OASI News

The newsletter of the Orwell Astronomical Society (Ipswich).
Registered charity 271313.

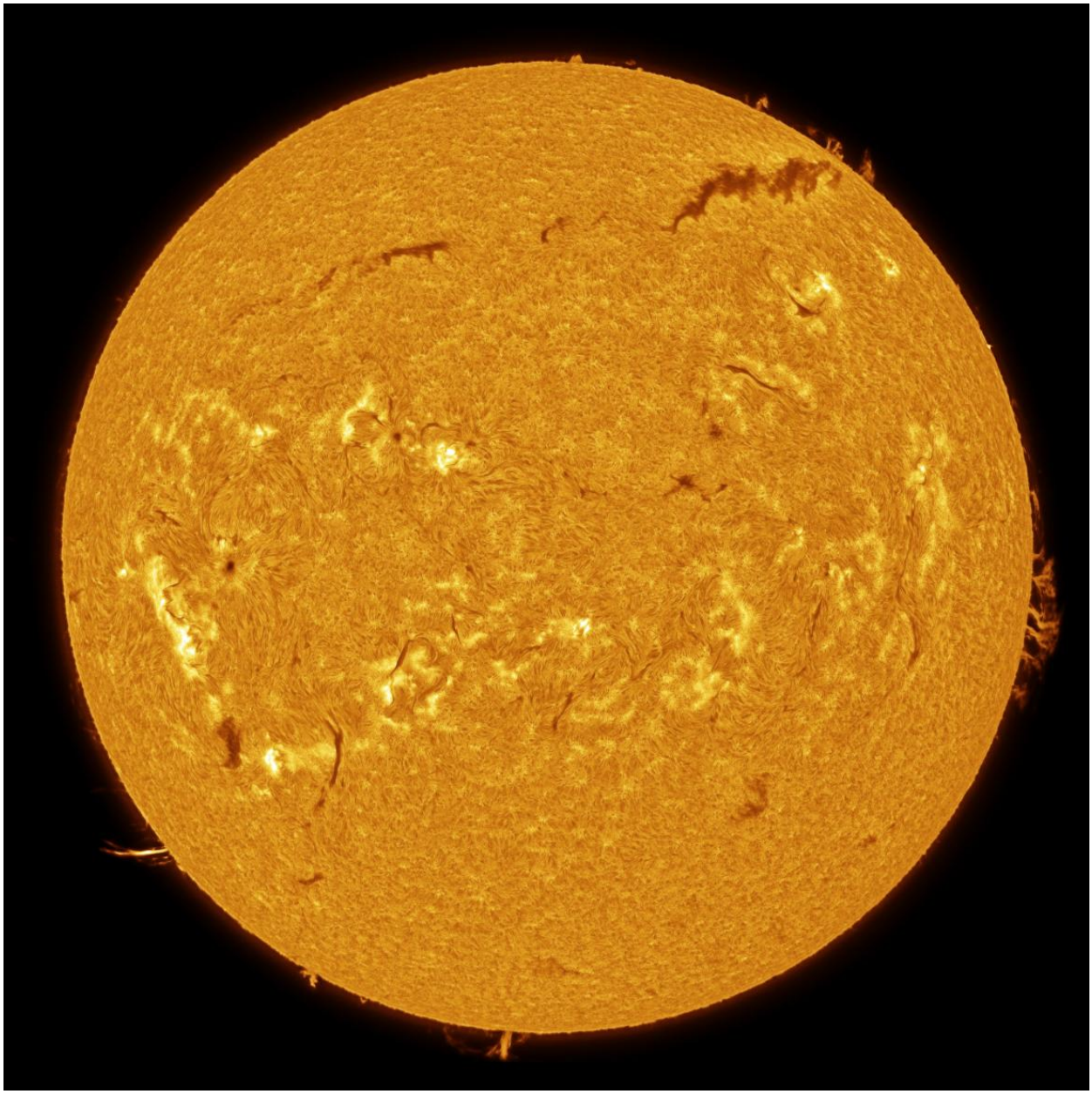

Image of the solar disk By Steve McElvanney, 26 May 2026. Captured using a Skywatcher Heliostar 76 telescope, ASI 585 mono camera and Firecapture software. Processed using Autostakkert and Pixinsight.

Contents

Chairman's Message

Dear Members,

A reminder that we will be holding our summer picnic at Newbourne Village Hall on Saturday 18 July from 13:00.

This is open to members of OASI and their family and friends. If the skies are clear we will set up some solar telescopes; if not, we will be in the village hall. This is one of our main social events of the year, so if you haven't been before, it would great if you could come along.

Even though the hours of darkness are short at this time of year, there is still plenty going on at our meetings at Newbourne and Orwell Park. Our first meeting of the month at Newbourne commences at the earlier time of 19:00, to enable us to carry out some solar observing and there is often plenty of wildlife to observe from the balconies at Orwell Park.

I hope to see you in the coming month.

Clear skies!

Andy Gibbs,

Chairman.

Committee & Trustees

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.
	Robin Carpenter	OASI@Newbourne deputy coordinator.
	Martin Cook	Membership, Tomline refractor maintenance & user testing.
	Adam Honeybell	Newsletter.
	Matt Leeks	Safety & security.
	Peter Richards	Lecture meetings.
	Paul Whiting	OASI@Newbourne coordinator.
	Mike Whybray	Astronomy workshops, Child Protection Officer, Orwell Park School astronomy.
	Andy Willshere	Librarian.
Trustees	Bill Barton	
	Neil Morley	
	David Payne	

Contact Details

Events: www.oasi.org.uk/Events/Events.php

Email queries: info@oasi.org.uk

Website: www.oasi.org.uk

Facebook: www.facebook.com/groups/445056098989371

YouTube: www.youtube.com/@orwellastronomical425

WhatsApp: email Andy Gibbs (chairman@oasi.org.uk) to be added to the WhatsApp group.

Message board: https://groups.io/g/OASI (members-only).

Orwell Park Observatory (meeting nights only): tel. 07960 083714

OASI News

Edited this month by James Appleton.

Please send reports of astronomical activities (observations, studies, queries, analysis of observations, fabrication of instruments, general interest, etc) to news@oasi.org.uk. The closing date for material is the 15th day of the month.

The Newsletter archive is at www.oasi.org.uk/NL/NL_archive.php.

Authors: please note that the Newsletter is publicly available!

New Members

Welcome to Gabriela Crane, who joined OASI in June.

Events

Date, Time & Location	Contact	Event
Wed 01 Jul 2026 20:00 Orwell Park Observatory	Martin Cook membership@oasi.org.uk	General observing for members of OASI.
Wed 08 Jul 2026 20:00 Orwell Park Observatory	Martin Cook membership@oasi.org.uk	General observing for members of OASI.
Mon 13 Jul 2026 19:00 Newbourne Village Hall	Paul Whiting, FRAS newbourne@oasi.org.uk	Newbourne meeting - beginners and new members welcome! 19:00 Doors open and solar observing if the sky is clear.
Wed 15 Jul 2026 20:00 Orwell Park Observatory	Martin Cook membership@oasi.org.uk	General observing for members of OASI.

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Date, Time & Location	Contact	Event
Sat 18 Jul 2026 13.00-20:00 Newbourne Village Hall	Pete Richards lectures@oasi.org.uk	Summer picnic, with solar observing in the afternoon (weather permitting). Open to all members of OASI and their guests.
Mon 20 Jul 2026 20:00 Zoom	Paul Whiting, FRAS treasurer@oasi.org.uk	Pre-recorded talk: *Arrokoth and the Sentinels* by Greg Smye-Rumsby. (Zoom login details are provided by email to members.)
Wed 22 Jul 2026 20:00 Orwell Park Observatory	Martin Cook membership@oasi.org.uk	General observing for members of OASI.
Mon 27 Jul 2026 19:30 Newbourne Village Hall	Paul Whiting, FRAS newbourne@oasi.org.uk	Newbourne meeting - beginners and new members welcome! 19:30 Doors open. 19:45 *Sky Notes* by Bill Barton, FRAS and *Astro News* by Paul Whiting, FRAS.
Wed 29 Jul 2026 20:00 Orwell Park Observatory	Martin Cook membership@oasi.org.uk	General observing for members of OASI.
Wed 05 Aug 2026 19:30 Newbourne Village Hall	Martin Cook membership@oasi.org.uk	General observing for members of OASI. NB: Orwell Park Observatory will be closed tonight.
Sat 08 Aug 2026 11:00-16:00 On the patio area outside the cafe at *The Hold*	Andy Gibbs chairman@oasi.org.uk	**Event open to the public.** Solar observing. Event is in association with Suffolk Archives' exhibition *The Moon: Our Nearest Neighbour*. Booking not necessary.
Mon 10 Aug 2026 19:30 Newbourne Village Hall	Paul Whiting, FRAS newbourne@oasi.org.uk	Newbourne meeting - beginners and new members welcome! 19:30 Doors open.
Wed 12 Aug 2026 17:30 Location: TBA	Martin Cook membership@oasi.org.uk	Observing the partial solar eclipse (first contact at 18:12). This event is open to members of OASI only. Details will be provided by email to members. NB: Orwell Park Observatory will be closed tonight.
Mon 17 Aug 2026 20:00 Zoom	Paul Whiting, FRAS treasurer@oasi.org.uk	Pre-recorded talk: *Sunny, with a Chance of Catastrophe* by Sean Elvidge. (Zoom login details are provided by email to members.)
Wed 19 Aug 2026 19:30 Newbourne Village Hall	Martin Cook membership@oasi.org.uk	General observing for members of OASI. NB: Orwell Park Observatory will be closed tonight.

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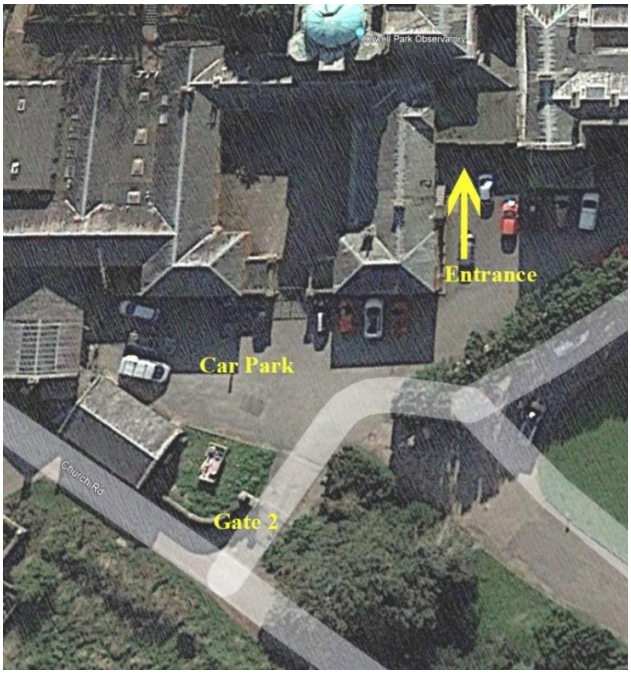
Date, Time & Location	Contact	Event
Mon 24 Aug 2026 19:30 Newbourne Village Hall	Paul Whiting, FRAS newbourne@oasi.org.uk	Newbourne meeting - beginners and new members welcome! 19:30 Doors open. 19:45 *Sky Notes* by Bill Barton, FRAS.
Wed 26 Aug 2026 20:00 Orwell Park Observatory	Martin Cook membership@oasi.org.uk	General observing for members of OASI.
Mon 31 Aug 2026 Time TBC Bawdsey Radar Museum	Paul Whiting, FRAS treasurer@oasi.org.uk	**Event open to the public.** Solar observing. This event is run by Bawdsey Radar. Booking not necessary.

The latest list of events is available online: https://www.oasi.org.uk/Events/Events.php.

OASI events are free for members to attend. All members are welcome at all events.

OASI @ Orwell Park



We hold meetings at Orwell Park Observatory every Wednesday evening from 8pm.

Access is via the second gate on Church Road, Nacton. (What3Words: tour.fuse.banks.)

Access requires the combination code or a key fob to open the gate and a key fob to open the door to the observatory. Regular attendees will be provided with a key fob – ask any committee member for details. If you do not have a key fob, ring the observatory number and someone will let you in.

Attendees must follow the below route. Please keep noise to a minimum to avoid disturbing pupils and staff at Orwell Park School.

- Enter through the gate south (towards the River Orwell) of the main gate of the school. The combination code or a key fob is required to open the gate.
- Park as indicated on the above map.
- Enter the school through the double black doors as indicated on the map. A key fob is 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 turn immediately right.
- Pass through the single door and follow the stairs immediately on the left to the observatory.

OASI @ Newbourne

Meetings at Newbourne are held in the Village Hall, Mill Lane, IP12 4NP (What3Words: scars.atlas.printing.)

Doors open at 7.00pm in early July (this is 30 minutes earlier than usual, to enable solar observing, if skies are clear).
Doors open at 7.30pm, late July onwards.

Visitors are welcome. Anyone visiting more than twice will be asked to become a member of OASI.

Newbourne dates for 2026		
July	13	27(S, A)
August	10	24(S)
September	14	28(S, A)
October	12	26(S)
November	09	23(S, A)
December	14(Q)	

A = *Astro News* by Paul Whiting.
S = *Sky Notes* by Bill Barton.
Q = quiz by Paul Whiting.
Newbourne Meetings are generally held on the 2nd and 4th Mondays of each month. # indicates a deviation from the usual monthly pattern.

Outreach Events

The following outreach events have been organised. Assistance will be appreciated from as many members as possible. Enthusiasm and willingness to engage with members of the public are more important than scientific expertise! Contact the organisers with offers of assistance or to ask for more information.

Date	Event	Organiser	Status
Saturday 08 August	Solar observing on the patio area outside the cafe at *The Hold**	Andy Gibbs	Confirmed
Monday 31 August	Solar observing at Bawdsey Radar Museum	Paul Whiting	Confirmed
Friday 18 September	Lunar observing at Newbourne Village Hall*	Andy Gibbs	Confirmed

* Event is in association with *The Hold* as part of the exhibition *The Moon: Our Nearest Neighbour*.

OASI held two outreach events, both solar observing sessions, during June 2026. Photos of the events are below.

Solar observing at the East Suffolk Wireless Rally (The Ipswich Radio Rally) on 21 June. OASI's stand attracted much interest. Photo by Neil Morley.

Solar observing outside Christchurch Mansion on 27 June. The stand attracted much interest from visitors to the Mansion. The sky was clear until early afternoon, enabling attendees to see sunspots, prominences and other features on the solar disk through a variety of telescopes. Photo by Mike Whybray. See p.52 for an image of the Sun captured during the event by Paul Whiting FRAS and p.60 for an image of the Sun captured during the event by Jack Gleed.

OASI Picnic 2026

If it's sunny there will be solar observing at the picnic. Use club telescopes or bring your own. Access to the village hall will be from shortly after 1pm.

The picnic is organised by Pete Richards. Contact for queries: lectures@oasi.org.uk.

The Night Sky in July 2026

Event times are in BST.

Data for the Sun, Moon, planets and ISS is from https://heavens-above.com for the location of Orwell Park Observatory, 52.0096°N, 1.2305°E. Data for meteor showers is from the *BAA Handbook* for 2026.

Object	Date	Rise	Set	Mag.
Sun ☉	1	04:39	21:18	
	31	05:15	20:47	
Moon ☾	1	22:39	05:33	
	31	21:32	07:07	
Mercury ☿	1	06:33	22:46	0.9
	31	03:49	19:29	0.5
Venus ♀	1	07:44	23:38	-3.9
	31	09:39	22:06	-4.1
Mars ♂	1	02:51	18:06	1.3
	31	01:32	17:59	1.3
Jupiter ♃	1	07:07	23:03	-1.7
	31	05:10	20:39	-1.6
Saturn ♄	1	01:46	14:16	0.8
	31	22:57	11:33	0.6
Uranus ♅	1	03:18	19:05	5.8
	31	00:34	16:26	5.8
Neptune ♆	1	01:25	13:26	7.9
	31	22:32	10:27	7.8

Meteor showers

Shower	Visibility	Maximum	ZHR* At Max	Prospects for the UK
Alpha Capricornids	03 July – 15 August	30 July	5	Unfavourable

* ZHR (zenithal hourly rate) is the number of meteors an observer would see in an hour of peak activity if the radiant were at the zenith, assuming perfect conditions.

Visible passes of the ISS

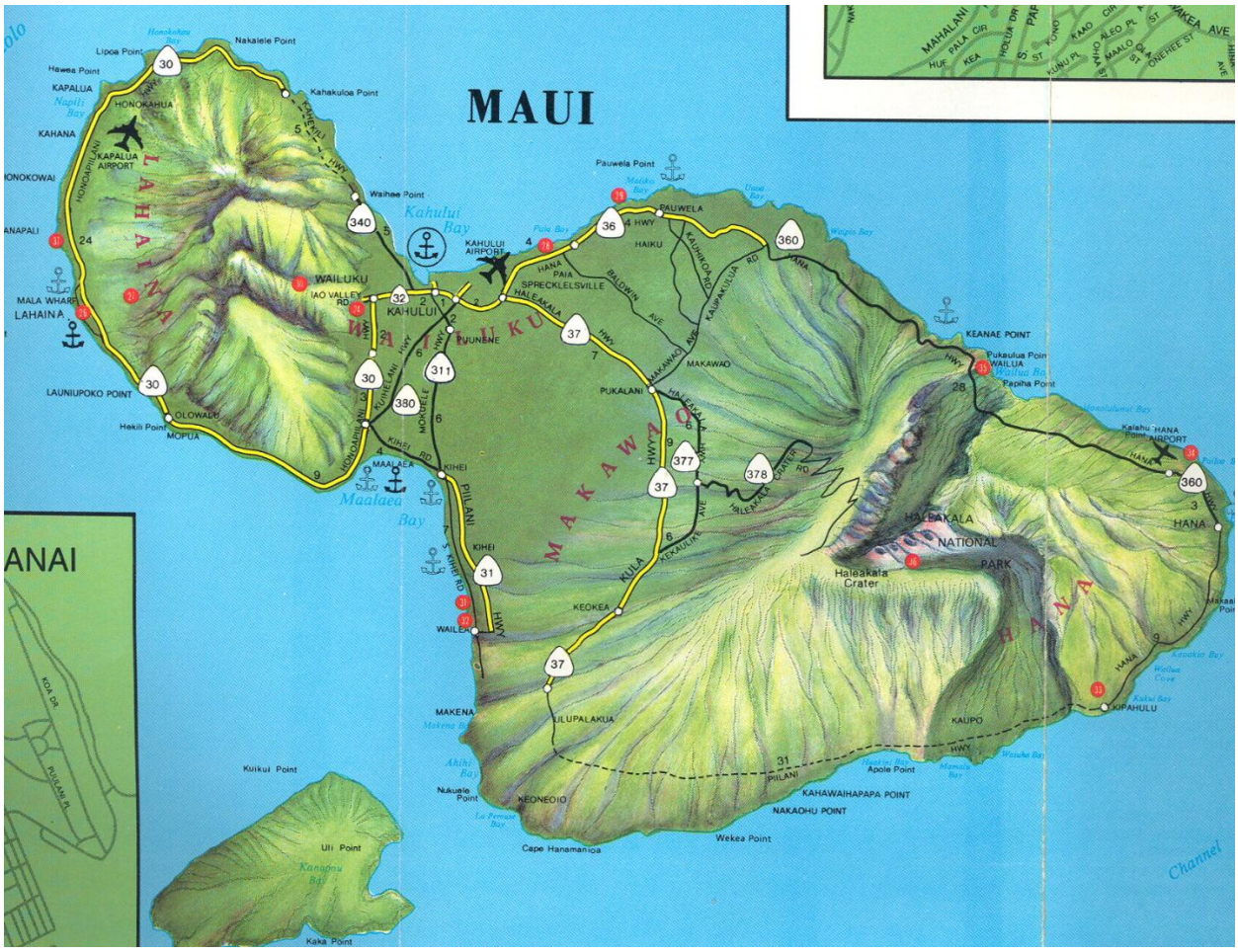
Date	Brightness	Start			Highest point			End		
	(mag)	Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
01-Jul	-2.6	01:06:05	25°	SE	01:06:05	25°	SE	01:08:45	10°	E
01-Jul	-3.8	02:38:59	10°	WSW	02:42:20	71°	SSE	02:45:43	10°	E
02-Jul	-1.7	00:19:22	15°	ESE	00:19:22	15°	ESE	00:20:32	10°	E
02-Jul	-3.7	01:52:14	20°	WSW	01:54:25	59°	SSE	01:57:45	10°	E
02-Jul	-3.8	03:27:45	10°	W	03:31:09	86°	S	03:34:32	10°	E
03-Jul	-3.5	01:05:19	31°	SSW	01:06:31	45°	SSE	01:09:46	10°	E
03-Jul	-3.8	02:39:46	10°	W	02:43:10	86°	S	02:46:34	10°	E
04-Jul	-3.1	00:18:04	32°	S	00:18:37	34°	SSE	00:21:43	10°	E
04-Jul	-3.9	01:51:49	10°	W	01:55:11	80°	S	01:58:35	10°	E
04-Jul	-3.8	03:28:34	10°	W	03:31:57	72°	SSW	03:35:19	10°	ESE
04-Jul	-2.7	23:29:54	22°	S	23:30:45	25°	SSE	23:33:35	10°	E
05-Jul	-3.9	01:03:50	10°	WSW	01:07:12	70°	SSE	01:10:35	10°	E
05-Jul	-3.8	02:40:34	10°	W	02:43:57	81°	S	02:47:20	10°	E
05-Jul	-2.3	22:40:32	10°	S	22:42:55	18°	SE	22:45:18	10°	E
06-Jul	-3.8	00:15:53	10°	WSW	00:19:13	58°	SSE	00:22:33	10°	E
06-Jul	-3.8	01:52:33	10°	W	01:55:56	86°	S	01:59:19	10°	E
06-Jul	-3.5	03:29:20	10°	W	03:32:36	47°	SSW	03:35:52	10°	SE
06-Jul	-3.5	23:28:00	10°	SW	23:31:15	44°	SSE	23:34:30	10°	E
07-Jul	-3.9	01:04:30	10°	W	01:07:53	86°	S	01:11:17	10°	E
07-Jul	-3.8	02:41:17	10°	W	02:44:37	60°	SSW	02:47:57	10°	ESE
07-Jul	-3.1	22:40:13	10°	SW	22:43:17	33°	SSE	22:46:23	10°	E
08-Jul	-3.9	00:16:27	10°	WSW	00:19:51	80°	S	00:23:14	10°	E
08-Jul	-3.9	01:53:13	10°	W	01:56:36	73°	SSW	01:59:58	10°	ESE
08-Jul	-2.8	03:30:10	10°	W	03:33:04	27°	SSW	03:35:58	10°	SSE
08-Jul	-3.9	23:28:25	10°	WSW	23:31:47	69°	SSE	23:35:10	10°	E
09-Jul	-3.9	01:05:09	10°	W	01:08:32	82°	S	01:11:55	10°	E
09-Jul	-3.2	02:41:59	10°	W	02:45:07	36°	SSW	02:48:15	10°	SE
09-Jul	-3.7	22:40:26	10°	WSW	22:43:44	56°	SSE	22:47:04	10°	E
10-Jul	-3.9	00:17:04	10°	W	00:20:27	86°	S	00:23:50	10°	E
10-Jul	-3.6	01:53:51	10°	W	01:57:07	48°	SSW	02:00:23	10°	SE
10-Jul	-2	03:31:29	10°	WSW	03:33:19	14°	SW	03:35:08	10°	S
10-Jul	-3.4	21:52:29	10°	SW	21:55:42	43°	SSE	21:58:57	10°	E
10-Jul	-3.8	23:28:57	10°	W	23:32:21	85°	S	23:35:44	10°	E
11-Jul	-3.8	01:05:43	10°	W	01:09:04	61°	SSW	01:11:44	15°	ESE
11-Jul	-2.1	02:42:53	10°	W	02:44:29	18°	WSW	02:44:29	18°	WSW
11-Jul	-3.8	22:40:51	10°	WSW	22:44:13	79°	S	22:47:36	10°	E
12-Jul	-3.9	00:17:36	10°	W	00:20:58	74°	SSW	00:23:42	15°	ESE
12-Jul	-2.4	01:54:31	10°	W	01:56:32	24°	WSW	01:56:32	24°	WSW
12-Jul	-3.8	21:52:45	10°	WSW	21:56:06	68°	SSE	21:59:28	10°	E
12-Jul	-3.9	23:29:28	10°	W	23:32:50	82°	S	23:36:13	10°	E
13-Jul	-3.2	01:06:17	10°	W	01:09:13	37°	SW	01:09:13	37°	SW

13-Jul	-3.8	22:41:18	10°	W	22:44:42	86°	S	22:48:04	10°	E
14-Jul	-3.6	00:18:04	10°	W	00:21:21	49°	SSW	00:22:09	39°	SSE
14-Jul	-3.8	21:53:08	10°	W	21:56:30	85°	S	21:59:54	10°	E
14-Jul	-3.8	23:29:53	10°	W	23:33:14	63°	SSW	23:35:13	22°	ESE
15-Jul	-1.7	01:07:00	10°	W	01:08:05	16°	WSW	01:08:05	16°	WSW
15-Jul	-3.8	22:41:42	10°	W	22:45:04	75°	SSW	22:48:21	11°	ESE
16-Jul	-2.6	00:18:36	10°	W	00:21:14	28°	SW	00:21:14	28°	SW
16-Jul	-3.8	21:53:29	10°	W	21:56:52	83°	S	22:00:15	10°	E
16-Jul	-3.1	23:30:18	10°	W	23:33:28	38°	SSW	23:34:25	30°	SSE
17-Jul	-3.5	22:42:02	10°	W	22:45:19	50°	SSW	22:47:39	17°	SE
18-Jul	-1.5	00:19:32	10°	WSW	00:20:32	13°	WSW	00:20:32	13°	WSW
18-Jul	-3.7	21:53:47	10°	W	21:57:07	64°	SSW	22:00:28	10°	ESE
18-Jul	-2.2	23:30:52	10°	W	23:33:29	21°	SW	23:33:47	21°	SSW
19-Jul	-2.6	22:42:24	10°	W	22:45:23	29°	SSW	22:47:05	19°	SSE
20-Jul	-3	21:54:03	10°	W	21:57:13	39°	SSW	22:00:24	10°	SE
20-Jul	-1.2	23:32:37	10°	SW	23:33:17	10°	SW	23:33:17	10°	SW
21-Jul	-1.6	22:43:09	10°	WSW	22:45:14	16°	SW	22:46:37	13°	S
22-Jul	-2	21:54:26	10°	W	21:57:07	22°	SW	21:59:46	10°	SSE
24-Jul	-1.2	21:55:48	10°	WSW	21:56:47	11°	SW	21:57:46	10°	SSW

A Visit to Haleakala, Maui, Hawaii

Neil Short, with another edition of *Short's World*.

In April 2024, I was on vacation in the island archipelago of Hawaii, the 50th state of the USA and one of the most isolated places in the world (a 5-hour flight from California), specifically, the Island of Maui. As a glance at the relief map of the island will reveal, the landscape looks like it is formed from two mountains separated by a narrow-necked valley, and this is indeed the case. The mountains are volcanoes: the small Mauna Kahalawai volcano in the NW is dwarfed by the Haleakala volcano to the SE. Both are formally classed as dormant (note: not extinct!) The entire Hawaiian island chain is formed from active, dormant, or extinct volcanoes.



Maui.

The summit of Haleakala is home to several observatories. Whilst there is no public access, I had the opportunity to see the exterior of several while on a "Sunset on Haleakala" tour. The tour began at our hotel near the town of Lahaina. (Unfortunately, the town made the news in August 2023 due to being caught in a devastating wildfire). The journey to the lower slopes of Haleakala took us from farmland into the rainforest before we finally reached cloud level at around 1000 m. At approximately 2000 m we broke through into sunshine and could look down to sunlight reflecting from the cloud tops.

The view on ascending above the cloud level.

With a few stops on the way for views and coffee we finally reached Haleakala National Park and the park visitor centre. On leaving the visitor centre, we continued ascending, with further stops to take in the view, including at the Kalahuka Lookout overlooking the caldera. The road was winding, but paved all the way to the top (it is a public road). Finally, we arrived at the summit visitor centre, at an altitude of approximately 3000 m, just below the summit itself. The summit visitor centre has toilets and a couple of information boards but little else. Its main function is to provide a car park from which it is possible to view sunrise and sunset, both key events for visits to the top of the mountain.

Public information sign at the Haleakala National Park summit visitor centre.

We could see the observatories on the crest above the summit visitor centre. The site is owned by the University of Hawaii. There are three major facilities, which are operated or leased by the University. I'll not cover them in detail, as there is any amount of material available online, but the following is a brief summary of key aspects.

- Pan-STARRS (Panoramic Survey Telescope and Rapid Response System). This facility covers a pair of telescopes with appropriate computing, that surveys the sky continuously for astrometry and photometry purposes. Difference analysis from earlier observations supports discovery of a wide range of celestial objects. Two 1.8 m telescope are used when in full operation.
- The Space Surveillance Complex. Operated by the USAF Research Laboratory this facility provides input into the USAF Space Surveillance capability as part of the US Space Command (USSPACECOM). The Command delivers coordination of all US military operations in space (defined as anything 160 km or more above sea level). The Maui facility utilises a variety of assets, including a 3.67 m, a 1.6 m and two 1.2 m telescopes to monitor "objects of interest" in what the US now defines as a "war-fighting domain".
- The Daniel K. Inouye Solar Telescope. This is the new kid on the block, comprising the world's largest aperture solar telescope, delivered at the small price of around $350m. A 4.24 m mirror within an off-axis Gregorian configuration delivers a 4 m unobstructed aperture. Operating in the visible to near-infrared bands, and with the support of adaptive optics to overcome atmospheric distortion, the facility can resolve features on the surface of the Sun down to a size of 20 km. The facility was completed in late 2021 and commenced science operations in February 2023.

The Space Surveillance Complex.

The Daniel K. Inouye Solar Telescope.

There are also several other, smaller facilities. One of interest, perhaps, is the Faulkes North Telescope. This 2.0 m instrument offers remote observing opportunities for students, including many from the UK.

Well, enough of observatories! The tour was intended to provide an opportunity to witness a sunset from the summit. We waited, in the cold, as the Sun dipped beneath the cloud layer, providing a beautiful end to a great day (but leaving a journey of several hours to return to the hotel).

Sunset from the summit of Haleakala, 20 April 2024.

A final comment: as with all mountain/volcano-top observatories in Hawaii, there is conflict with the indigenous Hawaiian people who view the summits as the home of their gods and burial sites of their royalty. Access to many areas of the summit is strictly controlled to minimise what is already a tension-filled issue.

The photographs above were taken with a Samsung A54 smartphone and Canon 100D camera with Tamron f6.3 18-400mm lens.

Replacement of the Induced Transmission Filter (ITF) in OASI's Coronado Personal Solar Telescope (PST) - Cataract Surgery!

Neil Morley

David Lunt founded Coronado Instrument Group in Tucson Arizona in 1997. His mission was simple: making the dynamic chromosphere of the Sun accessible to a wide audience starting with affordable entry-level Hydrogen-Alpha (Hα) equipment.

The Coronado Personal Solar Telescope (PST) was launched in 2003 at a time when Hα telescopes cost around $5-10k. Priced at an extremely competitive $500 and retailing in the UK for approximately £500 (with import duties and extra taxes), the PST provided the first affordable entry-level Hα telescope.

The specification was a 40mm diameter objective with 400mm focal length and sub 0.1 nm bandwidth at 656.3nm. Intended for visual observations but also imaging with an appropriate camera (note the limited back-focus), the PST quickly became a sales success.

Increased customer demand for Hα products stretched Coronado's limited production facilities. Recognising this, the management team initiated discussions with Meade Instruments Corporation who were experienced in large scale production. In 2004, Meade acquired Coronado for circa $1.7m. By then, David Lunt had become seriously ill, and in 2005 he sadly passed away.

In 2006, Coronado production was moved to Meade's manufacturing plant in Irvine California. In 2007, David's Son Andrew (Coronado lead engineer) with members of the original Coronado team left Meade to found Lunt Solar Systems. In 2008, Coronado production moved to a new manufacturing plant located in Tijuana Mexico.

Lunt went on to release a completely new range of Hα products using variable air-pressure tuning. In 2024, after a period of 20 years, the original Coronado mechanical compression tuning patent expired. In 2025, the Chinese manufacturer Synta applied the Coronado technology to SkyWatcher-branded 76mm and 100m Heliostar Hα scopes as well as the entry-level Acuter-branded 40mm Phoenix. In the same year, Meade Instruments ceased operations putting an end to Coronado manufacture at the Meade Tijuana Mexico plant.

OASI's PST, purchased in 2007 was probably manufactured at Meade's Irvine California plant. For around 3 years, views remained bright, sharp, and pristine. Around 2010, a darkened ring at the edge of the visible field appeared. Inside the ring, the Sun's brightness and contrast were significantly reduced. Towards the centre, views remained brighter, clearer and pristine. Over the next two years, the darkened ring thickened and eventually consumed the entire visible field. The level of degradation became apparent in 2015 when OASI acquired a Lunt LS50 50mm Hα refractor. The LS50 provided a brighter and more detailed view of the solar disc than the PST. It seemed the PST had developed a cataract! The darkened view made eye positioning and tuning more difficult, making the overall PST experience disappointing.

In 2023, I started online research into the degradation in the PST's performance. It didn't take long to find extensive discussions within the cloudynights.com solar observing and imaging forum including [1]. It turned out that after 3-5 years, a common problem affected virtually all PSTs. The root cause was oxidation of multilayer metallic coatings within an energy reduction filter called the Induced

Transmission Filter (ITF). Its function is blocking harmful ultraviolet and infrared radiation wavelengths, preventing them reaching the observer.

In early production PSTs, the ITF was incorporated within the 40mm diameter cemented doublet objective. In factory-fresh condition, the objective ITF had a distinctive metallic gold appearance matching the gold colour of the scope's optical tube. Over a period of time, the ITF turned rusty brown, leading to the “PST rust” moniker. I am aware of some extremely isolated cases of the very first production PST objectives remaining intact. These PSTs manufactured in the Tucson plant are comparatively rare and collectible.

For a period of time, Meade provided a repair service to address the “PST rust” issue. It involved a) replacing the rusted objective with a standard 40mm 400mm focal length objective with a blue anti-reflective coating and b) installing a replacement eyepiece tube with internal housing at its base containing a smaller diameter 18mm ITF filter. By the time the OASI PST was purchased in 2007, PST production had moved over to the new variant with blue objective and smaller diameter internal ITF.

The internal ITF was also implemented using soft metallic multilayer coatings between two layers of optical glass. The evidence points to the filter edges being unsealed or at best improperly sealed and the same rusting failure occurring over time. With repeated use and associated thermal cycles, atmospheric moisture found its way inside the filter oxidising the metallic coatings. Rusting started from the outside and worked towards the centre of the glass. There was no safety issue because the filter become more opaque and continued to block harmful ultra-violet and infra-red radiation. A notable side effect of relocating the ITF to the eyepiece barrel was that filter rusting became invisible to the customer.

Fortunately, at the time of my research in 2024, two well-established commercial replacements for the 18mm Coronado/Meade ITF were available with excellent track-records:

1. BelOptik ITF (company based in France) using a completely different technology and manufacturing approach to the original Coronado/Meade ITF. Priced at α 169 EUR, hard metallic multilayer coatings provide a permanent solution to the rusting problem [2].

2. Maier Photonics ITF (company based in the US) using the same soft coating technology as Coronado/Meade and priced at $95. The key difference is the Maier filters are properly sealed around the edges [3]. After 10 years of use in PSTs, I've seen reports where Maier filters were examined and confirmed to be rust free.

In July 2024, armed with this knowledge, and knowing this was a common problem, I decided to access and inspect the OASI PST ITF filter for signs of rusting. Reports on the cloudynights.com solar observing and imaging forum warned me it was probable Locktite had been liberally applied to the PST eyepiece threads and elsewhere to discourage tampering. I soon confirmed the OASI PST was affected as its eyepiece tube would not unscrew. The recommendation was to use a strap wrench to get things moving. Fortunately I had one in my toolbox!

I arranged a timely visit to the legend (Martin Cook) as I thought two pairs of eyes were better than one. Martin secured the PST prism housing in a vice in his workshop with rubber straps at the sides preventing scratches. With the PST securely clamped in place, I applied the strap wrench to the top of the eyepiece tube then proceeded very slowly and carefully to unscrew the eyepiece tube. At the start, there was a lot of resistance and it was difficult to see any movement at all. Martin applied a pencil mark to the top edge of the eyepiece tube to track any rotation. It was confirmed but remained slow due to the resistance. Fortunately, the resistance reduced during subsequent rotations, and exposed threads finally appeared. The process took around 10 minutes, and successfully separated the two halves of the

eyepiece tube, exposing the ITF filter at the bottom of the eyepiece tube. This was good news and exactly as expected.

PST body securely clamped in the vice with a strap wrench applied.

Exposed ITF filter at the base of the eyepiece tube.

Remaining pieces of Locktite were removed by careful application of a flat bladed Jewellers screwdriver to the threads inside the lower portion of the eyepiece tube, then a bulb blower.

Using a lens removal tool, the retaining ring atop the ITF was removed. This allowed the ITF to be extracted using a lens removal suction tool. Initially rusting was not visible because the ITF had a reflective silver coating making it look pristine under normal daylight conditions. Applying camera flash revealed the tell-tale rust symptoms. In fact, the ITF was completely rusted over, just like numerous examples online.

The next steps involved approval from the committee to ordering a replacement ITF in June 2024. As Maier were out of stock, I ordered the BelOptik ITF replacement. Oliver Smie who runs BelOptik as a sole trader confirmed the PST would remain eye-safe for visual use if the BelOptik ITF replacement was the sole change to the optical system. This was definitely the case here!

The BelOptik ITF arrived in July 2024 and I fitted it to the PST. It needed to be oriented in the eyepiece tube with the gold side facing downwards towards the Sun and the red side facing upwards towards the blocking filter and eyepiece.

Testing the repaired PST that same day on the Sun was a revelation. Brightness and contrast were restored and pretty well on a par with the Lunt LS50. This was confirmed by OASI members who looked through the scope. The PST has since been used at OASI meetings and outreach events. In summary, this was definitely a worthwhile improvement.

Rusted ITF filter!

Replacement BelOptik ITF filter before installation.

BelOptik ITF filter after installation.

References

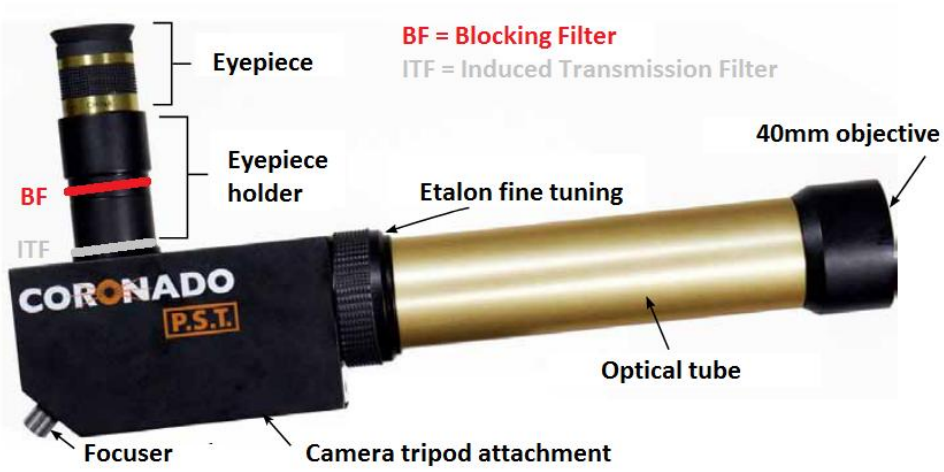
[1] https://www.cloudynights.com/forums/topic/657597-attention-pst-owners/

[2] https://beloptik.de/en/itf-replacement-filter

[3] https://maierphotonics.com/656bandpassfilter-1.aspx

Appendix – PST Description

Please refer to the following diagram showing the major features of later production PSTs, including OASI's example.



Features and controls of the Coronado PST.

The PST is a refractor with additional filters enabling eye-safe Hα viewing and imaging. A simplified description of the filters is as follows:

1. The etalon is a tunable interference filter. It comprises two extremely finely polished and partially reflective glass plates underneath a rotating tuning collar, spaced by a tiny air-gap using extremely thin mica plates. The output is a comb-like spectrum containing multiple frequencies spaced at regular intervals. The etalon is tuned by applying variable mechanical pressure to the plates via the tuning collar. This shifts the overall comb slightly upwards or downwards in frequency, allowing one of the spikes to be tuned to the desired 656.3nm Hα wavelength.
2. The Induced Transmission Filter (ITF) passes the desired 656.3nm Hα wavelength and rejects harmful ultraviolet and infra-red radiation, preventing it from reaching the observer.
3. The blocking filter passes just the desired 656.3nm spike from the etalon with a narrow bandwidth of <0.1nm. It also performs energy reduction. The PST has a blocking filter of 5mm diameter. Based on a focal length of 400mm, the diameter of the solar disk at prime focus of the PST is 3.6mm, fitting comfortably within the blocking filter.

The black housing contains a pentaprism acting like a conventional 90° diagonal by redirecting light from the etalon towards the filters in the eyepiece tube. Adjusting the focuser mechanically shifts the pentaprism inside the housing to achieve focus. An additional prism inside the housing redirects light from a small aperture at the front to the integrated solar finder, atop the housing, a unique feature making the Sun very easy to acquire.

The DAVINCI Mission

Andy Willshere

DAVINCI stands for Deep Atmosphere Venus Investigation of Noble gases, Chemistry and Imaging. This is a NASA Discovery Program mission which was selected on 2nd June 2021. The spacecraft consists of an orbiter coupled with a descent probe, called Zephyr. DAVINCI is currently scheduled to launch in June of 2029. It will explore Venus initially via two fly-bys then in June 2031 will release Zephyr. As it descends, Zephyr will study Venus from its topmost cloud system to its surface rock. As it gets closer to its landing site on the alpine tesserae surface above the Alpha Regio mountainous region, Zephyr will obtain high-resolution near infrared digital images. Zephyr will be the first probe to descend all the way through Venus's atmosphere since the Russian Vega 2 lander on 15th June 1985 (Vega 2 landed in the Aphrodite Terra area).

The spacecraft comprises two components. The Carrier Relay Imaging Spacecraft (CRIS), and the Probe Flight System (PFS), which accommodates Zephyr. The probe is the crux of the mission, crucial to fulfilment of its science objectives. The probe will be released at an altitude of 145 km, approximately at the top of the atmosphere, prior to its one-hour descent. At about three minutes into the descent, the PFS will deploy a subsonic parachute which is designed to withstand the severe Venusian conditions. At this point Zephyr will begin to collect data. After 30 minutes, a parachute will be released and the remainder of the descent will be regulated by the atmosphere of Venus, some 90 times denser than that of Earth. The dense atmosphere will decelerate the descent of Zephyr. During its descent, five onboard instruments will record a mass of data, the aim being to perform a chemical composition analysis of the lower atmosphere of Venus. The lower atmosphere contains gases that will provide important evidence as to the history of Venus. For example, if sulphur is detected, it may indicate whether volcanic activity is active or how long ago it ceased. Zephyr will measure the concentration of noble gases and results will be compared with data for Earth and Mars. Measurements of isotopes and trace gases may provide clues about the history of water on Venus.

Science objectives:

- How did Venus's atmosphere branch away from Earth's. Data obtained from noble gases, trace gases and their isotopes will be analysed. Was the planet ever habitable?
- Data from chemical and physical analysis of the lower atmosphere and near surface will be obtained as the probe descends.
- The tesserae terrain and area around Alpha Regio will be identified to obtain any proof of tectonic history, including erosion.

Instruments on board CRIS:

- Venus Imaging System for Observational Reconnaissance (VISOR). Takes ultraviolet and near-infrared images of Venus.
- Compact Ultraviolet to Visible Imaging Spectrometer (CUVIS). Tests the make-up of the upper cloud area.

Instruments on board Zephyr:

- Venus Tunable Laser Spectrometer (VTLS). Measures isotopes of sulphur, oxygen and carbon inside the Venus atmosphere.

- Venus Mass Spectrometer (VMS). Acquires noble gases and gas traces found within 67 km of the surface.
- Venus Atmosphere Structure Investigation. (VASI). Measures pressure, temperature and wind speed throughout descent.
- Venus Descent Imager (VDI). Takes Infrared images of the Alpha Regio area.
- Venus Oxygen Fugacity (VfOx). Measure the mixing ratio oxygen in the lowest part of the atmosphere.

With all space missions there are challenges. They occur in all aspects of the spacecraft from engineering, communication and instrumentation to operations. To alleviate as many problems as possible each section of the DAVIBCI spacecraft is checked continually to find and eliminate as many problems as possible.

Why go to Venus? We certainly cannot live there! Are the costs worth it? It has been a long time since Mankind has been to explore Venus. DAVINCI will provide the first images during the descent stage since the 1970s and the first high-resolution optical views since 1985. Measures of atmospheric isotopes and trace gases around surface level will help to establish where the water went, and why a runaway greenhouse effect occurred. The data will improve our knowledge of development of rocky planets and will be incorporated into understanding of exoplanets. The information we obtain will therefore enlighten us not only in our understanding of Venus, but in the galaxy more widely.

References:

DAVINCI - NASA Science

DAVINCI - Wikipedia

The DAVINCI Mission | Goddard Engineering and Technology Directorate

DAVINCI_SciTech2023_v4.pdf

SHA Picnic and Astronomy Weekend 2026, Dublin

Paul Whiting, FRAS

The three-day extended “picnic” of the SHA (Society for the History of Astronomy) took place over the long weekend 13–15 June 2026. Around eighteen SHA members, including two from OASI (Bill Barton, FRAS and the author), arrived in Dublin using various modes of transport including ferry and Aer Lingus. The base camp for the weekend was a pleasant but expensive hotel in the Portobello district of Dublin just off the River Liffey, conveniently situated on the Airport Express coach route.

The first day of the event involved a coach ride to Birr, County Offaly, some 140 kilometres away, to visit Birr Castle Demesne (figure 1), home of Lord Rosse’s “Great Leviathan” Telescope (figure 2). This was the third time I had visited Birr; the previous two occasions saw torrential, continuous rain. This time, however, was a glorious sunny day. New this time was an extended Science Centre displaying the history and memorabilia of the Parsons Family and their scientific endeavours. William, 3rd Earl Rosse, built several telescopes starting with an 18” (457mm) reflector, then a 36” (914mm) reflector and finally the massive 72” (1.83m) reflector. Completed in 1845, the latter instrument, with a tube over 50’ (15m) long, employed a mirror cast out of speculum metal (a highly reflective copper-tin alloy) weighing over 3 tons (3.05t). Because speculum metal tarnishes quickly, a second mirror was made, and a small railway track was built to facilitate changing them for polishing. Due to its immense weight, the telescope was built between two massive stone walls. It could only pivot slightly east or west of the meridian line, relying on Earth's rotation to bring targets into view.

Figure 1. Birr Castle Demesne. (Bill Barton, FRAS.)

By using the Leviathan to look at what astronomers then referred to as "nebulae", Lord Rosse became the first to identify their spiral, "Catherine wheel" structure. Specifically, he made detailed sketches of the Whirlpool Galaxy (M51) (figure 3), which incredibly match the structure observed by modern instruments like the Hubble Space Telescope. The name allegedly derives from eddies seen in William’s lake.

Figure 2. The "Great Leviathan". (Bill Barton, FRAS.)

Figure 3. The Whirlpool Galaxy, M51. (Paul Whiting, FRAS.)

William's wife, Mary Rosse, was pre-eminent in the field of photography and the science behind it.

Laurence, 4th Earl Rosse, continued his father's love of astronomy, notably making the first infra-red measurements of the Moon, trying to establish the lunar surface temperature. His results divided the scientific community of the day.

Laurence's brother, Charles Parsons, was an inventor and engineer who invented the steam turbine. His company acquired the Grubb Telescope Company and formed Grubb-Parsons, known for their telescopes and mounts.

Astronomy continues at Birr Castle today, at the Irish Low-Frequency Array (I-LOFAR) site (figure 4). LOFAR is the world's largest and most sensitive radio interferometer operating at low frequencies (10 to 240 MHz). Other LOFAR sites are in the UK, Netherlands, Germany, France, Poland, Sweden, Latvia, and Italy.

LOFAR powers the LOFAR Two-metre Sky Survey (LoTSS), which maps millions of cosmic radio sources and provides a census of supermassive black holes. LOFAR is also utilized to track the solar wind, monitor radio bursts from the Sun, and measure ionospheric disturbances.

Figure 4. The I-LOFAR site. (Paul Whiting, FRAS.)

On the evening of Day 1, I was served custard with my sweet corn ribs instead of chilli mayo!

Day 2 involved a visit to Newgrange and the neolithic burial chambers. Arriving at the new Visitors Centre, we had plenty of time to study the history and extent of these 5000-year-old burial sites. I did not realise that the UNESCO World Heritage complex in the Boyne Valley was spread over three sites – Newgrange (figure 5), Knowth (figure 6), and Dowth. The sites are separated by several kilometres, but a handy shuttle bus service ferried the pre-arranged tour groups between Newgrange and Knowth (the two sites currently open to the public).

Newgrange was the only site open to visitors to explore the inside of the chamber. I was in two minds whether to enter or not, as the entrance tunnel was low. I was persuaded to enter by the guide. Alas it wasn't the height that barred entry to me, it was the width!

Figure 5. Newgrange entrance. (Bill Barton, FRAS.)

Figure 6. Burial mounds, Knowth. (Bill Barton, FRAS.)

The final day included a visit to Dunsink Observatory, just north-west of Dublin (figure 7). The observatory was established by an endowment in the will of Francis Andrews, Provost of Trinity College Dublin at his death in 1774. The South Telescope (figure 8), a refractor of aperture 11¾“ (298mm), was built by Thomas Grubb of Dublin and completed in 1868. The achromatic lens was donated by Sir James South in 1862.

Figure 7. Dunsink Observatory. (Bill Barton, FRAS.)

Figure 8. The South Telescope, Dunsink Observatory. (Bill Barton, FRAS.)

Dublin Mean Time, the official time in Ireland from 1880, was the local mean time at Dunsink, officially maintained on a Dent sidereal clock, similar to that missing from Orwell Park (figure 9). In 1916, Ireland moved to GMT, and in 1936, Trinity College stopped maintaining the observatory and rented out the land.

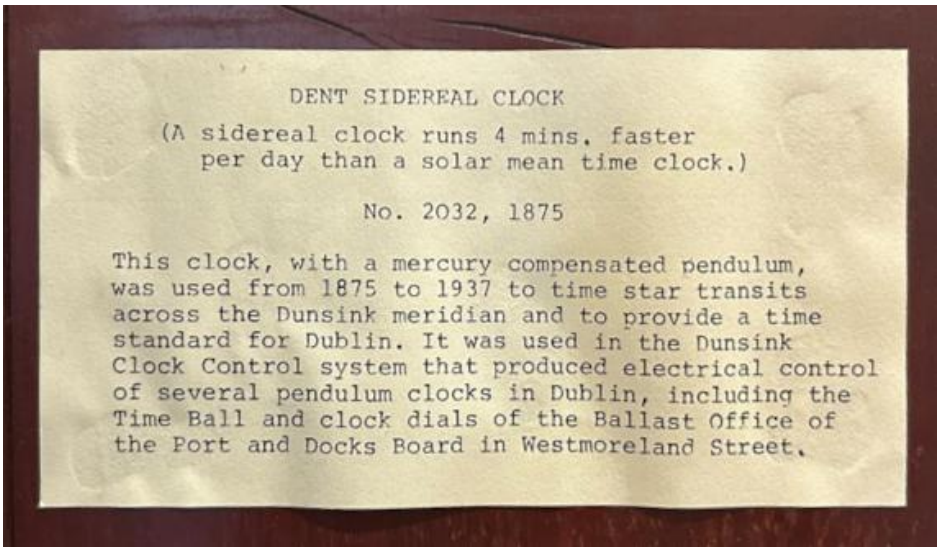


Figure 9: Exhibit caption for Dent sidereal clock. (Bill Barton, FRAS.)

The Irish President, Éamon de Valera, who had driven the establishment of the Dublin Institute for Advanced Studies (DIAS) in 1940, added to it a School of Cosmic Physics in 1947, partly to revive the observatory, for which it was given responsibility.

The Andrews Professorship of Astronomy was associated with the directorship of Dunsink Observatory during the time that the observatory was part of Trinity College Dublin, but now has an independent director.

An interesting note. The standard public outreach eyepiece (figure 10) used at Dunsink bears more than a passing resemblance to OASI's "Old Knurly" eyepiece. If they do share a common military heritage, then this would suggest a first world war connection.

Figure 10: Old Knurly's twin? (Bill Barton, FRAS.)

From Dunsink I was dropped off at the airport for the journey home after an excellent weekend.

Ditloids 2A

Andy Willshere.

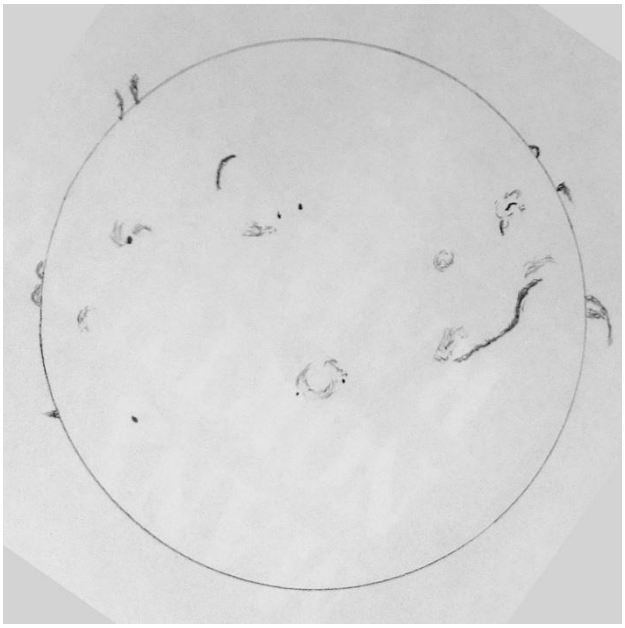
1. 206 B I T H B.
2. 16 I T CR O 4096.
3. 8 T O A O.
4. 3 T A L.
5. 4 S OA D B.
6. 101 D.
7. 6 W O H T E.
8. 10 D S.
9. 64 S O A C B.
10. 4 F O A C B.
11. 8 B IA B.
12. 36 B K OA P.
13. 225 S OA S B.
14. 12 S OT Z.
15. 13 C IA S.
16. 3 S A O.
17. 16 O IA P.
18. 9 F H OA R.

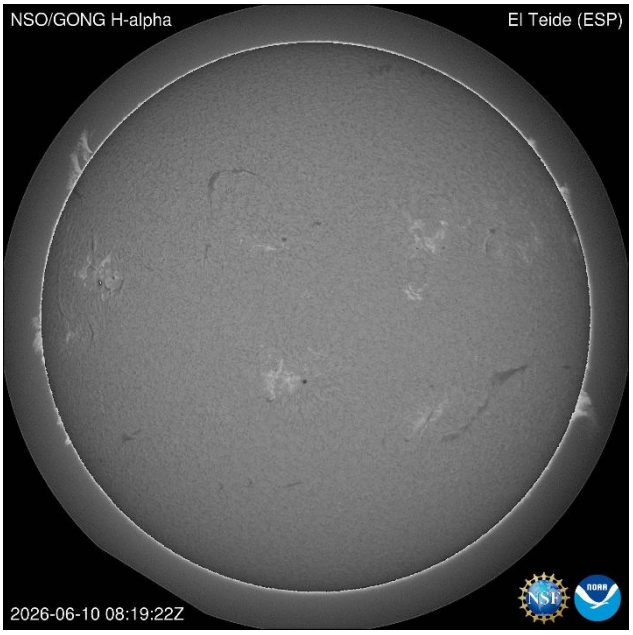
Happy Ditloiding!

Members' Observations

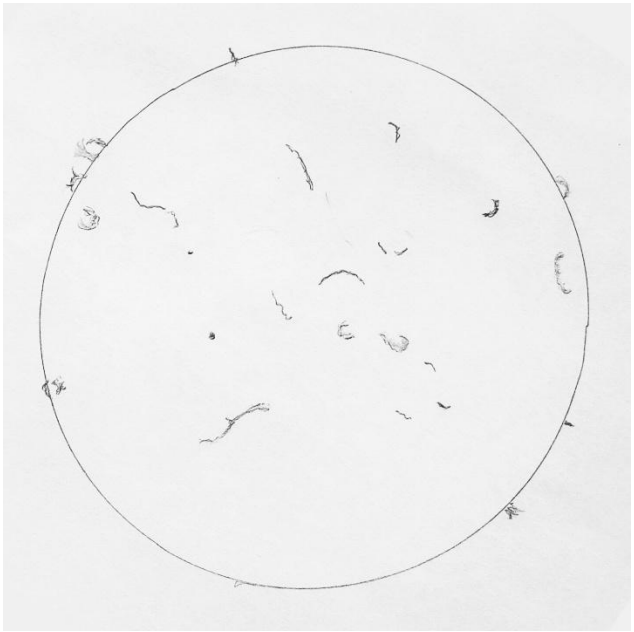
Neil Morley

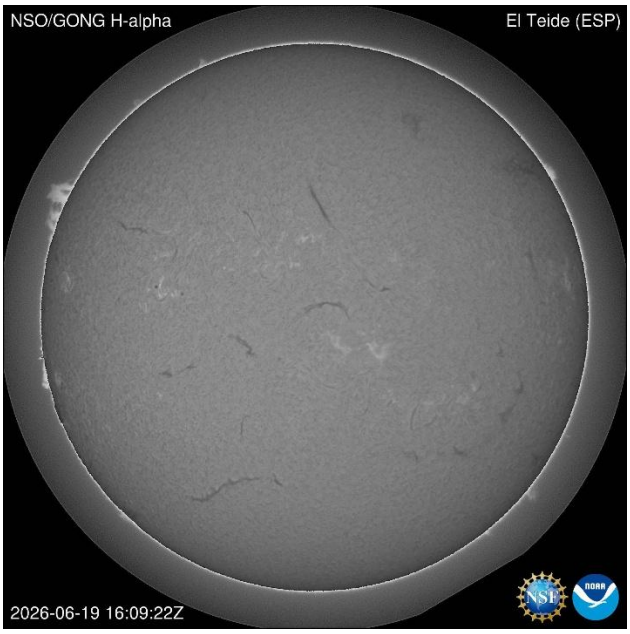
10 June 2026, 07:45-08:05 UT. Left: sketch of the solar disk in Hα light drawn at the eyepiece of OASI's PST with a Baader Mk IV Zoom eyepiece at the 24 mm and 20 mm settings providing magnifications of 17-20x. Observing conditions were challenging, with variable cloud cover! Right: corresponding image by GONG (Global Oscillation Network Group) at the US National Solar Observatory.





19 June 2026, 15:35-15:50 UT. Left: sketch of the solar disk in Hα light drawn at the eyepiece of OASI's PST with a Baader Mk IV Zoom eyepiece at the 20 mm setting providing magnification of 20x. Few sunspots were visible but there were some prominences at the edge of the disk and many filaments. Right: corresponding image by GONG (Global Oscillation Network Group) at the US National Solar Observatory.

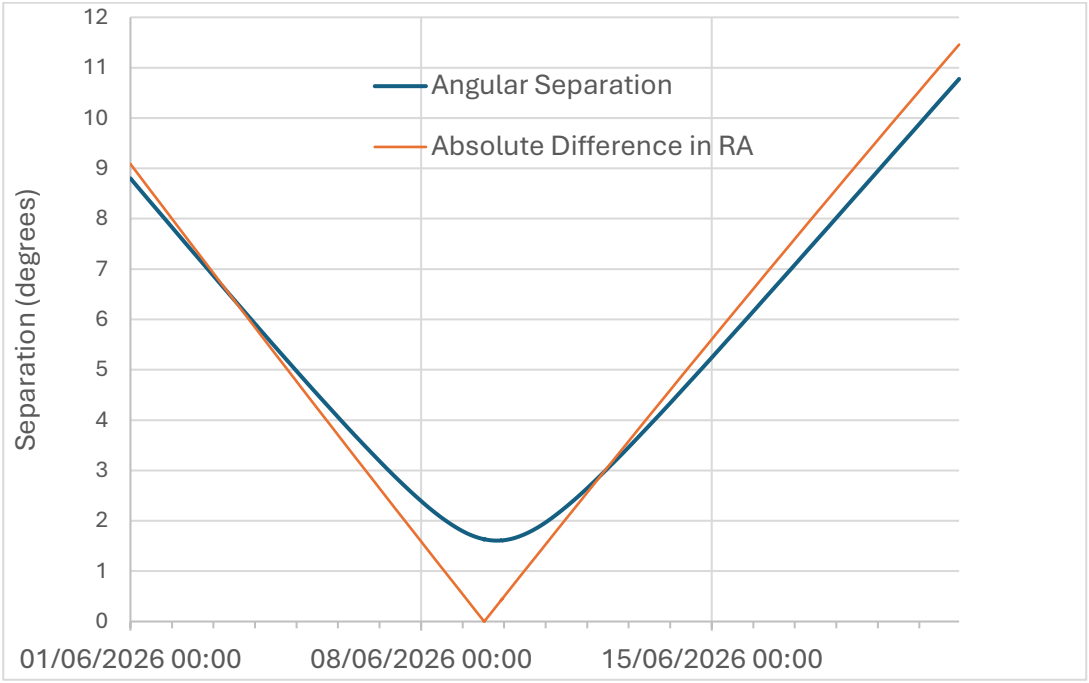




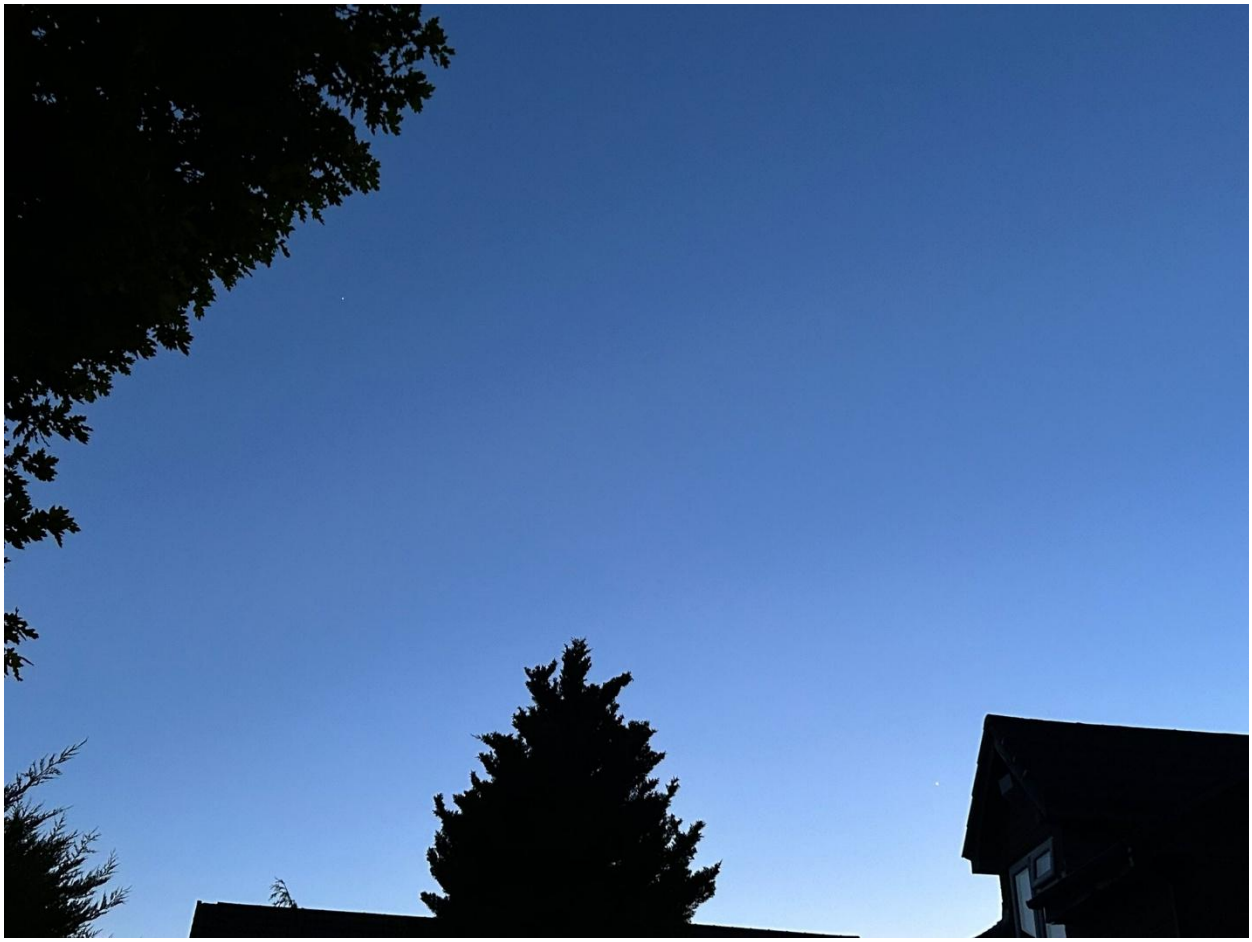
Venus-Jupiter Appulse, 09 June 2026

At 12:29 UT on 09 June 2026, Jupiter and Venus came to conjunction (i.e. the same RA). Slightly more than ten hours later, at 22:42 UT, they came to a minimum separation (between the centres of the planetary disks) of 1.38°. Details are for the location of Orwell Park Observatory, allowing for the effect of atmospheric refraction, computed using the JPL Horizons ephemeris.

The following plot shows the change, over the period 01-20 June, of the absolute difference in RA of the two bodies and the separation of the centres of the planetary disks. (Again, computed with Horizons, this time with no allowance for atmospheric refraction; the latter makes a difference around conjunction of a fraction of a degree to positions and a few hours to the times of conjunction and minimum separation.)



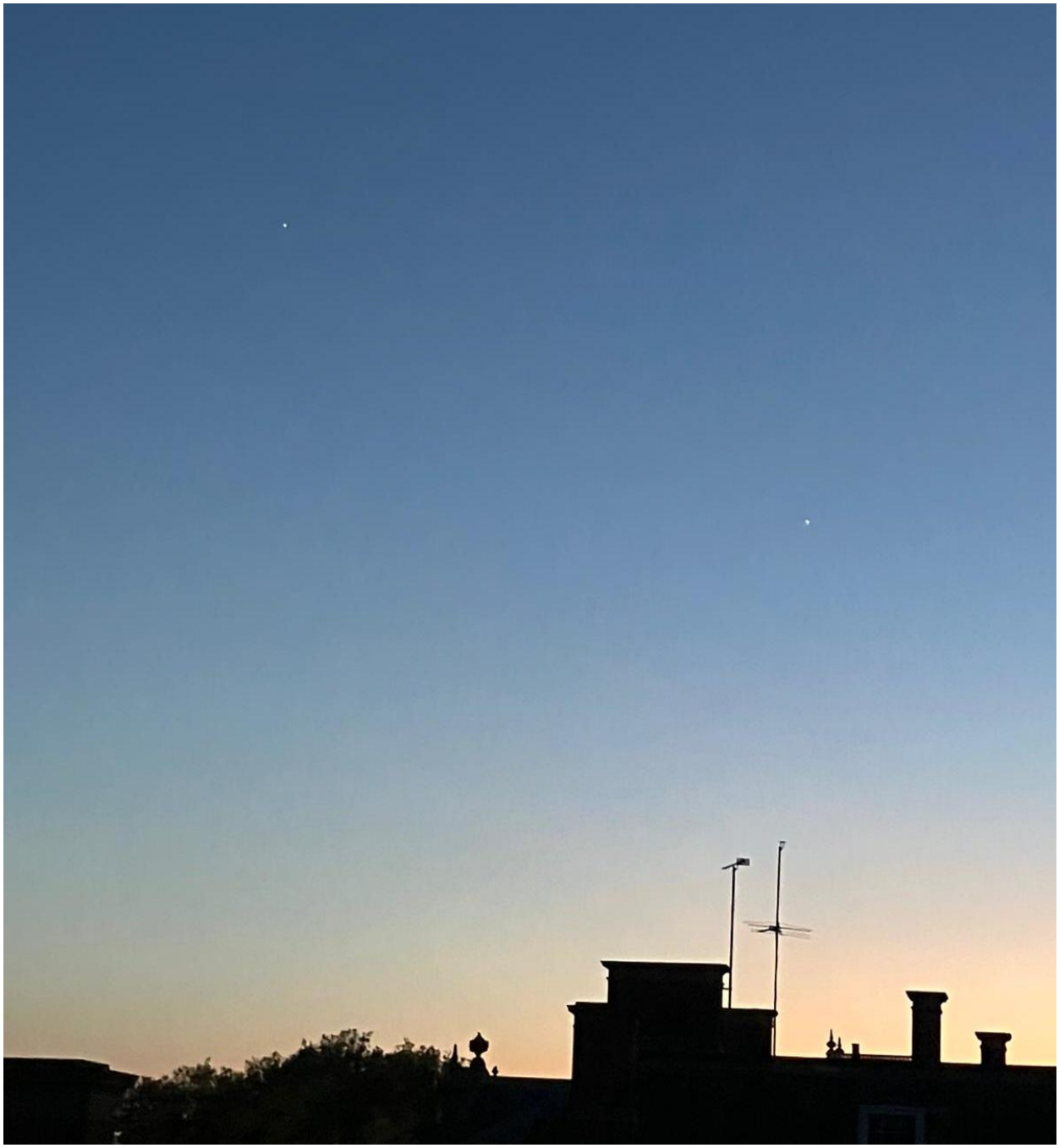
The event generated much interest among members of OASI, many of whom took photographs, shown below.



11 May 2026. Bill Barton, FRAS.

11 May 2026. Pete Richards.

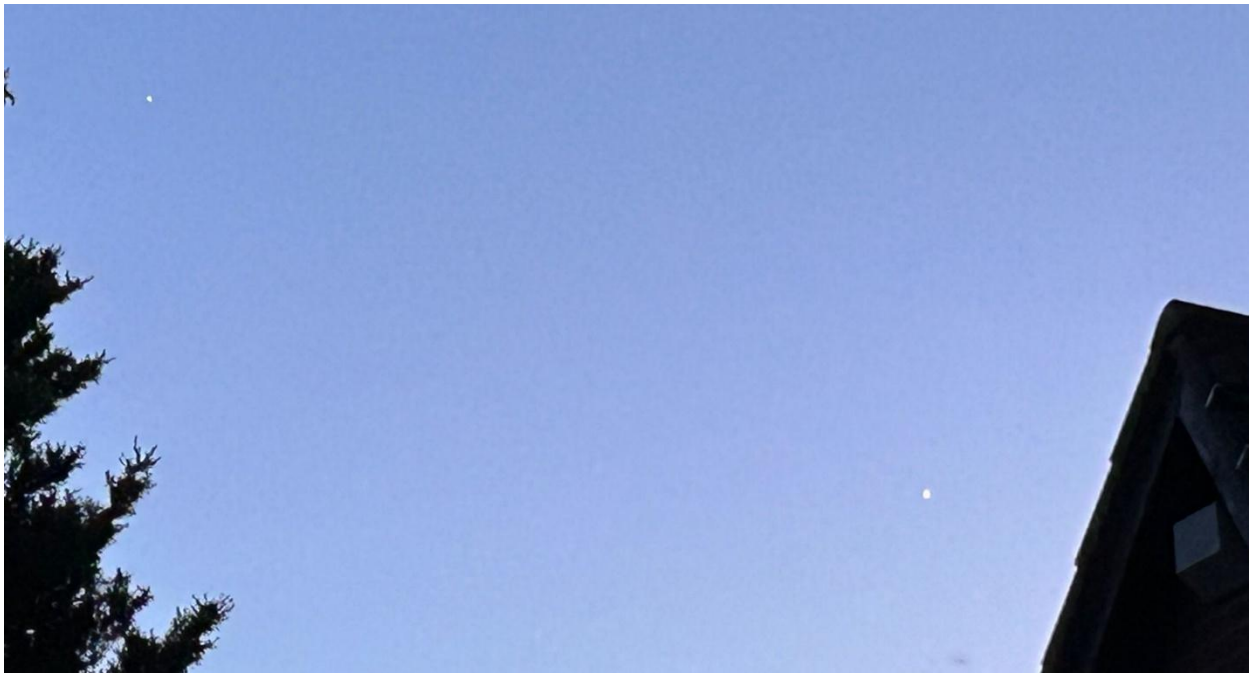
11 May 2026. Neil Morley.



27 May 2026. Andy Gibbs, taken at Orwell Park Observatory.

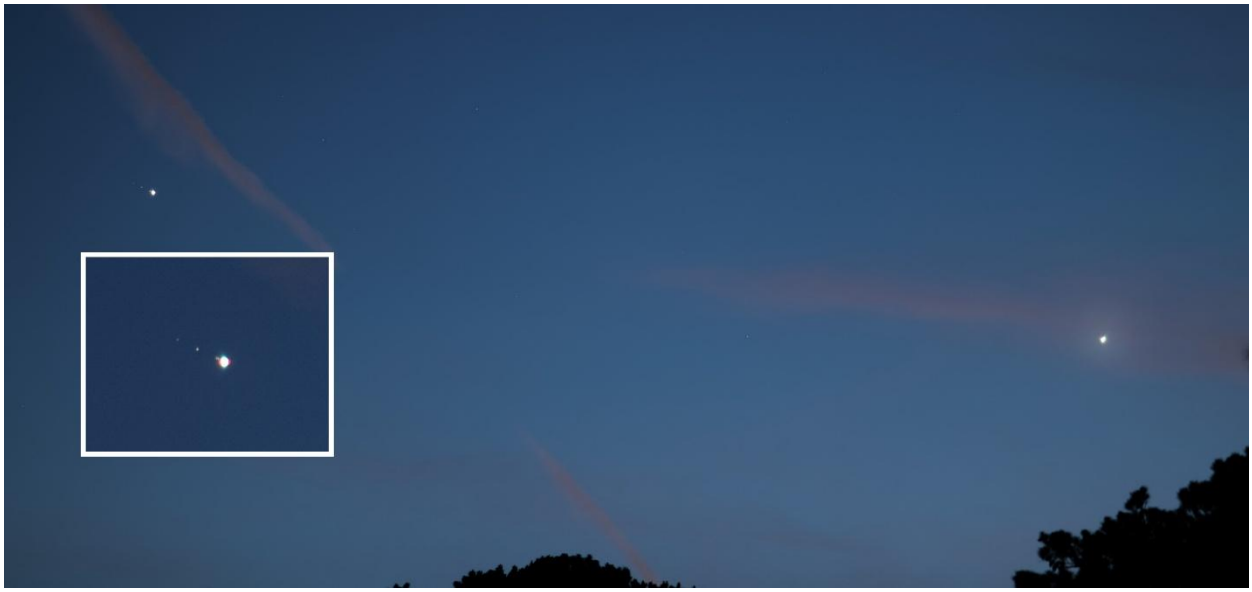
27 May 2026. Carl Baldwin, taken at Orwell Park Observatory.

29 May 2026, 21:16 UT. Steve McElvanney. Castor and Pollux are also visible.

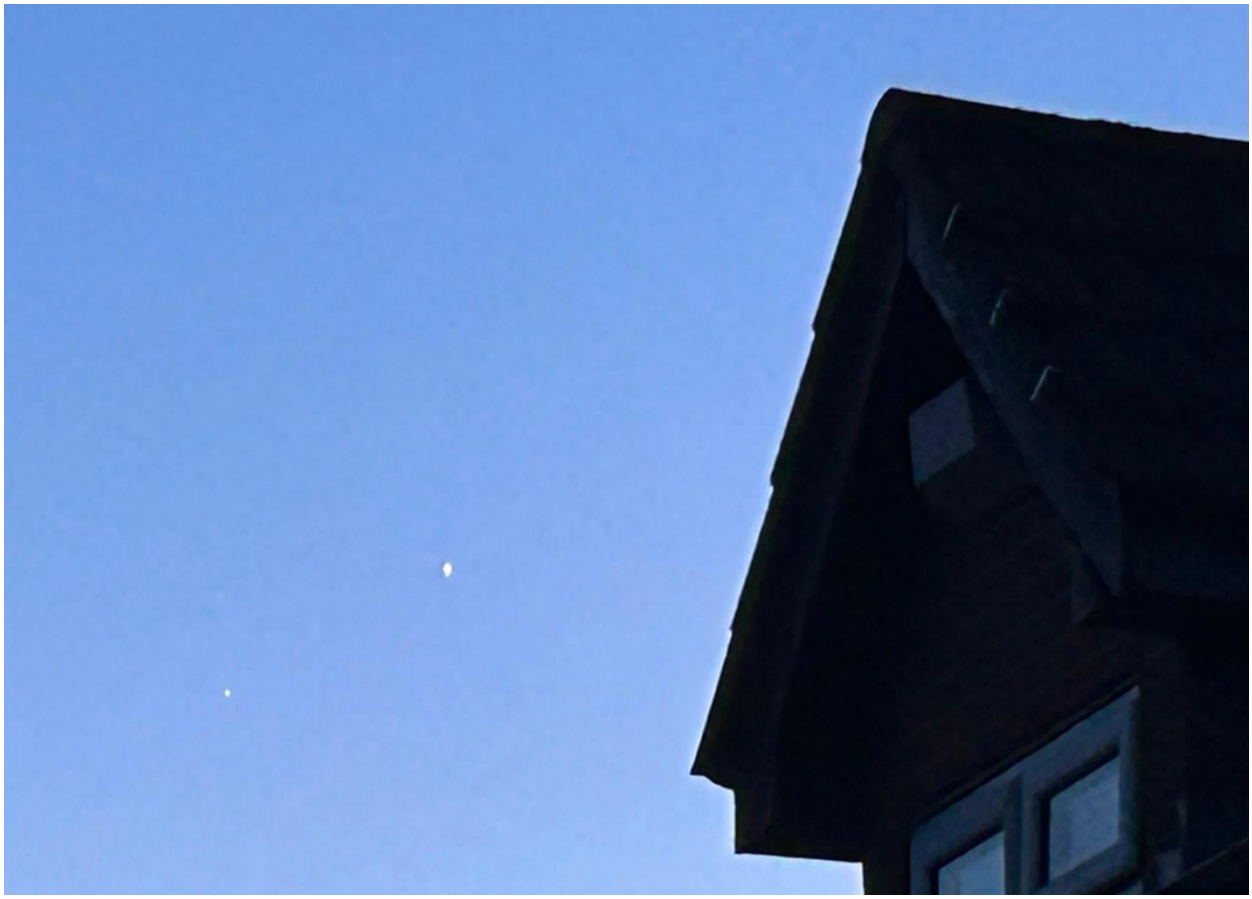


31 May 2026, Bill Barton, FRAS.

04 June 2026. Neil Morley, taken at Orwell Park Observatory.

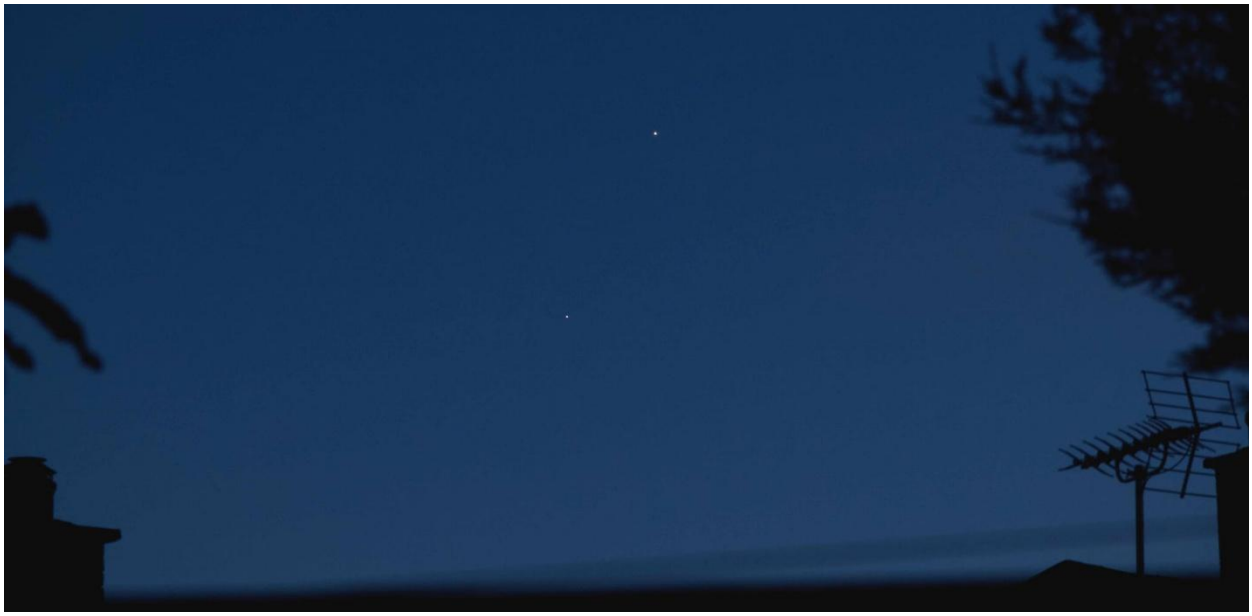


04 June 2026. Steve McElvanney.



06 June 2026, Bill Barton, FRAS.

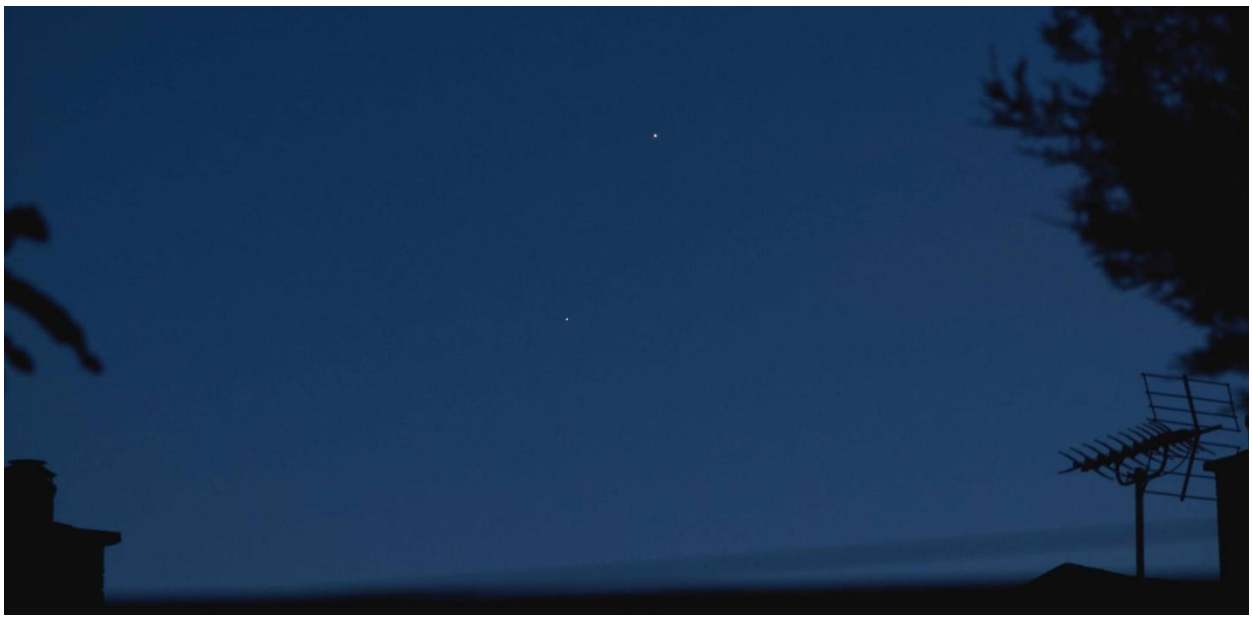
09 June 2026, 22:00 UT. Steve McElvanney.



09 June 2026, 21:00 UT. Martin Cook.

10 June 2026. Andy Gibbs.

10 June 2026. Andy Gibbs, taken at Orwell Park Observatory.



11 June 2026, approximately 22:20 UT. Steve McElvanney. Canon 800D camera with 200 mm lens.

Venus-Moon Appulse, 17 June 2026

Just over a week after the appulse of Jupiter and Venus, at 21:01 UT on 17 June 2026, the Moon and Venus came within 40' of each other. The figure is the angular distance between the centres of the bodies, as seen from Orwell Park Observatory, computed by the JPL Horizons ephemeris, allowing for the effect of atmospheric refraction.

Stephen Tetlow.

Neil Morley.

Nicola.

Gabriela Crane.

Bill Barton, FRAS.

Steve McElvanney.

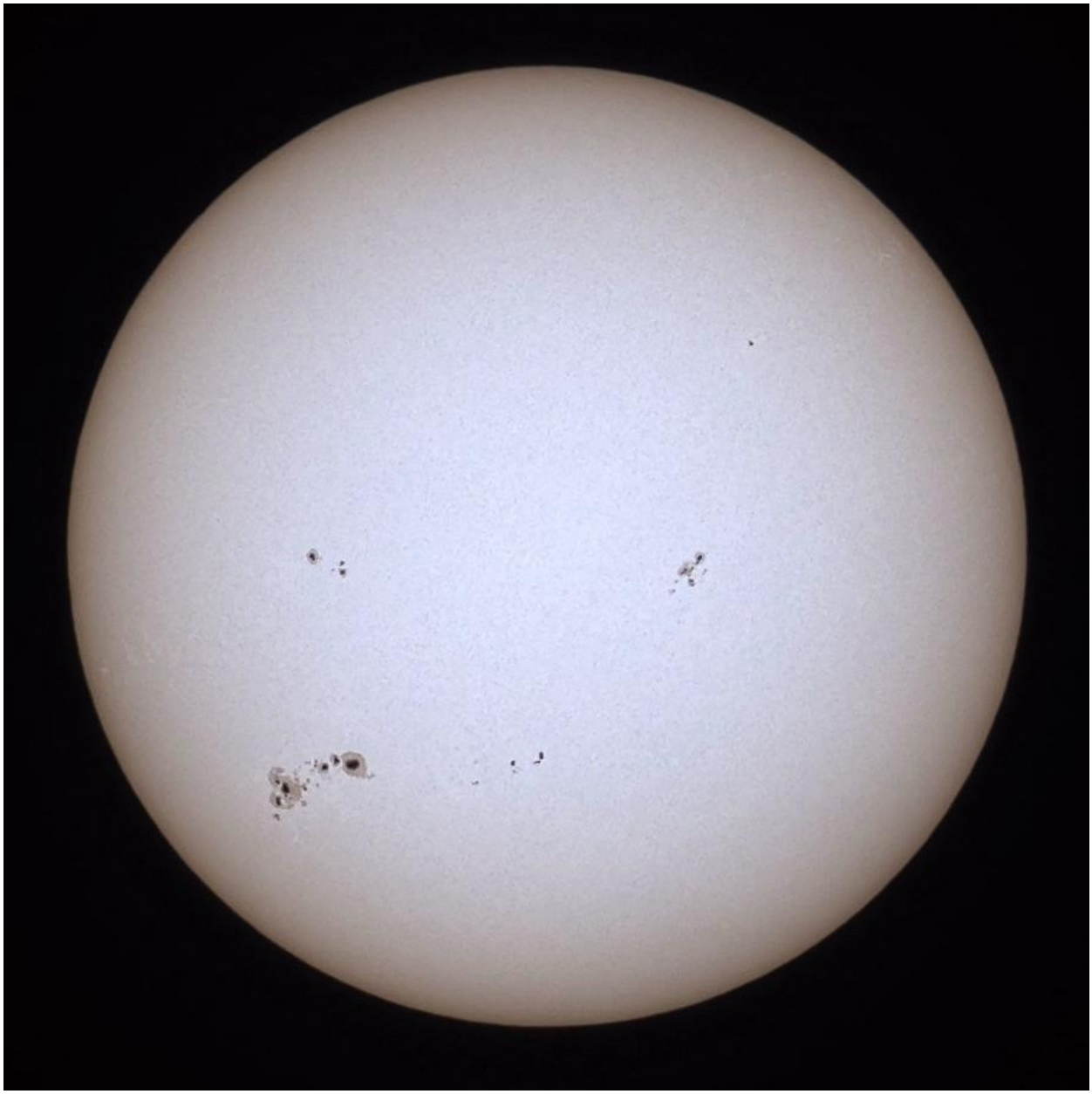
Mike Whybray.

Paul Whiting, FRAS

Images taken with a ZWO Seestar S50 "smart" telescope.

25 May 2026. The Moon captured during an OASI Newbourne meeting.

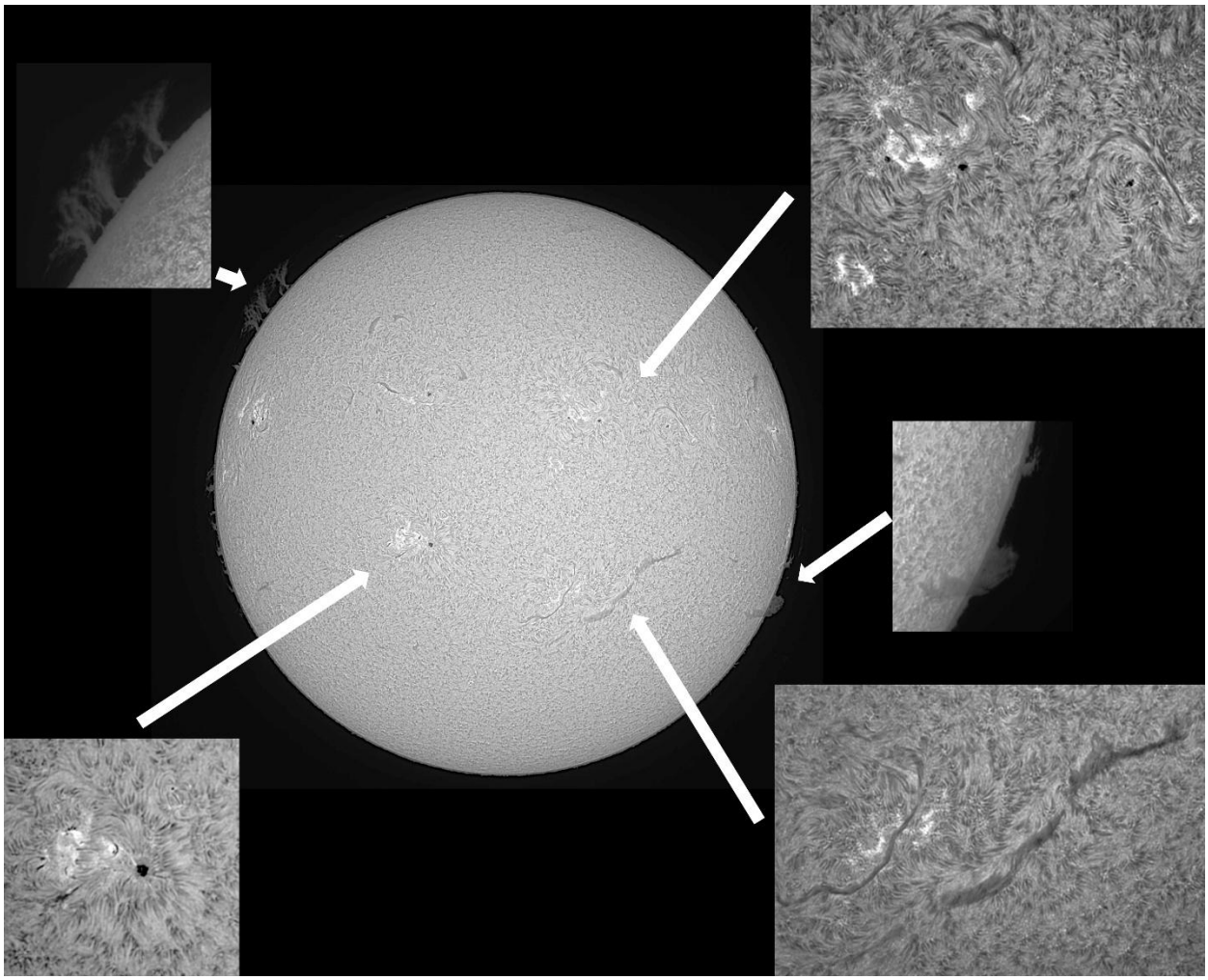
27 June 2026. The Sun in white light captured with a new Baader Astro solar film filter, which provides improved detail and contrast compared to the original ZWO filter. Image captured during OASI's outreach event at Christchurch Park.



Martin Cook

09 June 2026. A montage of solar images captured in Hα light between 12:33 and 12:57 UT. Lunt LS60THa/B1200 telescope and ZWO 178MM (mono) camera. The enlarged images of the sunspots, prominences and filaments were taken using a 2.5x Barlow lens. Captured using Sharpcap then stacked and processed in Autostakkert 4, Registax 6 and Affinity Photo.

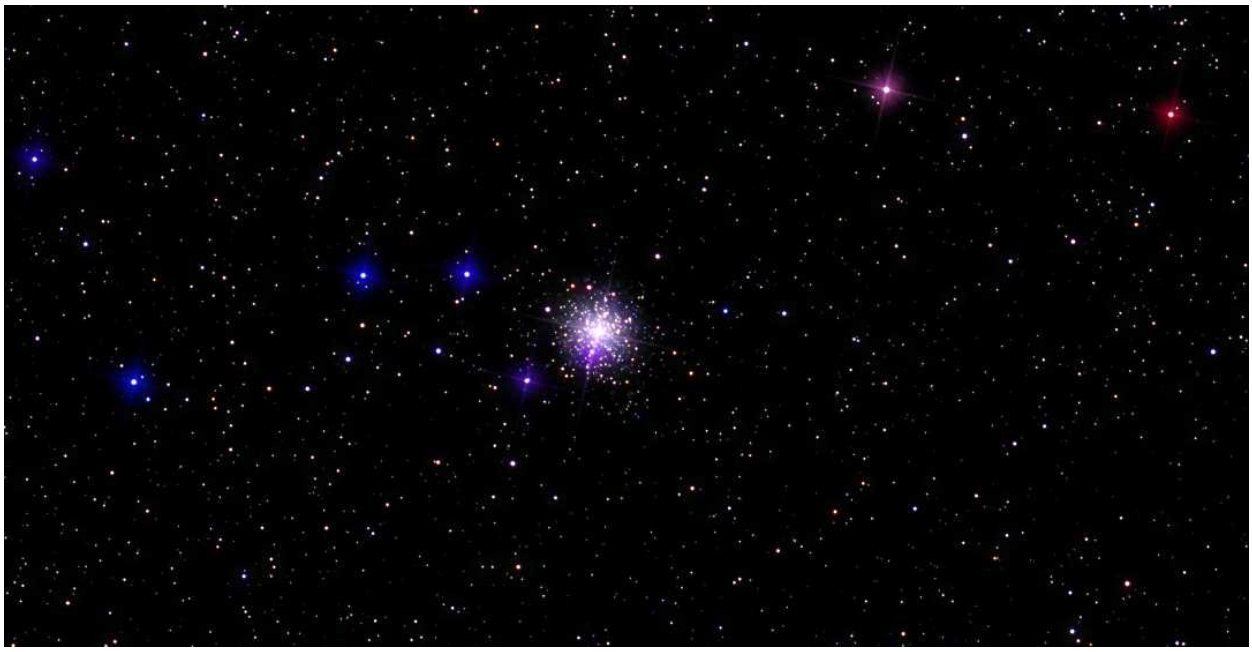
At the 11 o'clock position there are some tree-shaped prominences "dancing" on the surface, and at the 4 o'clock position a filament becoming a prominence as it is carried towards the limb by the Sun's rotation. (Filaments are prominences that are within the disc of the Sun as we view it, and therefore appear as dark lines of relatively cool matter against the hotter bright chromosphere behind.)



Gabriela Crane

Images captured with a Dwarflab DWARF Mini “smart” telescope.

21 June 2026. Globular cluster M12 in the constellation Ophiuchus. The object lies some 16,000 light years distant and is visible in binoculars. Image created from more than 300 frames captured over 1.5 hours.

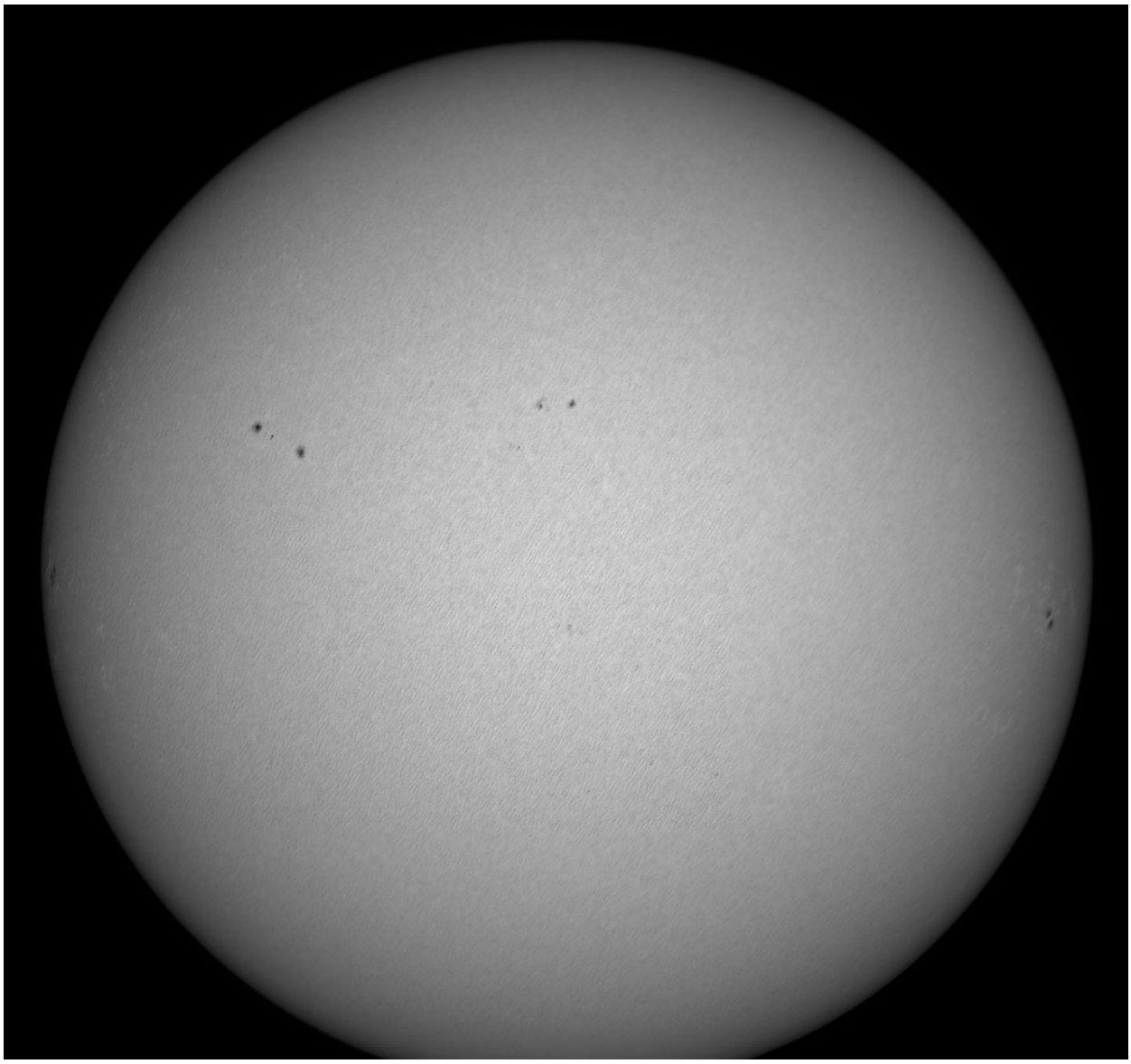


24 June 2026. Nebula IC1848 in the constellation Cassiopeia. The object lies 6,500 light years distant. It contains several small, open star clusters. Image post-processed in Stellar Studios and Adobe Lightroom.

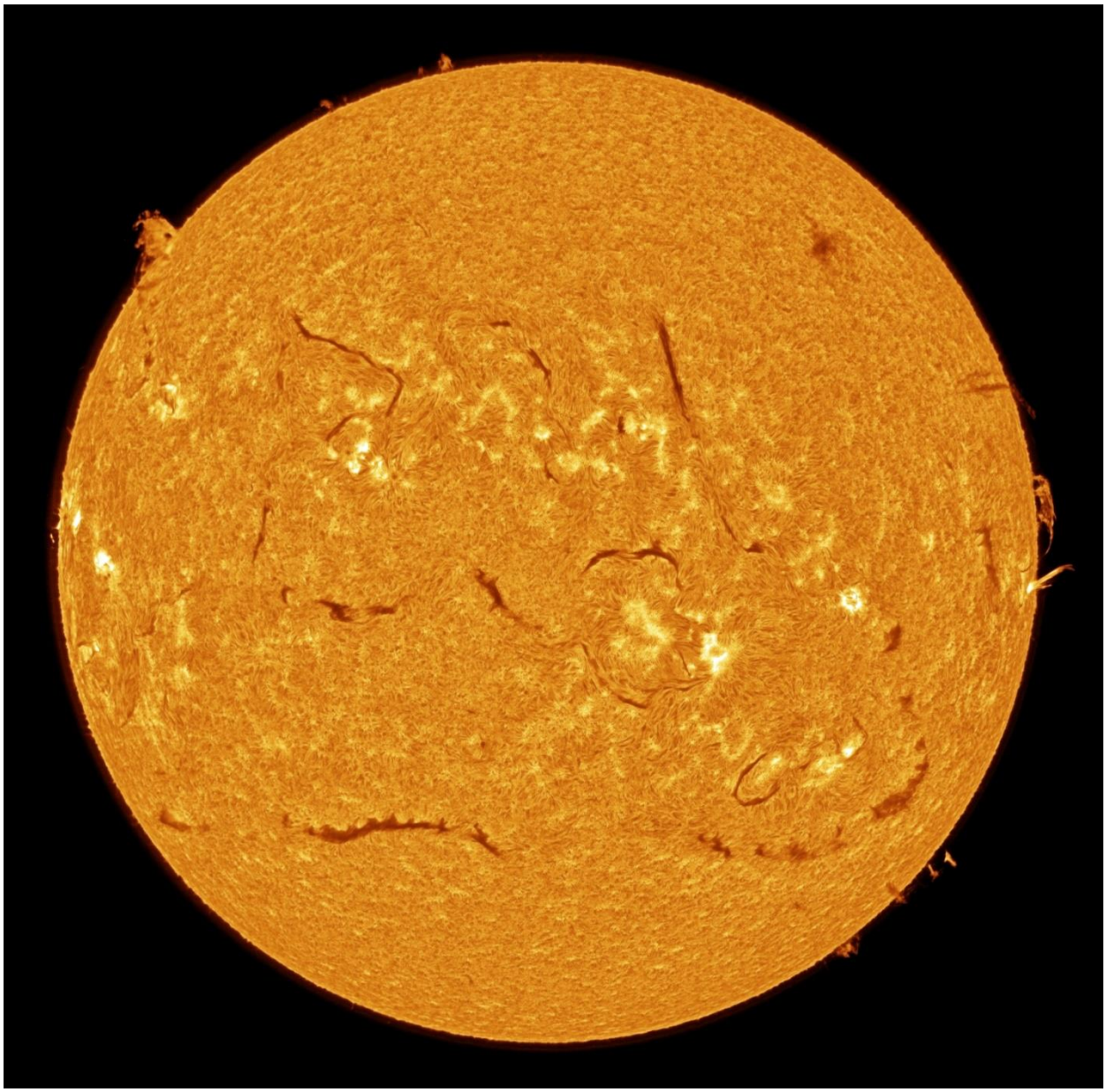
25 June 2026. Nebula IC1805 in the constellation Cassiopeia. The object lies 7000 light years distant. Image post-processed in Stellar Studios and Adobe Lightroom.

Steve McELvanney

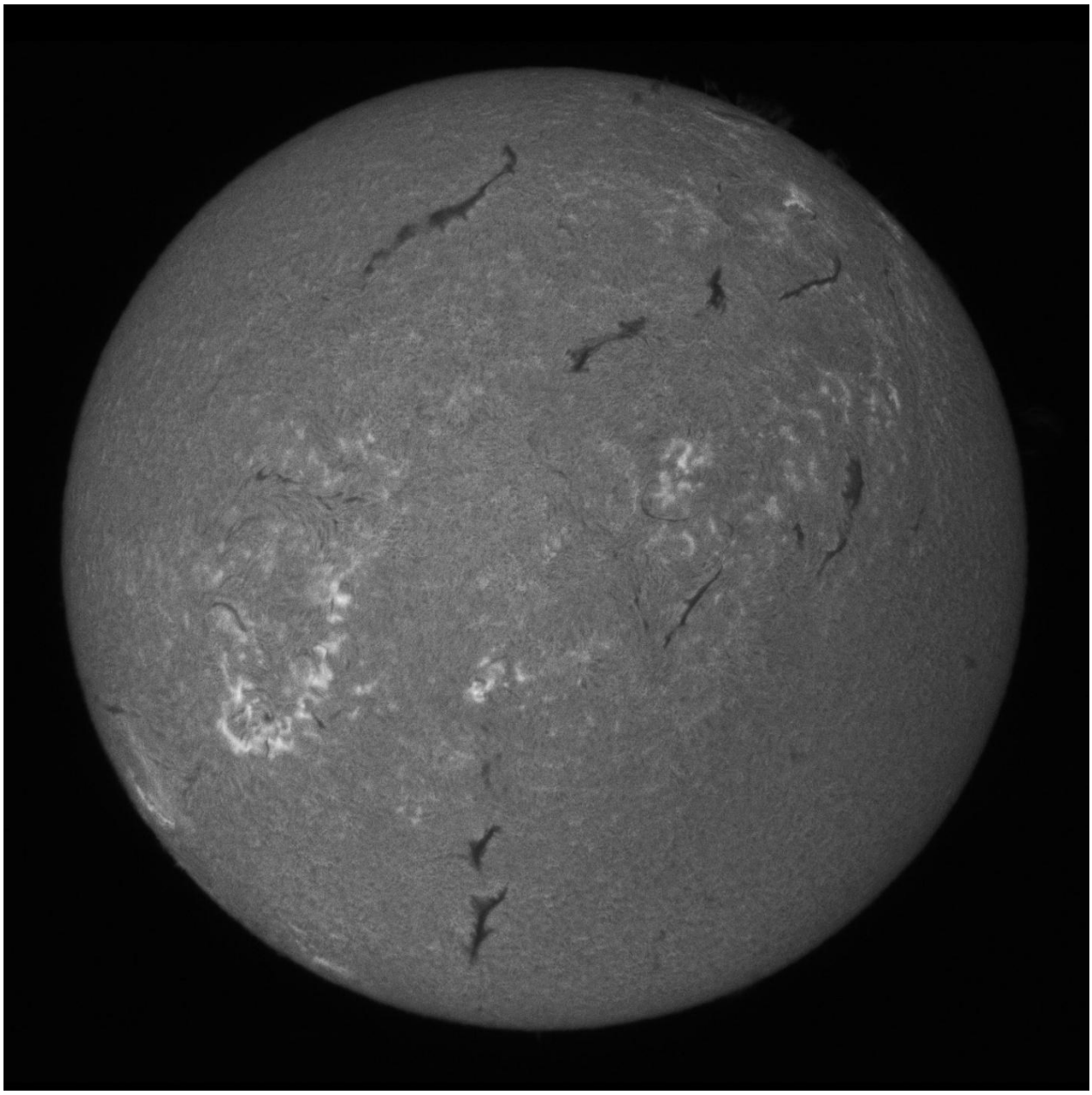
19 June 2026. The Sun in white light. Captured with an Altair Starwave 80ED refractor and ZWO ASI 585 MM camera.



20 June 2026. The Sun in Hα light. Captured with a Skywatcher Heliostar 76 telescope and ASI 585 MM camera. Processed with Autostakkert and Pixinsight.



23 June 2026. The Sun in Hα light. Captured with a Skywatcher Heliostar 76 telescope, ASI 585 MM camera and ASI Air Plus controller. Single-shot image.



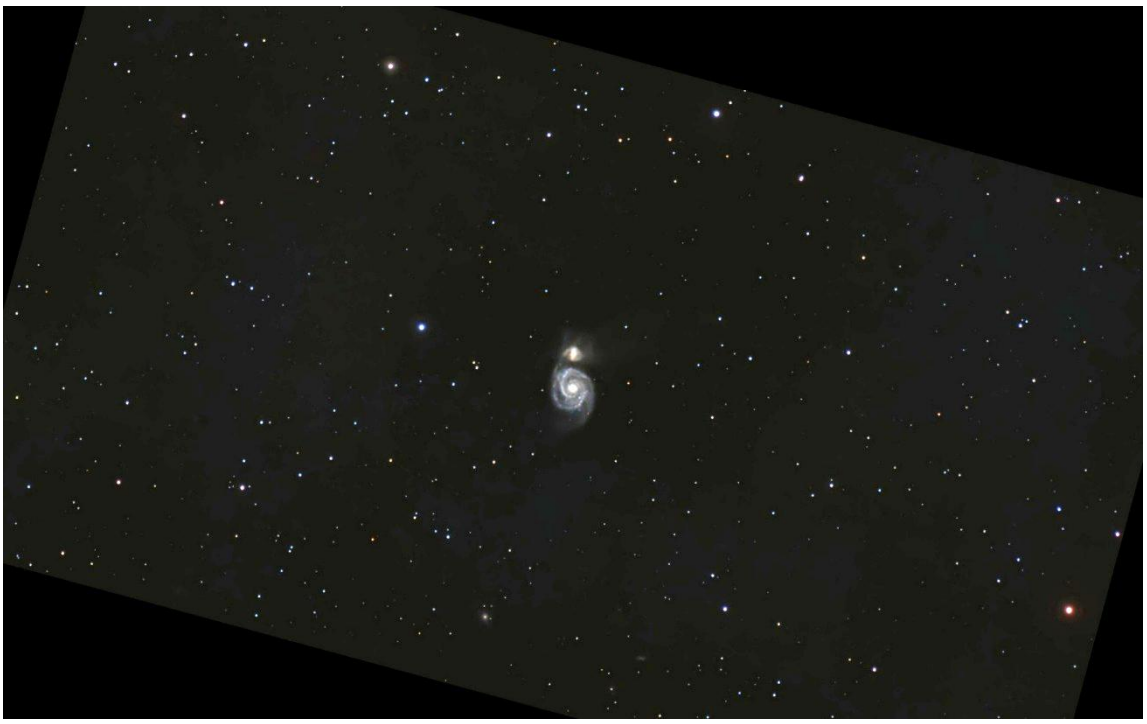
See also the front cover of this edition for Steve’s image of the Sun taken on 26 May.

Jack Gleed

Images captured with a DWARF 3 “smart” telescope.

23 June 2026. Two objects imaged with the telescope in EQ mode. Sky estimated at Bortle 5. Total exposure of 3.5 hours shared over the two images. Processed in Siril. Imaged from Yaxley.

M51, the *Whirlpool Nebula*.



Part of NGC7000, the *North American Nebula*. A mosaic image would have been necessary to cover the whole nebula. Image post-processed in Stellar Studios and Adobe Lightroom.

27 June 2026. The Sun in white light imaged with the telescope in alt-az mode. Single frame from a video captured during OASI's outreach event at Christchurch Park.

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