



### From the new Vice President

Hi there, astronomers!

At our recent AGM I answered the call from John Gould, the then Acting-President and Vice President, to volunteer for office for the year to come. I put myself forward and was nominated for Vice President by Committee members and duly appointed. Since I am new to the Shoalhaven Astronomers, I take this opportunity to introduce myself to you.

I was born and grew up in London in the 1950s and 60s. As a boy and youth, my interest in heavenly matters was sparked by Patrick More and "The Sky at Night" on the BBC TV, by the orbital flights of the Sputniks and Yuri Gagarin, by Telstar, the first communication satellite that provided TV pictures in London live from New York, and by the Gemini and Apollo programs and the subsequent moon landings.

(read more from Vice President over page.)

**Next Meeting and AGM Aug 18th 7 pm**

### Contents

*Message from The Vice President Cont...page 2*

*Observation Report Andrew Wood Pages 3-4*

*Astro Events Frank Gross Pages 5-7*

*Wolf Revisited Harry Roberts Pages 8-9*

*Observatory Report Mark Town Pages 10-11*

*Vale Bob Turnbull Page 12*

*More Information Page 13*



### MOON PHASES



**New Moon Aug 16th First Quarter Aug 24th Full Moon Aug 31st Last Quarter Sep 7th**

### Viewing Nights

We are aiming, once daylight saving is over, to make observing at Friday meetings a priority if the weather permits.

New and Last Quarter moon phases are good times for Dark Sky Observing.

## ... Message from the Vice President

Cont...2

I had the magical experience of watching Neil Armstrong step from the lunar module “Eagle” onto the moon, live on TV with pictures captured by the radio telescope - “the dish” - in Parks, New South Wales! Wherever that was! And on the theoretical side, there was Fred Hoyle and colleagues and nucleosynthesis in the stars, along with Hoyle’s Steady State cosmological model that engendered endless disputes with the Big Bang proponents. There was Bernard Lovell and Martin Ryle and their radio telescopes at Jodrell Bank and in Cambridge. In my 20s I lived in Cambridge, being a student and research fellow in the University, and was enthralled by the antics of Stephen Hawking and Roger Penrose, from That Other Place (aka University of Oxford), and their work on black holes, along with Jocelyn Bell and Anthony Hewish and their “Little Green Men” that turned out to be the first pulsar.

In 1980 I left Cambridge for Australia and have never looked back! My professional activities have been in chemistry, biology, and medicine. I retired from my teaching position at UNSW in 2019, but retain my research interests there. Now I tutor some of the University of Wollongong medical students at the Shoalhaven Campus, and when so doing, I look out with pride over the Shoalhaven Observatory! Unlike most members of the SA, I have never been active in practical astronomy, but my interest in cosmology was re-ignited by the discovery of dark energy, dark matter, and the accelerating rate of cosmological expansion – truly remarkable mysteries!

My family and I moved to Berry from Chatswood in Sydney in 2013, where I was astonished to re-discover the magnificence of the night sky, and the beauty of the Milky Way. It is so much more impressive than I remember seeing it in the northern hemisphere! So, inspired by these developments, my daughter, Scarlett, and I joined the SA not long before Covid, being embraced by Eugene O’Connor who began tutoring me in the business of telescopes and practical astronomy. Then Covid struck and everything stopped. Tragically, Eugene passed away just as the SA was recovering after the pandemic faded.

I have come to know Mark Town, John Gould, and Andrew Woods in recent months, and been inspired by their knowledge of astronomy, telescopes, the night sky, electronics, electrical and mechanical engineering, and their administrative skills. They have worked tirelessly to make the Observatory happen, and to help rebuild the club after the ravages of Covid. The Observatory is of profound importance, since it provides access to first class telescopes for direct viewing and for astrophotography, to all SA members. For members like Scarlett and myself, who lack the necessary equipment and knowledge to arrange for these resources at home, it’s truly a gift from the gods. So now the club is in the wonderful position of using these facilities to attract new members to the SA, particularly younger ones whose financial and time resources may be directed elsewhere.

And of course, the Observatory provides the means of inviting the wider community in the Shoalhaven, both young and old, to participate in a personal discovery of the remarkable Universe they live in. These efforts to expand SA membership, and to enhance interaction with the wider community, will be an important focus for the activities of the new Committee.

Very best wishes,

Larry Wakelin  
Vice President

## Observation Report Andrew Wood

### What's on in the Cosmos –August/September 2023

This instalment is dedicated to Robert Turnbull, who as Observation Officer has contributed this entry of the Astroflyer for many years. Bob passed away recently. Our condolences to his wife Jill and other family. Our August 18 meeting is just after New Moon on the 16<sup>th</sup>; peak Deep Sky Observing time. The following New Moon will occur on the night of our September 15 meeting.

#### Moon Phases

New Moon	16 <sup>th</sup> August	Dark all night
First Quarter	24 <sup>th</sup> August	Dark after midnight
Full Moon	31st August	Enjoy the Moon – a Blue Super Moon
Last Quarter	7 <sup>th</sup> September	Dark before midnight
New Moon	15 <sup>th</sup> September	Dark all night

#### Planets

**Mercury** is past its greatest elongation and lower in the west after sunset each evening.

**Venus** is now lost in the Sun's glare in the evening. In the first half of September it shines very brightly in the east before sunrise.

**Mars** Also sinking lower in the evening western sky and will soon be out of sight.

**Jupiter** Get your telescope ready for the giant of the planets. Now a late evening rather than morning object, becoming apparently larger over the coming months. From Aug 19-24, the star sigma-Arietis will appear as a "fifth moon" to the four Galilean Moons.

**Saturn** At opposition on August 27, rising at around sunset and visible all night. Despite being much more distant, Saturn has more moons than Jupiter visible in large aperture telescopes. Although, apart from Titan, they are faint, good telescopes under good observing conditions can pick up at least five more moons. Pages 62 and 67 of *Astronomy 2023*, if you have a copy, illustrate some good configurations during August and September.

**Uranus** moving from the morning into a late evening object during this observing period.

**Neptune** approaching opposition and visible most of the night for anyone who wants to chase it down.

#### Planetary and Lunar Conjunctions

Low above the western horizon on Aug 19, one hour after sunset, Mercury, Mars and the crescent Moon are close in a straight line.

Jupiter and the Moon are adjacent on the night of Sep 4.

Saturn is below the Moon on Aug 30 and above the Moon on Sep 27.

#### Comets

Although faint at, magnitude 12, *Comet C/2020 K1 (Panstarrs)*, is currently circumpolar in the constellation Musca. There are several other faint comets visible. See pages 61 and 65 of *Astronomy 2023* or visit a website such as <https://www.cometwatch.co.uk/current-observable-comets/>.

#### Beyond the Solar System

Looking east soon after dark, the dark lanes of the Milky Way rise toward Scorpius. Below Scorpius, near the constellation Sagittarius (the Archer, though more contemporarily recognised by its teapot-shaped asterism) is the realm of many bright nebulae. Among them are the showcases M8 (the Lagoon), M20 (the Trifid), and M18 (Swan or Omega) nebulae. There are many other Messier objects in the region, including many more nebulae and the bright Globular Clusters M22 and M28.

**Note: we would like to read and hear reports of observations of Solar System and Deep Sky Objects made by members, either visually or via images. Write a report of your observations for the Astroflyer or request a spot to speak at meetings.**

## Observation Report Andrew Wood

Cont...2

**The constellation Scorpius showing the positions of Antares, M4, M6 and M7**



Sagittarius photo by Andrew Wood

## **Origins Federation: Pioneering Collaborative Research into Life Beyond Earth**



Ivan Petricevic  
Posted on March 6, 2023

The Origins Federation, a new multidisciplinary research consortium, has been formed to advance the understanding of the emergence and early evolution of life, as well as its place in the cosmos. This international alliance, which includes some of the world's leading institutions such as The Origins of Life Initiative at Harvard University and the Leverhulme Centre for Life in the Universe at the University of Cambridge, aims to pursue scientific research of interest to its founding members with a long-term perspective and common milestones.

Four leading institutions will create a multidisciplinary research consortium to advance the understanding of the emergence and early evolution of life and its place in the cosmos. The so-called Origins Federation is driven by The Origins of Life Initiative (Harvard University), the Centre for Origin and Prevalence of Life (ETH Zurich), the Center for the Origins of Life (University of Chicago), and the Leverhulme Centre for Life in the Universe (University of Cambridge). The Origins Federation will pursue scientific research topics of interest to its founding centers with a long-term perspective and common milestones.

### **The goals of the Origins Federation**

It will strive to establish a platform to create opportunities for creative and innovative ideas and enable young scientists to pursue a career in this new field. The federation is open to new members, both institutions and individuals, and is committed to developing the necessary mechanisms and structure to achieve this goal, as reported by the University of Cambridge.

Along with Nobel laureate chemist Jack Szostak and astronomer Dimitar Sasselov, Didier Queloz, director of the Centre for Origin and Prevalence of Life at ETH Zurich and the Leverhulme Centre for Life in the Universe

## Astro Events from Frank Gross

Cont...2

at Cambridge, presented this international alliance that brings together the expertise of researchers working on the origins of life in these centers.

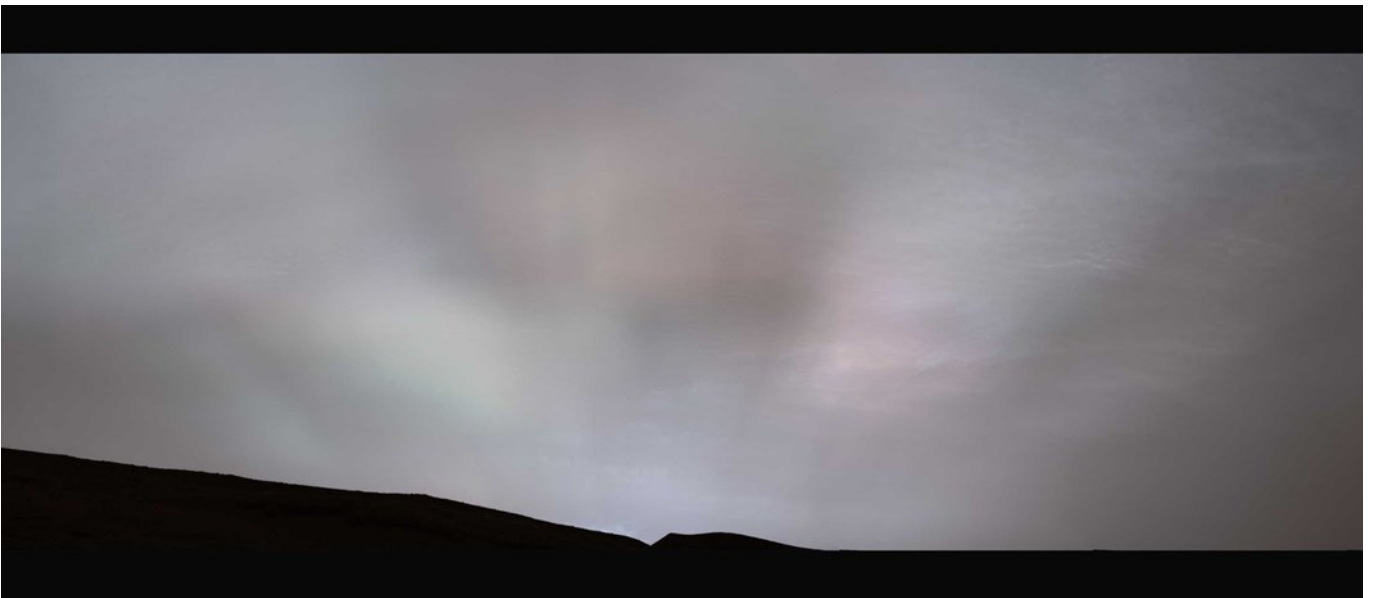
### An extraordinary historical moment

“We are living in an extraordinary historical moment,” says Queloz in a statement. As a doctoral student, Queloz was the first to discover an exoplanet, that is, a planet that orbits a solar-type star outside the Earth’s solar system. A discovery for which he later received the Nobel Prize in Physics.

To date, scientists have discovered more than 5,000 exoplanets and predict the possible existence of trillions more in the Milky Way alone. Each discovery raises more questions than answers about how and why life arose on Earth and whether it exists elsewhere in the universe.

Technological advances, such as the [James Webb Space Telescope](#) and interplanetary missions to Mars, are accelerating access to an overwhelming volume of new observations and data, making it necessary for a multidisciplinary network to converge in order to understand the emergence of life in the universe.

### NASA’s Curiosity Rover Captures Stunning Images of Sun Rays on Mars



[Justin Gurkinic](#)  
Posted on March 6, 2023

NASA's Curiosity Rover has captured incredible images of sun rays on Mars, shedding new light on the planet's atmosphere and weather patterns. These photos, taken in February 2023 during the rover's latest twilight cloud survey, depict a rare phenomenon known as crepuscular rays. The discovery of these rays offers exciting new possibilities for further exploration and research, deepening our understanding of Mars and its potential to support life.

## Astro Events from Frank Gross

Cont...3

NASA's Curiosity rover recently captured breathtaking images of crepuscular rays illuminating a cloud bank on Mars. This was the first time such rays were seen so clearly on the [Red Planet](#). The rover took the images during its [twilight cloud survey](#) in February 2023, which followed its earlier observations of noctilucent clouds in 2021. Unlike most Martian clouds composed of water ice, the clouds in the images appear to be at higher altitudes, possibly made of carbon dioxide ice or dry ice. Clouds on Mars provide valuable insights into its climate, including its composition, temperature, and wind patterns.

### Curiosity data

By analyzing these data, scientists can gain a better understanding of the planet's environment and potential to sustain life. The discovery of these crepuscular rays on Mars is an exciting development for further exploration and research. NASA's Curiosity rover continues to expand our knowledge of the Red Planet with each new discovery. Through its tireless efforts, we can uncover more mysteries of our neighboring planet and unravel the secrets of our solar system.

### A feather-shaped cloud



A feather-shaped cloud on Mars. NASA/JPL-Caltech/MSSS.

On January 27, NASA's Curiosity rover captured a fascinating image of colorful feather-shaped clouds on Mars. These clouds, when illuminated by sunlight, produce a rainbow-like display known as iridescence. In addition to the stunning sun rays image, this recent discovery adds to our understanding of the diverse cloud formations and atmospheric conditions present on the Red Planet.

### Valuable insight

The Curiosity rover continues to provide us with valuable insights into the Martian environment and its potential to support life. NASA's Curiosity Rover is a marvel of modern technology that has been exploring the surface of Mars since 2012. This sophisticated robotic vehicle is equipped with a range of scientific instruments, including a laser spectrometer, a rock-vaporizing drill, and a robotic arm for collecting and analyzing samples. Through its mission, the Curiosity Rover has made numerous groundbreaking discoveries, including the identification of ancient lakebeds and evidence of past water activity on Mars.

It has also provided valuable data on the planet's geology, climate, and potential for sustaining life. Despite being over a decade old, the Curiosity Rover continues to push the boundaries of scientific discovery on Mars. Its latest images of crepuscular rays and iridescent clouds have captured the imagination of people all around the world and offer exciting new insights into the Red Planet's atmosphere. As Curiosity continues to roam across the Martian surface, it promises to provide us with even more extraordinary discoveries and deepen our understanding of this fascinating planet.

## Wolf Revisited by Harry Roberts

### Wolf Revisited

Crater Wolf draws me often to the Sea of Clouds (M. Nubium) to view the unusual landform - a Valentine's Day heart shape, with the pointy end of the heart missing - and to wonder how it got that way? Wolf missed out on being imaged close-up by the Apollo side-view cameras - and only a single "look down" Orbiter view exists, it shows pretty much what we see in Earthly 'scopes.

The challenge with Wolf is to explain the formation's unusual shape. How did this landform come to be high enough to protrude well above the lava at a point close to the centre of the basin where no other high ground survived? Did the Nubium impact produce an uplifted central peak - none of the other basins have them? Clearly Wolf existed before the Nubium lava flooding occurred, so it is an ancient and battered formation - and it must be a high one compared to features nearby.

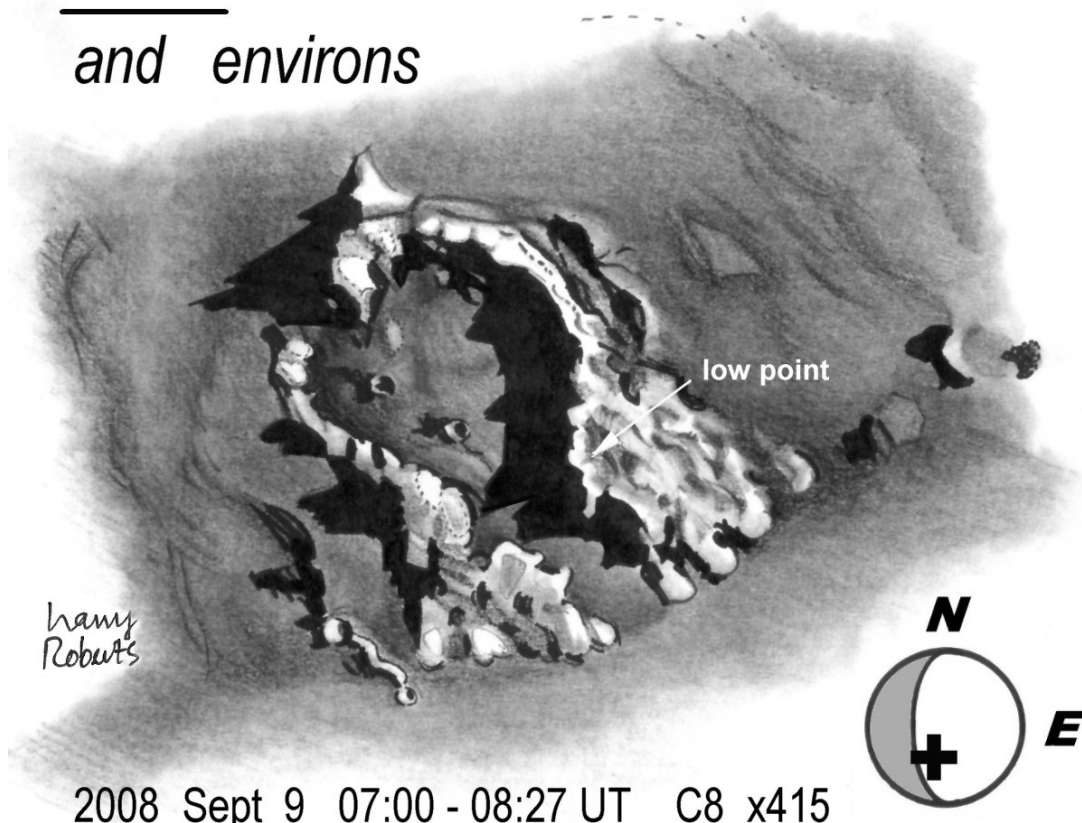
Try as I might I can't believe that the main crater got its heart shape from multiple impact events. The wreath surrounding Wolf is unusually wide and flat-topped, with "toe-like" features leading down to the mare surface on the SE/SW sides. Schultz in "Moon Morphology(1986)" states that "the cloverlike plan is probably the result of multiphased formation along such structural weaknesses. Wolf is interpreted as a caldera that was formed prior to the last stages of mare emplacement"(P 246). I wish I could accept that Wolf is a volcanic caldera - like those found on Earth and Mars - it would be by far the largest on the Moon. Sadly, there are now no accepted volcanic cones on the Moon bigger than 5km, much less Wolf's 25 km diameter!

Wolf's floor is covered by lava that seems darker than the mare surroundings - or is this an illusion? I saw two small fresh craters there, but maps show more. Was Wolf's floor higher than the surroundings it would prove the formation arose as a volcano - but nothing suggests it is. On Wolf's SW side a short bright rille seemed to connect two small craters - and this is probably a lava channel. Strangely, the broad gap in Wolf's rim on the south side is mapped as secondary impact crater Wolf B.

## Wolf

Sol Colon 21.3° Libn lat 4°24', long -1°53'

## and environs





## Wolf Revisited by Harry Roberts

Cont...2

The impressive shadows cast by Wolf's east rim on the crater floor reach about 10km in length (at solar altitude 5°), but equate with a rim only 800m high – so the surviving walls are uneven in height and quite low. Arrowed in the image is a low point in the wall, revealed by the deep notch in the shadows on Wolf's floor. The Wolf formation is ringed by lava ridges giving the impression of a surrounding caldera nearly buried in the mare – note the ridge about ten km to the west throwing shadows across the mare's wrinkled surface.

Point your 'scopes at Wolf, and see if you can unravel its strange genesis.

Clear skies!

## Observatory Report Mark Town

### Observatory Update

The RC-14A , the Esprit 100 and the Evostar 72 are now all mounted on the CEM120 mount (see picture). There is still more to do and the Sunday morning sessions are continuing– Big vote of thanks to those who have assisted! - however the observatory can now be used for some basic operations.

Training in the use of the observatory is now available and will be delivered to interested SA members on a demand basis. To use the observatory you need to do at least the first 3 training modules:

- Work Health & Safety
- Observatory Overview, and Manual Visual Observing.

The training is easy to do and done in the observatory in small groups so each person gets some practical experience of using the systems. The current list of accredited users is provided elsewhere in the AstroFlyer. I encourage all of you to get the training so you can start to enjoy the observatory and what it can offer SA members.

### SA Training Accreditation List

Name	WHS	Observatory Overview	Manual Visual Observing	Basic Computer Assisted Observing	Advanced Computer Assisted Observing	N.I.N.A.
Ann Cameron	Y	Y				
Ian Cameron	Y	Y				
John Gould	Y	Y	Y			
Frank Gross	Y	Y	Y			
Rudolph Henssen	Y					
Lisa Hewitson	Y	Y				
Elanor Hewitson	Y	Y				
Steven Holloway	Y	Y	Y			
Stephen Jones	Y	Y	Y			
George Mavrocordatos	Y	Y				
Chris O’Hanlon	Y					
Ian Scott	Y					
Robert Spruyt	Y					
Mark Town	Y	Y	Y			
Andrew Wood	Y					

## Observatory Report

Cont...2



Fully assembled system

## Vale Robert Turnbull

With heartfelt sadness the Shoalhaven Astronomers note the passing of Robert Turnbull who was a member for many years. He had brought a smile and a lifetime of astronomical knowledge to each and every club meeting he attended. I remember the fine lecture his daughter gave to a packed house on the history of the Soviet Space Program.

Bob he made his own telescope and ground the mirror himself and was the Observation officer for the club producing **Out There** for the AstroFlyer for many years.

Little did most members of the SA know was that Bob was a talented musician who played many different wind instruments. He played in local jazz bands for many years.

A service to celebrate Bob's life was held at the Shoalhaven Crematorium and Lawn Cemetery Chapel on Wednesday 9th August.

Bob will be sorely missed.

Frank Gross (2023)

## More Club News

**The AGM was held at the July 2023 monthly meeting. Elected officials for 2023- 2024**

### **Executive**

President: Frank Gross  
Vice President: Laurence Wakelin  
Frank Gross  
Andrew Wood  
Mark Town  
John Gould  
Ian Scott

Secretary : Andrew Wood  
Treasurer: Frank Gross  
Public Officer; Frank Gross

### **Operation Positions**

Website Manager: Steve Holloway  
Observation Officers: Andrew Wood, Mark Town and John Gould  
Editor: Kaye Johnston  
Librarian: Chris O'Hanlon  
Equipment Officer: Andrew Wood

### **Committee General Members:**

Laurence Wakelin  
Frank Gross  
Andrew Wood  
Mark Town  
John Gould  
Ian Scott

Check out the Astro Flyer on the web site: [www.shoalhavenastronomers.asn.au](http://www.shoalhavenastronomers.asn.au)

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**The deadline for Articles for the Astro Flyer is  
The First Friday of the Month.**

**Editor Kaye Johnston**