



# Astro Flyer



## AUGUST 2024

### Club News

President's Report. G'day

As my first report I would like to introduce myself to members I haven't had the chance to meet yet. I have only been with Shoalhaven Astronomers for six months. Previously I was a member of the Sutherland Astronomical Society, since 2011 and specialise in Wide field Astrophotography. Since being at Shoalhaven Astronomers I have seen the amount of effort and dedication from members who run the club and continually upgrade projects such as the observatory. I would like to thank the previous President Frank Gross for his time and effort last financial year.

Unfortunately weather this year has prevented successful observation nights and use of the observatory to its full potential. The outlook for the rest of the year however is promising. Rain forecast is at or below the median amount till November which hopeful means (touch wood) we can finally get the cobwebs off the mounts and look through some newly collimated scopes.

I look forward to catching up with everyone in the upcoming meetings.  
Very Respectfully  
Lachlan Mabbutt

**The next monthly meeting is on August 16th at 7PM** at the Uni of W'Gong, Shoalhaven Campus just off Yahwal Road on George Evans Road.

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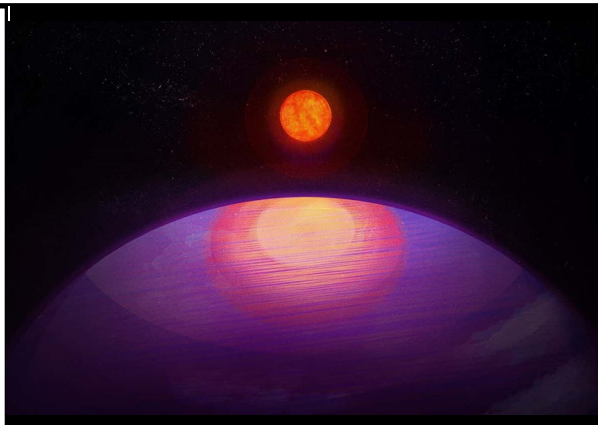
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### MOON PHASES



**New Moon** **First Quarter** **Full Moon** **Last Quarter**  
**Sep 3th** **Sep 11th** **Aug 20th** **Aug 26th**  
Start here ^

### 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.

## Observatory Report Mark Town

### Current Status

The observatory is fully operational and can be used for both basic and more advanced activities. Integration of the observatory systems into a cohesive whole is progressing with the system control program – called N.I.N.A. – able to exercise reliable control over the CEM120 mount, the dome/shutter and the cameras. Baseline tracking performance has improved with the physical realignment of the mount more closely with the southern pole.

### Remote Access

With the assistance of the UOW network engineers, remote access to the observatory – so you can operate the observatory systems from the comfort of a warm room, either on campus or in your own home – has been tested successfully.

If this capability is of interest to you, please take the time to let me know either in person or via email to [marktown@shoal.net.au](mailto:marktown@shoal.net.au) so your committee will know the level of interest within the association.

Assistance and training will be provided to get you setup and operational.

### Training

Refresher training was provided in a session on the 30Jul24 and the recently completed “*Basic Computer Assisted Observing*” training module was successfully completed by two of our members, Steven Jones and Frank Gross.

Congratulations Steve & Frank!

### Observatory Access

Remember, to avoid disappointment, check the access code on the website before going to the observatory!

Time on the observatory can be booked via the Members Area / Observatory Activities page on our website. You will need a username and password to login to the website so message or email myself for that information.

Thanks and  
Best regards,  
Mark Town  
M: 0474859788 Email: [marktown@shoal.net.au](mailto:marktown@shoal.net.au)



## Observation Report Andrew Wood

### What's on in the Cosmos August–September 2024

Our August 16 meeting will coincide with a waxing Gibbous Moon. The club's viewing night at the Shoalhaven Observatory on August 17 will see sunset about 5:30PM with full darkness by 7PM. The waxing Gibbous Moon will be present.

#### Moon Phases

|               |                |  |
|---------------|----------------|--|
| Full Moon     | 20th August    | The Sturgeon Moon – from native American culture<br>[Also a supermoon- a Moon that is full and near the closest point (perigee) in its orbit around Earth] |
| Last Quarter  | 26th August    | Dark before midnight   |
| New Moon      | 3rd September  | Dark all night   |
| First Quarter | 11th September | Dark after midnight  |

#### Planets

**Mercury** Anyone catch a look at Mercury last month? I saw it on July 22 when it was furthest from the Sun; but by the time it was bright enough to see it was shimmering in the atmosphere above the horizon and too low to aim a telescope at from my place. That was the best chance this year and it's now out of sight for a while.

**Venus** has become the "Evening Star" visible in the west after sunset. It is in a slightly gibbous phase with a magnitude of -4 and a diameter of 10.5".

**Mars** is a morning object, rising about 2:30am. It's disc currently being small at 6", its interest visually is conjunctions with other objects. Aug 15-17 sees it within 0.3°-1° of Jupiter. On 9 Sep Mars is close to the bright open star cluster M35.

**Jupiter** has an early morning conjunction with Mars (see above). With a magnitude of -2.2 and a diameter of 36", it is as always also great through a telescope.

**Saturn** is becoming an evening object; and reaches opposition in September. Its magnitude is 0.7 with a diameter of 19". The ring system is very narrowly inclined to us. This can be a period of better observing the planetary disk.

**Uranus** If you wish to go early morning planet observing, Uranus can be found in Taurus along with Mars and Jupiter. Its diameter is 3.7" with a magnitude of 5.7.

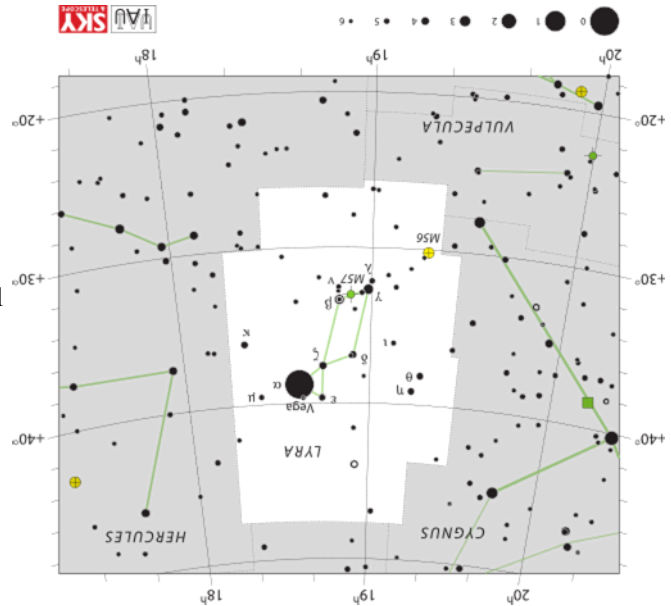
**Neptune** Rising in the early evening, currently in Pisces. Its magnitude is 7.8 with a diameter of 2.4".

## Observation Report Andrew Wood

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### Beyond the Solar System

At this time of year around 9pm, above the northern horizon the bright star Vega, the alpha star in the constellation of Lyra (the Harp, or Lyre). For interest-sake, in the magnitude system, Vega's brightness is given as 0.0. But among the much fainter stars of Lyra lies an iconic deep sky object; the Ring Nebula, M57 (also NGC 6720). This planetary nebula is large, at 70" x 150", and at magnitude 9 is easily visible through most telescopes from a dark location. Of course, the larger the aperture the more detail you will see. It is also easy to locate, lying mid-way between  $\beta$  and  $\gamma$ -Lyrae. [The graphic has been turned upside-down to show how Lyra appears in the southern hemisphere].



M57 is a very colourful nebula in images, as this NASA image shows.

While you are viewing and/or imaging the nebula, Lyra has another bright deep sky object, the globular cluster M56 (NGC 6779), at magnitude 8 and 7' in diameter.

Also have a look at  $\epsilon$ -Lyrae, a wide double star in which the two components are also double – the famous “Double-double” in Lyra.



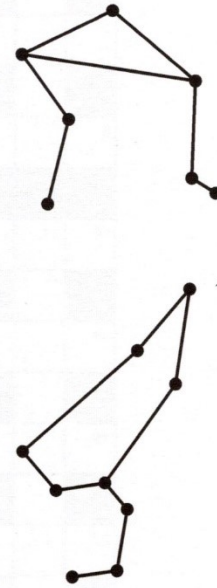
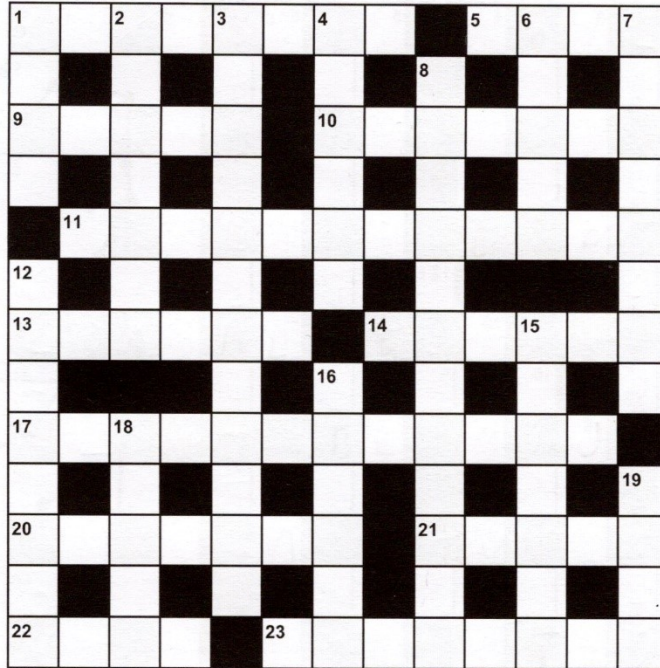
**Always great to read and hear reports of observations of Solar System and Deep Sky Objects made by members, either visual descriptions or via images. Write a report of your observations for the *Astroflyer* or request a spot to speak at meetings.**



## Astro Quiz Andrew Wood

Cont...4

### Crossword August 2024



#### Across

- 1 Dawdlers (8)
- 5 Swedish satellite named after a Norse god (4)
- 9 Not together (5)
- 10 African country (7)
- 11 Faint constellation near Sagittarius and Capricornus (12)
- 13 Third-largest moon of Neptune (6)
- 14 First appearances (6)
- 17 Part of the spectrum observed by the Hubble telescope (7,5)
- 20 Brightest star in Leo (7)
- 21 Fluid made by bees (5)
- 22 Sea eagle (4)
- 23 Short heavy club (8)

#### Down

- 1 Incline (4)
- 2 Slowly moving mass of ice (7)
- 3 Group of rocky objects between the orbits of Mars and Jupiter (8,4)
- 4 From Denmark (6)
- 6 One of the United Arab Emirates (5)
- 7 Narrowly avoided accident (4,4)
- 8 Made poor (12)
- 12 The whole cosmos (8)
- 15 Throw into disorder (7)
- 16 Small carnivorous mammal (6)
- 18 Carl \_\_\_\_ : US astronomer, author and science communicator (5)
- 19 Church song (4)

#### Solution to July 2024



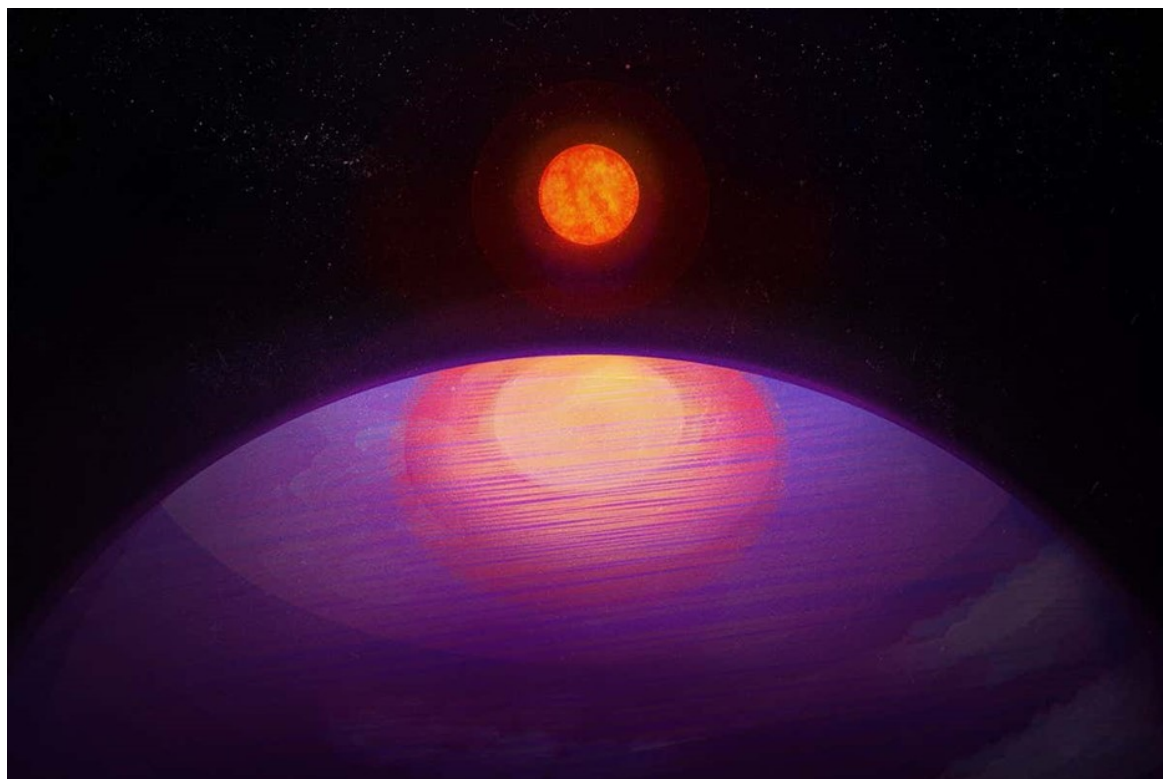
## Astro Events from Frank Gross

### Tiny star found harbouring a huge planet that shouldn't exist

By [Leah Crane](#)

30 November 2023

An enormous planet has been spotted orbiting a small star, and it could not have formed under either of our existing models of the birth of planets.



An

artist's rendering of the view from LHS 3154b towards its tiny host star  
Penn State

An enormous planet orbiting a tiny star may break our ideas about planet formation. Astronomers have found a world more than 13 times as massive as Earth orbiting a star nine times less massive than the sun, and our best predictions of how planets form say that such a world should not exist.

Read more

**Weird, enormous planets may be stolen from stars in 'planetary heists'**

[Suvrath Mahadevan](#) at Pennsylvania State University and his colleagues found this [strange world](#), called LHS 3154b, using a procedure called the radial velocity method. In this method, astronomers look for the signatures of tiny wiggles in the position of a star as it is nudged by the gravity of an orbiting planet.

Their observations indicated that LHS 3154b orbits its star – which is called LHS 3154 and is about 51 light years from Earth – once every 3.7 Earth days, and that it is surprisingly massive. “At this close in of an orbit, we’ve never seen anything like this,” says Mahadevan. “We didn’t believe that something so small, such a dinky star, could have such a large planet.”

Generally, we think that planets form in one of two ways: either the [protoplanetary disc](#) of dust and gas surrounding a young star rapidly collapses under its own gravity to form clumps of material, or large rocks in the disc slowly accrete many smaller ones over a long time. like LHS 3154b.

## Astro Events from Frank Gross

Cont...2

The researchers performed hundreds of simulations of small stars with discs similar to ones that have been observed, and none of them formed a single world that was anything like LHS 3154b.

“Assuming a normal disc, neither of our planet formation theories seem to be able to form this planet,” says Mahadevan. “So this disc may have been much, much larger than we expected.” When the researchers performed the same simulations, this time with ten times as much solid material in the discs, massive worlds with short orbits began to appear.

### A fascinating view of the Toby Jug Nebula

Ivan Petricevic

Posted on July 14, 2023



This is pure cosmic art. A Fascinating View of the Toby Jug Nebula

Resembling an antique English ceramic jug, the glowing nebula IC 2220, fondly known as the Toby Jug Nebula, is a fascinating celestial discovery. Located around 1,200 light-years away in the Carina constellation, it's a bipolar cloud of gas and dust, a creation of the red giant star within.

The phase of a red giant star's life that creates such structures is rather brief, making them a rarity in the cosmos. Consequently, the Toby Jug Nebula provides a precious perspective on stellar evolution.

**Capturing the Celestial Beauty.** An image taken by the Gemini South Telescope, part of the Gemini International Observatory operated by NOIRLab, reveals the exquisite, near-symmetrical double-loop design of the Toby Jug Nebula and its radiant core.

## Astro Events from Frank Gross

Cont...3

These attributes offer key insights into the transformation of aging stars into planetary nebulae. It's a critical view into the life endings of low-to-intermediate mass stars, and the cosmic formations they create, according to NOIRLab. Red Giant HR3126: The Nebula's Creator

The red giant star HR3126, Toby Jug Nebula's progenitor, took form when its hydrogen core got depleted. Consequently, the star started to shrink, its core temperature rose, and the star swelled to up to 400 times its original size. Despite being much younger than our sun at 50 million years, its mass is five times larger.

HR3126's mass allowed it to exhaust its hydrogen and become a red giant more rapidly than our sun. As it grew, it began shedding its outer layers, which led to a gas and dust structure formation. This now reflects light from the star. Infrared studies of the Toby Jug Nebula indicate silica as the likely compound reflecting HR3126's light.

### The Role of a Companion Star

Astronomers believe that the nebula's bipolar structures may result from interactions with a binary companion star. While no companion has been detected for HR3126, a compact material disk was observed around the star. This leads to a theory that an old binary companion might have been consumed within this disk, sparking the nebula's formation.

In about five billion years, our sun will become a red giant, exhausting its hydrogen supply, and eventually transform into a planetary nebula. All that will be left of our Solar System will be a nebula as dazzling as the Toby Jug Nebula, with the cooling sun at its core.



## Club News

### The AGM was held at the July 2024 monthly meeting. Elected officials for 2024- 2025

#### Executive

President: Lachlan Mabbutt  
Vice President: Laurence Wakelin  
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 Members:

Andrew Wood  
Mark Town  
John Gould  
Ian Scott  
Paul Gwynne

Welcome to Lachlan Mabbutt as our new President and to Dr Paul Gwynne as a new committee member.

### Club Notices

#### Astronomy yearbook and calendar

This year, we will not be ordering these publications to sell to members. For anyone wanting to purchase them, the details are as follows:

*Astronomy 2024* can be purchased through Quasar Publishing <https://quasarastronomy.com.au/> . This publication, once it becomes available, can also be found in bookshops and newsagents.

*Astronomy Calendar 2024* can be purchased through Astrovisuals <https://astrovisuals.com/> .

National Australian Convention of Amateur Astronomers (NACAA)

NACAA will be held in Parkes over the Easter weekend of 2024. See <https://nacaa.org.au/2024/programme> .

#### Dear Members of Shoalhaven Astronomers

**This is a reminder** to members who paid last year, and have not yet paid membership for 2024-5, that fees are due. My apologies if there has been a mistake. If you have paid let me know and I will check with our treasurer Frank Gross. I know that in some cases illness may be a factor at the present time.

**Payment (\$30) can be made at club meetings.**

**Or Pay by direct deposit into the club IMB account – Please ensure your name is in the reference section. BSB 641800 Account 009135475**

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**