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OASI News

The newsletter of Orwell Astronomical Society (Ipswich)

Aurora over Birmingham - 1st January 2025 - By Mike O'Mahoney

Contents

Society Notices

Dear Members,

It's still a good time for planetary observing, with Mars, just past opposition and Jupiter still prominent in the evening sky. Let's hope we are blessed with a few clear nights to record observations and images!

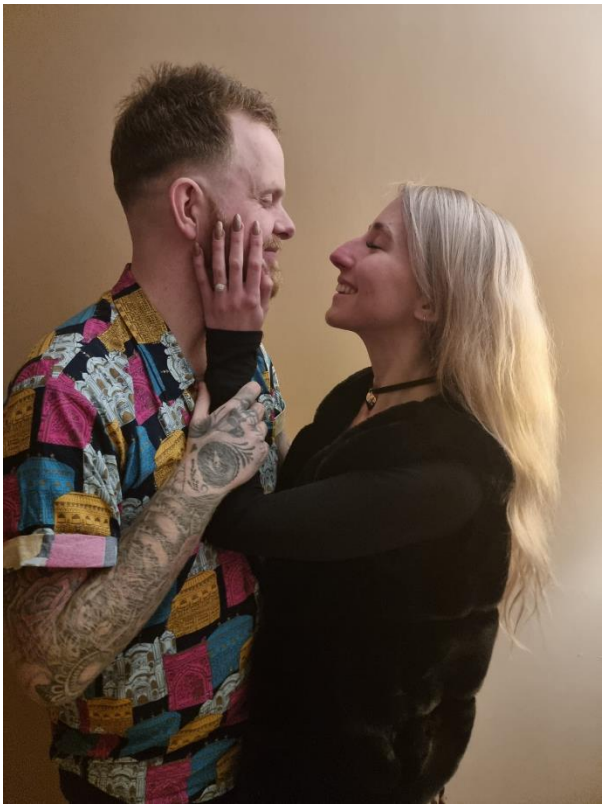
We are attending an outreach event, run by Ipswich Museum, at Christchurch Park on Saturday 8th February. The event is sold out, but as ever, we still need as members as possible to help out. You can either bring your own equipment, use the societies, or just bring yourself and act as a meeter and greeter. It's good fun and you don't have to be an expert!

Thank you,

Andy Gibbs,

Chairman.

On Thursday 14th November 2024, Bill and myself hosted a private visit to the Observatory, attended by Tom and Sophia. Just before the end of the visit, following the cue from Bill, Tom got on one knee and Sophia said yes!



Congratulations to the happy couple!

Committee 2025

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
	Mike Whybray	Astronomy Workshops, Child protection officer, Orwell Park School Astronomy Club
	Andy Willshere	Librarian
	Adam Honeybell	Newsletter
	Paul Whiting	OASI @ Newbourne

Committee Meeting

The next Committee Meeting will be the Friday 28th February 2025 on Zoom. All members welcome.

New members

Jack Gleed
Tracy Flynn
Tim Rovers

Welcome!

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
YouTube:	https://www.youtube.com/@orwellastronomical425
WhatsApp:	There is a WhatsApp group. Please email to be added.

We'd like to use social media a little more, since it's a more direct and immediate way to interact with members and potential members. Feel free to post pictures, comments or interesting articles. The more it's used, the more other people will be inclined to use it as well.

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 February).

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.

Meetings and events

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

Date, Time & Location	Contact	Event
Weekly, every Wednesday, from 20:00, Orwell Park Observatory, Nacton	Martin Cook	Observatory open
Monday 3rd February 20:00 Orwell Park Observatory	Paul Whiting,	Taster evening . Places must be booked in advance by email: tour@oasi.org.uk .
Saturday 8th February 18:00-20:00 immediately in front of Christchurch Park Mansion	Roy Gooding	Public access event. Star party. This is an event in support of National Astronomy Week 2025 . Sold out.
Monday 10th February 19:30 Newbourne Village Hall	Paul Whiting,	Newbourne meeting - beginners and new members welcome!
Monday 24th February 19:30 Newbourne Village Hall	Paul Whiting,	Newbourne meeting - beginners and new members welcome! Sky Notes by Bill Barton, FRAS.
Friday 28th February 20:00 Zoom	Roy Gooding	Committee meeting via Zoom. All members are invited to attend.

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**

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.

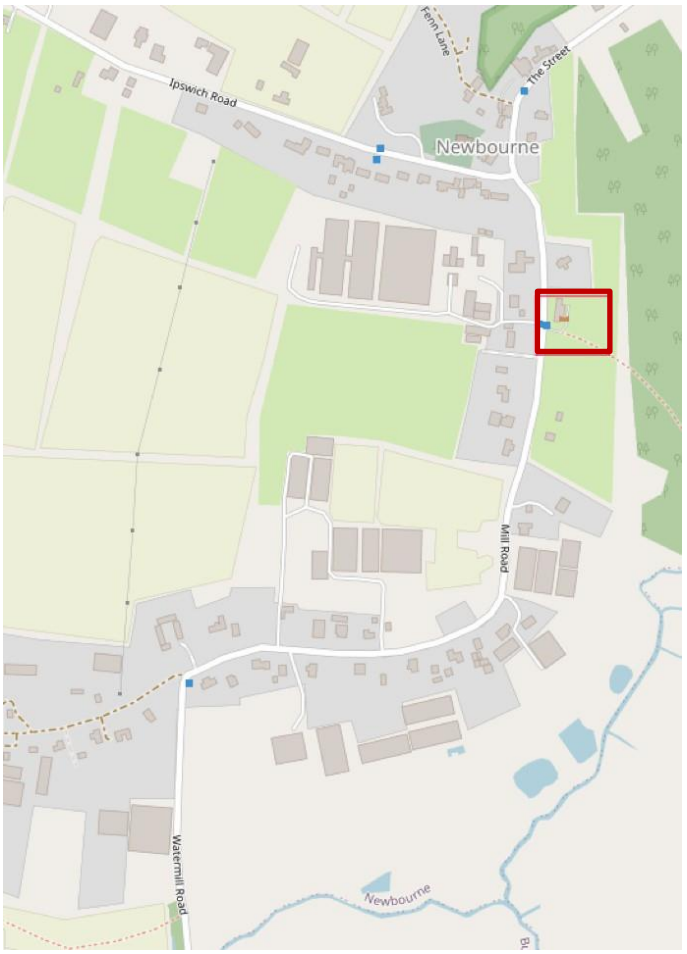
• Turn left at the end of the short corridor then immediately right.

• 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**

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 2025		
February	**10**	**24(S)**
March	**10**	**24(S)**
April	**14**	**28(S)**
May	**05#**	**26(S)**
June	**09**	**23(S)**
July	**14**	**28**
August	**11**	**25**
September	**08**	**22**
October	**13**	**27**
November	**10**	**24**
December	**08**	**22**

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

Astro News (A) / Sky Notes (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 2025

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 some enthusiasm! Just respond to the email call for help prior to the event.

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

Saturday 8th February

BAA news, events & webinars

BAA: https://britastro.org/events/future-events

Events correct at time of publication, please go to website for latest information.

7 February 2025	**European AstroFest 2025**	We will be back at Astrofest this year, so please stop by our stand in the basement level and say hello
22 February 2025	**ARPS Exoplanet Division Webinar**	Variations on an Exoplanet Theme – Part 2

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.

The Night Sky in February 2025

Event times are for Orwell Park Observatory at 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

Object	Date	Rise	Set	Mag.	Notes
Sun ☉	1	07:35	16:43		
	28	06:43	17:33		
Moon ☾	1	08:57	20:50		First Quarter : 05 February 08:02 Full Moon : 12 February 13:53 Apogee : 18 February 01:11 Last Quarter : 20 February 17:33 New Moon : 28 February 00:45
	28	07:04	18:22		
Mercury ☿	1	07:41	15:53	-0.9	
	28	07:13	18:55	-1.0	
Venus ♀	1	08:51	21:00	-4.5	
	28	06:56	20:41	-4.5	
Mars ♂	1	14:00	07:13	-1.1	
	28	12:02	05:11	-0.3	
Jupiter ♃	1	11:43	03:48	-2.4	
	28	10:00	02:07	-2.2	
Saturn ♄	1	08:59	19:46	1.1	
	28	07:18	18:18	1.1	
Uranus ♅	1	10:50	02:11	5.7	
	28	09:04	00:27	5.8	
Neptune ♆	1	09:12	20:48	7.9	
	28	07:27	19:07	8.0	

Occultations during February 2025

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 February 2025

After the Quadrantids, there won't be any notable showers until April, with the Lyrids.

Shower	Normal limits	Maximum	ZHR at Max	Notes
Quadrantids	26 December 12 February	4 February	120	Bluish- or yellowish-white meteors with fine trains

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.

Comet	Brightness	Date of last reported observation	Angular separation from Sun	Constellation
C/2024 G3 ATLAS	4.7	2025-Jan-30	27°	Piscis Austrinus
C/2023 A3 Tsuchinshan-ATLAS	11.1	2025-Jan-18	30°	Aquila
29P Schwassmann-Wachmann 1	11.6	2025-Feb-01	165°	Leo
C/2022 E2 ATLAS	13.2	2025-Feb-01	90°	Cassiopeia
C/2021 G2 Atlas	14.5	2025-Jan-31	81°	Libra
12P Pons-Brooks	15	2025-Jan-10	58°	Ara
C/2022 N2 PANSTARRS	15.4	2025-Jan-18	40°	Pisces
C/2024 J2 Wierzchos	15.6	2025-Jan-18	45°	Vulpecula
P/2023 S1	15.8	2025-Feb-01	176°	Cancer
C/2014 UN271 Bernardinelli-Bernstein	15.8	2025-Feb-01	77°	Hydrus
C/2022 R6 PANSTARRS	15.9	2025-Feb-01	124°	Canis Major
C/2022 QE78 ATLAS	15.9	2025-Feb-01	138°	Orion
472P NEAT-LINEAR	16	2025-Jan-30	136°	Orion

Visible ISS passes >30º max altitude for February 2025

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

Times are **GMT**.
Predictions are approximate (02/12/24) due to craft adjustments. Check the day before.
There are more passes than this, but they're below 30 degrees, so will be harder to spot unless you have good weather and can see the horizon. As with stella/planetary brightness, the more negative the magnitude, the brighter it is.

Date	Brightness	Start			Highest point			End			Pass type
	(mag)	Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.	
17-Feb	-3	06:24:18	10°	SW	06:27:34	50°	SSE	06:30:51	10°	E	visible
18-Feb	-2.6	05:36:39	15°	SW	05:39:04	38°	SSE	05:42:14	10°	E	visible
19-Feb	-3.6	06:23:41	10°	WSW	06:27:03	74°	S	06:30:24	10°	E	visible
20-Feb	-3.5	05:36:27	22°	WSW	05:38:26	62°	SSE	05:41:46	10°	E	visible
21-Feb	-3.2	04:49:45	48°	SSE	04:49:50	48°	SSE	04:53:06	10°	E	visible
22-Feb	-3.8	05:35:51	24°	W	05:37:47	82°	S	05:41:08	10°	E	visible
23-Feb	-3.8	04:49:01	72°	S	04:49:04	72°	SSE	04:52:25	10°	E	visible
24-Feb	-3.8	05:35:01	22°	W	05:37:02	86°	S	05:40:24	10°	E	visible
25-Feb	-3.9	04:48:06	80°	WSW	04:48:15	86°	S	04:51:37	10°	E	visible
26-Feb	-3.7	05:34:01	21°	W	05:36:08	72°	SSW	05:39:29	10°	ESE	visible
27-Feb	-3.9	04:47:04	73°	WSW	04:47:19	81°	S	04:50:41	10°	E	visible
28-Feb	-3.3	05:32:58	19°	W	05:35:04	47°	SSW	05:38:18	10°	SE	visible

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

A Star Gazing Opportunity

Paul Whiting

Whilst on a recent cruise to the Canary Islands, I noticed that there was a stargazing option at an observatory in La Palma. I immediately jumped at the chance to visit one of the leading observatories in the world and perhaps look through the Isaac Newton or William Herschel telescopes there.

Alas on further reading it appeared that we were going to visit a public observatory with much more modest telescopes. It did, however, promise a high viewing area above the clouds, with excellent seeing conditions.

The evening was scheduled to be from 18:00 to 22:30, back in time for the ship to depart. About thirty intrepid star gazers boarded a coach with two guides, and we set off. We were told it was about a 45 minutes to an hour journey to the site, with a convenience stop en route. Thirty minutes later we arrived at what we thought was a loo stop, but no, this was to be our observing site. The car park to a crater's visitor centre. Apparently, it was cloudy at the original intended site. One of the ten cloudy nights they have per year. Still, the car park was at a reasonably high location.

The guides pulled out 2 twelve-inch Celestron telescopes and set them up. All was looking good. Venus was shining brightly in the south-west and Jupiter in the east. The Sun had just set. I intended to take some wide-angled shots of the dark-sky Milky Way in order to make a movie of its motion across the heavens. I had set up my camera on its tripod and we were all waiting for it to get properly dark.

Just at that moment the single street light, that no-one had noticed, came on. It was perfectly placed above the two telescopes and my camera. So, we all had to move behind the coach to try to get in the shadow cast by the vehicle. It was at that point we noticed the glow coming from a village just up the road, when all its street lamps, plus expansive Christmas lighting, came on. The sky really lit up. So much for the legislation we were told about by the guides, that forbade anything other than downward lighting.

Meanwhile the guides were carrying on regardless, showing ooh and aah-ing guests Venus, Jupiter, Saturn, The Orion Nebula, The Pleiades and The Andromeda Galaxy. It was at this point the wind got up and blew my camera and tripod over on to the hard standing.

Luckily nothing was broken, but I was reticent to leave it again to look through the telescopes.

At last it was dark enough to try some Milky Way shots. Obviously one of the guides noticed, and started brandishing a laser pointer right across my field of view.

It didn't take long for me to get fed up as the light pollution was really bad, and the seeing wasn't that great anyway. Luckily everyone else got fed up too, especially with the lack of promised toilet facilities. We all trooped back on the coach and got back to the ship an hour earlier than expected.

Unfortunately a wasted opportunity.

Tromsø Aurora Expedition 21 January 2025 (Kvaløya)

Henrikvik Gravlund – 69° 40’ 53.7” N 18° 39’ 16.2” E

Rekvik - 69° 44’ 43.8” N 18° 21’ 12.4” E

Paul Whiting

Keen to make use of the currently active Sun, I set off for my annual pilgrimage to Tromsø, in the north of Norway. This time I wasn’t alone – I was accompanied by renowned photographer Nigel Evans and his wife Alex.

Having learnt from the awful flight timings of last January, we chose more user-friendly flights, leaving Gatwick Airport Monday mid-morning and returning from Tromsø mid-afternoon on the following Friday. Much less anti-social than the midnight and 6am timings last time!

Everything went to plan and we arrived in Tromsø safely. Nothing had altered much from the previous year, except that the hotel price had sky-rocketed. Even my credit card balked at the price, OK this may have been a break in the hotel internet. But when Nigel inserted his credit card the hotel fire alarm went off.

Having settled in we spent the rest of Monday exploring the vicinity, watching the Hurtigruten ships come and go. After a leisurely Tuesday we were ready for the first aurora minibus trip. Having found the new departure point, some 400m from the hotel, we signed in. I stay in this particular hotel as until now the safaris began and ended just outside, ho hum,

Our guide, a linguistics student, was particularly good at setting expectations of what we might see that evening. The bar was set very, VERY low. The weather forecast was for almost total cloud coverage, and the Bz was alternating positive and negative all day (it needs to be negative to be able to see any auroral activity). However, just like at home, the weather pays very little attention to the forecast and became totally clear of clouds. So, following his instructions to get the punters to see something, the guide had us stop in a pull off from the major road into a graveyard. As cars and other minibus loads of aurora chasers were driving past at speed, we were made to wear Hi-Viz jackets. This was only supposed to be a 10-minute stop, but some of the best aurora suddenly appeared in almost every direction. Instead of just having a quick look, everyone unloaded their cameras and started setting up. Well I should say each person unloaded their camera – singular. Except Nigel, who had five cameras.

The guide was not expecting such a magnificent, animated display, because this stopping place was not only on a main road, but the graveyard had a solitary streetlight that “added interest” to most of our shots.

We did eventually move on to our intended destination a few miles up the road, which was a trail head and scenic viewpoint pull off near the village of Rekvik, to the far northwest of Kvaløya Island. Here we were treated with more-or-less continual aurora across the whole sky for the next two hours. It was cold, around minus 10° C. Wearing the right clothing meant we lasted quite well, but hands and cheeks did at last shout enough’s enough, and when the camera battery decided to throw in the towel, I thought time to go home. Luckily everyone else came to the same conclusion.

The guide remarked that the aurora that was happening as we decided to go home would have been the wildest dream for other groups!

Figure 1: light pollution at first stop

Figure 2: Cassiopeia

Figure 3: swirls

Figure 4: Cygnus

Figure 5: Orion

Information from the Library.

Andy Willshere

An Overview of the Parker Solar Probe (Continued)

The original article was published in the OASI magazine at the latter end of 2020 and some of the information is incorporated into this month's offering. Since that date, the Parker Solar probe has been functioning on its flight within the parameters set down by its flight directors, and has amassed a great deal of data collected from its launch date to present day.

I think that at this point a little slice of history would be quite useful

During the mid 1950's the concept of solar winds was proposed by a junior physicist Eugene Parker who described them as a torrent of energy which incorporated a conglomerate of plasma, magnetic fields and particles consisting of protons, electrons and HZE ions (high energy nuclei of galactic cosmic rays with a charge of +3e or greater). He then looked at the superheated solar corona and re-wrote the known laws of physics at the time with a new theory which suggested that this area was hotter than the sun itself.

Parker was born on the 10th June 1927 in Michigan U.S.A. and received a PhD from Caltech in 1951. He lectured at the University of Utah from 1955 and had been a member of the faculty at both the University of Chicago and its Fermi institute. Throughout his life he had been in receipt of numerous awards. He died on 15th March 2022.

The probe was launched at 0731 GMT on August 12, 2018, from Space Launch Complex 37 at Cape Canaveral, Florida, USA, to have a mission duration of 6 years and 11 months

In order to achieve its final altitude, the mission uses a gravity assist method to incrementally decrease the probe's perihelion to gain its final altitude which will be approximately 6.9 Gm from the centre of the sun. The probe's trajectory will include passing close by Venus seven times over the seven years, which will gradually reduce its twenty four elliptical circuits around the Sun. Gravity will assist its speed by accelerating it at perihelion and decelerating it as it makes its way to aphelion.

All the systems on board, are protected by a solar shield. They will have to face, at perihelion, an incident solar radiation level 475 times that of the Earth's. The shield is of hexagonal shape, is comprised of reinforced carbon-carbon composite and is 2.3m wide and 11.4cm thick. It will tolerate temperatures of up to 1,370°C. Due to its white reflective surface, little absorption occurs. All the scientific instruments and systems electronics are housed centrally where direct solar radiation is blocked due to the shields shadow. Since it takes about eight minutes to talk to the solar probe, it must have a certain percentage of autonomy to protect itself. In the case of solar radiation, it has four light sensors to identify the initial strands of direct sunlight, at which point, the craft will move itself back into the shields shadow. This probe has a great many autonomous algorithms. Its primary power system is that of solar panels, which operates two systems on board. One used for most of the mission outside 0.25AU and the other powers the craft as it travels within close proximity of the final objective.

Missions

The first mission is to try to trace energy particles that heats the corona and speeds up the solar winds. Its second mission is to understand the magnetic field structure at the solar wind source and finally identify what methods move and speed up dynamic particles. In order to gain these objectives, five major studies will be executed:

i. Electric and magnetic vector fields, and directional energy flux, as well as plasma density and electron kinetic energy.
ii. **ISIS.** (Integrated Science Investigation of the Sun). This project will measure energetic particles taken over a very broad energy range, process the data and use scientific analysis to ascertain particle dynamics. It will be performed using two ISIS energetic particle instruments.
iii. **WISPR**. (Wide -field visible light heliospheric imager for solar probe). This is the only imager on the probe. It will image the fine scale structure of the solar corona, as well as produce a 3D image of the large scale corona and to quantify if there is a dust free area close to the sun.
iv. **SWEAP** (Solar Winds Electrons Alphas and Protons). This will measure the properties of the plasma in the solar atmosphere.
v. **HeliOSPP** (Heliospheric Origins with Solar Probe Plus) A representative and theoretical approach from all data obtained.

Scheduled Events

The probe will flyby Venus seven times over the period of nearly seven years. The orbit will slowly contract around the sun culminating in getting as close as 6.2 Gm to the photosphere, which is well within the orbit of Mercury.

2018

Fig.1. Data only credit: https://www.nasa.gov/content/goddard/parker-solar-

Year	Date	Event	Distance from the Sun (Gm)	Speed (km/s)	Orbital Period (days)
2018	Aug-12	Launch	151.6	174	
2018	Oct-03	Venus flyby #1			
2018	Nov-06	Perihelion #1	24.8	95	150
2019	Apr-04	Perihelion #2	24.8	95	150
2019	Sep-01	Perihelion #3	24.8	95	150
2019	Dec-26	Venus flyby #2			
2020	Jan-29	Perihelion #4	19.4	109	130
2020	Jun-07	Perihelion #5	19.4	109	130
2020	Jul-11	Venus flyby #3			
2020	Sep-27	Perihelion #6	14.2	129	112.5
2021	Jan-17	Perihelion #7	14.2	129	112.5
2021	Feb-20	Venus flyby #4			
2021	Apr-29	Perihelion #8	11.1	147	102
2021	Aug-09	Perihelion #9	11.1	147	102

2021	Oct-16	Venus flyby #5			
2021	Nov-21	Perihelion #10	9.2	163	96
2022	Feb-25	Perihelion #11	9.2	163	96
2022	Jun-01	Perihelion #12	9.2	163	96
2022	Sep-06	Perihelion #13	9.2	163	96
2023	Dec-11	Perihelion #14	9.2	163	96
2023	Mar-17	Perihelion #15	9.2	163	96
2023	Jun-22	Perihelion #16	9.2	163	96
2023	Aug-21	Venus flyby #6			
2023	Sep-27	Perihelion #17	7.9	176	92
2023	Dec-29	Perihelion #18	7.9	176	92
2024	Mar-30	Perihelion #19	7.9	176	92
2024	Jun-30	Perihelion #20	7.9	176	92
2024	Sep-30	Perihelion #21	7.9	176	92
2024	Nov-06	Venus flyby #7			
2024	Dec-24	Perihelion #22	6.9	192	88
2025	Mar-22	Perihelion #23	6.9	192	88
2025	Jun-19	Perihelion #24	6.9	192	88
2025	Sep-15	Perihelion #25	6.9	192	88
2025	Dec-12	Perihelion #26	6.9	192	88

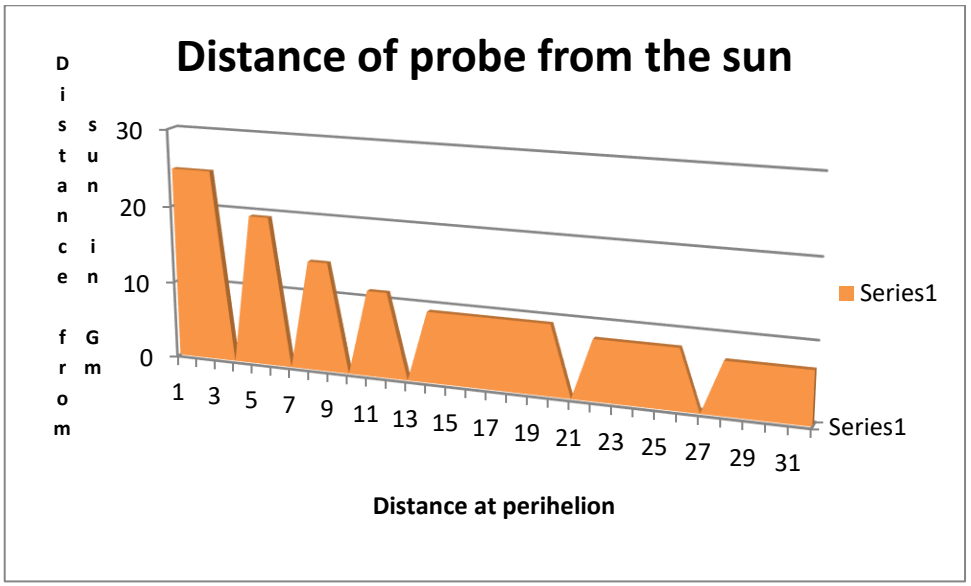


Fig.2 picture credit: https://www.nasa.gov/content/goddard/parker-solar

Life as the Parker Solar Probe.

On the 19th of September 2018, the Parker probe sent back First Light data. This data was obtained from its four scientific instrument suites on the probe, which work alongside each other in evaluating the magnetic

and electric fields of the Sun. As the probe heads towards the sun, images obtained from the solar winds bouncing off the craft were also sent back.

On November 5th 2018, the probe flew past the sun at a distance of approximately 15 million miles, at a speed of 213,000 mph. The solar radiation and extreme heat was managed well setting the scene for the rest of the project. A signal was sent back to the control suit at Johns Hopkins Physics Lab indicating that the probe and its instruments were performing at the highest level, 'A'. At this point of its journey, the probe transmitted results about near -Sun energetic particle radiation. This information had been generated from coronal mass ejections and spontaneous events whose velocity changes are due to the proximity of the Sun. It was at this point that an anomaly termed 'switchbacks' was noted. These are an abrupt u-turn in the solar wind's magnetic field.

January 19th 2019, Parker completed its first orbit of the Sun. This first revolution took 161 days. It then sets off on the second orbit of a proposed twenty four.

March 30th 2019 the space craft commenced its second confrontation of the Sun, with perihelion occurring at 6:40 p.m. EDT on April 4th . This stage lasted until April 10th . Data collection by all the scientific instruments was transmitted to Earth later in April, culminating on May 6th, with a concluding burst of 22 gigabytes of data. With all systems performing better than expected, more data could be transmitted and received.

September1st 2019 at a little before 1:50p.m. EDT, the probe completed its third approach (perihelion) of the Sun. For this part of the mission, the four scientific instrument packages (see mission) were switched on for a longer time allowing for greater data capture. They were switched off at about the 0.5AU point September 20th.

December 26th and the probe had accomplished its second Venus flyby. At this point the probe is 1870 miles from the surface. This manoeuvre used Venus to slow the probe down and at the same time modifying is course prior to the fourth Sun orbit. The data obtained from these early Venus flybys furnished the flight operations group with information to set up the remaining five Venus gravity assist exercises.

January 29th 2020, was an exciting day for the probe. At 4;37 a.m. EST Parker broke its own record as it sailed nearer to the Sun for the fourth time. The craft managed at perihelion, to get to within 11.6 million miles of the Sun's surface travelling at 390,760 km per hour. Being this close to the Sun may allow the instruments to provide new information about the solar winds.

May 9th 2020, saw the Parker probe begin its longest period of observation. At 100 $*10^6$ km from the Sun, the instruments were switched on and remained so until June 28th. The main reason for this was that earlier observations had shown definitive motion of the solar wind and other new solar wind occurrences.

On December 14th 2021 Parker flew through the sun's corona, sampling particles and assessing the magnetic fields. It could be said that the probe 'had touched the sun'.

Sunday November 21st showed Parker to have reached a point 5.3 million miles from the solar surface.

In February 2022, the Solar Orbiter, a NASA and ESA spacecraft that was investigating the Sun's corona

coincidentally aligned itself with Parker. This allowed both spacecraft to measure the same solar wind stream for two days. They both viewed what are called 'Alfven waves' (plasma energy transporters). This was the eleventh close approach of Parker. (25/02/2022).

December 6th 2023, saw Parker beginning its fourteenth close approach getting to 5.3 million miles from the solar surface. The eighteenth and nineteenth approaches culminated in Parker getting to within 4.51 million miles from the solar surface, the latter occurring on March 30th 2024.

December 24th 2024 was an historic day for the probe. It managed through a temperature of 930 degrees C to get to within 3.8 million miles from the Sun's surface, travelling at 430,000 miles /hour. This was at perihelion at 11:53 GMT.

A beacon tone was received by the Johns Hopkins APL on Thursday December 26th 2024 verifying that the craft had survived the encounter and all was well. It is hoped that in the early part of 2025, two more flybys at the same distance and speed will be attempted, on March 22 and June 19.

The data that up to now has been provided by the Parker Solar probe has been passed onto the scientific public. This has provided many primary papers to be written by scientific groups. These range from observations of circularly polarized electromagnetic waves at the ion scale to magnetic field 'switchbacks' and on to meteoroid bombardment. This magnificent space journey will provide humankind with a breakthrough into understanding a little more about our majestic solar system.

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Ion-scale Electromagnetic Waves in the Inner Heliosphere. Trevor A.Bowen et al.

Answers to January 2025 questions

Question 1.

A. 723,144
B. 835,256
C. 945,400
D. 546,225.

Which set of numbers doesn't fit.?
A= 7+2+3=12.
122 = 144.
C=324 and not 400.

Question 2.

Which letter group fits at ???
DRQ, GRM, JRI, MRE, ??? D to G=4 letters. G to J = 4 letters. J to M = 4 letters. M+4= ? = P.
Next letter is **R**
Final letter has 5 letters between then going backwards. Final letter is A.
PRA.

A. PRQ
B. PRA
C. GRE
D. AGI
E. ORA.

Questions for February.

1. Which word logically comes next in order. Spots, tops, pots, opts, ?
2. One sister says to her younger sister, two years ago , I was three times as old as you were. In three years time ,I will be twice as old as you. How old is each now?

Newbourne observing 13th January 2025

Neil Morley – via WhatsApp

Great evening at Newbourne yesterday. Conditions forecast as cloudy but views of the Moon, Mars and Jupiter were appreciated in the Celestron C8 Schmitt-Cassegrain Goto telescope (shown here) and SkyWatcher Infinity 76 mini- Dobsonian. Paul Whiting took shots of the Moon, Jupiter and Uranus using the Seestar smart telescope and displayed them in the hall with a selection of recently captured deep sky objects!

Members Observations

Stephen Olley

The Flame nebula NGC 2024 and the horse's head nebula (Barnard 33. 2.5 hours of data collected around 3rd January 2025