



OASI News

The newsletter of Orwell Astronomical Society (Ipswich)



Total eclipse on April 8th 2024,
with prominences

Trustees: Mr Roy Adams Mr Neil Morley Mr David Payne

Honorary President: Dr Allan Chapman D. Phil MA FRAS

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Society Notices

Dear Members,

We have another busy month coming up. On Friday 17 May the Society will be hosting a lecture meeting at Museum Street Methodist Church Hall. The British Astronomical Association Historical Section Director, Mike Frost, will be presenting a talk, *The Yerkes Observatory*. Doors open at 19:00, talk commences at 19:30. This event will form part of our celebrations marking 150 years of Orwell Park Observatory.

On Saturday 18 May, the BAA will be holding a Historical Section Meeting. This will be held in Museum Street Methodist Church. OASI will be providing some of the speakers and will also provide an information desk. Entry is free, but you will need to register first.

Details provided here: <https://britastro.org/event/historical2024>

I hope to see you at these events or one of regular Society meetings in the coming month.

Thank you,

Andy Gibbs, Chairman.

Committee 2024

Chairman	Andy Gibbs	Set overall agenda for OASI, Chair committee meetings, Press and publicity
Secretary	Roy Gooding	Outreach meetings (jointly with Chairman), observatory decoration
Treasurer	Paul Whiting	Finance, Supervision of applications for grants. Visits by outside groups, Observatory tours, public appreciation of astronomy, Outreach activities
Committee	James Appleton	Committee meeting minutes, Web site
	Martin Cook	Membership, Tomline refractor maintenance & user testing
	Matt Leeks	Safety & security
	Peter Richards	Lecture meetings
	John Wainwright	Equipment curator
	Mike Whybray	Astronomy Workshops, Child protection officer, Orwell Park School Astronomy Club
	Andy Willshire	Librarian
	Adam Honeybell	Newsletter
	Paul Whiting	OASI @ Newbourne

Committee Meeting

The next Committee Meeting will be on Friday 31st May at 8:00pm via Zoom. All members welcome.

New members

No new members this month

Society Contact details

Website:	https://www.oasi.org.uk
Events:	https://www.oasi.org.uk/Events/Events.php
Email queries:	info@oasi.org.uk
Submissions for Newsletter:	news@oasi.org.uk
Members-only message board:	https://groups.io/g/OASI
Observatory (meeting nights only):	☎ 07960 083714

Social Media

For other astronomy news and astro pictures try our socials:

Facebook:	https://www.facebook.com/groups/445056098989371
X (formerly twitter) feed:	https://twitter.com/OASlpswich (access to account needs to be renewed)
YouTube:	https://www.youtube.com/@orwellastronomical425

Articles for OASI News

News, pictures and articles for this newsletter are always welcome.

Please send tables as separate files in one of these formats (Excel, .csv, OpenOffice)

If you don't feel up to writing a major article, perhaps you might write a short note for OASI News along the lines of "This month I have mostly been observing/constructing/mending/reading/etc."

Please send material for the OASI web site and newsletter e.g., observations, notices of events, general interest articles, to news@oasi.org.uk

The CLOSING date is the **15th** day of the month (i.e. 15th May).

The Newsletter archive is at www.oasi.org.uk/NL/NL_form.shtml

Authors, please note that your articles will be publicly available worldwide!

Reproducing articles from OASI News

If you plan to reproduce an article exactly as per OASI News then please contact the Editor – otherwise, as a matter of courtesy, please seek permission from and credit the original source/author. You may not reproduce articles for profit or other commercial purpose.

Visiting

We have regular meetings on the 2nd and 4th Monday of the month at **Newbourne Village Hall**, and every Wednesday at **Orwell Park**. Night sky observing will usually take place when the skies are clear.

Date, Time & Location	Contact	Event
Weekly, every Wednesday, from 20:00 Orwell Park Observatory, Nacton	Martin Cook Roy Gooding	Observatory open
Monday 6 th May from 19:30 Newbourne Village Hall	Paul Whiting	OASI@Newbourne Newbourne meeting - beginners and new members welcome!
Thursday 16 th May 20:00 Zoom	Paul Whiting	Monthly Zoom Meeting
Friday 17 th May 19:30 Methodist Church Hall	Pete Richards	Lecture Meeting. Mike Frost, Director of the BAA Historical Section , <i>The Yerkes Observatory</i> . The lecture is one of several events celebrating the 150 th anniversary of Orwell Park Observatory.
Monday 27 th May 2024 19:30 Newbourne Village Hall	Paul Whiting	Newbourne meeting - beginners and new members welcome! <i>Sky Notes</i> by Bill Barton, FRAS. <i>Astro News</i> by Paul Whiting, FRAS.

OASI @ Orwell Park

There are regular meetings every Wednesday evening from 8pm. Access is controlled by a gate and a fob. The entrance is gate 2 is on Church Road, What3Words is [tour.fuse.banks](https://www.what3words.com/?w3w=tour.fuse.banks)

Access into the School Grounds and Observatory Tower

The route is as follows:

- Enter through gate 2 (gate 1 being the main gate) and park inside as per the attached map.
- Enter the school through the double black doors as indicated on the map. A key fob will be required to open the door.
- Continue straight through the next two sets of double doors.
- Turn left at the end of the short corridor then immediately right.
- Pass through the single door and on your left you will find the staircase leading to the observatory.
- On no account must you deviate from this route.



When leaving the observatory use the same route but in reverse. Please keep noise to a minimum as there are staff quarters nearby.

OASI @ Newbourne

newbourne@oasi.org.uk

We meet at Newbourne Village Hall, Mill Lane, IP12 4NP on the 2nd and 4th Mondays from 19:30.

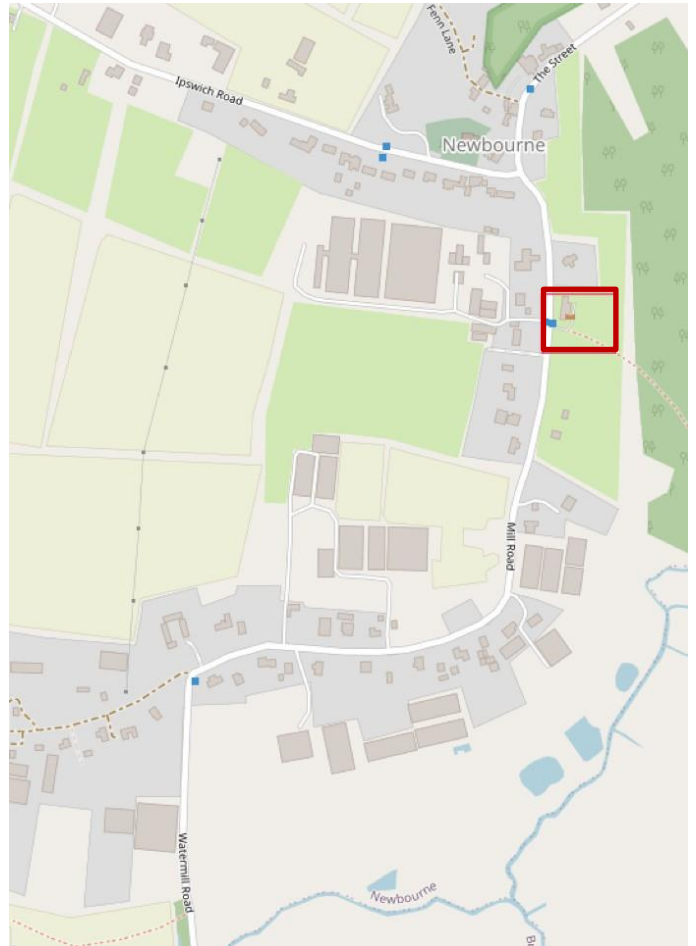
What3Words [scars.atlas.printing](https://www.what3words.com/scars.atlas.printing)

Visitors are welcome but we do ask you to join the Society after two visits.

<http://www.oasi.org.uk/OASI/Membership.php>

Newbourne dates for 2024

May	01 [#]	22 (S)
May	06 [#]	27 (A/S)
June	10	24 (S)
July	08	22 (A/S)
August	12	26 (S)
September	09	23 (A/S)
October	14	28 (S)
November	11	25 (A/S)
December	09 (Q)	



We open up for all meetings at 7:30pm.

Astro News (A) / Star Guide (S) at 7:45pm followed by any Talks (T), Workshops (W) and occasional Quiz (Q).

indicates a change to the normal monthly pattern.

Forthcoming Outreach Programmes 2024

All members are welcome to come along and help out at these events – you don't need to be an expert in the subject. Just respond to the email call for help prior to the event.

Please note that not all events are open to the public.

<i>Saturday 8th June TBC</i>	Christchurch Park Solar Event, 10:00 to 16:00 at Mansion Entrance
<i>Sunday Jun 16th</i>	Solar Party at ESWR Radio Rally, Kirton Sports Ground
<i>Saturday Jun 22nd</i>	Solar observing, Mendlesham Village Fete, Mendlesham playing field behind the village hall. Open times: 12:00 to 18:00. Roy Gooding
<i>Friday 26th – Sunday 28th July</i>	Latitude (to be invited)
<i>Sunday Aug 25th</i>	Solar Party at Bawdsey Radar Museum, Bawdsey Setup 10:00
<i>Fri 25th & Sat 26th October</i>	Observatory Open Evenings

OASI and BAA Events

For the latest event details, please check our website and social media.

BAA news & webinars

For full details of all meetings or cancellations, please go to <https://britastro.org/events/future-events>

Saturday 11th 2024 May BAA Spring Meeting, Greenock

Saturday 18th May 2024 10:00-17:00 Historic Section Meeting, Ipswich
Venue: Museum Street Methodist Church, Ipswich (tbc)

Wednesday 5th June 2024 17:30-20:00 BAA Meeting & George Alcock Lecture
Venue: INSTITUTE OF PHYSICS, 37 Caledonian Road, London, N1 9BU

September (dates tba) BAA Autumn Meeting
Venue: Rutherford Appleton Laboratory

Wednesday 30th October 2024 17:30-20:00 BAA Meeting & AGM
Venue: INSTITUTE OF PHYSICS, 37 Caledonian Road, London, N1 9BU

The BAA Radio Astronomy Section

The BAA Radio Astronomy Section have been enjoying talks, seminars and tutorials via Zoom and these are available on the BAA YouTube channel <https://www.youtube.com/user/britishastronomical/playlists>.

Answer to March / April I Q teaser:

Answer to the question for April:

$$W = 19$$

$$R = 9$$

$$Q = 7$$

$$P = 5$$

$$Y = ?$$

Using the Caesar code in both directions.

$$W = 23 - 4 = 19$$

$$R = 18 - 9 = 9$$

$$Q = 17 - 10 = 7$$

$$P = 16 - 11 = 5$$

$$\text{Therefore } Y = 25 - 2 = 23.$$

Question for May

What is the figure at ?

6 8 5 4

9 8 8 7

8 7 6 4

7 6 4 ?

The Night Sky in May

All event times are for the location of Orwell Park Observatory 52.0096°N, 1.2305°E. Times are **GMT** unless otherwise stated.

Sun, Moon and planets

Sources: <http://heavens-above.com/PlanetSummary.aspx> <http://heavens-above.com/moon.aspx>

May 2024

Object	Date	Rise	Set	Mag.	Notes
Sun ☉	1	04:25	19:21		
	31	03:42	20:05		
Moon ☾	1	02:13	10:08		Last Quarter: 02 May 03:15 Perigee: 07 May 17:52 New Moon: 08 May 18:21 First Quarter: 15 May 19:13 Apogee: 20 May 02:11 Full Moon: 23 May 23:49
	3x	01:11	12:18		
Mercury ☿	1	04:00	16:45	1.2	
	31	03:12	18:23	-0.7	
Venus ♀	1	04:20	18:16	-3.8	
	31	03:45	19:49	-3.8	
Mars ♂	1	03:25	15:13	1.1	
	31	02:05	15:26	1.1	
Jupiter ♃	1	05:05	20:20	-1.9	
	31	03:25	19:01	-1.8	
Saturn ♄	1	03:05	13:51	1.2	
	31	01:12	12:05	1.2	
Uranus ♅	1	04:57	20:12	5.8	
	31	03:03	18:23	5.8	
Neptune ♆	1	03:22	15:03	7.9	
	31	01:26	13:09	7.9	

Occultations during May 2024

https://iota-es.de/moon/grazing_descrx101.html and
<http://www.lunar-occultations.com/iota/bstar/bstar.htm>

Observers are encouraged to download and install the [Occult](#) software program [Windows only] to generate predictions for their own particular site coordinates.

Meteor showers during May 2024

Shower	Normal limits	Maximum	ZHR at Max	Notes
Eta Aquariids	19/04/24 – 28/05/24	06/05/24	50	Low in sky. Associated with Comet Halley

See also <https://www.rmg.co.uk/stories/topics/meteor-shower-guide>

For radio observation, use reflections from Graves Radar on 143.049MHz or the Brams transmitter in Belgium on 49.97MHz and UK GB3MBA on 50.408MHz <https://www.ukmeteorbeacon.org/Home>

See also https://www.popastro.com/main_spa1/meteor/radio-meteor-observing-2020/.

Comets

Source : <https://heavens-above.com/Comets.aspx> on 01/04/24.

Comet	Brightness	Date of last reported observation	Angular separation from Sun	Constellation
12P Pons-Brooks	4.7	2024-May-01	26°	Taurus
13P Olbers	8.7	2024-May-01	31°	Taurus
C/2023 A3 Tsuchinshan-	10.2	2024-May-02	154°	Virgo
C/2023 A1 Leonard	10.4	2024-Apr-12	74°	Pictor
C/2021 S3 PANSTARRS	11.1	2024-May-01	83°	Cygnus
62P Tsuchinshan	11.6	2024-Apr-30	136°	Virgo
144P Kushida	11.6	2024-Apr-30	85°	Cancer
C/2020 V2 ZTF	13.2	2024-Apr-18	67°	Phoenix
C/2021 G2 Atlas	13.8	2024-Apr-29	139°	Hydra
32P Comas Sola	14	2024-Apr-27	49°	Auriga
C/2022 E2 ATLAS	14.6	2024-Apr-30	58°	Gemini
C/2022 L2 ATLAS	14.7	2024-Apr-29	124°	Antlia
C/2019 U5 PANSTARRS	14.9	2024-Apr-29	83°	Puppis
C/2023 C2 ATLAS	14.9	2024-Apr-29	116°	Apus

Visible ISS passes >30° max altitude for May 2024

Source: <http://heavens-above.com/PassSummary.aspx?satid=25544>

Times are **GMT**.

Predictions are approximate (01/05/24) due to craft adjustments. Check the day before.

Date	Brightness (mag)	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
07-May	-3.9	19:04:42	10°	SSW	19:08:01	60°	SE	19:08:56	40°	ENE
07-May	-3.9	19:04:42	10°	SSW	19:08:01	60°	SE	19:08:56	40°	ENE
08-May	-0.3	19:54:28	10°	WNW	19:55:14	11°	NW	19:56:01	10°	NW
09-May	-1.3	19:03:09	10°	WSW	19:05:56	24°	NW	19:08:42	10°	N
12-May	-1.5	04:59:40	10°	N	05:02:33	28°	NE	05:05:27	10°	ESE
13-May	-0.4	04:11:44	10°	NNE	04:13:10	12°	NE	04:14:35	10°	E
14-May	-3.7	04:57:01	10°	NW	05:00:13	50°	SW	05:03:27	10°	SSE
15-May	-1.6	04:12:51	20°	SE	04:12:51	20°	SE	04:14:03	10°	SE
08-May	-0.3	19:54:28	10°	WNW	19:55:14	11°	NW	19:56:01	10°	NW
09-May	-1.3	19:03:09	10°	WSW	19:05:56	24°	NW	19:08:42	10°	N

Bill Barton's Radio Broadcast

ICRFM (Ipswich Community Radio) 105.7 MHz at about 08:25 in the morning of the first Wednesday of each month. I aim to cover what there is to see in the sky and then a little bit on something topical. ICRFM is also available to listen to over the Internet and there is a listen again option on their website. <http://www.icrfm.com>

Total Solar Eclipse – 2024 April 08 Valley Mills, Waco, Texas – Paul Whiting

For once the journey to the airport went remarkably smoothly. Even the Heathrow Hotel Hoppa, which is notoriously unreliable, operated to schedule. Following an early start, the journey to the airport was just as uneventful.

The flights to Dallas / Fort Worth and on to San Antonio also went well. I even chose a happy US border guard, who asked me sensible questions about the eclipse. One interesting security announcement came over the tannoy at San Antonio airport: “Will passengers please note that hand guns must be stowed in hold luggage and not carried on to the plane”!

San Antonio is quite a remarkable place. I was expecting a dusty old “frontier” town, but instead there was a smart, tourist friendly community built up around the San Antonio River and the drainage canals added following the disastrous flood in 1921, all dolled up as the “Riverside Walk”, with many tourist pubs and restaurants, including the Mad Dogs British Pub, alas they had run out of London Pride, Sam Smith’s and anything else remotely British, but they did have a red telephone box! I ended up drinking mango wheat beer, a delicacy I discovered in Australia for the last eclipse (2023). Otherwise the beer of choice was Blue Moon – a Belgian beer very popular in the US, I first saw during the 2017 US eclipse, and of course very apt for the occasion.

There was an interesting “cabaret show” in the Crab Shack, whilst we were eating lunch one day. Some itinerant was arguing and swearing loudly over something and the police had to be called. It was all handled very professionally with minimal disturbance to the other guests.

We spent the two days we had spare in San Antonio exploring the sites, including The Alamo, where Davy Crockett found fame. There is also a modern statue called The Stargazer, again very appropriate.



Figure 1: The Alamo



Figure 2: The Stargazer



Figure 3: A Moon Gazer

The end of Day 2 brings the Eclipse briefing prior to our 3-hour coach journey to Waco tomorrow. The eclipse weather forecast is not good – thunderstorms all day, although all the surrounding national meteorological agencies had diverging models and hence no real agreement as to where the cloud cover would end up at the time of the eclipse.

The next day, the weather in Waco was clear and sunny, but the forecast for the next day was still very iffy. The weather indoors wasn't all that clement following the evening meal of Kung Pao Brussel Sprouts – a local delicacy apparently. The Texan food portions, in general, were enormous. You do not order a starter and a main course, unless you want a couple of meals to take home in a doggy bag. The prices, however, by the time you have added tax and the ubiquitous tip, were every bit as big as the portion. The going tip rate is now 20%, although 26% was the largest "suggested" on one bill.

The Waco hotel, although a little more comfortable than the one in San Antonio, had strange ideas about customer service. If they didn't have what you ordered, they simply brought you what they did have, placing it in front of you without saying a word! For example, the breakfast waitress made a big point of pushing three special eclipse cocktails, she even went to find what was in each of them for us. One of them sounded great – a sort of dark rum punch with grenadine and orange juice. So later that day we ordered two of them. A while later two tequila based drinks with lemon juice and added salt and cayenne pepper appeared. When we complained, the waiter said that they had none of the materials to make any of the special cocktails. I couldn't help thinking of Fawlty Towers at this point.

The morning dawned with thick cloud. We had been issued with breakfast vouchers to present at breakfast. The buffet breakfast was good, but when presented with the bill, the waiter said that the vouchers covered everything except the tip! Basil rides again.

Off to the Equestrian Centre in the area of Valley Mills, just outside Waco, a little nearer to the centre eclipse line. The clouds were reasonably broken when we arrived. We were very early, anticipating major traffic snarls, but of

course there was hardly any other traffic. The site was well laid out. We had several acres for our sole use, there being about 150 off us. There were portaloos and a stall selling food and drink and even the occasional T-shirt. The owners toured round greeting us on horseback (of course!), carrying a US flag for some reason.



Figure 4: The Equestrian Centre Owners

They were going around interviewing people presumably for social media to promote their riding school. I volunteered. The microphone was on the tip of the flag! Questions included “how do you pronounce” then they gave me several Spanish and Mexican place names with many Qs and Xs in them. However, they did try me on “Worcestershire” and “rural” for some reason. Finally they asked me to taste some Cheetos (cheesy Wotsit equivalents) – both cheese and mega spicy varieties. When I asked when does the spice kick-in, they were somewhat abashed. I didn’t have the heart to tell them I had a cold and had lost most of my taste and smell! Another odd question was “What does yonder mean to you?” I responded that back home it would be the next field, but as everything was bigger in Texas, it would be over the horizon!

We are now heading for 2nd contact (C2), when the interesting stuff starts. There were vast tracts of clear blue sky with big huge thunder clouds. However, as my tame meteorologist explained, the reducing heat from the eclipsing sun stopped the thermal convection clouds forming, so in a way the eclipse cleared the weather for us. From just before C2 all the way to C3 and beyond the full eclipse could be seen.

I was doing my usual vertical light level and shade temperature measurements, but again I had some problems with focussing the camera correctly. I thought I had cracked it this year, but not quite. The visual eclipse was one of the nicest I have seen, with a marvellous naked eye prominence visible for most of totality. A narrow corona, as expected at solar maximum. Despite being quite dark only Jupiter was visible. Many people used the 4 minute totality window to search for comet 12P/Pons-Brooks, with little success as I understand. The horizon shadow effects were fantastic.

Following the eclipse we returned to Waco by coach, only to enjoy one of the delayed thunderstorms. Similarly the next day, there was torrential rain for most of the return journey to San Antonio. Luckily the rain stopped when we arrived. We were informed that the rooms would not be ready until 6pm, 2 hours late. We arrived at 2pm, 4 hours early. The hotel let us leave our cases in the conference room, while we went back along the River Walk to our favourite Mexican bar. We had to get back for 4pm as the hotel had offered free drinks in the Gavel Bar for the duration of the 2 hours delay. They also laid on a substantial free buffet. They didn't even ask for a tip!

So, the day of the return home dawned. We had a 45-minute turn around in Dallas. Storms at Dallas delayed our flight in, but we were informed that the London flight would also be delayed. It was, but not quite long enough for us to catch it. We were re-booked on a later flight (4 hours later), but we had the last 2 seats, which were not business class. We thought we would go to the business class lounge to spend the 4 hours, as we had paid for business seats. The lady in the lounge looked concerned when I told her our story. I thought that as we had been downgraded, she wasn't going to let us anywhere near the champagne. However not only did she let us in she found one business class seat for Diana. In response I asked that Diana would occasionally send a glass of champagne back to me. The lady at the desk did tell me to "trust her", and about 40 minutes later I was summoned to the lounge ticketing desk to be "re-ticketed" with my own business class seat, next to Diana. Shame in a way, I did fancy the idea of receiving a glass of champagne "from the lady in business class"!

I lost my wristwatch, and a call went out for any medical personnel, but apart from that it was an uneventful flight. The delay of 4 hours meant that my timed advanced rail ticket was useless, and there was a mysterious bleep that seemed to follow me on the Elizabeth Line, then again at Liverpool Street and then continuously on the train from London to Ipswich. I checked my bags, but it didn't appear to come from either. One passenger was being driven to distraction by it and so she helped me move the cases around to try to home in. However, when I got off at Ipswich it stopped and despite a thorough search, I could find no possible cause. The mystery is unresolved.

So, despite all odds, another successful eclipse. The shade temperature chart demonstrates well the effect of the variable cloud cover between C1 and C2, as does the critical or vertical luminance graph. Comparing the latter graph to that of Exmouth last year, it can be seen clearly that this eclipse was the darker of the two at totality (1.98 kLux compared to 23.38 kLux last year). This peak darkness level may well become the prime area of research for the next few eclipses.



Figure 5: Eclipse views taken at the Valley Hills site.

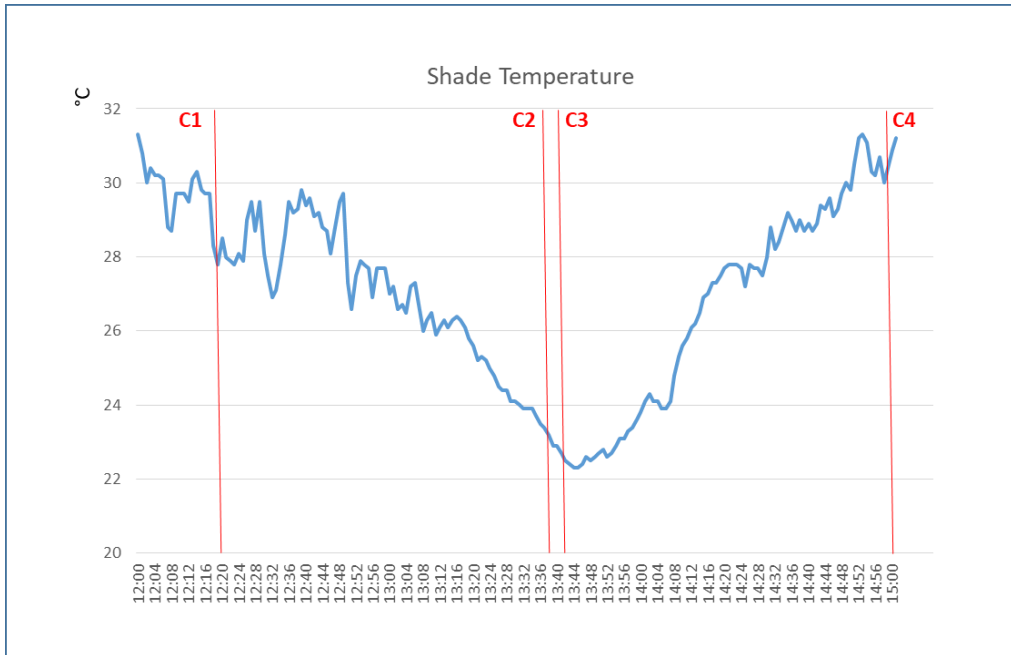


Figure 6: Shade Temperature

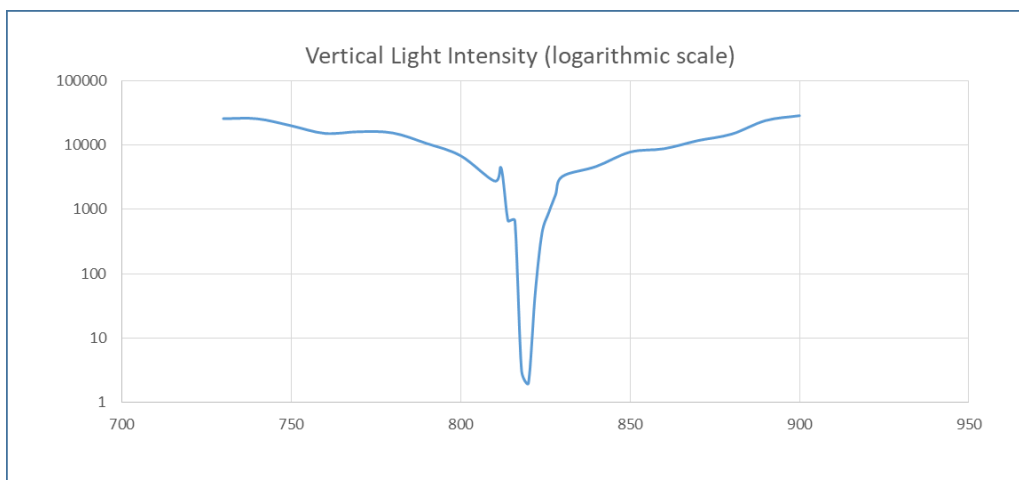
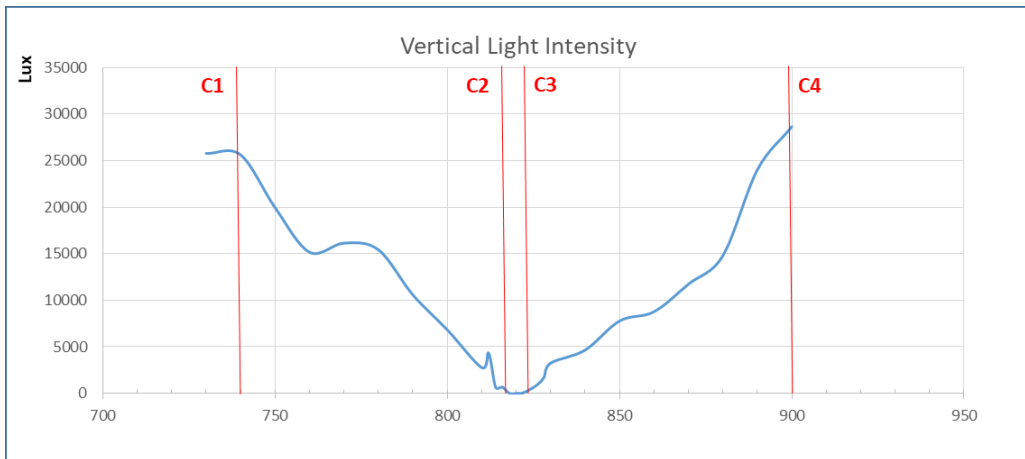


Figure 7: Critical (Vertical) Luminance Level. Top: linear scale. Bottom: logarithmic scale.

Member's Observation

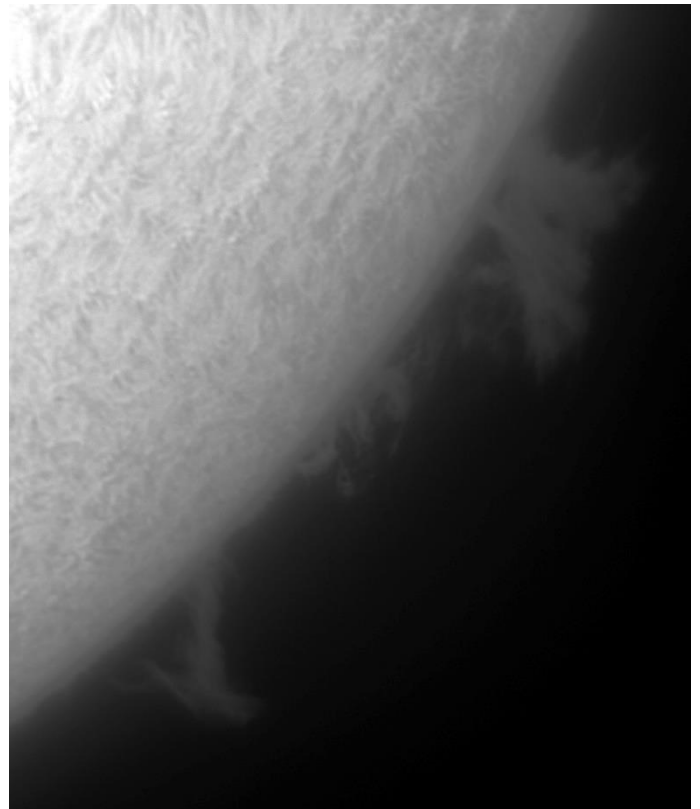
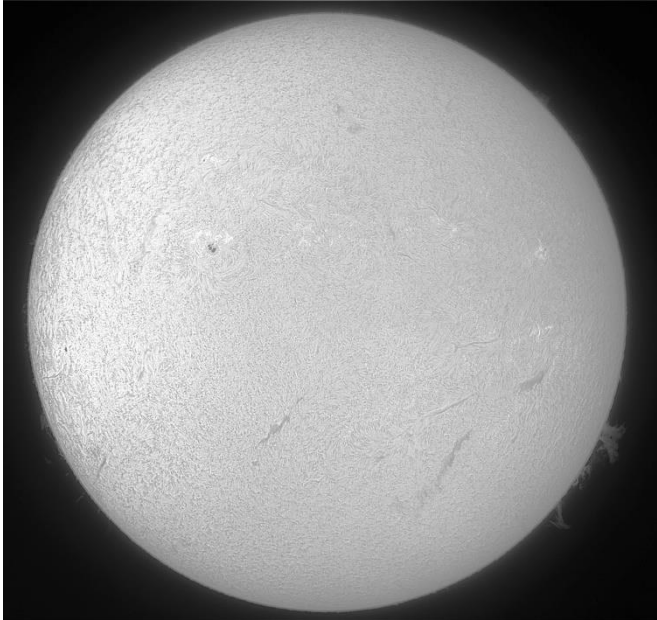
Martin Cook – The Sun

The Sun on 7/4/2024 at 12:00UT in H-Alpha.

Fighting the effects of storm Kathleen I placed the telescope outside the patio doors and waited for a lull in the wind and a gap in the clouds.

Lunt LS60THa/B1200 telescope and Zwo 178MM camera.

The enlarged image of the prominences was taken using a 2.5x Barlow lens.



John Hughes - Abell 1656 Coma Cluster

With all the poor weather we have been having I leapt at the chance of some imaging time during a New Moon on 9th April 2024.

As there was only around 6 hours of astronomical darkness to play with I wanted to capture as many galaxies as I could and pointed the scope towards Abell 1656 in the constellation Coma Berenices. Abell 1656 is a large galaxy cluster and contains over 1,000 identified galaxies.

Equipment

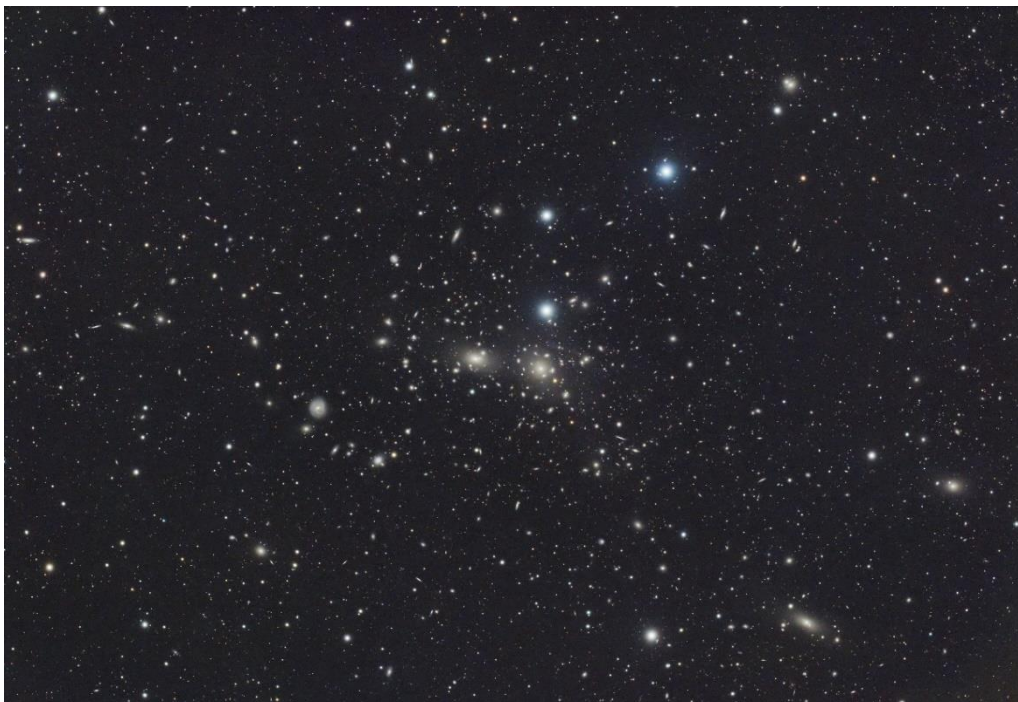
- William Optics Zenithstar 103 telescope with Angle Rotator.
- ZWO ASI294MC Pro camera.
- Sky-Watcher EQ6R-Pro mount.
- Chroma Luminance filter.
- Sesto Senso motor focuser.
- William Optics 50mm GuideScope with ZWO ASI290mm mini guide camera.

Data

- 161 x 120s sub frames. Gain 121 Offset 30 sensor temp -10c.
- 50 darks.
- 30 flats.
- 30 dark flats.

Software

- Acquisition software - N.I.N.A. with the Hocus Focus plug-in.
- PHD2 for guiding.
- PegasusAstro Affinity Platform to manage all power and data transfer through N.I.N.A.
- PixInsight for producing the final image.

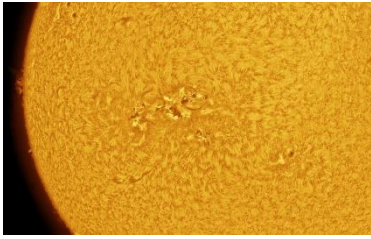


Adam Honeybell – Aurora 20th April

On one of the rare occasions that an aurora may be visible AND the sky wasn't overcast I decided to drive to Needham lake and see if the aurora could be seen. It turned out to be visible, albeit very faint, especially as the moon was bright too. I took multiple exposures at ultra high ISO just to quickly see if there was anything at all, before bringing it down to around 400 iso for around 5 seconds. I was using my 24mm pancake lens, which has the advantage of auto focus and maximum f stop of 2.8, so can gather plenty of light. I probably spent an hour or so there, and while reviewing some of the photos I took I noticed one frame was showing a definite aurora. After that, I could make out very faint shifting shapes in the sky, but hardly spectacular. But it is the first time I've ever seen them from Suffolk, so I was pleased. Also, I managed to capture a meteor a little later. I didn't actually see it at the time, although I did see another 20 minutes later. It could have been a Lyrid, but possible an Eta Aquarid since they would start in April too.



For sale - DayStar Quark H-alpha 'Eyepiece' Chromosphere / Prominence Filter.



This has been owned from new and originally purchased from Firstlightoptics. This filter when combined with a refractor and an eyepiece/camera will allow the user to view or capture images of the chromosphere of the Sun. Higher exposure times on a camera will also reveal prominences on the solar limb.

The filter is designed to be used on refractors of F/4 to F/8 and it has been used successfully with both a 60 mm and 100 mm refractor. For further details and specifications please

see https://www.firstlightoptics.com/solar-filters/daystar-quark-h-alpha-eyepiece-chromosphere-prominence.html?_gl=1*1cpd0w9*_up*MQ..&gclid=Cj0KCQjwiYOxBhC5ARIsAlvdH50olgWkF5kOADar0DmC6J5-Wp4kUKb3ORM7AJ8f1b4gbTHmP3y0t24aA_pnMEALw_wcB



The Quark will come with;

- USB power cable allowing you to power the Quark via a power tank.
- Wall Power Adapter.
- Twist-Case.

Should you wish to capture images of the Sun it is recommended that you also use a tilt adapter and a mono camera with high FPS. Images previously captured can be seen in the Sun section of the Clubs website dated 12 May 2019 through to 16th May 2019. A more recent image captured on 18th April 2024 is attached.

Sale price is £850.

For enquires please email daystar@oasi.org.uk