macarthur astronomical society

prime focus

monthly journal of the M.A.S.

Volume 15, Issue 3 March 2010

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President's Report: John Rombi

Welcome everyone to our March meeting; we are already coming to the end of ¼ of 2010! The inclement weather continues, and so does our lack of observing time.

Mars' opposition has come and gone, and my time actually observing Mars has been 20mins. Luckily that time was well spent, with a clean clear sky that gave sharp views of the many surface features.

Saturn is now high in the sky at a decent hour of the night, the rings are starting to open up to allow us a better view. Make sure that you take advantage of any clear sky to observe this large beautiful object.

Of course, don't forget (my favourite) Deep Sky Objects. If you would like to take up Deep Sky Observing, please don't hesitate to contact me. I will be able to help you with tips, maps etc.

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MAS Dates 2010

March 2010		August 2010	
13/3/10	Stargard	07/8/10	The Forest
15/3/10	General Meeting	14/8/10	Stargard
20/3/10	The Forest	16/8/10	General Meeting
April 2010		September 2010	
10/4/10	Stargard	04/9/10	Stargard
12/4/10	General Meeting	11/9/10	The Forest
17/4/10	The Forest	20/9/10	General Meeting
May 2010		October 2010	
08/5/10	Stargard	02/10/10	Stargard
15/5/10	The Forest	09/10/10	The Forest
17/5/10	General Meeting	18/10/10	General Meeting
		30/10/10	Stargard
June 2010		November 2010	
05/6/10	Stargard	06/11/10	The Forest
12/6/10	The Forest	15/11/10	General Meeting
21/6/10	General Meeting		
July 2010		December 2010	
10/7/10	The Forest	04/12/10	The Forest
17/7/10	Stargard	11/12/10	Stargard
19/7/10	General Meeting		

President's Report: John Rombi

In February

MAS was privileged to have World renowned astroimager Dr David Malin pay us a visit. David's presentation was on "Galileo's Legacy"

With the 400th Anniversary of the telescope last year and Galileo's input into its development, it was also an eye opener to hear of Galileo's major contributions to astronomy.

David also brought along a few copies of his new book "Ancient Light" it was good to see that the members bought David's entire inventory. David also autographed each copy.

The Forest

Will be held on the weekend of March 20th. Hopefully the weather will be kind and present us with a clear sky…….ALL NIGHT!

Don't forget to pay Ned Pastor when you ARRIVE. The cost is $8 per person, per night or part there of. This helps offset costs placed on MAS by International House.

Stargard

Will be held this Saturday March 13th, sunset will be at 7.18pm. Gates will be open from 6.00pm.

Public Nights

These nights will be held in March, May, September and November. With the 10th Anniversary of The Domes being celebrated this year, UWS has asked if we could hold nights to celebrate this milestone.

Since I have not received a reply from UWS (up until the publication of this article) the Open Nights are in Limbo for the time being. I will notify all members if this situation changes.

Other Matters

There are some surprises in the mix for 2010; I will let you know as soon as I can tie up some loose ends.

Tonight

I would like to welcome Prof Fred Watson AM; Fred has been a frequent visitor to our monthly meetings over the years. He is The Astronomer in Charge of The Anglo-Australian Telescope at Coonabarabran.

This facility is home to many instruments, particularly the 3.9metre reflector and The 1.2 metre U.K Schmidt.

His fresh, uncomplicated, but very informative presentations have always been met with a big turnout. On Australia Day this year Fred was presented with the order of AM, his citation read,

"For service to astronomy, particularly the promotion of space science through public outreach."

This recognition of Fred's work is long overdue and I'm sure that you all will join me in congratulating him on this award.

Fred's presentation will be on *"More Than a Big White Dome - The Past, Present and Future of The Anglo-Australian Observatory"*
Until next month,

Clear Skies, John Rombi.

Secretary's Column: Roger Powell

Our guest speaker last month, Dr. David Malin, provided us with an excellent talk about the discoveries made by the Italian astronomer, Galileo and how his innovative use of the telescope 401 years ago led to the revolution in scientific knowledge that astronomers now take for granted.

Galileo did not have a camera, so he published drawings of his discoveries, which confirmed the Heliocentric Theory of the solar system (proposed earlier by Copernicus). His conclusions were fiercely resisted because they did not match the religious beliefs of the period but eventually his views prevailed and the Geocentric concept of our Solar System was discarded forever.

David Malin spent thirty years taking stunning pictures with the 3.9 metre AAO telescope. He had no need to make sketches or battle with the Vatican. However, his photographic images and the new image processing techniques he pioneered have, like Galileo, pushed the boundaries of science and I sincerely hope to see David back as a guest of the Society before too long.

David has now retired from the AAO but he worked there with Professor Fred Watson for many years. Fred has been a regular visitor to MAS and this month sees him back in our guest speaker slot. Fred needs very little introduction to MAS members and will no doubt provide us with another very informative and witty talk. This one

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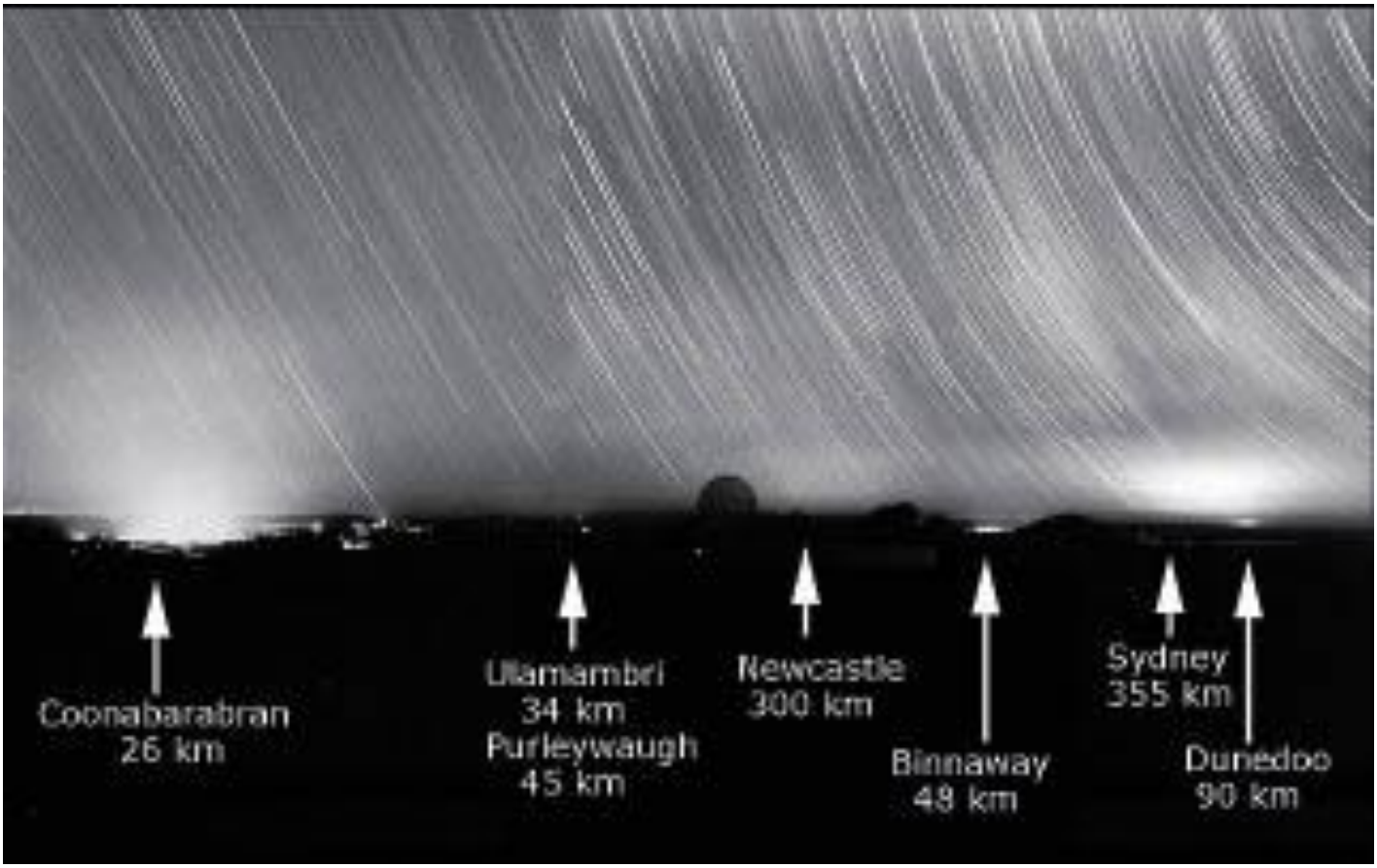
Secretary's Column: Roger Powell



will be about the past, present and future of the AAO telescope that he and David Malin were fortunate enough to use together.

The AAO connection is alive and well at MAS, so the committee is currently investigating the possibility of organising a future visit to the AAO at Siding Springs, which I believe will generate a lot of interest amongst members, especially after the interesting talks from David and Fred. I have no doubt John will expand upon this proposal at the meeting.

One of the things that interests me about the AAO facility is it's mandatory control of light pollution around the observatory. They are able to exercise the kind of control over bad lighting, in a radius of 200 km around the observatory, that we can only dream of here in Macarthur. Despite that, they naturally still suffer some skyglow from nearby Coonabarabran and even Sydney (355 km distant).

This image shows a time exposure taken from the AAO looking towards Coonabarabran (left) and Sydney (right). I doubt if the glow would even be barely observable with the naked eye.

Just imagine if there were adequate restraints on light pollution in and around the Sydney area! The Universe visible from our backyards and deep sky observing sites would be so much better!

However, the light pollution that two or three decades ago was rapidly approaching Campbelltown has now swept past and is beginning to engulf the rest of Macarthur. As we begin to see even more development in the Camden and Oran Park areas it will get worse. There is little we can do about it and the best we can hope for is to stem the tide by raising the issue with our local representatives.

With this in mind, the Management Committee has decided to make a statement about it and has adopted a light pollution policy that will be sent to local councillors and MPs, in the hope that one more voice might lead to better implementation of lighting regulations in the future.

With such cloudy weather recently, there have been very few cloudless evenings, so I am keeping an eye on the long range weather forecast in the hope of a viewing opportunity, which rarely seems to come these days. Mars and Saturn should be looking great over the coming weeks and don't forget to keep an eye out for Venus appearing in the West just after sunset.

MAS: LIGHT POLLUTION POLICY

Roger Powell

Macarthur Astronomical Society draws attention to the growing threat to the once spectacular night skies of the Macarthur region.

Light pollution is wasted energy that consists of two main components:

- Direct glare from street lights, floodlights and general building lighting that spills from the intended task into adjacent areas.
- Uncontrolled light that indiscriminately escapes upwards and contributes to 'sky-glow'.

We are encouraged that the night sky has been Heritage Listed by the NSW National Trust. However we remain deeply concerned about:

- The relentless spread of light pollution with continuing urban sprawl.
- The escalating loss of the cultural heritage that is our window on the Universe.
- The potential complete loss of the night sky to future generations that may grow up never to see the Milky Way or other magnificent night objects.
- The unsustainable waste of energy and resources used to generate misdirected light.
- The financial loss to the public purse, due to wasted energy.
- The damage to the environment due to wasted burning of fossil fuels.
- The dangers posed by uncontrolled glare to motorists and pedestrians.
- The lack of awareness and understanding of the problem at all three tiers of government.

We recognise the need for well designed public and private lighting to prevent accidents, fight crime and to facilitate general convenience. However, bad lighting can be overcome by:

- Stronger regulation and implementation of existing standards by our councillors and members of parliament.
- Thoughtful design of building architecture, to reduce spillage.
- Careful design of external lighting to eliminate glare and spillage.
- A new inspection regime at local level.
- Remedial action to replace or improve existing lighting.
- Introduction of more electrical and mechanical energy control devices.

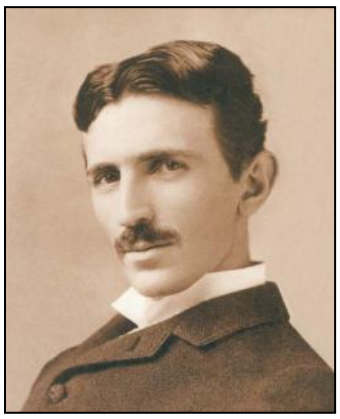
We call upon our elected representatives, architects, building owners, lighting design engineers and the community in general to take heed of the implications of light pollution and to embrace strong measures to reverse the trend.

It is Amazing Who You Meet on the Moon: Part 2 Crater Tesla

David M Jones

My idea of society is that while we are born equal, meaning that we have a right to equal opportunity, all have not the same capacity. Mahatma Gandhi

Crater Tesla is a far-side object, located on the moon at - Latitude 124.7E; Longitude 38.5N - and has a diameter of 43 kilometres (Society, 2009)



If any man were to have proved his extraordinary scientific capacity, it was Nikola Tesla. To condense Tesla's multitude of achievements into such a small article is almost a sin. Suffice to say, if one requires further reading, on a man, described by Hugo Gernsback as: *"the world's greatest inventor, not only at the present, but in all of history"*, there is a veritable plethora of reading material available either on the Internet or through various bookshops.

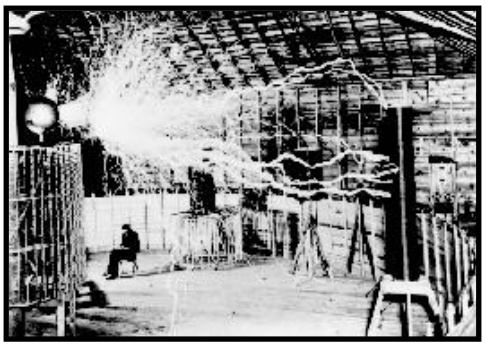
Tesla was born on the 10th July 1856 in Smiljan Croatia (ethnicity Serbian). He died aged 86, on the 7th January 1943 in New York City. Describing himself, he would say, "I am a Serb, but my fatherland is Croatia." During his lifetime he resided in the Austrian Empire, the Kingdom of Hungary, France and the USA. In due course, he held dual Austrian Empire and American citizenship. His field of expertise was in mechanical and electrical engineering.

In his talk last month, Dr David Malin humanized Galileo Galilei by describing his personal characteristics. Such description brings historical figures into sharper focus. Reading about Nikola Tesla, one gets the feeling he might have been quite a snob on one level; but in his defence remember that historically he was Victorian. He was definitely eccentric, and egocentric; his comments to the press often smacked of exhibitionism. Throughout his life, Tesla suffered from what can only be described as serious 'mental aberrations'. On the lecture platform he was described as a weird, stork-like figure, dressed in his white tie and tails. He was naturally tall at nearly seven foot, but on stage he always wore thick cork-soled shoes for his dangerous demonstrations with electricity. As he warmed to his 'act', his high-pitched, almost falsetto voice, would rise in excitement.

Tesla was educated at the Austrian Polytechnic School at Graz and the University of Prague, Czechoslovakia, where he studied mathematics, physics and mechanics for four years. Gifted with an amazing memory, Tesla learned to speak six languages (other sources claim eight) and could perform calculus equations mentally while still a student. Not only did he possess a photographic memory, he was able to use creative visualization with an uncanny yet practical intensity. (Online Highways)

It is suggested that Nikola Tesla could not only visualize his inventions, but he could also 'run and test them' mentally, even to the extent that he could foresee where weak points and wear would occur. He claimed never to have physically created one of his inventions until it was perfected in his mind's eye. This claim was not quite accurate because in later years it is known that he did indeed commit some drawing and plans to paper. Tesla wrote – "*my method is different. I do not rush into actual work. When I get an idea I start at once building it up in my imagination. I change the construction, make improvements and operate the device in my mind. It is absolutely immaterial to me whether I run my turbine in my thought or test it in my shop.* ***I even note if it is out of balance."***

Tesla is credited with many patents, amongst them the system of AC electricity (as opposed to mains DC), wireless communication, and a wide variety of illuminations, some the forerunners to today's fluorescent tubes. Practical applications of Tesla's AC electrical and radio broadcast patents brought contemporary science and engineering to the technological age. These patents form the world's "power grid," and lie at the core of all the following technologies: robotics, radio and television broadcasting, remote control, radar and hybrid-fuel automobiles. Tesla's bladeless disk turbine engine, when coupled with modern materials, proved to be among the most efficient motors ever designed.



Tesla's inventions and discoveries led to the latest in laser and particle-beam weaponry, and may yet resolve the looming world oil crisis. Answers to Tesla's hypothetical questions are as vague as Einstein's "Theory of Everything," yet promise real technological advances when technology catches up. Examples of advanced applications and ongoing research, based on Tesla's patents and theories, include remote control of pilotless spy drones, and NASA's planetary missions using such robots as the

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It is Amazing Who You Meet on the Moon: Part 2 Crater Tesla

David M Jones

little "Rover" on Mars. (Online Highways) Tesla is known to have experimented with X-rays and other very advanced concepts – even venturing into the territory of plasma physics. It should be noted that at the time Nikola Tesla was working with these advanced theories and concepts, the language to even describe such phenomena did not exist.

Tesla was no stranger to controversy, some of which even today would be viewed as outrageous. He argued indefatigably that Mars was signalling America and that communication with the stars would one day be possible. In other controversial areas he would find himself in accord with many today as he spoke of a time when wind and solar power would be developed to 'conserve', as he put it, coal, oil and wood. Windmills, he affirmed should be placed on roofs at the earliest opportunity, to run elevators, pump water, cool houses, and heat them in winter.

He is reported as making some very far-sighted technological predictions, I quote: "*It is more than probable that the household's daily newspapers will be printed wirelessly in the home during the night. The problem of parking automobiles and furnishing separate roads for commercial and pleasure traffic will be solved* [not sure about that one]. *Belted parking towers will arise in our large cities, and roads will be multiplied through sheer necessity, or finally rendered unnecessary when civilisation exchanges wheels for wings. The world's internal reservoirs of heat...will be tapped for industrial purposes. Solar heat would partially supply the needs of the home; wireless energy would supply the remainder; and small vest-pocket instruments, amazingly simple compared to our present telephone, would be used.*

In closing this article on an amazing character, I could do no better than use the words of Dr. B. A. Behrend (Electrical Engineer) in his formal testimonial to Nikola Tesla in 1917; which was said to have been both eloquent and sincere: "Were we to seize and eliminate from our industrial world the results of Mr Tesla's work," he reminded his colleagues, "the wheels of industry would cease to turn, our electric cars and trains would stop, our towns would be dark, our mills would be dead and idle. Yes, so far-reaching is his work that it has become the warp and woof of industry...His name marks an epoch in the advance of electrical science. From that work has sprung a revolution.

Behrend closed by paraphrasing Pope's lines on Newton:

> "Nature and Nature's laws lay hid in night;
> God said, let Tesla be, and all was light."
> (Cheney, 2001)

In his honour the unit of "Magnetic Flux Density" is officially called a "Tesla" and the moon crater "Tesla" is so named.

References:

Cheney, M. (2001). *Tesla man out of time.* New York London Toronto Sydney: A Touchstone Book.

Online Highways. *Nikola Tesla*. Retrieved March 1, 2010, from http://www.u-s-history.com/pages/h1619.html.

Society, T. M. (2009, July 1). *Happy birthday Nikola Tesla*. Retrieved February 23, 2010, from Tesla Memorial Society: http://www.teslasociety.com/happybirthdaytesla2009.htm.

Prime Focus Article Submission

Deadline for article submissions for the next edition of Prime Focus is

Monday 12th April 2010

All Articles can be submitted via email editor@macastro.org.au
Or via snail mail to the MAS Postal address
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