Shoalhaven Astronomers Inc.
www.shoalhavenastronomers.asn.au

Volume 24
Issue 7

Astro Flyer

JULY 2024

Club News

President's Report. Hi All,

This is the last blurb I'll be writing for the club newsletter. I hope to have a quiet time enjoying the club meetings, listening to the lectures and viewing through the telescopes.

I urge club members to step forward and take on the presidency and treasurership. I am certain you would receive lots of help if you do.

I hope to be more creative and produce some more videos of my own to show to the club. I will also continue to gather astronomical videos for the club meetings. I will also keep gathering copy for the Astroflyer.

See you all at **the next monthly meeting, the AGM, On July 19th at 7PM** at the Uni of W'Gong, Shoalhaven Campus just off Yahwal Road on George Evans Road.

Frank Gross
Public Officer, President and Treasurer

Contents

MOON PHASES

New Moon	First Quarter	Full Moon	Last Quarter
Aug 4th	Aug 13th	Jul 21	Jul 28th

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.

More Information and Club News
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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 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
If you are concerned that the training you have done has departed your brain since you completed it - don't worry! We are running some dedicated training sessions – both during the day and in the night hours – so you can have some practical experience to refresh your memory and give you the confidence to operate the observatory. Future sessions will be advised by email.

Refresher training was provided in a session on the 27Jun24 and the recently completed "***Basic Computer Assisted Observing***" training module was successfully completed by one of our members, Andrew wood. Congratulations Andrew!

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.

Best regards,
Mark Town
M: 0474859788 **Email:** marktown@shoal.net.au

A Night at The observatory Andrew Wood

After a lot of time and effort from dedicated club members, Shoalhaven Astronomers now have a state-of-the-art observatory. Thus far, the facility has been little used. This could be due to our run of anomalous weather that has made any type of astronomy difficult lately. At the first opportunity, I determined that I would get my use of the observatory underway.

Making a booking on the club website was easy. You log-in to the members' area, navigate to the Observatory page and book in. Weather forecasts for Thursday June 27 looked promising; I booked from sunset to midnight. The website page gives the 4-digit code for the lock box attached adjacent to the observatory door. Once you have opened the lock box and extracted the key, you can open the door and enter.

I had undergone basic training for using the smaller of the two telescopes, the 100mm apochromatic refractor, for visual use. It had been some time since the training, however, and Observatory Manager Mark Town met me to go over it again. The basic training explains how to open the dome shutter, rotate the dome and use the handset attached to the mount to slew to objects. Mark also trained me in the next step: computer-assisted automatic rotation of the dome and slewing to objects. This was straightforward for anyone with basic computer use knowledge.

After Mark left me to my own devices, I got my observing underway. I hadn't come with any observing plan. All I brought with me was the *Bright Star Atlas* (Tirion and Skiff), which lists the brighter deep sky objects suitable for small telescopes. I practised slewing around the sky taking in some bright star clusters and nebulae, including well-known examples such the Jewel Box in the Southern Cross; and M22 and the Lagoon Nebula in Sagittarius.

A really visually appealing region was the area around Zeta-Scorpii, a wide double star at the kink of the tail in Scorpius. I will talk about this in my "What's on in the Cosmos" article.

I stayed until around 10pm, going through the supplied checklist to ensure everything was turned off properly. I will be going back at every opportunity, with an observing plan and some of my own eyepieces and filters to supplement those supplied at the observatory.

I also look forward to going to the next steps; learning how to image using the camera attached to the 14-inch telescope.

And I really look forward to going to the website and seeing other members having booked to use this facility, and to hear their reports!

Observation Report Andrew Wood

What's on in the Cosmos July-August 2024

Our July 19 meeting will coincide with a waxing Gibbous Moon. The club's viewing night at the Shoalhaven Observatory on July 20 will see sunset about 5PM with full darkness by 6:30 PM. The almost Full Moon will be present.

Moon Phases

Full Moon	21st July	The Full Buck Moon – from native American culture
Last Quarter	28th July	Dark before midnight
New Moon	4th August	Dark all night
First Quarter	13th August	Dark after midnight

Planets

Mercury is at its best possible viewing position. All that is needed is a clear western horizon after sunset. It will be highest on July 22, 27° from the Sun. It will be magnitude 0.3 with a diameter of 7.8". Telescopically, it will exhibit a just under half-full phase.
Venus is higher each evening in the western twilight and will be around in the coming months. Its phase is nearly full, with a magnitude of -3.9 and a diameter of 10".
Mars is a morning object, rising mid-way between midnight and sunrise. It has a magnitude of 0.8 and a diameter of 6".
Jupiter is also a morning object, with a magnitude of -2.2 and a diameter of 36".
Saturn is rising earlier each night, showing itself in the eastern sky. 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 rises about 1am. Its diameter is 3.6" with a magnitude of 5.7.
Neptune is becoming easier to observe with a telescope. Rising earlier each night, its magnitude is 7.8 with a diameter of 2.4".

Conjunctions

Mars and **Jupiter** will be 0.3° apart on the morning of August 15.
Mercury, **Venus,** the thin **crescent Moon,** with the star **Regulus** in the mix; make a nice sight after sunset on August 6 if you have a clear western horizon.

Beyond the Solar System

As mentioned in my report, "A Night at the Observatory", on the night of June 27, using the 100mm apochromatic refractor, I came across a very visually appealing region of deep sky objects near the wide double star Zeta-Scorpii. Using the 42mm eyepiece supplied at the observatory, the telescope has a very wide field of view of 5° at a magnification of 13X. Within that field I was able to see a complex of open clusters: NGC 6231/6242/6281 and Trumpler 24. Trumpler 24 is a large rich cluster best viewed at low magnification. The other three clusters lie close-by. They are compact but obvious in the wide-field and well worth a look at higher magnification. The observatory also has a 9mm eyepiece yielding a field of view of 1° at a magnification of 60X. NGC 6231 is an especially pretty cluster; very bright, it really sparkles in the eyepiece at the higher power.

Observation Report Andrew Wood

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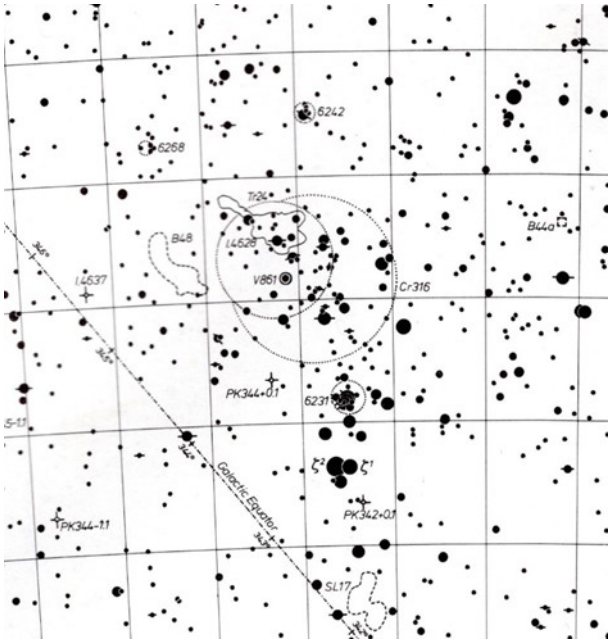
The images below show Scorpius with Zeta-Scorpii indicated, and a scan of the region near Zeta (Greek alphabet symbol ζ) from the atlas *Uranometria*.



It's a rich region of sky I hope to observe more and use the club observatory to image.

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

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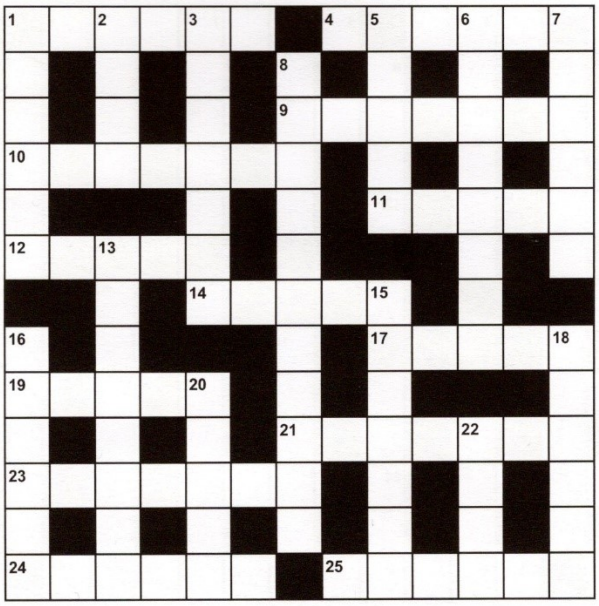
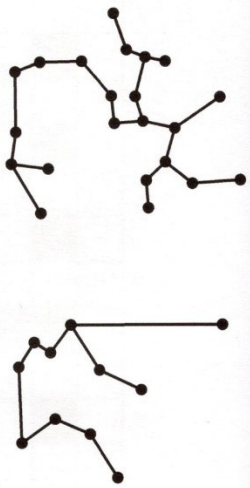
Crossword July





Across

1 Bright area on the surface of the sun apparent before a sunspot (6)
4 Treat with excessive indulgence (6)
9 Wearing away (7)
10 French astronomer who published a famous star catalogue (7)
11 Italian cathedral (5)
12 Competes in a speed contest (5)
14 Greek writer of fables (5)
17 Acquires through merit (5)
19 Curved path of an object going round a planet (5)
21 Robotic lander on Mars (7)
23 One of the largest main-belt asteroids (7)
24 Not so important (6)
25 Get away from (6)

Down

1 Of the past (6)
2 Drinking vessels (4)
3 Moon of Neptune (7)
5 Keep away from (5)
6 Captive (8)
7 District (6)
8 Relating to Earth rather than elsewhere in the universe (11)
13 Beast with three heads (8)
15 Constellation that contains Algol (7)
16 Containerful (6)
18 End a dispute (6)
20 Armistice (5)
22 Celebration; festivity (4)

Solution to June 2024

C	A	M	I	S	O	L	E	■	G	O	A	L
O	■	I	■	P	■	O	■	T	■	D	■	I
N	O	R	M	A	■	W	H	I	T	I	N	G
S	■	A	■	C	■	E	■	T	■	U	■	H
T	A	N	K	E	R	S	■	T	E	M	P	T
E	■	D	■	S	■	T	■	L	■	■	■	F
L	O	A	T	H	E	■	G	E	M	I	N	I
L	■	■	■	U	■	O	■	T	■	N	■	N
A	L	O	F	T	■	B	E	A	R	H	U	G
T	■	A	■	T	■	E	■	T	■	A	■	E
I	N	S	U	L	A	R	■	T	U	B	E	R
O	■	I	■	E	■	O	■	L	■	I	■	E
N	A	S	A	■	I	N	J	E	C	T	E	D

Astro Events from Frank Gross

15-06-2024

Nova explosion of nearby star will soon light up Earth's skies

By Eric Ralls Earth.com staff writer

The vast expanse of the night sky, a canvas dotted with countless stars, is about to unveil a rare and spectacular phenomenon. Brace yourself for a stellar light show as T Coronae Borealis, a seemingly unremarkable star nestled within the constellation Corona Borealis, is on the brink of a dramatic nova explosion.

T Coronae Borealis

T Coronae Borealis, affectionately known as T CrB, is no ordinary star. It's a binary system, a celestial pattern of two stars locked in a gravitational embrace.

At the heart of this cosmic process lies a white dwarf, the incredibly dense remnant of a once-mighty star. Its partner, a bloated red giant, is in the twilight years of its existence, slowly shedding its outer layers under the relentless pull of the white dwarf's gravity.

This ongoing stellar cannibalism sets the stage for an explosive event known as a nova. As the white dwarf siphons hydrogen from its companion, the gas accumulates on its surface, building up pressure and heat.
This process continues until, like a pressure cooker reaching its limit, the white dwarf erupts in a cataclysmic thermonuclear explosion.

Nova explosion from T Coronae Borealis

T CrB is no stranger to these nova explosions. Historical records suggest it's erupted roughly every 80 years, with its most recent outburst occurring in 1946.
This predictable behavior makes T CrB a recurrent nova, a relatively rare phenomenon in the vastness of the cosmos.

The anticipation among astronomers and amateur stargazers is palpable, as T CrB's recent activity mirrors the patterns observed in the lead-up to the 1946 eruption. All signs point to an impending nova, potentially as soon as September 2024.
"Recurrent novae are unpredictable and contrarian," said Dr. Koji Mukai, a fellow astrophysics researcher at NASA Goddard.

Astro Events from Frank Gross

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Witnessing the blaze star's brilliance
When T CrB erupts, its luminosity will increase dramatically, making it visible to the naked eye for several days. The Northern Crown, a constellation shaped like a majestic diadem, will play host to this celestial spectacle. To witness this event, locate the two brightest stars in the Northern Hemisphere: Arcturus and Vega. An imaginary line connecting these stellar beacons will lead you to the Northern Crown, where T CrB lies in wait. "It's a once-in-a-lifetime event that will create a lot of new astronomers out there, giving young people a cosmic event they can observe for themselves, ask their own questions, and collect their own data," said Dr. Rebekah Hounsell, an assistant research scientist specializing in nova events at NASA's Goddard Space Flight Center in Greenbelt, Maryland. "It'll fuel the next generation of scientists."

Significance of the T Coronae Borealis nova explosion
The impending nova isn't merely a visual treat; it's a golden opportunity for scientific exploration. Astronomers worldwide are mobilizing a vast network of telescopes and instruments, both on Earth and in space, to study this event across the entire electromagnetic spectrum. NASA's Fermi Gamma-ray Space Telescope, the James Webb Space Telescope, and a multitude of other observatories will be trained on T CrB, capturing valuable data that will shed light on the complex processes driving these stellar explosions.

The observations will delve into the nova's structure, energy output, and evolution, providing crucial insights into the life cycles of binary star systems. Citizen scientists, with their passion for the night sky, will also play a vital role in this scientific endeavour. Their observations and reports will help pinpoint the exact moment of the eruption, allowing professional astronomers to gather data from the very beginning of this celestial spectacle.

Let the countdown begin!
T CrB's relative proximity to Earth makes it an ideal laboratory for studying novae. The wealth of data that will be collected during the outburst will provide unprecedented detail about the intricate mechanisms behind these stellar explosions.

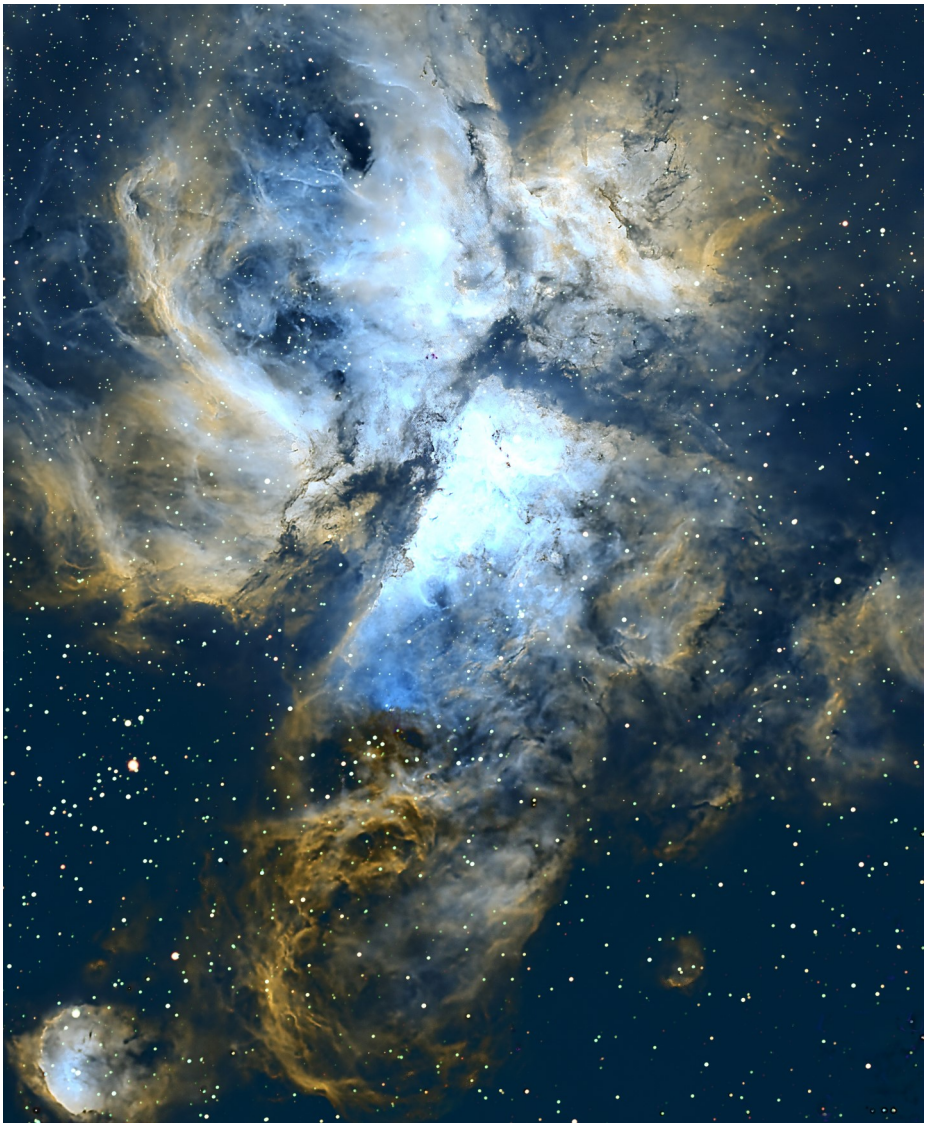
By studying T CrB, scientists hope to gain a deeper understanding of the complex interactions between white dwarfs and their companion stars.

These insights will not only illuminate the specific processes occurring in T CrB but also shed light on the broader dynamics of binary systems throughout the universe.

While the exact timing of T CrB's eruption remains uncertain, the anticipation is building. Astronomers and stargazers alike are eagerly awaiting the moment when this unassuming star transforms into a beacon of cosmic brilliance.
So, mark your calendars for September 2024 and turn your gaze towards the Northern Crown. With a little luck and clear skies, you'll be treated to a front-row seat to one of the universe's most awe-inspiring phenomena.

Astrophotography by John Gould

A photo captured a few months ago, during 2 consecutive nights of clear sky, which was unusual, as cloud at night has made photographing almost impossible ever since.



A 2 panel mosaic of Eta Carina captured as follows:
Telescope: Skywatcher Esprit 100mmED refractor
Mount: Skywatcher EQ6
Operating and capture system: ASIair
Filter: 2" Optolong L-extreme (Ha, S and Oiii)
Camera: ZWO ASI 294 cooled
Subs: 50
Darks/Flats: 30 each
Stacking and processing: Pixinsight.

If any member needs some advice on how to start astrophotography, I am more than happy to help out and pass on all the knowledge (that Steve Jones has taught me!).

Regards
John Gould

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

Andrew Wood
Mark Town
John Gould
Ian Scott

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

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 2023-4, 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

Hoping for your continuing membership – the Shoalhaven Observatory is now open and functional!

Kind Regards Andrew Wood Secretary

Check out the Astro Flyer on the web site: 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