cutting, Hough resigned in 1874. He took his instrument design ideas to private industry where he was very successful. However, his love of astronomy prevailed and in 1879 he was appointed professor of astronomy at the University of Chicago. He became the director of Dearborn Observatory when the observatory was moved to Evanston, Illinois. True to form, he introduced original plans for the dome and electric control for the telescope. He remained director of Dearborn until his death in 1909.

His major efforts, however, were in the field of meteorology. Hough applied his mechanical talents to invent an automatic recording barometer that needed no human

assistance, greatly increasing the amount of data available to meteorologists around the world.
Still, he left behind his catalogue of 627 double stars.

Some examples of Hough's doubles, gleaned from a quick trawl through Burnham's Celestial Handbook for the Andromeda constellation (in which I counted 9 Ho doubles) are:

Ho622 – AO class stars, mags 7 & 12, separation 23.6'.
Ho213 – class A3, both mags 7, separation 0.2' increasing. That's close!

W.H.van den Bos = B

Willem Hendrik van den Bos (25 September 1896 – 30 March 1974) was a Dutch-South African astronomer. He began his astronomical career at Leiden Observatory in the Netherlands, then joined Union Observatory in South Africa in 1925, becoming its director in 1941 up to 1956.

His double star work was prolific, discovering thousands of double stars and recorded tens of thousands of micrometer measurements of them. He was thus able to calculate the orbits of a large number of binary stars.

During his extensive career, he co-authored "Southern Double Star Catalogue for -19° to -90°" with B. H. Dawson in 1927. He authored other distinguished books, including "Micrometer measures of double stars" in 1959.

He was president of the Astronomical Society of South Africa in 1943 and 1955.

Though some biographical sources say he discovered more than a hundred asteroids this is not supported by the Minor Planet Center which does not credit him with any asteroid discoveries. However, the asteroid 1663 van den Bos is named after him, as is the lunar crater van den Bos.

Some examples of van der Bos's doubles, found in Burnham's Celestial Handbook for Canis Major (in which I counted five B doubles) are:

B110 – F5 class stars, mags 7.5 & 11, separation 6.7'.
B707 – class B3, mags 6.5 & 7.5, separation 0.2'. That's close!

van der Bos, with Innes to the left, at the Union Observatory.

E.S.Holden = Hn, Hd, Hld

Edward Singleton Holden (5 November 1846 – 16 March 1914) was an American astronomer who managed his time to maintain interest with other diverse unrelated subjects, including Mogul Emporers of Hindustan.

Becoming professor of mathematics at the US Naval Observatory in 1873, he made such a significant impression on contemporary astronomers that he was appointed director of Washburn Observatory at the University of Wisconsin–Madison from 1881 to 1885. He was subsequently elected a member of the American National Academy of Sciences in 1885.

His astronomical career wasn't all smooth going. An example was when in 1877, a few days after Hall discovered Deimos and Phobos, the two moons of Mars, Holden claimed to have found a third satellite of Mars, a claim he had to withdraw after further analysis of his observations.

After Washburn Observatory, he became president of the University of California from 1885 until 1888. His major career change was distinguished,

E. S. Holden

becoming the first director of the Lick Observatory, a position he held from 1888 until the end of 1897. It was during this period that he made most of his double star observations, using the famous Lick 36" refractor. Unfortunately, his claim of priority over this instrument led him into regular conflict with another famous Lick astronomer, Edward Emerson Barnard (of Barnard's Star fame).

While at the Lick Observatory, he was the founder and inaugural President (1889 – 1891) of the Astronomical Society of the Pacific. Typical of Holden's diverse talents and interests, in 1901 he became the librarian of the United States Military Academy at West Point, where he remained until his death in 1914.

During his career, apart from his double star work at Lick, he discovered a total of 22 NGC objects while at Washburn Observatory.

He is honoured by the naming after him of the asteroid 872 Holda, the crater Holden on the Moon and the crater Holden on Mars.

There is some confusion in Burnham's Handbook about the designation of Holden's double stars. While his introduction to double stars gives Hn and Hld as the prefix's to stars in Holden's catalogue, I can find very few examples of those (e.g. Hld 99 in Apus), while plenty of stars with a Hd prefix (e.g. Hd 155 in Aquila). I am assuming those are also Holden doubles.

Gerard Peter Kuiper

G.P.Kuiper = Kui

Gerard Peter Kuiper (7 December 1905 – 24 December 1973) was a famous Dutch-American astronomer, well known for the belt of objects beyond the orbit of Neptune which he predicted and was named after him – the Kuiper Belt.

It would appear that despite having his catalogue of double stars mentioned prominently in Burnham's Handbook, his score of doubles was not as high as many others. I have found reference only up to Kui 79. His interests and achievements lay elsewhere in the annals of astronomy. However, it would seem from accounts of the time, Kuiper was hugely responsible for the American drive to discover binary stars for the purpose of learning about the very nature of stars that binary relationships reveal. His peers, if not his administrative superiors, valued his unique contribution to the field. That is, his influence in the field of binary stars should not be measured by the number of binaries for which he is personally credited.

Born in North Holland, the son of a tailor, his interest in astronomy began early in life. This was aided by an amazingly sharp eyesight. While other mortals could see stars to around magnitude 6, Kuiper could see up to magnitude 7.5, about four times fainter.

When he entered Leiden University in 1924, he was fortunate to associate with a good number of other astronomers. His fellow students included Bart Bok and Oosterhoff while his teachers included Hertzsprung, de Sitter and Oort. He was off to a good start.

After graduating with a B.Sc. in astronomy in 1927, he continued his studies, completing a doctoral thesis on binary stars in 1933.

He immediately left Holland for Lick Observatory in California, becoming a fellow under the esteemed R. G. Aitken. In 1935 he moved on to the Harvard College Observatory, then to Yerkes Observatory at the University of Chicago. Having happily married and settled, he became an American citizen in 1937.

Kuiper's discoveries were most impressive. Amongst others, he discovered the Uranus's moon Miranda and Neptune's Nereid. As an encore, he discovered carbon dioxide in Mars's atmosphere and the methane dominant atmosphere of Saturn's moon Titan. He was also actively involved in the selection of Moon landing sites for the Apollo program.

The 'discovery' for which he is best remembered, of course, was speculation of the existence of thousands of small icy bodies in a disc shaped region beyond the orbit of Neptune. He proposed that the highly elliptical orbits of

these bodies was the source of many comets, mostly the short period variety. On the conformation of this belts existence, it was named after him.

A minor planet "1776 Kuiper" and craters on Mercury, Mars and the Moon were named after him.

J. South = S

Sir James South (1785 – 1867) was a British astronomer of the post-William Herschel era, being a contemporary of Herschel's equally famous astronomer son, John.

A man of letters, he originally studied and worked as a surgeon in London. However, having the good fortune to marry a wealthy heiress in 1816, he was able to change career paths and give all his time to the interest of astronomy.

In this career, he was highly successful and his influence in the British astronomical world was significant. As a co-founder of the Astronomical Society of London in 1820, he was President from 1831 to 1832 and was instrumental in obtaining a royal charter, renaming the society to the Royal Astronomical Society.

In 1824, while working with John Herschel, he jointly produced a catalogue of 380 double stars, some of which were re-observations of those discovered earlier by William Herschel. Continuing by himself, in the next year South identified another 485 double stars. For this, and his role in establishing the RAS, he was knighted in 1831.

Unfortunately, South's reputation was not totally unsullied. He was a party to an unsavoury and notorious lawsuit over a 12" telescope he'd had made and installed. Or more accurately, its equatorial mount. South claimed it was defective, the maker demanded payment, sued in court and won. Out of spite, South demolished the mount. This saga featured in Fred Watson's talk on 'Astronomers Acting Badly'.

Sir James South

Though not as damning, South had a negative hand in the career of Australia's Carl Rumker who, riding on the back of some success in the colony, had returned to London to seek advancement. However, Rumker became involved in a quarrel with Sir James South, then president of the Royal Astronomical Society, who used his influence to have Rümker finally dismissed from British government service. Rumker returned to Parramatta Observatory as a result.

A quick pass through Burnham's Handbook shows 'S' doubles scattered through the more northern constellations (as you would expect). I found most to be wide and 'opticals'. That is, not true binaries.e.g. S384 in Andromeda, with a separation of 76.4". However, a more exhaustive search might reveal closer binary doubles.

Conclusion:

As previously mentioned, there are many more catalogues of double stars out there. And behind each there will be a story.

If you are interested in observing doubles, a good place to start would be referring to the listings of double and multiple stars at the start of each constellation's section in the Burnham Celestial Handbook. There you will soon see that there is a plethora of double stars to observe, as well as a plethora of double star catalogues.

Enjoy!

M8 "Lagoon Nebula" by Debra Taylor

"Time" - a star trail with clock face superimposed to show rotation and time are related.
Winner "Top Shot", Mounties camera club - Bruce Reardon

Image Credit: Mike Salway

IceInSpace Astro Camp 2011

Mike Salway (iceinspace.com.au)

IISAC2011 treated attendees to great night skies - if you were prepared to stay up...

Organising IISAC events is like a rollercoaster.. bursts of activity, then a lull, then more activity, leading up to the event can be quite stressful. During the event it's no different. Lots to do at certain times, but hopefully enough time to relax and enjoy people's company and just enjoy the experience.

When it's over, I breathe a huge sigh of relief that it's over for another year. But a day or two later, I'm usually ready to do it all again after remembering the great times that were had.

That's where I am now. Had loads of fun and can't wait to do it again, but know that in the month before the event wonder why I go to all the effort.

First I'll start with the thanks, because without them, the event would be much more stressful.

To the sponsors: **OzScopes**, **Finger Lakes Instruments** and **Wildcard Innovations**. Your ongoing support of IceInSpace and the amateur astronomy community is much appreciated.

To the guest speakers: John Sarkissian, Mark Suchting, Gary Kopff, John Bambury and Alex Massey. Thanks for taking the time to give up your knowledge and expertise for the attendees.

To Al Meehan: For the shirts. They turned out great! Thanks!

To Fred "Bassnut" Vanderhaven: Yes he's a crazy scientist, but what a legend. Bringing his PA gear each year and setting it up so we have a good mic and speakers, and can broadcast down to the bottom field. All out of the goodness of his heart.

To the Gresford RFB: For awesome meals each night. I honestly don't know why everyone doesn't use them. For $15, you get a 3 course meal, often with seconds. More than enough food, always good quality and


Image Credit: Mike Salway

they pack up and clean up and take everything away with them. Can't get better value than that. It means you don't need to bring food for dinners - so easy!

Unfortunately though, the reduced camp numbers and the reduced number of people choosing the Gresford RFB catering means that it's getting to the point that they may not find it worthwhile anymore. I hope I can convince them to come back for the next one.

To the volunteers who helped out at the camp with setting up on Thursday morning and packing up on Sunday morning: I probably won't remember everyone and I'm sorry for that, but Al Sheehan, Stan Duoba, Bob Jones, Peter Langdown and wife, Wayne Williams, Eric Kingston. I hope I haven't forgotten anyone. You guys are legends.

No-one volunteers to hose out the toilet block after 3 days of a camp. But Eric did!

It was so great to meet people for the first time, after knowing them for years online - especially Jeanette and Eric. Jeanette was a pleasure to have around. Always happy and smiling ...and laughing!

Great to catch up with regular friends like Fred, Mike, Chris, Guy, Al, Gary and Mai, the pony clubbers and more.

It's a shame some other regulars couldn't make it this year & that the numbers were down overall. We had about 100 registrations which was down on last year, and only about 80 of those 100 turned up. Some families that normally come couldn't make it, and also being outside of school holidays, the registration of families was down in a big way since the kids were at school.

I hope there's a bigger registration next year, it's getting close to the point where it's too difficult to put on for the numbers - especially with the marquee.

Saturday afternoon formalities were also down with some people having left earlier in the day due to the inclement weather forecast (which was wrong and it was a beautiful night). It's just a shame when such great talks like Gary and John's weren't as well attended. And it's a little embarrassing for me. Makes me question whether to do the guest speakers but I know some who were looking forward to the talks all weekend and some people get a lot of out of them.

Anyway everyone has their reasons and I don't begrudge anyone for that. Not everyone goes for the talks or has time, etc. I don't expect everyone to go to them. At SPSP I don't attend all the talks either.

But I do hope it's better next time, both registrations and attendance for the camp and the talks.

The lucky door prizes were won by:

- OzScopes 8" dob: Chris Bond
- FLI Camera filterset: Andrew Fry or Andrew Kaye.
- Argo Navis voucher: Dennis Zambellis family
-

There were about 10 people that missed out on winning the prizes because they were pulled out of the barrel but had either already left or didn't attend.

Some of my favourite moments of the weekend include:

- Meeting Jeanette
- John Sarkissian's talk. I just loved the history and the photos.
- The unexpected clear skies!
- Saturday night around "Lake IISAC". The cacophony of frogs, Al's brilliant guitar playing, the beautiful skies with quite a few meteors, and the company of friends. It doesn't get any better than that.

Looking forward to the next one...

(Thanks Mike for a wonderful three days and nights. We all had a ball and look forward to the next one. I'll try and get as many MAS'ers along as I can! - Ed)

Guy Flemming's 8" F/3.8 astrograph on Takahashi EM-200 and FLI ProLine CCD

Chris's Landrover against the backdrop

Image Credit: Chris Malikoff

"Crux on the Water"

Image Credit: Chris Malikoff

Moon setting on "Lake IISAC"

Image Credit: Guy Flemming

Jeanette Dunphy image processing over coffee

Image Credit: NASA

New Mars Rover

NASA Ready For November Launch Of Car-Sized Mars Rover "Curiosity"

WASHINGTON -- NASA's most advanced mobile robotic laboratory, which will examine one of the most intriguing areas on Mars, is in final preparations for a launch from Florida's Space Coast at 10:25 a.m. EST on Nov. 25.

The Mars Science Laboratory (MSL) mission will carry Curiosity, a rover with more scientific capability than any ever sent to another planet. The rover is now sitting atop an Atlas V rocket awaiting liftoff from Cape Canaveral Air Force Station.

"Preparations are on track for launching at our first opportunity," said Pete Theisinger, MSL project manager at NASA's Jet Propulsion Laboratory (JPL) in Pasadena, Calif. "If weather or other factors prevent launching then, we have more opportunities through Dec. 18."

Scheduled to land on the Red Planet in August 2012, the one-ton rover will examine Gale Crater during a nearly two-year prime mission. Curiosity will land near the base of a layered mountain 3 miles (5 kilometers) high inside the crater. The rover will investigate whether environmental conditions ever have been favorable for development of microbial life and preserved evidence of those conditions.

"Gale gives us a superb opportunity to test multiple potentially habitable environments and the context to understand a very long record of early environmental evolution of the planet," said John Grotzinger, project scientist for MSL at the California Institute of Technology in Pasadena. "The portion of the crater where Curiosity will land has an alluvial fan likely formed by water-carried sediments. Layers at the base of the mountain contain clays and sulfates, both known to form in water."

Curiosity is twice as long and five times as heavy as earlier Mars rovers Spirit and Opportunity. The rover will carry a set of 10 science

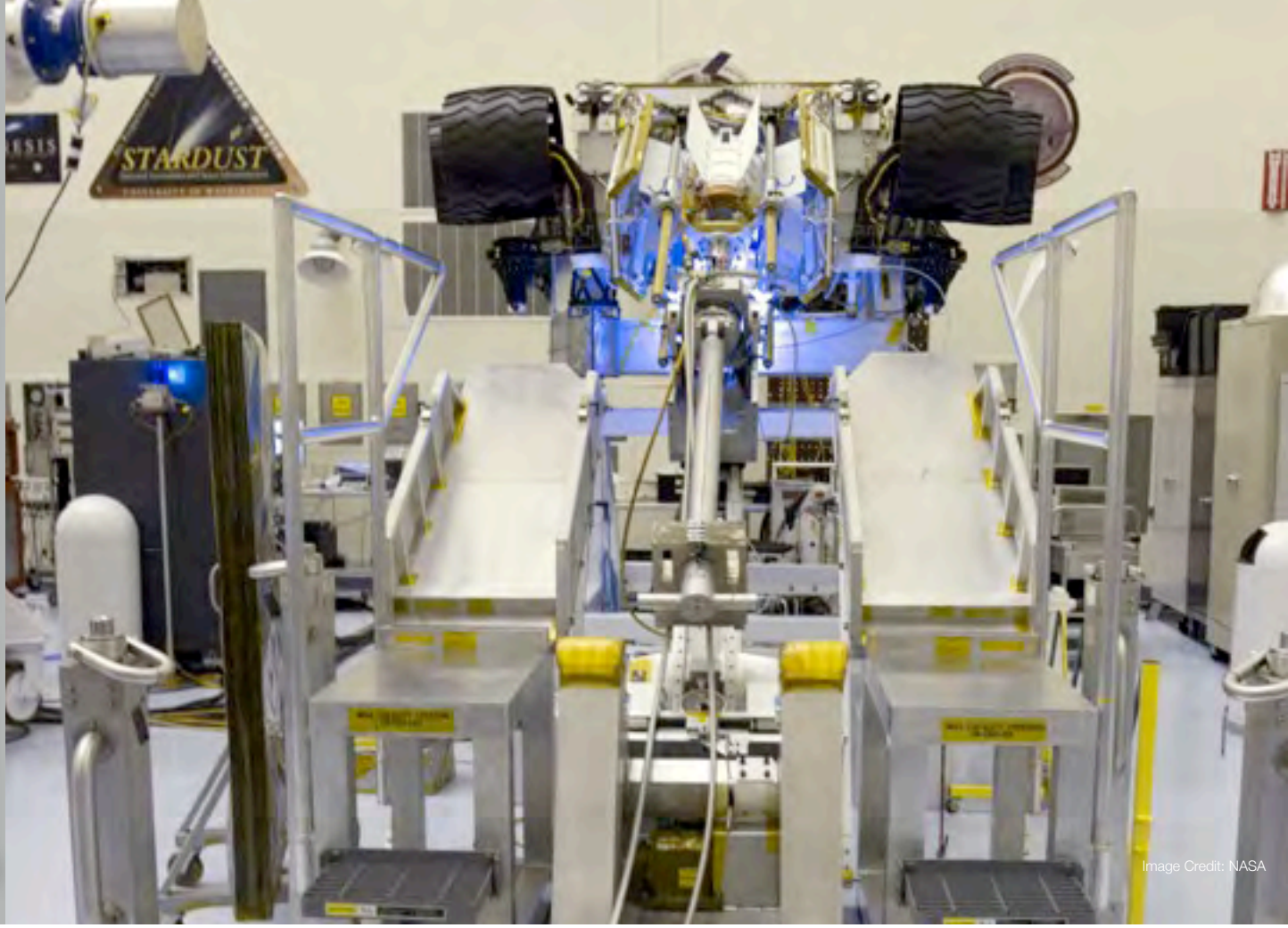


Image Credit: NASA

instruments weighing 15 times as much as its predecessors' science payloads.

A mast extending to 7 feet (2.1 meters) above ground provides height for cameras and a laser-firing instrument to study targets from a distance. Instruments on a 7-foot-long (2.1-meter-long) arm will study targets up close. Analytical instruments inside the rover will determine the composition of rock and soil samples acquired with the arm's powdering drill and scoop. Other instruments will characterize the environment, including the weather and natural radiation that will affect future human missions.

"Mars Science Laboratory builds upon the improved understanding about Mars gained from current and recent missions," said Doug McCuistion, director of the Mars Exploration Program at NASA Headquarters in Washington. "This mission advances technologies and science that will move us toward missions to return samples from and eventually send humans to Mars."

The mission is challenging and risky. Because Curiosity is too heavy to use an air-bag cushioned touchdown, the mission will use a new landing method, with a rocket-powered descent stage lowering the rover on a tether like a kind of sky-crane.

The mission will pioneer these precision landing methods during the spacecraft's crucial dive through Mars' atmosphere next August to place the rover onto a smaller landing target than any previously for a Mars mission. The target inside Gale Crater is 12.4 miles (20 kilometers) by 15.5 miles (25 kilometers). Rough terrain just outside that area would have disqualified the landing site without the improved precision.

No mission to Mars since the Viking landers in the 1970s has sought a direct answer to the question of whether life has existed on Mars. Curiosity is not designed to answer that question by itself, but its investigations for evidence about prerequisites for life will steer potential future missions toward answers.

The mission is managed by JPL for NASA's Science Mission Directorate in Washington. Curiosity was designed, developed and assembled at JPL. Launch management for the mission is the responsibility of NASA's Launch Services Program at the Kennedy Space Center in Florida. NASA's Space Network, managed by the Goddard Space Flight Center in Greenbelt, Md., will provide space communications services for the rocket. NASA's Deep Space Network will provide MSL spacecraft acquisition and communication throughout the mission.

For more information, visit:

http://www.nasa.gov/msl

MAS Shop

It's buyin' time!

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

'**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.

'**Prime Focus**' is our flagship publication - available now. Back-issues available until sold out. $6.00 at meetings.

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 has risen 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.

"Extreme Cosmos"

A book review

Roger Powell

Just when you think you have learned most of what you need to know about astronomy, along comes a book like "Extreme Cosmos!" I knew there was a black hole at the Milky Way Centre - and I had a pretty good idea that it was not a good place to be - but I had no concept that it was capable of ejecting stars right out of the galaxy and that astronomers have actually located one of those stars, moving at 2.5 million kilometres per hour!

One could argue that not only is the Cosmos extreme but so, too, is the author himself. Bryan Gaensler is a youthful scientist, packed with extreme experience at the cutting edge of modern astronomy. Yet, very little reference to Bryan's personal successes as an astronomer have been included in Extreme Cosmos, which says much for his modesty but also says much about his book. I was in an extreme hurry to buy it. I had been impressed (extremely) by the author's talks to MAS and I was aware of his (extreme) achievements and his growing reputation as an elite astronomer, so I was very keen to read this, his first book.

Currently Professor of Astronomy at Sydney Institute for Astronomy; Chair of the SKA Coordinating Committee; Director of CAASTRO; and Patron of Macarthur Astronomical Society - it's an impressive CV and his research includes ground-breaking work on Magnetars (Neutron Stars with unimaginably large magnetic fields); mapping the magnetic fields of remote galaxies; and very recently he was the first to image the 'snake-like' structure of intersteller space.

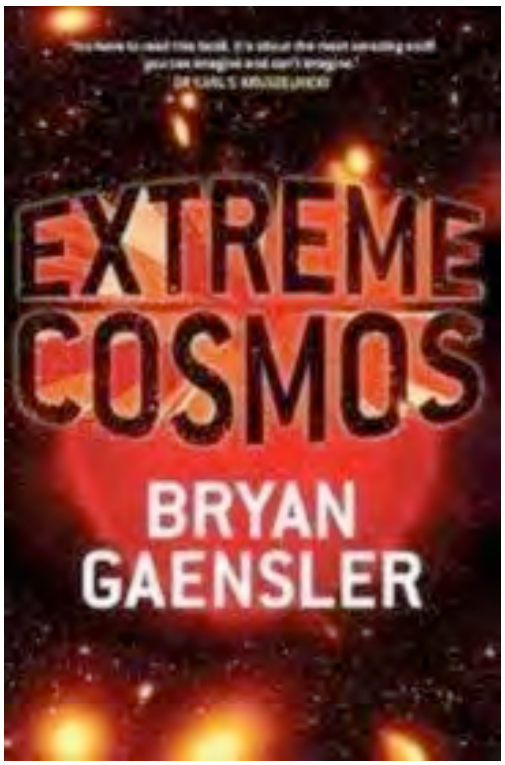
Yet he has not used his book as a vehicle to promote the astonishing results of his own research - maybe that will come next time. Instead, he has used it to catalogue the extremes which have been discovered mainly by other astronomers, a kind of up-to-the-minute Guiness Book of Records for astronomy; or a statement of our understanding of objects in the Universe at this point in time. Want to know the hottest and coolest places in the Universe? The brightest gamma-ray burst or the fastest spinning neutron star? The biggest/fastest/heaviest/densest objects? The smallest? The extremes of gravity and magnetism? It's in the book.

Bryan Gaensler's speaking style in his talks at MAS - and in recordings of public lectures and media interviews that I have heard - are consistently authoritative, informative, factual, yet easy-going. His writing style in "Extreme Cosmos" reflects that. He is one of those people with a knack for patiently communicating science to anyone interested enough to listen. Good science communicators have been in short supply since the passing of Carl Sagan - and Bryan Gaensler goes a considerable way to filling that gap.

What is the mass of the Universe? What is the fastest star? What is the life expectancy of a red dwarf star? How bright is a supernova? Extreme Cosmos answers all these questions. It is not just a book for life-long astronomy enthusiasts, it is also eminently suitable for newcomers to astronomy - but whatever your level of interest in astronomy, this book will teach you many things about the Universe that you didn't know!

The Universe is a very extreme place. How do we know? Bryan told us so!

Bryan Gaensler will be back at MAS again on 21st November for our final Macarthur Astronomy Forum.



macarthur astronomy Forum

November's Speaker

Prof. Bryan Gaensler

The Universe is all about extremes. Space has a temperature of 270 degrees C below freezing. Stars die in catastrophic supernova explosions a billion times brighter than the Sun. A black hole can generate 10 million trillion volts of electricity. Hypergiants are stars are 2 billion kilometres across - larger than the orbit of the planet Jupiter.

"*Extreme Cosmos*" is an exciting new best-selling book by our Patron, Professor Bryan Gaensler, Professor of Astronomy at the Sydney Institute for Astronomy (at University of Sydney) and as Director of **CAASTRO**, (The ARC Centre for All Sky Astro-physics) he is working to establish Australia as the world-leader in wide-field radio and optical astronomy. The CAASTRO team aims to answer major unsolved problems in astronomy and will bring Australia's top astronomers together into a focused collaboration, to cement Australia's reputation as an international leader in astrophysical research, and to build unique expertise in wide-field radio and optical astronomy.

Bryan's talk to the Macarthur Astronomy Forum will consider the extremes of temperature, light, time, size, speed, mass, sound, electricity & magnetism, gravity and density which are known to exist in this astonishing Universe.

“Extreme Cosmos" is available from www.bookshop.unsw.edu.au . You may also purchase an electronic copy from I-Books. MAS recommends this book to all members and non-members. Buy it now and Bryan will autograph it for you on 21st November.

Over the last couple of months, Bryan has been interviewed many times on radio about his book, so we are very pleased to be able to hear about it from the author.

Heavens Above!

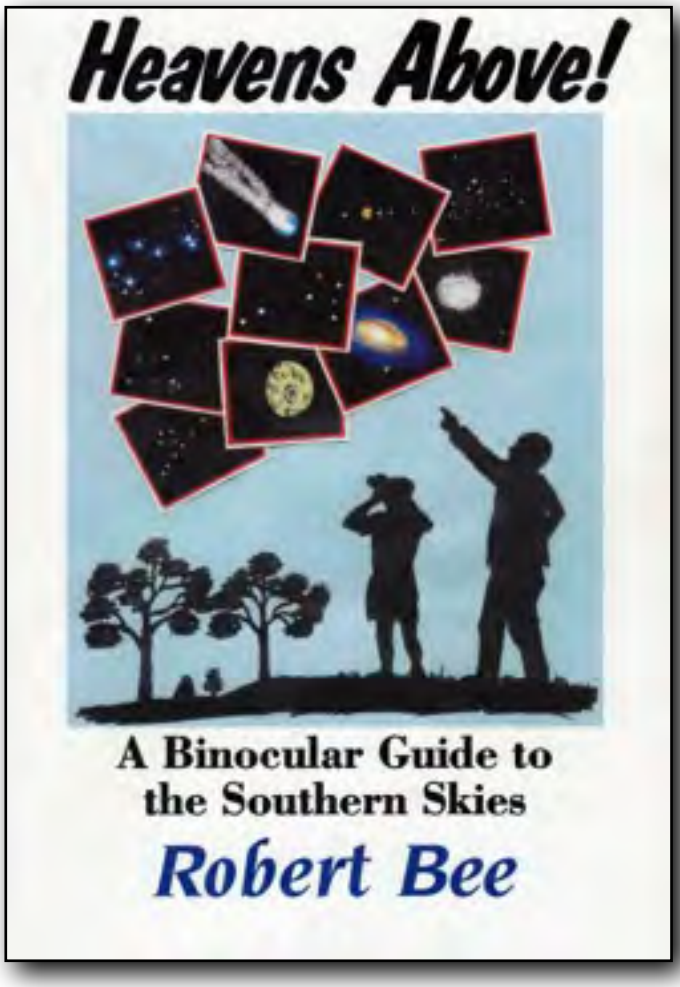
Advertisement

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.

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.

PROGRAM

Advertisement

COMMEMORATING GOVERNOR SIR THOMAS BRISBANE

Royal Society of NSW, The National Trust of Australia (NSW) and Parramatta Park Trust

THURSDAY 1 DECEMBER 2011 at 5.30pm
ANNIE WYATT ROOM, The NATIONAL TRUST, OBSERVATORY HILL, SYDNEY

5.30 - 6.00	Refreshments
6.00 – 6.15	Welcome by **Will Holmes à Court**, CEO, The National Trust **John Hardie**, President, Royal Society of NSW **Christopher Levins**, Director, Parramatta Park Trust
6.15 – 6.45	Dr Ragbir Bhathal (University of Western Sydney): A Governor's Observatory.
6.45 – 7.15	Dr Peter Tyler (Royal Society of NSW): Sir Thomas Brisbane – Patron of Colonial Science.
7.15 – 7.45	Associate Professor Carol Liston (University of Western Sydney): Sir Thomas Brisbane – An Astronomical Governor.
7.45 – 8.00	Questions & Discussion.

Registration Fee: $10 cash payable on the night. RSVP: National Trust of Australia (NSW) 02 9258 0142 or email rsvp@nationaltrust.com.au – please indicate that you are attending the Governor Brisbane Lecture.

SATURDAY 3 DECEMBER 2011 at 2.00pm
PARRAMATTA PARK, PARRAMATTA

2.00 – 4.00	Talk and guided tour of Observatory remains: Anne Bickford, Director, Archaeology and Heritage Pty Ltd. Brisbane's Legacy - Tour of Old Government House, Parramatta Park, Parramatta David Hoffman, Manager Old Government House Meet at Reception of Old Government House, Parramatta Park at 2 pm.
Fees	**$9** General , **$6** Concession, Members of The National Trust & Royal Society of NSW
To Book	**02 9635 8149**
	ENJOY LUNCH AT LACHLANS'S CAFE BEFORE THE EVENT

PARRAMATTA PARK TRUST

NATIONAL TRUST

Asteroid 2005 YU55

From the vantage point of Brisbane, Near-Earth asteroid 2005 YU55 passed within 0.85 lunar distances from the Earth on November 9, 2011. This Near Earth Asteroid was discovered on December 28, 2005 and results from the Arecibo radar show it to be a very dark, nearly spherical object some 400 meters in diameter. The wavy profile of the track is more the result of the gusty winds hitting the imaging rig rather than the body itself tumbling!

I managed to record the passage of this relatively large object as it glided across the moonlit skies of Brisbane on 9th Nov 2011, capturing 42 x 10 sec images between 7:41pm and 7:54pm AEST (UT+10h). My wife was comforted by the fact that I was keeping watch outside, recording 2005 YU55's silent passage, whilst she slept safely indoors.

Dennis Simmons
'Ice In Space' Member

'A Christmas Pudding Enterprise'

Robert Bee

Our mother had decided
To make her own this year
And give to all our family
A special cause for cheer.

She's found her mother's recipe,
It's not hard, for goodness sake,
After all, a Christmas pudding
Is just another type of cake.

She shopped for the ingredients,
She really went bananas
With figs and currents, raisins, dates,
Glazed cherries and sultanas.

All chopped up, tossed into a bowl,
The biggest that was handy,
Then mixed with eggs and orange juice
And rich Napoleon brandy.

She poured it in and stirred it round,
She whisked and blended madly,
You didn't have to be Einstein
To see it could end badly.

The kitchen soon was in a mess,
The bench and floor, disaster,
But the crunch of egg shells 'neath her feet
Just spurred her on still faster.

For Mum by now was in the groove,
She'd found the pudd's quintessence,
So in went ginger, orange rind,
Bread crumbs and lemon essence.

Sugar followed, then… oh dear
We heard our mad Mum mutter
"I've forgotten something… what… I know"
In went the melted butter.

The bowl was full, right to the brim
And now she had to boil it,
Wrapped in cloth of calico
Otherwise she'd spoil it.

At least that's what grandma's recipe said
And Mum was doomed to follow
So she cut up Dad's best Star Trek shirt
Much to his great sorrow.

The shirt was barely large enough
To keep the soggy pudding in

And as Mum struggled to tie it up
Spock gave a wide enigmatic grin.

On the other side Kirk's calm command
To "boldly go" failed on the spot
As Enterprise was stuck mid-warp
Where Mum had tied her granny's knot.

Mum struggled to lift the bundle up
And put it in the boiling pot,
But the eggs and bread crumbs on the floor
Really didn't help a lot.

She sat there, dazed, upon her bum
While Dad approached with wicked grin
And suggested, pointing to the cloth
That she simply should have beamed it in.

It boiled for hours, ten in fact
Till Mum was sure it was fully cooked,
Then she carried it out to the pergola
And hung it up, securely hooked.

And as she gazed upon it proudly,
Hanging just as she had dreamed
A sudden thought sprang from her memory,
She froze, she gasped and then she screamed.

She cried, she ranted, it was awful
To see your mother lose her senses.
"What is it?" we asked, "what is the matter?"
"I forgot", she sobbed, "the bloody threepences."

Our mother had decided
To make her own this year
And give to all our family
A special cause for cheer.

That pudding, it was marvelous,
The best we'd ever tasted
And as for silly threepences
Their riches would be wasted.

For we knew as we stood beneath that pudd
As her enterprise hung above
That Mum had given everything,
Her heart, her soul, her love.

M.A.S. HYSTERIA !!!