WAS News December 2024

Newsletter for the Wiltshire Astronomical Society

Wiltshire AS Contacts

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Newsletter/Publicity : Simon Barnes

Treasurer and Membership: Sam Franklin

Speaker secretary: Position Vacant

Observing Sessions coordinators: Chris Brooks, Jon Gale,

Web coordinator: Sam Franklin

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Website url: https://wasnet.org.uk/

Follow our Facebook Page https://www.facebook.com/Wiltshire-Astronomical-Society-154077261327030/

Join the members only Facebook Group: https://www.facebook.com/groups/wiltshire.astro.society/

Committee Page:

https://wasnet.org.uk/committee/

Report from the Chair

With the risk of becoming boring, once again I request volunteers to help with committee matters including helping with arranging speakers. Please think about giving back to keep the society active and growing. I cannot overstate how much work goes on in the background by the committee of just three.

We have a number of issues to resolve, that said, looking on the bright side, we have some ideas to try and hopefully these will add some impetus. A committee meeting was postponed due to the biblical level floods, so we have not been able to finalise some discussion points including the proposed member survey.

This month I take the opportunity to thank Sam and Chris for their continued efforts to support me and their enthusiasm for the Society since the start of my tenure as Chair.

As we head toward the close of 2024 and we focus on the festive season, on behalf of the committee I wish you and your families a

A Very Merry Christmas and a Happy New Year!

Upcoming Observing Session

Observing Sessions

Prime Session Friday 27th December
Back Up

Start time 20:00 Hrs.
Please look out for a confirmation email from Chris that the session is either ON or OFF

Location:

Red Lion Pub carpark SN15 2LQ
W3W - airbag.shudders.losing

Upcoming Speakers:

3rd December 2024	**Globular Clusters.**	Owen Brazell. (Zoom)
7th January 2025	**Spectroscopy.**	Hugh Allen. (Zoom)
4th February 2025	**Astrophotography.**	Matthew Terrell. (Zoom)

****Interested in Joining the Society? See https://membermojo.co.uk/was/

November 5th Meeting Report

The meeting opened with some short updates on society news as well as some ideas that are still in discussion with the committee.

If you are thinking about buying a telescope for yourself or maybe a family member, this is the meeting you should have come to this hall meeting, the presentation explained about the steps you need to consider before parting with your hard earned cash. As well explaining about binoculars, the main telescope types and mounts were covered.

Chris Brooks kindly brought in two of his telescopes so that members could physically see some options. His telescopes also were examples of an altazimuth mount as well as the equatorial.

Whilst the presentation was aimed at beginners, there were some questions and comments from experienced observers.

As with all hall meetings the attendees had coffee or tea some general discussions ensued.

December 2024 Zoom Speaker: Owen Brazell **Topic: "Globular Clusters"**

Owen is the current President of the Webb Society, his interest in astronomy was sparked by an attempt to see a comet from his native Toronto. From early years, he kept up his interest in astronomy which culminated in a degree in astronomy from St Andrews University in Scotland and taking though not completing an MSc in Astrophysics. At that time, he also gained an interest in the northern lights. As with many astronomers, finding no living there, he moved into the oil business first in R&D and then as a computer systems designer (this explains his interest in the computer side of astronomy). Despite this he still uses Dobsonian type telescopes ranging from a 4" Genesis-sdf through a 21". The recent plethora of fuzzy objects that move has re-awakened an interest in comets!

His searches for dark skies have taken him from the mountains of Canada through Texas to the Florida Keys as well as to Wales - the only good dark sky site he has found so far in the UK.

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For those that do not know about the Webb Society mentioned in Owen Brazell's oversview above here is a short description about the society and its activities.

The society was founded and named in honour of the Reverend Thomas William Webb (1806-1885), an eminent amateur astronomer whose classic *Celestial Objects for Common Telescopes* has been an inspiration to several generations of amateur astronomers.

The main purpose of the Society is to encourage amateur observations of double stars and 'deep-sky' objects such as star-clusters and nebulae, and to provide a forum where observers can communicate and publish the results of their work.

Observational activities of the Society are coordinated in various sections each under the control of a director with wide experience in the particular field. Currently the sections are:

Double Stars, Nebulae and Clusters and Galaxies.

Results of the Society's work are published quarterly in the Deep Sky Observer/Quarterly Journal consolidated publication.

https://webbdeepsky.com

Moon Phases for December– with rise and set times.

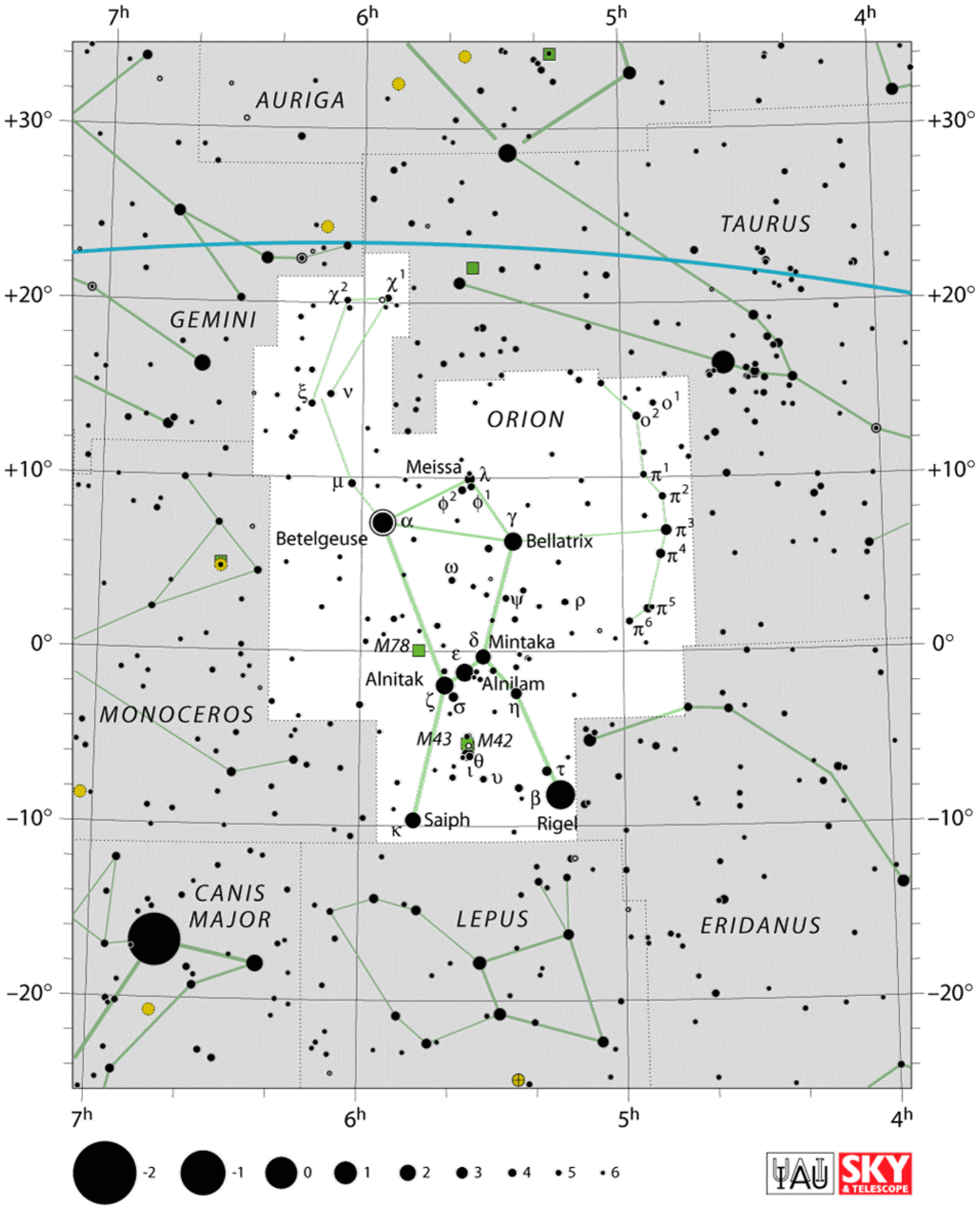
December 2024						
Sun	Mon	Tues	Wed	Thur	Fri	Sat
1 Sun: 07:54 16:05 Moon: 08:38 15:34 New Moon,06:23	2 Sun: 07:55 16:04 Moon: 09:47 16:18	3 Sun: 07:57 16:04 Moon: 10:43 17:19	4 Sun: 07:58 16:03 Moon: 11:25 18:33	5 Sun: 07:59 16:03 Moon: 11:55 19:55	6 Sun: 08:00 16:02 Moon: 12:16 21:20	7 Sun: 08:02 16:02 Moon: 12:32 22:44
8 Sun: 08:03 16:02 Moon: 12:45 ------ First Qtr.,15:28	9 Sun: 08:04 16:02 Moon: 12:58 00:08	10 Sun: 08:05 16:02 Moon: 13:10 01:33	11 Sun: 08:06 16:01 Moon: 13:24 03:00	12 Sun: 08:07 16:01 Moon: 13:42 04:29	13 Sun: 08:08 16:01 Moon: 14:06 06:02	14 Sun: 08:09 16:02 Moon: 14:40 07:33
15 Sun: 08:09 16:02 Moon: 15:31 08:52 Full Moon,09:02	16 Sun: 08:10 16:02 Moon: 16:39 09:54	17 Sun: 08:11 16:02 Moon: 17:58 10:36	18 Sun: 08:12 16:02 Moon: 19:20 11:05	19 Sun: 08:12 16:03 Moon: 20:40 11:25	20 Sun: 08:13 16:03 Moon: 21:56 11:39	21 Sun: 08:13 16:04 Moon: 23:08 11:51
22 Sun: 08:14 16:04 Moon: ------ 12:01 Last Qtr.,22:19	23 Sun: 08:14 16:05 Moon: 00:17 12:10	24 Sun: 08:15 16:05 Moon: 01:27 12:20	25 Sun: 08:15 16:06 Moon: 02:37 12:31	26 Sun: 08:15 16:07 Moon: 03:51 12:45	27 Sun: 08:15 16:08 Moon: 05:06 13:05	28 Sun: 08:16 16:09 Moon: 06:21 13:32
29 Sun: 08:16 16:09 Moon: 07:34 14:11	30 Sun: 08:16 16:10 Moon: 08:35 15:07 New Moon,22:28	31 Sun: 08:16 16:11 Moon: 09:23 16:18	1 Sun: 08:16 16:12 Moon: 09:57 17:41	2 Sun: 08:15 16:13 Moon: 10:21 19:07	3 Sun: 08:15 16:15 Moon: 10:38 20:33	4 Sun: 08:15 16:16 Moon: 10:53 21:58
5 Sun: 08:15 16:17 Moon: 11:05 23:21	6 Sun: 08:14 16:18 Moon: 11:17 ------ First Qtr.,23:57	7 Sun: 08:14 16:19 Moon: 11:30 00:46	8 Sun: 08:13 16:21 Moon: 11:46 02:12	9 Sun: 08:13 16:22 Moon: 12:06 03:41	10 Sun: 08:12 16:24 Moon: 12:35 05:10	11 Sun: 08:12 16:25 Moon: 13:18 06:32

December Meteor Showers

Geminids	Will be at maximum ~14-15 December but displays between 4-20 December 150/hour could be possible. Generally plenty of bright meteors, with a few trains.
Ursids	Maximum on 23 December and displays between 17-26 December. Rates typically 10/hour. Quite a sparce shower. Associated with comet 8P/Tuttle.

Constellation of the Month

Orion



Orion

Orion is among the 48 constellations listed by the 2nd-century astronomer Ptolemy. It is named after a hunter in Greek mythology. It one of the most widely known constellations that is seen in the winter months in the Northern Hemisphere, accordingly is seen suring the summer months in the Southern Hemisphere. It straddles the celestial equator and many interesting objects can be found within its boundary.The best time of the year to see Orion is during the month of January, when the constellation appears higher above the horizon around 9 pm.

As can be seen on the map on page 4, it has very distinctive shape, with the well known trio of stars known as Orions Belt. The stars Betelgeuse and Rigel are in the top 10 of the brightest stars in the sky. Betelguese is red giant with magnate 0.6, sitting top left of the constellation. Rigel being a blue supergiant shines at magnitude 0.3 sits bottom right of the constellation.

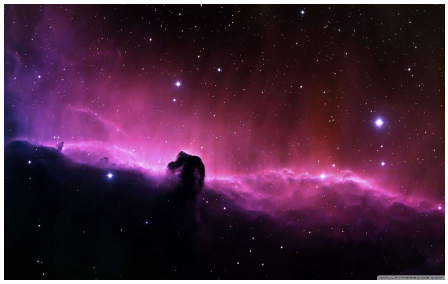
Below Orions "belt" is a smaller line of three stars, Orion's Sword, also known as the hunter's sword. The middle star of the sword is actually the Orion Nebula (Messier 42). This is always worthy of telescopic observation (binoculars too) and is a favourite target of astrophotographers. Within the same locale there is also the Messier 43 nebula and the Running Man Nebula. In the heart of M42 a group of 4 stars reside called Trapezium, a close knit group at 1,500 light years distance.

Near to the star Alnitak lies the emission nebula IC 434, the Flame Nebula (NGC 2024), and the Horsehead Nebula (Barnard 33). They are another favourite target for astrophotographers.

In the region of Orion there are many other nebulous regions, these are beyond naked eye visibility and some only become revealed by imaging. There are no Caldwell objects.

Other objects: Barnards Loop, Running Man Nebula, The Flame Nebula, The Witch Head Nebula and the Cosmic Keyhole.

Orion Nebula



The Horsehead Nebula

Barnards Loop

Running Man Nebula

Suggested planetarium programs:

Stellarium https://stellarium.org (Free)

Carte du Ciel http://www.ap-i.net/skychart/en/download (Free)

There are several other free programs and a quick google search will find these for you. As well as these you can also find programs that require payment e.g., 'TheSky' from Software Bisque.

Most programs allow you to connect your telescope and control it from within the program.

Planets for December 2024

Mercury will be a morning object in December 2024 and visible from mid-December through to the end and reaches inferior conjunction on 6 December. By 23 December 2024, Mercury will be a bright 'morning star' shining at mag. –0.2 and rising nearly two hours before the Sun. Look for it in the South East.

Venus will be visible in the evening about 4 hours after sunset. It shines brightly at –4.0 magnitude. It cab be found in the South-South West sky.

Mars continues to brighten moving toward opposition on 16 January next year.

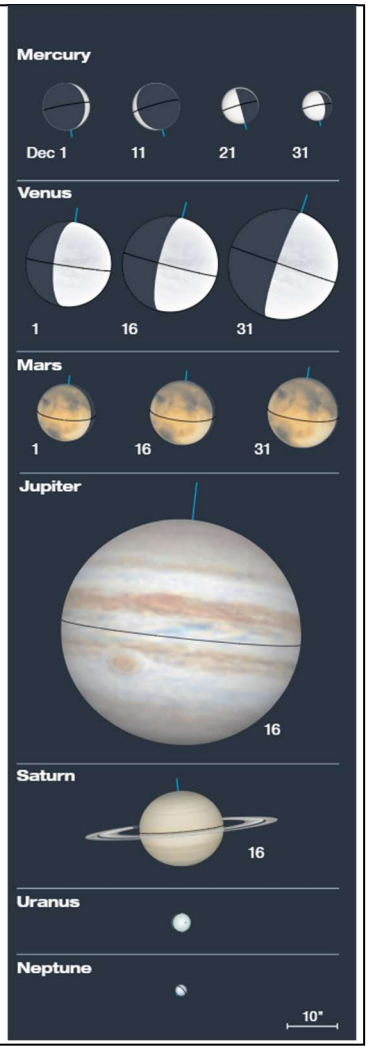
Jupiter reaches opposition on the 7 December and is well placed for observation this month at magnitude ~+2.8. I have already seen some fantastic images from the like of Christopher Go in the Philippines (a fantastic planetary imager). The cloud belts are always interesting due to the rapid rotation of the planet. Look for the planet near to the Hyades in Taurus. Also look out for Galilean moons and their movement day to day.

** Take a look at page 10 for the SPECIAL SECTION for Jupiter images**

Saturn is still high in the sky. The rings are slowly closing heading toward the ring plane crossing on 23 March next year. This is when the rings appear to disappear as they are edge on to our line of sight, Its magnitude is around +0.9 lying in the constellation of Aquarius.

Uranus is at the limit of naked eye visibility at magnitude +5.6. In the east in during the evening it will about 7^{0} away from the Pleiades.

Neptune will need a telescope to spot 14^{o} east of the Planet Saturn, its magnitude is +7.8.



For further information about the current night sky, you can go to various web pages e.g., Sky and Telescope

https://skyandtelescope.org/observing

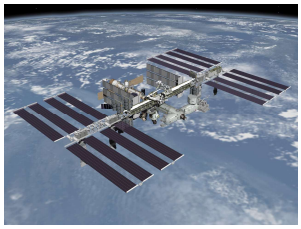
or the British Astronomical Society

https://britastro.org/news/sky-notes

International Space Station Visible Passes 3 December 2024 – 3 January 2025

Date	Bright-ness	Start			Highest point			End			Pass type
Date	(mag)	Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.	
03-Dec	-1.4	17:01:13	10°	W	17:03:59	25°	SSW	17:06:47	10°	SSE	visible
05-Dec	-0.5	16:57:38	10°	WSW	16:59:21	13°	SW	17:01:03	10°	S	visible
13-Dec	-0.5	07:00:12	10°	S	07:02:01	14°	SE	07:03:51	10°	ESE	visible
15-Dec	-1.5	06:53:43	10°	SSW	06:56:31	26°	SSE	06:59:20	10°	E	visible
16-Dec	-1	06:03:30	10°	S	06:05:46	17°	SE	06:08:03	10°	E	visible
17-Dec	-0.7	05:13:57	10°	SSE	05:15:02	11°	SE	05:16:08	10°	ESE	visible
17-Dec	-2.7	06:47:47	10°	SW	06:50:58	44°	SSE	06:54:08	10°	E	visible
18-Dec	-2.1	05:58:17	19°	SSW	06:00:03	31°	SSE	06:03:01	10°	E	visible
19-Dec	-1.3	05:09:46	20°	SE	05:09:46	20°	SE	05:11:43	10°	E	visible
19-Dec	-3.6	06:42:31	13°	WSW	06:45:20	70°	SSE	06:48:37	10°	E	visible
20-Dec	-3.2	05:53:47	47°	SSW	05:54:16	52°	SSE	05:57:29	10°	E	visible
20-Dec	-3.8	07:27:27	10°	W	07:30:46	83°	N	07:34:04	10°	E	visible
21-Dec	-1.2	05:04:54	21°	E	05:04:54	21°	E	05:06:17	10°	E	visible
21-Dec	-3.9	06:37:38	23°	W	06:39:36	89°	N	06:42:54	10°	E	visible
22-Dec	-3.7	05:48:37	72°	ESE	05:48:37	72°	ESE	05:51:42	10°	E	visible
22-Dec	-3.8	07:21:40	10°	W	07:24:59	87°	N	07:28:17	10°	E	visible
23-Dec	-0.9	04:59:29	18°	E	04:59:29	18°	E	05:00:26	10°	E	visible
23-Dec	-3.9	06:32:13	30°	W	06:33:43	83°	N	06:37:01	10°	E	visible
24-Dec	-3.2	05:43:00	57°	ENE	05:43:00	57°	ENE	05:45:43	10°	E	visible
24-Dec	-3.7	07:15:43	10°	W	07:18:58	74°	SSW	07:22:16	10°	ESE	visible
25-Dec	-0.6	04:53:43	15°	E	04:53:43	15°	E	04:54:22	10°	E	visible
25-Dec	-3.9	06:26:26	36°	W	06:27:39	89°	S	06:30:57	10°	E	visible
26-Dec	-2.8	05:37:06	47°	E	05:37:06	47°	E	05:39:34	10°	E	visible
26-Dec	-3.2	07:09:49	12°	W	07:12:44	49°	SSW	07:15:55	10°	SE	visible
27-Dec	-0.4	04:47:44	13°	E	04:47:44	13°	E	04:48:07	10°	E	visible
27-Dec	-3.7	06:20:26	42°	W	06:21:22	66°	SSW	06:24:37	10°	ESE	visible
28-Dec	-2.4	05:31:02	38°	ESE	05:31:02	38°	ESE	05:33:13	10°	ESE	visible
28-Dec	-2.4	07:03:44	13°	W	07:06:12	29°	SSW	07:09:06	10°	SSE	visible
29-Dec	-0.2	04:41:37	11°	E	04:41:37	11°	E	04:41:42	10°	E	visible
29-Dec	-3.2	06:14:19	38°	SW	06:14:49	42°	SSW	06:17:56	10°	SE	visible
30-Dec	-1.8	05:24:53	27°	SE	05:24:53	27°	SE	05:26:35	10°	ESE	visible
30-Dec	-1.7	06:57:35	11°	WSW	06:59:23	16°	SW	07:01:31	10°	S	visible
31-Dec	-2.3	06:08:10	24°	SSW	06:08:10	24°	SSW	06:10:43	10°	SSE	visible
01-Jan	-1.1	05:18:45	16°	SSE	05:18:45	16°	SSE	05:19:33	10°	SE	visible
02-Jan	-1.2	06:02:03	12°	SSW	06:02:03	12°	SSW	06:02:35	10°	S	visible

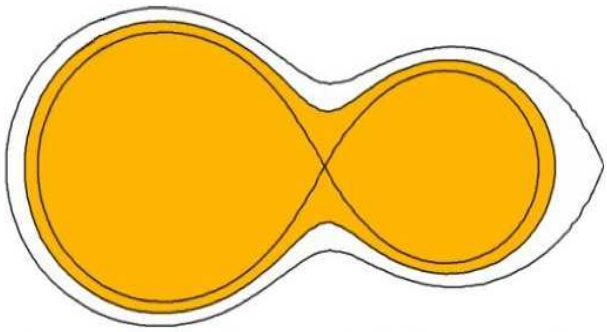
The above data is based on location data for Seend, the Heavens Above web pages. If you need accurate data for your location please go to: https://www.heavens-above.com/



Members contribution — From Tony Vale

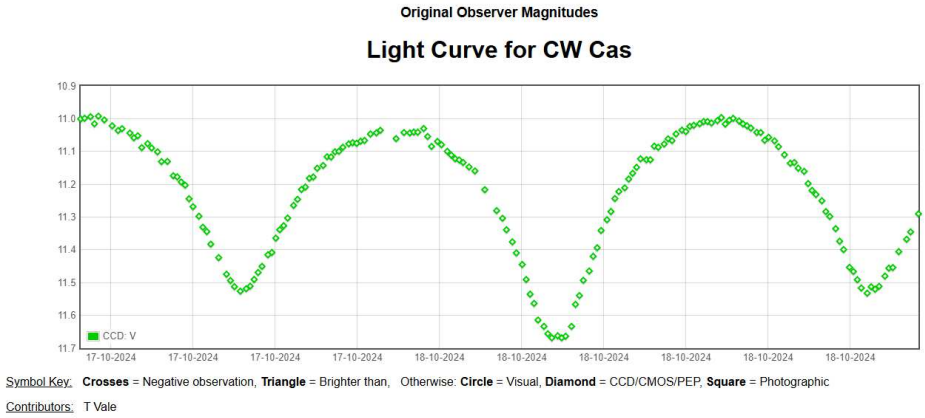
Period change in the eclipsing binary CW Cassiopeia

CW Cassiopeia (or CW Cas for short) is an overcontact eclipsing binary, (sometimes also called a W Uma eclipsing binary). The components in these systems are about sun sized but are so close to each other that they share a common envelope and spin around their common centre of gravity at very high speed. The components of CW Cas complete an orbit every 7 hours and 39 minutes.



In overcontact systems both stars are contained within a common envelope of material.

During my recent visit to Andalucia I was able to obtain 10 hours of photometry of CW Cas on the night of 17th to 18th October. Ten hours of clear sky has been a rare occurrence recently from the UK but it was sufficient to capture a primary eclipse and two secondaries. The first and third maxima reached magnitude 11.0, the second, a little less. This is likely to be the result of starspots visible during the second maximum. Starspots are a feature of these systems and are associated with their high rotation speeds.



By accurately measuring the times of the minima from light curves such as the one above it is possible to track changes in the periods of eclipsing binaries. Some of these changes tell us something about what might be happening in these systems. Others are not easily explained at present. The changes are usually presented as an O-C diagram (O-C is short for "observed minus calculated") and the O-C diagram for CW Cas is shown below. The X axis is the epoch, or number of cycles elapsed since time T_0 measured in Julian date, so the calculated eclipse time in Julian date for epoch n would be T_0 + n.P_{orb} where P_{orb} is the orbital period. If we measure the eclipse times and subtract the calculated times we have a very sensitive method for tracking period changes. A straight, sloping line suggests that the orbital period is not P_{orb} but is not changing. A curved line may indicate a continuously changing period. In the case of CW Cas we see both of these. From epoch = 0 to about epoch 40,000 the curve was an upturned parabola suggesting a continually shortening period. This is probably an indication of mass transfer from the secondary to the primary causing the system to spin up. From epoch 40,000 until today (about epoch = 60,000) the line has been straight, suggesting no further period changes and therefore that the mass transfer ended about 20,000 cycles or about 17 years ago.

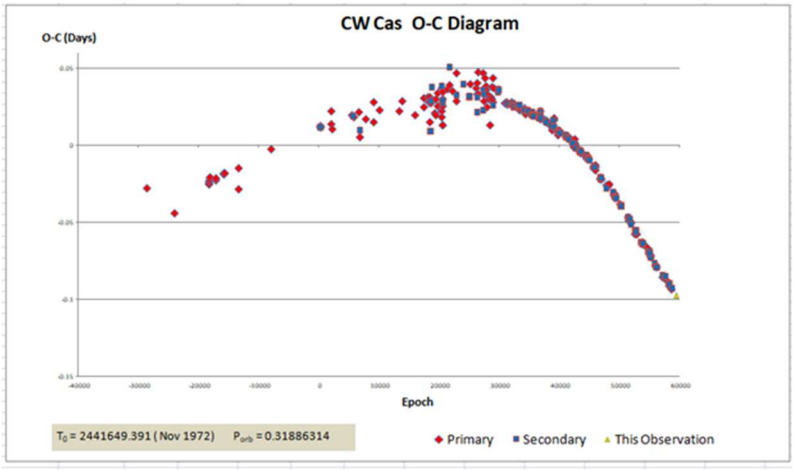
We can estimate roughly how much the period has shortened from the diagram. If we consider the straight line part of the curve from (40000 , 0) to (60000 , -0.1) that tells us that the eclipses are now occurring 0.1 days or 2.4 hours earlier that they

were 20,000 cycles ago or about 0.4s per cycle, so the actual period changes are perhaps smaller than we might think when we first look at the diagram.

Cont'd.....

……..Cont'd

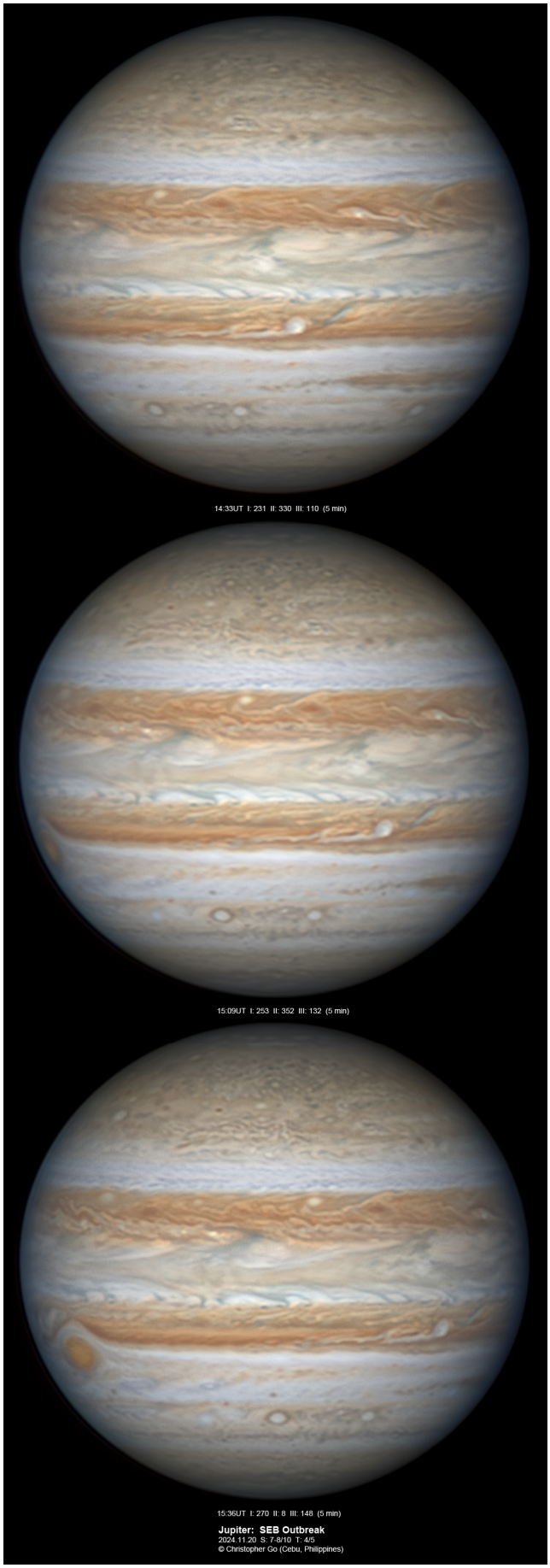
One thing that I should perhaps point out is that the time of the eclipses, both calculated and observed, are not actually Julian date but something called Heliocentric Julian date. If anyone is interested in why this is, I would be very happy to explain. I think the reason is quite interesting - but perhaps that's just me!



Sadly, no submissions, comments etc., have been received for this month from other members.

Observing Sessions

Unfortunately, the first attempt at an observing session this month as well as the back up session were declared OFF. Such is UK astronomy/weather. Fingers crossed for our December sessions!



SPECIAL SECTION The images to the left side were taken by Facebook friend Christopher Go and world renowned planetary photographer who is based in Cebu, Philippines. He is known among other things as discoverer of a storm on Jupiter called "Red Spot Junior"

He has kindly let me publish these photos for this newsletter.

These images were taken at Banilad, Cebu City, Philippines.

All images were taken using a Celestron C14 mounted on an Astrophysics AP900GTO mount. A QHY5III678M cameras were used is these images. RGB is done using a set of Chroma Technology RGB filters on a Starlight Xpress Motorized filter wheel. Methane band images are done using a Chroma Methane Band filter (889nm 18nm bandpass). UV images are done using a Astrodon UV filter. Amplification is done using an Astrophysics Advance Convertible Barlow working at 4.0X.

Image acquisition was done using Torsten Edelmann's Firecapture 2.7 64bit software. All images are NORTH UP! Processing was done using AutoStakkert! and Registax.

https://Astro.christone.net

Peeking through his first set of binoculars at a young age, Christopher Go had no idea how the images being reflected back at him would change his life as he knew it. For four years, Go viewed the world through the lenses of his binoculars and, at the same time, got a closer look into his passion. In 1990, he received his first telescope and began exploring the world of astroimaging. Christopher Go founded the Astronomical Society at the University of San Carlos in his native Philippines, has co-authored articles in numerous scientific journals including Nature. Go is also a current member of the American Astronomical Society and its Division for Planetary Sciences. Go uses a Celestron C14 and a Celestron Skyris camera to capture his astrophotography and the hearts of his avid followers. (Chris's background info taken from Celestron)

*** A short note about Ads: Going forward will not use space in the Newsletter for 'For Sale' items. However, if someone is offering to pass we have started a policy that we will forward messages to members regarding equipment being offered gratis (without charge). If you want to sell items we suggest using https://www.astrobuysell.com/uk/. Or similar. Thank you for your understanding.

Selected Space Flight News

SpaceX's Starship Flight 6 Ship vehicle made what appeared to be a smooth descent and splashdown in the Indian Ocean. The vehicle made a flawless landing burn, pitch over and soft-landing as cameras on a buoy looked on. Unlike SpaceX's Flight 5 test flight, the Ship did not appear to explode after splashdown, but merely tipped over on its side engulfed in flames. SpaceX warned the public not to approach any Starship debris in the ocean from Ship or the Super Heavy booster as a safety measure. The booster 'catch' attempt was aborted and was landed in the sea. I'm sure Space X will have learned much from this flight as they plan for their next flight.

Japan's priceless asteroid Ryugu sample got 'rapidly colonized' by Earth bacteria

Scientists have discovered that a sample of the asteroid Ryugu was overrun with Earth-based life forms after being delivered to our planet. The research shows how successful terrestrial micro-organisms are at colonization, even on extraterrestrial materials. www.space.com/ryugu-asteroid-sample-earth-life-colonization

The US is now at risk of losing to China in the race to send people back to the Moon's surface

With continued delays with vehicles and spacesuits maybe the next language radioed back from the lunar surface will be Mandarin! China's space programme seems to be moving at speed, without significant failures or delays. In April 2024, Chinese space officials announced that the country was on track to put its astronauts on the Moon by 2030.

Artemis III, the next attempt by the US to land on the moon with astronauts was scheduled to launch this year, but the timescale has slipped several times. A review in December 2023 gave a one in three chance that Artemis III would not have launched by February 2028.

www.space.com/space-exploration/human-spaceflight/the-us-is-now-at-risk-of-losing-to-china-in-the-race-to-

Satellite communications to improve connectivity in remote areas

New projects are set to test innovative hybrid connectivity solutions in some of the very hardest to reach places in the UK, with up to £3.5 million in government funding. Despite the significant progress made on superfast and gigabit-capable broadband, certain remote and rural locations across the UK still face challenges where satellites offer the only practical solution for connectivity. These areas, often characterised by difficult terrain and sparse populations, make traditional infrastructure costly and impractical.

The UK Space Agency is working closely with the Department for Science, Innovation and Technology (DSIT) and the European Space Agency's (ESA) telecommunications research programme to help close the digital divide.

www.gov.uk/government/news/satellite-communications-to-improve-connectivity-in-remote-areas