



# PRIME FOCUS

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## MAS Committee

### President

Noel Sharpe

### Vice President

John Rombi

### Secretary

Ian Cook

### Treasurer

Dick Everett

### Committee Members

Lloyd Wright

Bob Bee

Daniel Ross

## MAS Postal Address

P.O. Box 17  
MINTO NSW 2566

Ph: 0415 915 771  
Web: [www.macaastro.org.au](http://www.macaastro.org.au)

### Prime Focus Editor

Kate Johnston  
[cyberniggy@optusnet.com.au](mailto:cyberniggy@optusnet.com.au)

## Presidents Report

Noel Sharpe

Greetings to all our members and guests, tonight we welcome as our special guest speaker the Rev Bob Evans. Bob is well known to many of us as one of this country's most esteemed astronomers specializing in the discoveries of Super Novae. Bob has such an eye for detail that to date he has discovered 40 supernova visually. His memory is such that he can recall the star patterns in over a thousand galaxies. We are honored to have such a distinguished guest visit us tonight and I am sure everyone will make Bob feel most welcome.

## It Happened Last Month.

The founder of Ice In Space, Mike Salway gave us a great talk on how to image with a dobsonian telescope. These days there are so many gadgets to use, from web cams, ccd's, digital cameras, photo shops and regi stacks. How do we keep up with it all?



Its amazing how well Mike has applied himself in just two short years, founding Ice In Space, organising star parties, astrophotography, all this whilst having a career and family, gee I am still trying to find M1 after 11 years, but I reckon I am now in with a chance!

Mike has proven himself to be an excellent presenter and his rotational shots of Jupiter were just amazing, well worth the many hours of time dedicated to get such fine results. Remember to take a peek at the "Ice In Space" website and perhaps join the forum as many members have done.

[www.iceinspace.com.au](http://www.iceinspace.com.au)

### **Society Membership Fees**

Renewal fees are now due so please be timely and see Dick Everett, our treasurer who is more than happy to take your money, for a good cause. Remember if you have joined us from October last year than you are covered until next year.

### **Official Notice of AGM**

Our Annual General Meeting is being held next month, April 16<sup>th</sup> to be exact. Nomination forms for positions are in the back of the attendance book; nominations are to be handed to the secretary either by person or mailed no later than 2<sup>nd</sup> of April.

Such nominations will be posted on the society's website for information purposes.

### **Some Fresh Looks**

Great work by our new editor Kate Johnston on the new Prime Focus journal, well done! Also I am sure that I carry a similar message to say that

it's really important to receive as many contributions as possible coming in, thanks again Kate.

Our website has had a makeover as well, it looks great and is easy to use, great work Martin in giving the site a makeover. Remember folks the website is there to use, so take a peek at

[www.macaastro.org.au](http://www.macaastro.org.au)

At next months AGM we will be handing out a special badge to all those members who have held over 10 years of continuous membership, I am just finalising the list and hope to make mention of the names in next months journal.

I might at this stage confirm that we have now renewed our Public Liability insurance for another year, the renewal was about twenty dollars less than last year so that's good news, suffice to say it's business as usual.

### **The Dates**

31/03/07 Campbelltown Rotary  
Observatory, Earth Watch Blackout  
Night  
24/03/07 Stargard  
13/04/07 Campbelltown Rotary  
Observatory, To Be Confirmed  
14/04/07 Stargard  
16/04/07 Annual General Meeting  
21/04/07 Magellan Observatory, or  
The Forest, members choice.

Sometimes we observe off the schedule and John Rombi will send out Critical MAS emails to members

to advise the location and times. It's really important to reply to those emails if you intend to go out. Recently an instruction was given that replies were needed for such a night, hence to say no one replied and the night was cancelled.

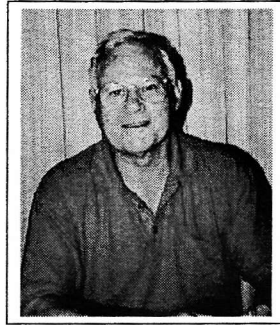
Unfortunately I know of one member who did go out and another was on their way with a car loaded up with equipment. Also I was preparing to go as well but alas we received no confirmations when I called John, so please read the content of the emails, as it's very important.

Also for those going to Magellan please confirm with John as the society will have to pay a cancellation fee if we book and then cancel due to lack of numbers, again this is really important.

### **Acknowledgement.**

In the last issue of the journal I made mention of Bob Bee's considerable contributions to the society, the acknowledgement came mainly as a result of Bob handing over his responsibilities of producing Prime Focus, it seemed like an opportune time for such comments.

For some months now we have known of Ian Cook's intention not to seek nominations for the role for the society's secretary, a post he has filled since 2001. As such we now have two vacancies within the management committee to fill, myself being the other.



MAS Secretary Ian Cook

Certainly going forward this places the society at a point in time where new faces and ideas will be keenly sought, so if you're considering putting your hand up for contributing in any shape or form then this is the time get your nominations in.

Now back to Ian, I am most pleased to publicly thank him for all his efforts in helping to run the club. Ian handles many phone calls from the public, collects and deals with the society's mail and writes out welcome letters to new members. He is very accomplished at showing the night sky to the public at star nights and always maintains an enthusiastic audience.

Ian has acted as our guest speaker on occasions; in particular his talk on the famous Herschel family of astronomers was just fantastic, a little while back he gave a talk on one of his favorite subjects Double Stars, which was very well received.

For over 4 years he wrote the articles "What IC This Month" in Prime Focus, and according to Ian he may contribute further writings to the journal, which would be great. I know with the What IC articles a lot of work went into these and I have received much feedback about the popularity of those articles.

Ian contributed in the various discussions of the committee and takes the minutes of those meetings, types them up and emails those to all members of the committee, a copy of those notes are available at the front desk at our general meetings.

Again another chapter is closing on the good ship MAS, I wish Ian all the best in his astronomic pursuits; on behalf of the society I pass on our great appreciations.

Well that's about it from me, I look forward to seeing everyone either out on the field or at next months AGM, good stargazing to all.

### **Astronomy in Bundjalong National Park (Black Rocks)** **Ursula Braatz**

We went for a holiday from the 12.2.07 to the 1.3.07 to Bundjalong National Park on the coast to our favorite place, where we go every year. My husband likes to go fishing on the beach and at night I like to watch the beautiful starry sky.

There is no light pollution like in Sydney, because in our backyard in Moorebank I don't see many stars. But in the bush the Constellations and the Milky Way are brilliant.

On the 17.2.07 there was a cloudless sky and I took my telescope and my binoculars out. First I observed Venus with naked Eye then with the telescope. It was beautiful orange, before it sat in the west. Later I concentrated on Taurus and Orion. I had the Pleiades and the Hyades and the Great Orion Nebula with my telescope in focus.

The other night I tried to get Alpha Centauri the double star but the air was moist and so it was difficult to get it. Then I swept with the binoculars through the sky and found Omega Centauri the famous star cluster. When a few clouds came I stopped observing.

On the 19.2.07 there was a beautiful orange sickle moon and I observed it with my telescope. When it was waxing the next few nights I saw clearly the craters and the mountains on the Moon. Then I stopped observing because the sky was sometimes cloudy and there was too much moonlight. It was then time to drive home. We had a good time.

## Book Review

### **"STARGAZER – The Life and Times of the Telescope"** **By Fred Watson (342 pp, Allen & Unwin 2004)**

This is one of those rare astronomy books that is both highly informative and delightfully entertaining. It is a pleasure to read and my only disappointment at the end was that it had, in fact, come to an end. It is classic Fred Watson.

Fred starts his tale in 2000, at the "Power Telescopes and Instrumentation into the New Millennium" symposium at Munich. Here he details such phenomena as 'wavelength chauvanism' – the debate between proponents of optical astronomy and 'invisible' wavelengths. Also, he describes how even professional astronomers can come down with aperture fever. Hence, the OWL, a 100m diameter earth-bound reflector.

Then we are taken back to the beginning, telescope wise. We meet Tycho Brahe, the pre-telescope observer extraordinaire. After that, we are into it: who really invented the first telescope? Fred details tantalizing historical references (pre-1608) that seemed to describe the action of a telescope, such as those by Thomas Digges and William Bourne. But were they really describing a telescope?

Spectacles existed before Galileo, but it seems no-one had either the idea or the ability to combine two to give a practical telescope. The story of Hans Lippeshey is a fascinating combination of contemporary politics, warfare and human nature. Fred tells the story in great historical and technical detail, as well as a twinkle in his eye.

Then Galileo gets the Watson treatment. Was he really the first to use a telescope to observe the stars and planets? Consider Thomas Harriot in England who was observing the Moon through a telescope in July 1609, as did his pupil Sir William Lower. In November 1609 a German astronomer Simon Marcus saw 'stars' accompanying Jupiter. This became an issue of dispute between Marcus and Galileo as it was not until 1610 that Galileo started observing Jupiter's moons. It all came down to who was the first to actually publish their findings. A classic example of 'publish or be damned'.

Fred goes on to describe how the basic principles of how a telescope worked came to be understood and developed by a succession of mathematicians, opticians and scientists. This account is full of historical detail and is never boring due to the variety of personalities involved and their circumstances, as

well as Fred's entertaining style of writing. Fred has a way of providing interesting personal information about his historical figures to make us really want that person to succeed, or to feel it in our guts when injustice or tragedy intervenes.

Over the following chapters Fred takes us through the development of various optical configurations, some of which are familiar to us, some completely new (at least to me). They all had to do with different combinations of concave or convex lenses, concave or convex mirrors and the use of mirror holes or offset axes. After the 'Galilean' telescope, there came the 'Keplerian', 'Terrestrial', 'Gregorian', 'Newtonian', 'Cassegraine', 'Nasmyth', 'Schmidt' and others. There seemed to be no end to the ingenuity of telescope makers.

Much of the development of different configurations and the overcoming of optical problems such as spherical aberration and chromatic aberration was the realm of the theoreticians, the mathematicians of the day. Fred, without using any mathematics, describes the political battles that took place within the astronomical community of such theories. Our hero Newton did not hesitate to use his lofty position to support his, ultimately discredited, position on chromatic aberration, to the detriment of a competitor.

Man's urge to build things bigger and bigger is well covered in chapters with titles like "Mirror Image", "Scandal", "The Way to Heaven", "Astronomers Behaving Badly", "Leviathans" and "Heartbreaker." Refracting telescopes just had to be made longer to allow for larger apertures (as F numbers were horrendously large in the early days) and reflectors horrendously larger to allow for even larger mirrors. It seems comical in hindsight but lens and mirror grinding was still in its infancy in the 1700s and 1800s.

The latter chapters of the book deal with the 'modern' telescopes, such as the 100 inch Mt Wilson, the 200 inch Mt Palomar, the 150 inch AAT at Siding Spring, the Great Melbourne Telescope, the Gemini, Subaru and Keck telescopes to name a few.

Typically Fred, he ends the book with an epilogue, cheekily written from the viewpoint of the year 2018.

I thoroughly recommend this book. It was a relaxing and enjoyable read, provided colossal historical and technical background to the telescopes and optical systems we take for granted. I can see myself regularly going back to different chapters to reread and enjoy them as various historical astronomical issues arise.

## Neutrino Trivia

Bob Bee

I've taken a recent fascination to the subject of Particle Physics (thanks to some DVDs on loan from Lloyd – thanks matey.) This has been to provide some light relief from my normal obsession with Cosmology. Since I now have some additional time at my disposal, I have taken to watching one lecture per day (sometimes two) while having lunch. These talks on anti-particles, leptons and bosons, muons, quarks (up, down, charmed, strange, top and bottom), pions, kaons, gluons and every other type of \*-on you can name has been great for the digestion and the following siesta.

It's fascinating stuff. Marion asked one time as she walked by: "Do you really understand that?" And the scary thing was, I actually did. The fact that two hours later I couldn't remember most of it is beside the point. True, that it was only covered at a descriptive level, with no math's or formulae involved made it easier to comprehend.

What I really enjoyed was being taken through the entire (?) history of how knowledge of particle physics developed since the early 1900s and how the well known names of the greats of modern physics contributed to that march of knowledge. Such names as Pauli, Heisenberg, Dirac, Feynman, Schrodinger, Chadwick, Yokawa, Planck, Higgs and so many others. I found it fascinating how

people could develop theories and experiments to predict and then observe particles so small, and sometimes only existing for unimaginable short life-spans, that they are to all normal people, fairy tale stuff. Yet, they make up the total reality that is you and me, the keyboard I am typing this on, the air we breathe, the planet we stand on. All this big stuff, our world and universe, is ultimately made up of all this unimaginable small stuff.

What really struck me was how a large number of particles that physicists now accept as part of the "standard model of particle physics" were in fact predicted as having to exist simply to make the model 'elegant' and symmetrical. That is, a theoretician said: "To make the theory symmetrical, there should be another particle with properties such and such and have an energy of so many mega-electron-volts." So they set up experiments (usually involving higher energy particle accelerators) and, ultimately, there it was, exactly as predicted. Now, THAT's SCIENCE. Theory – prediction- experimental verification.

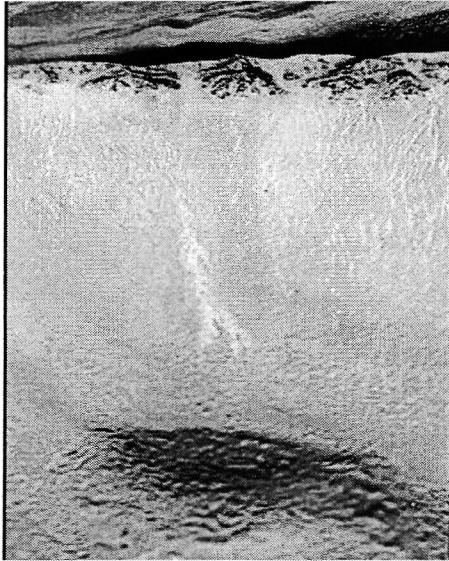
Which gets me back to neutrinos. Theory of the conversion of hydrogen to helium (in the Sun, for example), predicted that each process should give off a very light uncharged particle which Chadwick called the neutrino. The trouble is, they have





## **Crikey, that looks like water!**

Bob Bee



### **Is that white mark evidence of trickling liquid water?**

NASA's Mars Global Surveyor has recently taken photos that have excited planetary scientists looking for evidence of liquid water on Mars. Such evidence would provide encouragement for the possibility that Mars ever harboured life, even if not now. While it is well known that two forms of water exist on Mars (the water vapor in the tenuous atmosphere and the ice at the poles), the existence of liquid water would be necessary for the existence, past to present, of life.

Two particular Martian craters in the Terra Sirenum and the Centauri Montes regions of southern Mars have been under observation and the multiple images over time have allowed them to detect if there have been any changes to their character over that period. In particular, they were looking for changes that suggest the recent flow of liquid water.

Images taken seven years apart have been compared. As well as identifying about 20 newly formed impact craters, there were marks on the crater walls suggesting the trickling of liquid water. They display finger-like branches at the bottoms which could be diversions around small obstacles. Could it be?

One of the scientists involved in the study and a published paper, NASA's Michael Meyer, said that this gives strong evidence that even at this time, liquid water still flows occasionally on Mars' surface.

Even though the water would rapidly freeze and evaporate due to the cold mostly airless conditions on the surface, it would appear that liquid water had lasted long enough to flow on the surface down the crater walls during the seven year observation period. For this to happen, the water must be very close to the surface and, for reasons to yet be understood, seep out from time to time.

Ever the open minded scientists, they allowed that there were a number of possible explanations for the observed white markings in the images. One is that it was simply the movement under gravity of dry dust slipping down the slope. The more

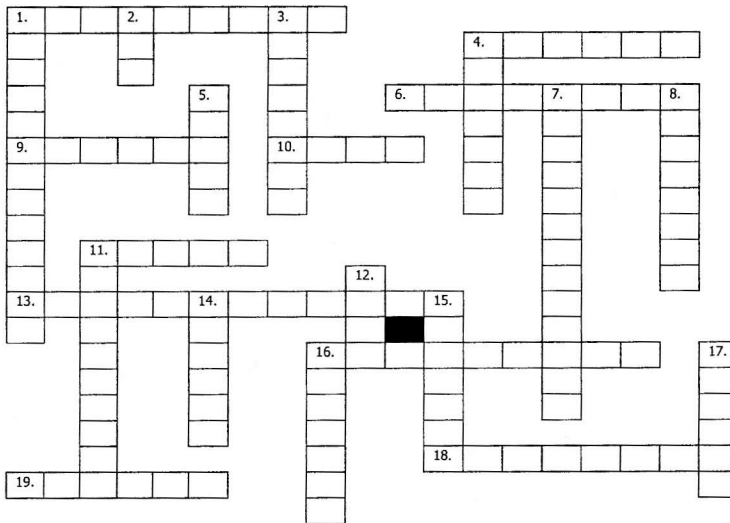
exciting explanation is that there is seeping liquid water which, before it eventually froze, was able to move surface debris down the slope leaving the white scoring.

This adds further fuel to the speculation as to whether life ever existed on Mars. Because of its more hostile environment than Earth, scientists have thought that if life did (or does) exist, it would be in a much more primitive form than exists on Earth, mostly in some form of bacteria hidden from the worst of Mars' environment.

There is no doubt from extensive surveys of land formations and surface features that there were once copious quantities of water on Mars, but where is it now?

This recent discovery simply adds to the number of other questions queuing up for answers. For example, where is the water coming from? How does it stay in liquid form long enough to do what it appears to be doing? Is this an isolated pocket of water on Mars, or is this typical and we just have to search longer and wider? Is there enough (assuming it is water) to be used as a resource for a manned mission to Mars?

Crossword No.1



**Across**

1. A Type of Telescope (9)
4. The name of Pluto's only moon (6)
6. Hawaiian observatory (5,3)
9. German Mathematician who derived the three laws of planetary motion (6)
10. The element that gives Mars its reddish-orange colour (4)
11. The largest moon of Saturn (5)
13. The main element in a C-type asteroid. (12)
16. The brighter an object appears, the lower the numerical value of its .....? (9)
18. A solar year is also known as a ..... year? (8)
19. An astronomical source of electromagnetic energy? (6)

**Down**

1. A term used to describe faint objects outside the solar system (4,3,6)
2. Lies at the centre of the solar system (3)
3. M72 is in this constellation (8)
4. A Group of stars which are gravitationally bound is known as a star .....? (7)
5. The brightest star in the Southern Cross? (5)
7. The brightest star in the constellation of Centaurus? (13)
8. Sometimes referred to as minor planets (8)
11. The first woman in space, Valentina .....? (10)
12. The 2 main parts of a comet are the nucleus, the tail and the .....? (4)
14. Interstellar cloud of dust, gas and plasma (6)
15. A cooler region of the Sun's photosphere. (7)
16. The planet whose year is only 88 days long (7)
17. When viewed from Earth if two stars appear close to each other they are sometimes referred to as being a "....." star? (6)

## Back Focus

Kate Johnston

Hi fellow astronomers – and thanks for reading another edition of Prime Focus. It was great to see once again a number of fantastic contributions this month.

I wanted to use this section to tell you all a bit about your new Prime Focus Editor. I am no match in the Astronomical circle to many of you – but over time with your help I believe that will change.

I spent a few years as what I use to call an astronomers widow! Every Saturday night Daniel would drive off, the big telescope all packed in the car and I wouldn't see him till the early hours of the next morning.... What was all the fuss about .... So I soon started to accompany him to the "viewing nights" – and I was impressed.

My interest soon grew and I too was now a member of MAS.

### **What did I know about Astronomy!**

I knew I had an interest, and it was time to find out more. So here I am the editor of your Newsletter. Through my contributions I am going to take you all along on my quest: **Astronomy and Beyond.**

I hope you all try out the crossword in this month's edition. I certainly learnt a few facts while producing it. What I do ask is if you ever find anything wrong in what I write or an error in the crossword – let me know – if I have a fact wrong better still write me an article explaining the truth!!!! What a great way for us to learn.

Everyone in the Society has a wealth of knowledge in a vast variety of Astronomical topics..... let's share it all around.

## **MAS Website**

**[www.macaastro.org.au](http://www.macaastro.org.au)**

## **MAGELLAN TRIP**

**COULD ALL THE MEMBERS THAT WOULD LIKE TO ATTEND THE MAGELLAN OBSERVATORY IN GOULBURN ON THE WEEKEND OF APRIL 20, 21, 22, PLEASE CONTACT JOHN ROMBI WITH THEIR INTENTIONS. THE PRICE CANNOT BE FINALISED UNTIL I HAVE THE FINAL NUMBERS. GOING BY LAST YEARS ATTENDANCE (OF 8 PEOPLE) IT COMES OUT TO APPROX \$40 PER PERSON FOR EITHER ONE OR TWO NIGHTS. IF YOU HAVE ANY QUESTIONS PLEASE CONTACT JOHN.**

## **Prime Focus Article Submission**

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

**Monday 9<sup>th</sup> April 2007**

All Articles can be submitted via email to  
[cyberpiggy@optusnet.com.au](mailto:cyberpiggy@optusnet.com.au)  
Or via snail mail to the MAS Postal address

Thanks to all the contributors for this month.....