



OASI News

The newsletter of the Orwell Astronomical Society



M31 the Andromeda galaxy (see page 22)

Photo by Andy Gibbs

Trustees:

Mr Roy Adams

[see page 4]

Mr David Payne

Honorary President:

Dr Allan Chapman D.Phil MA FRAS

Contents

Cover picture: M31 The Andromeda Galaxy	
Society Notices.....	3
Society Contact details	3
Next Committee Meeting	4
Welcome new members	4
David M J Brown	4
OASI and BAA Events	5
Planned Observatory visits	6
Lecture Meetings	7
OASI @ Newbourne	7
Stargazer's guide	7
Astronomy Workshops	8
Astronomy Book Swap	8
Other local astronomy society meetings	9
Atheneum Astro Soc	9
LYRA Lowestoft & Yarmouth Regional Astronomers	9
DASH Astro	9
The Night Sky in November.....	10
Moon	10
Sun, Moon and planets	10
Paul's Astronomy Podcast for November	10
Occultations during November 2018	11
Meteor showers	11
Visible ISS passes $\geq 15^\circ$ max altitude	12
Iridium flares	12
Astronomy on the radio	13
BAA news	13
Back to Basics 2019 – Hosted by OAS Ipswich	13
The Practical Astronomy Show	13
The OASI Christmas Meal – Last Orders!	14
Variable Nebula Update.....	15
Hubble's variable nebula, NGC2261. RA 06h 39m Dec +08d 45m	15
Hind's variable nebula, NGC1555. RA 04h 22m Dec +19d 32m	16
R Corona Australis nebula NGC6729. RA 19h 01m Dec -36d 49m	16
Gyulbudaghyan's Nebula. RA 20h 45m Dec. +67d 58m	17
Loughton Astronomical Society	18
50th Anniversary Astro Festival	18
Another little missive from the Library	19
An Overview of the Parker Solar Probe	19
Open Evenings at Orwell Park School Observatory	21
Newbourne Report – 22 October.....	22

Society Notices

Society Contact details

Observatory (meeting nights only)

NB new number! 07960 083714

Email queries: info@oasi.org.uk

Facebook: <https://www.facebook.com/groups/445056098989371/>

Twitter: @OASlpswich

The OASI Facebook pages are proving very popular. Several non-members are active contributors.

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

Other contact details will be issued to members on a separate printed list.

Access into the School Grounds and Observatory Tower

Please use the third gate into the school grounds by the gym.

Areas out of Bounds

Access to the Observatory is **only via the black door** at the foot of the Observatory tower, which leads to the staircase and thence to the spiral staircase up to the Observatory. If the black door is locked, please phone the observatory mobile, **07960 083714** during meeting hours. **Kindly check/amend the number shown on your 2018 membership card.**

Please do NOT explore other routes. When in doubt, ask or call the Observatory mobile.

Remember this is a school and straying into the main part of the school where the pupils reside would cause the society big problems and could see us losing the use of the observatory. Any member found to be anywhere other than the approved access route or the observatory area will face serious sanctions up to and including expulsion from OASI.

Please note that access time for all observatory member nights is after 20:15

Articles for OASI News

News, pictures and articles for this newsletter are always welcome. Please send them to news@oasi.org.uk

The CLOSING date is the 15th day of the month

Please submit your articles in any of the following formats:-

Text: txt, rtf, rtf, doc, docx, odt, Pages, pdf

Spreadsheets: xls, xlsx, OpenOffice/LibreOffice, Numbers

Images: tiff, png, jpg

Please send tables as separate files in one of the above formats.

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."*?

[Newsletter archive www.oasi.org.uk/NL/NL_form.shtml](http://www.oasi.org.uk/NL/NL_form.shtml)

Authors, please note that your articles will now 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.

Committee 2018

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

Signing in and out

Please ensure you sign in and out when visiting the Observatory and/or Newbourne.
This is for fire safety precautions and also provides an historic record.

Next Committee Meeting

30 November 2018, at Museum St Methodist Church rooms, Black Horse Lane.

Welcome new members

George Francis Kevin Swale Mandy Jablonski Catherine Christou

David M J Brown

**It is with sadness that we report the death on the 5th October 2018
of our long standing Trustee, Mr David Brown.**

OASI and BAA Events

For the latest event details, please see www.oasi.org.uk/Events/Events.php

There's a Google Calendar on the OASI web site with the latest dates (and corrections!). If you want to easily add OASI Events to your own computer/phone/tablet calendar application click this button on the website Events page or use this address to access this calendar from other calendar applications.



<https://calendar.google.com/calendar/ical/1jhs9db71ncki4sojo7092vfvc%40group.calendar.google.com/public/basic.ics>

For other astronomy news and astro pictures try our

Twitter feed <https://twitter.com/OASlpswich>

Facebook page <https://www.facebook.com/pages/Orwell-Astronomical/158256464287623>

Subscribe to the OASI Yahoo group by emailing oasi-subscribe@yahoogroups.com

Date, Time & Location	Contact	Event
Weekly, every Wednesday, 20:15–22:00 Orwell Park Observatory	Martin Cook, Roy Gooding	General observation (weather permitting) using a variety of telescopes. Entry via the third gate left. NOT the main gate NB OASI Xmas Dinner on Wednesday 12 Dec.
Fri 26 Oct 2018, 20:00 St Augustine's Church Hall	Pete Richards llectures@oasi.org.uk	Lecture Meeting. POSTPONED
Saturday 10 November		Loughton Astronomical Society 50th Anniversary. See page 18
Mon 12 Nov from 19:00 Newbourne VH	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI@Newbourne . 19:30 Skynotes by Bill Barton. Book swap. Bring your telescope to our dark-sky site. (Talks on astronomy if weather unsuitable for observing.)
Fri 23 Nov, 20:00 St Augustine's Church Hall	Pete Richards llectures@oasi.org.uk	Lecture Meeting. Martin Lewis , <i>Imaging with a Dobsonian</i> .
Mon 26 Nov from 19:00 Newbourne VH	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI@Newbourne . Bring your telescope to our dark-sky site. (Talks on astronomy if weather unsuitable for observing.)
Tue 27 Nov, 04:00 Location TBD	James Appleton iinfo@oasi.org.uk	Field trip to observe the graze of 85 Gem. More info.
Tue 27 Nov, 22:15 Location TBD	James Appleton iinfo@oasi.org.uk	Field trip to observe the graze of δ Cnc. More info.

Date, Time & Location	Contact	Event
Friday 30 Nov 20:00	Roy Gooding secretary@oasi.org.uk	OASI Committee Meeting
Saturday 8 Dec 14:30 37 Caledonian Road, Kings Cross, London, N1 9BU	http://britastro.org/node/14931	BAA Christmas Lecture SPACE IS LIMITED SO ALL ATTENDEES MUST BOOK EARLY AS THE VENUE ONLY HOLDS 150
Monday 10 Dec from 19:00 Newbourne Village Hall	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI @ Newbourne. 19:30 Sky notes 20:00 astro bring & buy.
Wednesday 12 Dec. Coach & Horses, Melton	Roy Gooding secretary@oasi.org.uk	OASI Christmas Dinner.
Thurs 13 Dec 20:15		Private visit to OPS observatory
2019		
Monday 14 January	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI @ Newbourne. 19:30 Sky notes 19:45 Workshop: Astroimaging – Andy Gibbs
Saturday 2 March 09:45 to 18:00 Museum St Methodist Church room.	https://britastro.org/node/14933	BAA Back to Basics Workshop– hosted by OASI See page 13
Saturday 9 March, 09:30 Kettering Conference and Exhibition Centre, NN15 6PB	http://practicalastroshow.com/	The Practical Astronomy Show See page 13
29 June Newbourne Village Hall	Pete Richards llectures@oasi.org.uk	OASI Summer BBQ

Newbourne dates for 2019 are on page 7 and will be added to this list next month.

Planned Observatory visits

13 Nov, 11 Dec, 15 Jan, 12 Feb, 12 March, 9 April Booking essential. Contact Paul Whiting FRAS

Lecture Meetings

Contact: Peter Richards lectures@oasi.org.uk

We have an exciting and interesting set of lectures by guest speakers for the Autumn.

There is a new venue for lectures this year which is:

St Augustine's Church Hall
Bucklesham Road
Ipswich IP3 8TH.

The start time for all talks will be 8pm and, as usual, the talks will be held on Friday evenings.

OASI Guest Speaker Lectures for 2018



POSTPONED to 2019

"Monsters in the Dark: searching for the Universe's most massive galaxies" Dr Matt Bothwell, Institute of Astronomy, University of Cambridge.

Friday 23rd November

"Imaging with a Dobsonian" Martin Lewis, Lunar and Planetary Imager. The speaker has just sent this link to whet your appetites: <https://www.rmg.co.uk/whats-on/astronomy-photographer-year/galleries/2018/planets-comets-asteroids>

OASI @ Newbourne

Martin Richmond-Hardy newbourne@oasi.org.uk

We normally meet at Newbourne Village Hall, Mill Lane, IP12 4NP on the 2nd and 4th Mondays (with a few exceptions, like May 2019).

OASI @ Newbourne is a good place to start for beginners. If you are thinking of buying a scope or binoculars, come and try before you buy and talk to owners about the strengths and weaknesses of particular models. If you've already splashed the cash, bring your new scope along to use or for advice on setting-up and adjustment. All welcome, with or without telescopes. We would like visitors to join OASI to enjoy the full benefits of membership.

There are also **Stargazer's Guide (Sky Notes)**, **Astronomy Workshops** and the **Book Swap**.

Stargazer's guide

On the first meeting each month Bill Barton FRAS will give a short presentation of what can be viewed in the following 4 weeks. For armchair stargazers (on those cloudy nights) there is a small branch of the OASI Library held at Newbourne and a copy of the full catalogue.

OASI@Newbourne Meetings in 2018

12 Nov (S+B) 26 Nov 10 Dec (S+B+ Bring & Buy)

OASI@Newbourne Meetings in 2019

14 Jan	28 Jan (S+B)	11 Feb	25 Feb (S+B)
11 March	25 March (S+B)	8 April	22 April (S+B)
6 May[*]	27 May	(both Bank Holidays)	

* NB 13 May is unavailable due to a Parish Council meeting.

10 June 24 June (S+B)

We open up for all meetings at 7pm. Star Guide (S) at 7:30pm and Workshops (W) at 7:45pm. B = Book Swap night (see below).

Astronomy Workshops

Contact Mike Whybray

Location: Newbourne Village Hall IP12 4NP

Doors open at 7:00pm.

Workshops start at 7:45pm

If you are a new OASI member, or haven't been to one of these informal workshops before, they are a mixture of events of different characters including beginners talks, interactive workshops, films, etc., suitable for all. They are also a chance to chat with other members over a cup of tea and a biscuit, in a venue rather warmer than the observatory dome on a winter's night!

Given a clear night, we can make use of the field for a workshop or continue afterwards with some observing – something not possible at the previous venue, Nacton village hall.

Do you have a subject you could workshop? You could do a short one, or share the effort with a partner. Drop Mike Whybray a line! workshops@oasi.org.uk

TBA Martin Cook on Tomline Refractor Training (at the Observatory)

Monday 14 January 2019: Andy Gibbs – Practical Astroimaging Workshop,

This would give members the chance to bring their own cameras and telescopes to see what can be done and to share tips and ideas.

There will be a first quarter Moon that evening, so it would be ideal for lunar imagers, without compromising deep sky imagers, where Orion will be well placed.

In the event of cloudy skies, I suggest members bring along their laptops so processing tips and ideas can be shared.

Astronomy Book Swap

Pete Richards

If you are anything like me you'll have a bookcase or two full of astronomy books and no room for any more but you know the next time you are at an astronomy event you'll be tempted again. OASI will be hosting an astronomy book swap event at Newbourne on a Monday evening help you to clear some space or maybe you can provide a home for someone else's unwanted books.

If you bring any books and they are not taken you will need to take them home again as OASI has no spare storage space for books.

You can take away any books you are interested in but if you have not provided any books yourself you might like to make a small cash donation to OASI.

Any cash donations will help towards running OASI @ Newbourne.

The books can be on any area of astronomy, or space exploration, or related subjects. They can be factual or works of fiction including space related science fiction. As well as books you could bring DVDs on similar subjects, or maybe you have an astronomical jigsaw puzzle you'd like to give away or exchange.

The book swap will be held at Newbourne Village Hall on Monday Star Guide/Workshop nights (a normal oasi @ newbourne night).

Other local astronomy society meetings

Athaneum Astro Soc

www.3a.org.uk/index.htm

We meet fortnightly on Thursdays, from 7.30pm, at our dark-sky site in the [Walled Garden](#) at Nowton Park, just outside Bury St Edmunds. If you're planning on joining us for the first time, please [contact us](#) in advance, just to make sure the meeting is going ahead. We recommend that you wear warm clothing (even summer nights can be chilly, especially when the skies are clear!) and bring a flask, or insulated mug, for a warm drink. We have tea and coffee-making facilities on-site. Events are listed here <http://www.3a.org.uk/events.htm>

8 November	The Kuiper Belt
	What's topical in astronomy
22 November	The Oort Cloud
	What's in the night sky
6 December	Mysteries of Mars
	What's topical in astronomy

LYRA Lowestoft & Yarmouth Regional Astronomers

www.lyra-astro.co.uk

LYRA Programme and Local Events 2018 – All talks (unless other wise stated) will commence at 7.30pm in the Coach House Room at Parkhill Hotel, just outside Oulton Village on the B1375 (Oulton Broad to Gt. Yarmouth Road) NR32 5DQ

All Talks £2.50 For Non Members

13 Nov	Talk by Bob Argyle, President of the Webb Society "Observing Double Stars Past & Present"
27 Nov	LYRA Observing/Practical night at Barn Car Park, Parkhill Hotel from 7:30pm

DASH Astro

Darsham And Surrounding Hamlets

<http://dash-astro.co.uk>

All DASH Astro observing sessions will take place at WESTLETON COMMON. ASOG observing sessions and locations may be arranged at the time of observation.

Unless stated all group meetings will take place at WESTLETON VILLAGE HALL from 7:30 pm.

Note these are now on Sundays.

11 Nov	Dash Observing Session (Sunset 16:06 Moonset 18:59 16% Moon)
25 Nov	Meeting – Dave Green: Distances to Stars and Galaxies. How do we measure?
08 Dec	(Saturday) DASH Christmas Social – Irene's confirmed (Members and Guests only)



The Night Sky in November

Martin RH

All event times given are for the location of Orwell Park Observatory
52.0096°N, 1.2305°E

ICYMI The UK reverted to GMT (UTC) on Sunday 28 October

ALL times are given in UTC.



Moon

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

New Moon	1st Quarter	Full Moon	Last Quarter
07 Nov 16:02	15 Nov 14:54	23 Nov 05:39	30 Nov 00:19

Sun, Moon and planets

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

Object	Date	Rise	Set	Mag.	Notes
Sun	1	06:50	16:27		
	30	07:39	15:48		
Moon	1	23:50	14:13		
	30	22:58 (29th)	13:17		
Mercury	1	09:18	16:55	-0.1	Max. eastern elongation 6 Nov. Inferior conjunction 27 Nov. Perihelion 29 Nov.
	30	06:58	15:32	3.5	
Venus	1	06:22	15:28	-4	
	30	03:58	14:15	-4.5	
Mars	1	14:19	23:20	-0.6	
	30	12:50	23:13	-0.1	
Jupiter	1	08:42	17:11	-1.6	Superior Conjunction 26 Nov.
	30	07:23	15:35	-1.6	
Saturn	1	11:43	19:21	0.6	
	30	10:00	17:40	0.5	
Uranus	1	16:06	06:03	5.7	
	30	14:10	04:03	5.7	
Neptune	1	14:51	01:37	7.8	
	30	12:57	23:38	7.9	

Paul's Astronomy Podcast for November

Paul Whiting FRAS Podcast, November 2018 www.oasi.org.uk/2018_11_pod.mp3

Occultations during November 2018

James Appleton

The table lists occultations during the month under favourable circumstances. The data relates to Orwell Park Observatory, but will be similar at nearby locations.

The events should be readily visible in small telescopes or binoculars. The first two columns list the date and time (UT) of the occultation. Column three gives the phenomenon: 'D' denotes a disappearance and 'R' a reappearance. The table lists circumstances of disappearances and reappearances as dictated by the visibility of each phenomenon (determined by altitude, lunar phase, etc). Column four details the lunar phase ('+' for waxing and '-' for waning). Columns five and six give the altitude of the Sun and the star, both in degrees. (A negative solar altitude means that the Sun is below the horizon.) Columns seven and eight provide the star's magnitude and catalogue number.

Only one lunar occultation occurs during July under favourable circumstances, detailed below.

The data relates to Orwell Park Observatory, but will be similar at nearby locations.

Please note that **times are shown in UTC**.

Date	Time (UT)	D/ R	Lunar Phase	Sun Alt(°)	Star Alt(°)	Mag	Star
16 Nov	16:57:26	D	0.60+	-8	21	7.5	Hip 111651
16 Nov	20:33:05	D	0.61+	-41	22	6.8	ZC 3327
16 Nov	20:58:08	D	0.61+	-44	20	7.4	Hip 112111
19 Nov	00:08:58	D	0.80+	-57	17	7.4	ZC 44
21 Nov	20:51:04	D	0.97+	-44	43	4.3	87 Cet, μ Cet
30 Nov	02:26:15	D	0.48-	-46	29	5.3	53 Leo, I Leo
	03:27:21	R		-38	37		

There are two grazing lunar occultations on 27 November:

04:04 UT: southern limit graze of the magnitude 5.4 star 85 Gem.

22:14 UT: southern limit graze of the magnitude 3.9 star δ Cnc.

Details are on the OASI website: http://www.oasi.org.uk/Occs/Occ_summary_2018.php.

Observing trips will be organised if weather conditions are favourable: details will be provided via the OASI email list.

Meteor showers

Source: BAA Handbook 2018 p97-99

Shower	Maximum	Normal limits	ZHR at Max	Notes
Taurids	Nov 5 –12	Oct 20 – Nov 30	10	Slow meteors. Double radiant. Broad peak. Sometimes more fireballs as in 2015. Favourable.
Leonids	Nov 18d 01h	Nov 15 – 20	20?	Very fast meteors, many with persistent trains. Favourable.
Puppids–Velids	Dec 9 – 26	Nov 27 – Jan	15	Two of several radiants in Puppis, Vela and Carina from November to January.

Visible ISS passes $\geq 15^\circ$ max altitude

Martin RH

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

Times are BST. Predictions are approximate due to craft adjustments. Check the day before.

Date	Mag	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
01 Nov	-2.6	04:43:04	31°	S	04:43:40	34°	SSE	04:46:41	10°	E
02 Nov	-1	03:53:14	17°	ESE	03:53:14	17°	ESE	03:54:24	10°	E
02 Nov	-3.7	05:25:55	22°	WSW	05:27:50	69°	SSE	05:31:06	10°	E
03 Nov	-3.2	04:36:00	52°	SE	04:36:00	52°	SE	04:38:56	10°	E
03 Nov	-3.8	06:08:51	10°	W	06:12:08	86°	S	06:15:26	10°	E
04 Nov	-1	03:46:01	15°	E	03:46:01	15°	E	03:46:45	10°	E
04 Nov	-4	05:18:41	34°	W	05:19:58	84°	S	05:23:16	10°	E
05 Nov	-2.8	04:28:40	45°	E	04:28:40	45°	E	04:31:05	10°	E
05 Nov	-3.8	06:01:19	12°	W	06:04:16	78°	S	06:07:33	10°	ESE
06 Nov	-3.9	05:11:16	48°	W	05:12:05	85°	S	05:15:23	10°	E
07 Nov	-2.1	04:21:12	33°	E	04:21:12	33°	E	04:23:10	10°	E
07 Nov	-3.5	05:53:52	16°	W	05:56:19	59°	SSW	05:59:33	10°	ESE
08 Nov	-4	05:03:47	65°	WSW	05:04:07	74°	SSW	05:07:25	10°	ESE
09 Nov	-1.5	04:13:43	25°	E	04:13:43	25°	E	04:15:12	10°	E
09 Nov	-3	05:46:23	20°	W	05:48:14	39°	SSW	05:51:19	10°	SE
10 Nov	-3	04:56:20	52°	S	04:56:20	52°	S	04:59:17	10°	ESE
11 Nov	-0.9	04:06:18	17°	ESE	04:06:18	17°	ESE	04:07:08	10°	ESE
11 Nov	-2.3	05:38:58	20°	WSW	05:40:01	24°	SSW	05:42:43	10°	SSE
25 Nov	-1.5	18:09:36	10°	SSW	18:10:43	16°	S	18:10:43	16°	S
26 Nov	-0.9	18:52:32	10°	SW	18:53:11	15°	SW	18:53:11	15°	SW
27 Nov	-2.6	18:00:22	10°	SW	18:02:56	31°	SSE	18:02:56	31°	SSE
28 Nov	-2	17:08:25	10°	SSW	17:11:02	22°	SSE	17:12:37	16°	ESE
28 Nov	-1.5	18:43:52	10°	WSW	18:45:16	23°	WSW	18:45:16	23°	WSW
29 Nov	-3.5	17:51:30	10°	SW	17:54:41	50°	SSE	17:54:54	49°	SE
30 Nov	-2.8	16:59:15	10°	SW	17:02:17	36°	SSE	17:04:29	16°	E
30 Nov	-2	18:35:17	10°	W	18:37:08	31°	WSW	18:37:08	31°	WSW

Iridium flares

Getting fewer. See <http://heavens-above.com/IridiumFlares.aspx>

[Iridium flares to cease by end of 2018 | BBC Sky at Night Magazine](#)

Astronomy on the radio

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>

David Murton's Radio Broadcast

On 1st Tuesday of the month, 1.40pm on the Lesley Dolphin show on BBC Radio Suffolk – now digital (channel 10c) and FM 103.9 (Ipswich), 104.6 (west Suffolk), 95.5 (Lowestoft), 95.9 (Aldeburgh) and the internet. <https://www.bbc.co.uk/radiosuffolk>

BAA news

Back to Basics 2019 – Hosted by OAS Ipswich

<https://britastro.org/node/14933>

Venue: Museum Street Methodist Church, 17 Black Horse Lane, Ipswich, IP1 2EF

Date: Saturday, 2019, March 2 - 09:45 to 18:00

The British Astronomical Association has designed a programme of talks and practical sessions to help you learn basic techniques and develop your interest to its full potential. Experienced people will be on hand to answer your questions.

The programme will cover:

- What Equipment you need to get started,
- Lunar Observing,
- Observing Planets,
- Comets
- Deep Sky Observing

The cost for the meeting is £TBC BAA Members & children under 16. £TBC for non-members.

SPACE IS LIMITED SO ALL ATTENDEES MUST BOOK EARLY

Programme times for the day are: -

10:30 Official welcome – BAA President – Mr Callum Potter

10:35 So what astronomy can I do? – Mrs Hazel Collett

10:45 What equipment & books do I need? – Dr Stewart Moore

11:30 Lunar observing & Workshop – Mr Nick James

12:15 Lunch

13:30 Ipswich Astronomical Society

14:45 Comets - Nick James TBC

15:30 Afternoon Tea

16:00 Deep Sky observing – Mr Callum Potter

16:45 Feedback, Q&A session & Raffle

17:00 Close.

The Practical Astronomy Show

Date: Saturday 9 March 2019 - 09:30

[The Practical Astronomy Show](#) is a free one-day event at the Kettering Conference and Exhibition Centre, Thurston Drive, Kettering, Northamptonshire, NN15 6PB.

There will be free talks about the practical aspects of astronomy, with an emphasis on using and getting the best out of astronomy products.

The show caters for all levels of practical astrophotography and visual astronomy.

Organisations involved in astronomy education, outreach and tourism will be available to meet and greet the general public.

Please note the Practical Astronomy Show is not run by the BAA, but the BAA will be present as an exhibitor.

The OASI Christmas Meal – Last Orders!

Roy Gooding

I have booked the [Coach & Horses](#) in Melton for this year's Christmas meal and will be taking orders up to the middle of November.

Coach and Horses, Melton Wednesday 12th December at 20:00

Christmas Party Menu 2018

2 Courses £18

3 Courses £22

Deposit £5

Starters

Roasted Squash & Sweet Potato Soup
served with fresh bread

Shredded Slow cooked Lamb Shoulder.
Slow cooked with honey & rosemary. Served with
tomato pearl & crisp green salad

Creamy Garlic & herb Mushrooms served with grilled brioche

Prawn & Crayfish Cocktail bound with fresh tomato & chilli salsa with fresh bread

Filo Wrapped Tiger Prawns with a sweet chilli dip

Main Course

Traditional Roast Suffolk Turkey

Roasted Suffolk turkey breast served with rich sage & onion stuffing, Procter's Cumberland chipolata wrapped in smoked bacon, golden roasted potatoes, fresh vegetables & rich gravy

Slow Roasted Belly of Pork

Served upon gratin potatoes with Aspalls cider gravy & vegetable medley

Seafood Filo strudel

Served with rich cheese sauce & vegetable medley

Roasted Winter Vegetable Bake

Medley of winter vegetable layered with parmesan cream sauce with gratinated potato topping. Served with mixed salad

Roasted Sirloin Steak (£5 sup)

Served with garlic buttered mushrooms, coleslaw, onion rings & chips

Desserts

Traditional Christmas pudding served with brandy sauce

Chocolate Gingerbread Cake served with chocolate sauce & vanilla ice cream

Selection of Fine Cheese & Biscuits served with selection of crackers & apple

Lemon & Clementine Posset served with spiced flapjack

Mince Pies to Finish



Variable Nebula Update

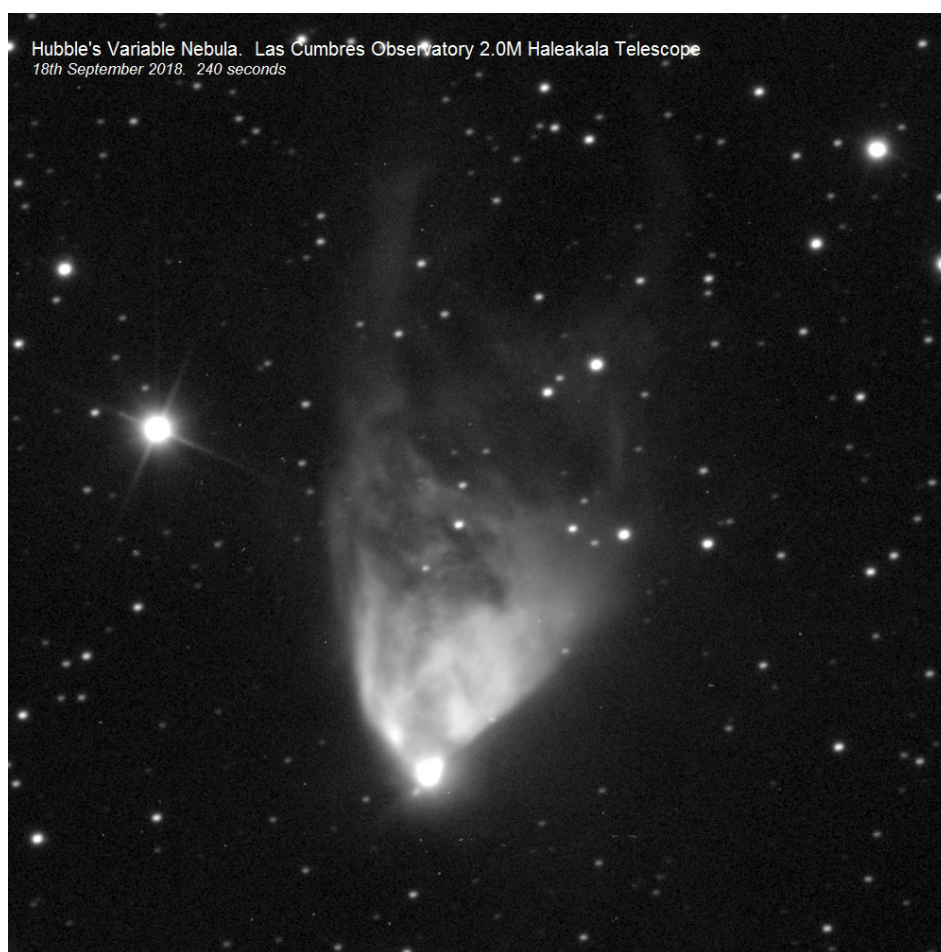
Mike Harlow, November 2018

Monitoring of variable nebulae continues using my home observatory and remote telescopes. Images have been obtained of Hubble's, Hinds', R Corona Borealis and Gyulbudaghyan's nebulae. Note that an archive of images of variable nebulae is on the OASI web site at: http://www.oasi.org.uk/Obsvns/20140602_VN/20140602_VN.php

Hubble's variable nebula, NGC2261. RA 06h 39m Dec +08d 45m

Located in Monoceros about 4 degrees north north east of the Rosette nebula, Hubble's variable nebula is probably the one imaged most often. Although it was discovered by William Herschel in 1783, it wasn't until 1916 that Edwin Hubble noticed changes in its structure when comparing photographs taken at different times. Burnham's Celestial Handbook has some interesting notes on this and other variable nebula and is well worth a look.

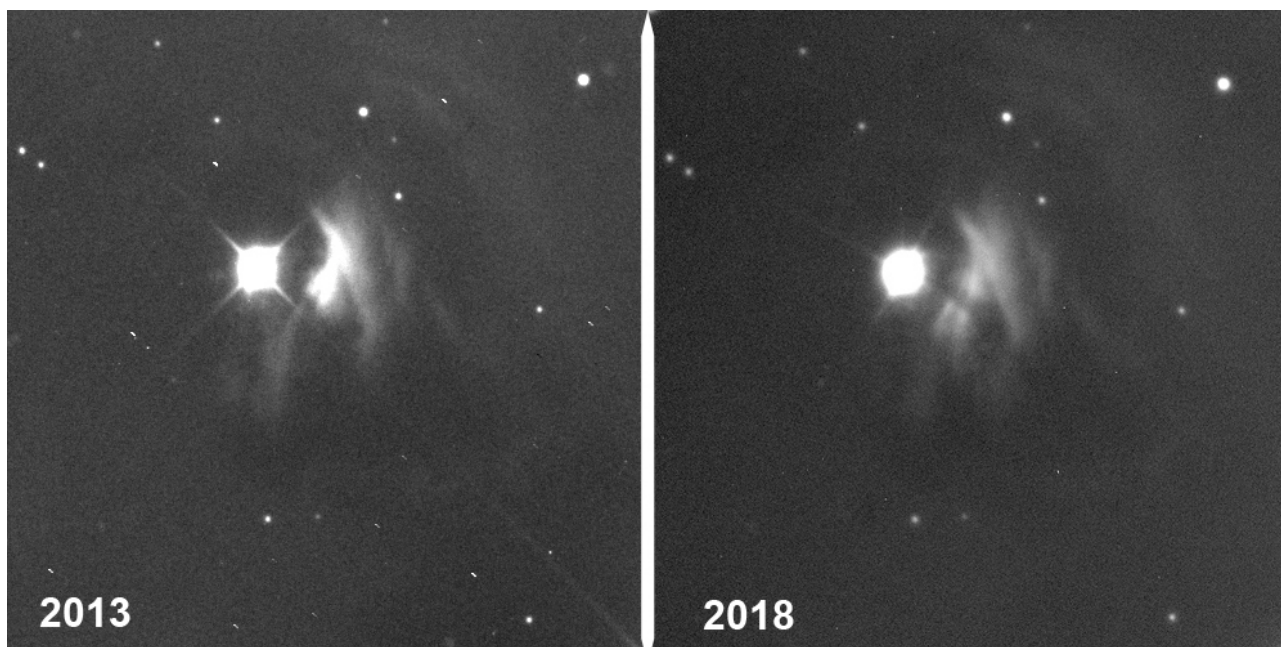
Currently, it is an early morning object at its highest just before dawn. Luckily remote telescopes remove the need to set the alarm for 3am and they do all the hard work for you. The image below was taken with a 2.0 meter telescope on Haleakala in Hawaii. This was formerly the 'Faulkes telescope north' but is now operated by the Las Cumbres observatory global telescope network (LCO see: <https://lco.global/>). They also have the 'Faulkes telescope south' at Siding Spring in Australia as well as several 1.0 meter and 0.4 meter telescopes at many locations around the world. LCO really is the ultimate in remote observatories and their philosophy is that all images taken using their network are available to everyone...it's worth taking a look! This image of NGC2261 is one example.



Hubble's variable nebula on 18th September 2018. 2.0M telescope on Haleakala, Hawaii. 240 seconds total exposure. Field of view 4 x 4 arc minutes.

Hind's variable nebula, NGC1555. RA 04h 22m Dec +19d 32m

Hinds' nebula was seen to be variable within years of its discovery in October 1852 (see Burnham's again for more details). Recently, there hasn't been much change but the images below do show a subtle difference between the 2013 and 2018 images. The 2018 image was also taken with an LCO telescope but this time with the 2.0M at Siding Spring. The 2013 image was taken with the Mt Lemmon 32 inch or 0.8 M telescope at that time operated by the Sierra Stars observatory network (SSON see: <http://sierrastars.com/>) but sadly no longer available.



Hinds' variable nebula in January 2013 and October 2018.

The single filament to the south-west in 2013 is now double. Field of view 5 x 5 arc minutes.

R Corona Australis nebula NGC6729. RA 19h 01m Dec -36d 49m

This nebula associated with the variable star R Corona Australis isn't visible from the UK as it lies south of Sagittarius so you either need to travel south or use a remote telescope to see it. The image below is again with the LCO 2.0M at Siding Spring and is a stack of four 30 second exposures. The Moon was just 35 degrees away at the time.

NGC6729 in Corona Australis. Las Cumbres Observatory 2.0M Siding Spring telescope
21st September 2018. 4 x 30 seconds



NGC6729 on 21st September 2018.

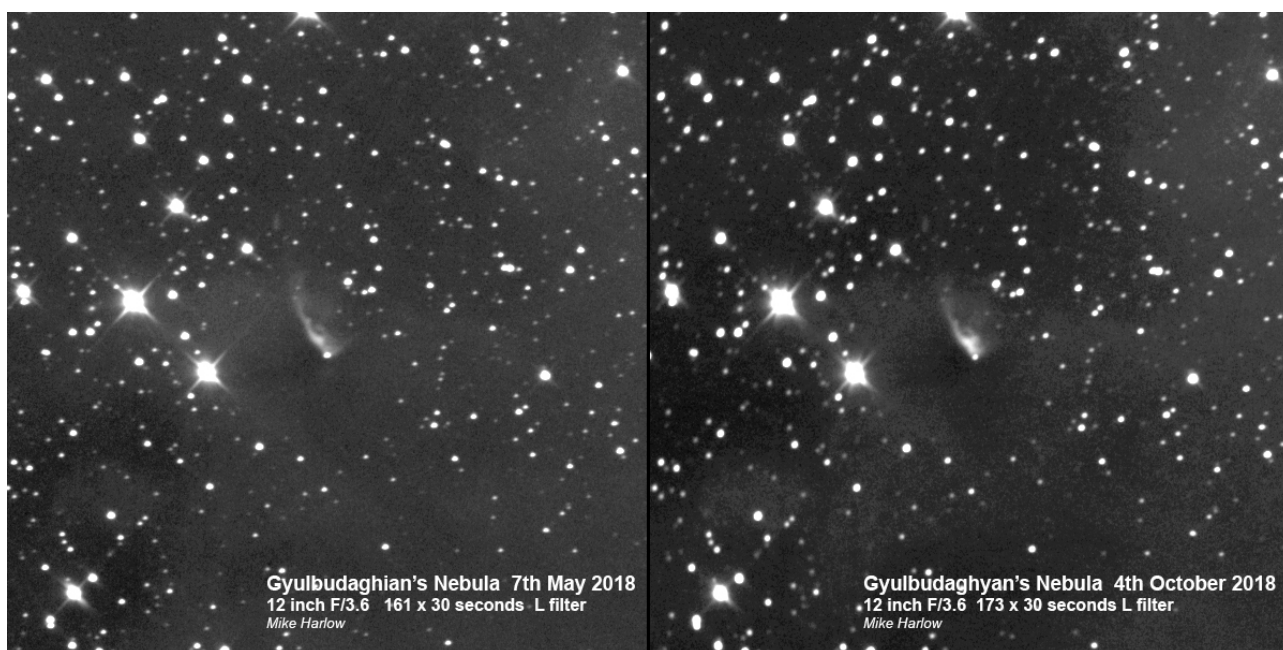
Las Cumbres Observatory 2.0M

Siding Spring telescope.

Field of view 5 x 5 arc minutes.

Gyulbudaghyan's Nebula. RA 20h 45m Dec. +67d 58m

And finally, on to my favourite variable nebula. Located in Cepheus it is visible all year round so is one I try to image from home. It shows by far the biggest changes in shape and brightness and can change from a typical wedge or comet shape to a bar or some combination of the two, it can disappear completely at times as it did in 2009, so it is well worth keeping an eye on as often as possible. The image below shows a comparison of its shape in May and October this year with my 12inch F/3.6 telescope. Nebulosity is more extensive now than it was back in May and appears to be spreading westward.



Comparison of Gyulbudaghyan's nebula in May and October 2018.

12" F/3.6 astrograph with Starlight Xpress H16 CCD and Astrodon Luminance filter (400 to 700nm).

Field of view ~13 x 13 arc minutes.

Almost as an afterthought, I imaged the nebula on 9th October through colour filters to attempt a colour image. This was my first try at LRGB imaging so isn't brilliant but now I have an idea what to do, it's something I'll try each month from now on. Below, I've compared three colour images taken over a ten year period to show the significant changes in shape that can occur in this object. I can't compete in terms of aperture or resolution with either Adam Block or Damien Peach but I'll keep trying!



Ten years of change in Gyulbudaghyan's Nebula.

2008 image by Adam Block, 2013 image by Damien Peach, 2018 image by me.

And finally...

If you feel like an observing challenge why not have a go at imaging one of these interesting objects? Who knows how they may change in the future? Nick Hewitt at the BAA is always looking for contributions to the Deep Sky section so any results you get please send to him.

Post script

After writing this article I discovered a really nice sequence of images of Gyulbudaghyan's nebula on the Cloud Nights web site. Take a look at: <https://www.cloudynights.com/topic/597583-pv-cephi-and-gyulbudaghians-nebula-have-changed/> to see how it changed from 2011 to 2017.

Loughton Astronomical Society

50th Anniversary Astro Festival

Saturday 10th November 2018
Theydon Bois Village Hall



We are writing directly to all Astronomical Societies located within a reasonable distance of the LAS here in Theydon Bois, Essex and would be grateful if you could distribute this message and the attached flyer to your membership.

Your members may be interested in attending our 50th Anniversary event including morning displays and afternoon lectures from leading astronomers.

The venue for the event is Theydon Bois Village Hall (CM16 7LR) which is a large modern facility (with disabled access), has ample free parking and is only a 5 minute walk from Theydon Bois tube station (Central Line).

We have structured our anniversary event so that the morning will be of particular interest to astronomically-minded families with children of school age.

There are several vendor stands, demonstrations and displays relating to astronomy and space exploration, ranging from advice on telescopes and Astro Apps to interactive cosmology education and the making of model rockets!

In addition there are four shows in a large 60-seater planetarium. Entry for the morning displays is free, although there is a small charge for the planetarium (£3 for adults; £2 for under 16s - children must be accompanied by a responsible adult).

Our afternoon session is geared towards astronomers and comprises four lectures by renowned experts in various fields of astronomy and cosmology:-

- Nik Szymanek
- Greg Smye-Rumsby
- Professor Richard Nelson
- Professor Lucie Green

Tickets to attend the afternoon lectures cost £15 and this includes refreshments (tea/coffee/juice and cake/biscuits)

For more details and to book tickets for the planetarium shows and/or the afternoon lecture session, please visit our website http://las-astro.org.uk/visit_50_test.php

We do hope that you will be able to join the LAS on the day and help us celebrate 50 years.

Clear skies

Brian Morton

Secretary, Loughton Astronomical Society www.las-astro.org.uk

Another little missive from the Library

An Overview of the Parker Solar Probe

Andy Willshire

During the mid 1950's the concept of solar winds was proposed by a junior physicist Eugene Parker. This he described was a torrent of energy which incorporated a conglomerate of plasma, magnetic fields and particles consisting of protons, electrons and HZE ions. He then considered the superheated solar corona and re-wrote the known laws of physics at the time to provide 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 has been a member of the faculty at both the University of Chicago and its Fermi institute. Throughout his life he has been in receipt of numerous awards.

In the fiscal year of 2009 it was decided to set up a project and manufacture the Parker Solar Probe. This would be a NASA spacecraft designed to explore the outer corona of the Sun, managing to get to within 6.2×10^6 km of the photosphere at a speed of 700,000 km/h. The cost was estimated to be in the region of 1.5 billion U.S. dollars. This would be the first time that a NASA spacecraft was to be named after a living person. It would also be the first to fly into the low solar corona, evaluating as it passes, the complexity and activity of the magnetic field and Sun's coronal plasma as well as how particles from this area are energised.

The probe was launched at 0731 GMT on August 12, 2018, from Space Launch Complex 37 at Cape Canaveral, Florida, USA. It will have a mission duration of 6 years and 11 months. A Delta IV Heavy rocket was used (Delta 9250H) which is similar to the Delta Medium except that it has two additional Common Booster Cores (rocket stages), which are powered by an Aerojet Rocketdyne RS-68 engine, which burns both liquid hydrogen and liquid oxygen. The maximum launch energy C3 is $154 \text{ km}^2/\text{s}^2$, with a total mass at launch is 733,000 kg.



Picture content credit: <https://www.nasa.gov/content/goddard/parker-solar-probe-images>.

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, use a solar shield to protect them. 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. Because of 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. Because 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 object.

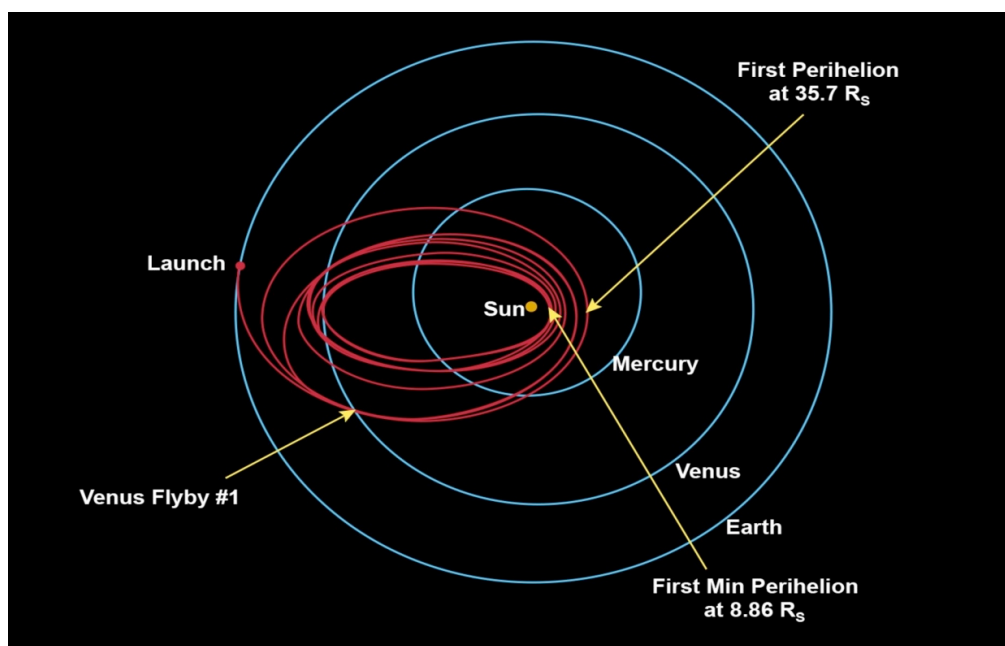
The mission has several goals which are mainly the following. The first one is to try to trace energy particles that heats the corona and speeds up the solar winds. Secondly to understand the magnetic field structure at the solar wind source and thirdly to identify what methods move and speed up dynamic particles. In order to perform these objectives, five major studies will be performed:

FIELDS study. (Electromagnetic Fields study). Direct measurements of the following will be taken:

1. Electric and magnetic vector fields, and directional energy flux, as well as plasma density and electron kinetic energy.
2. 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.
3. 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.
4. SWEAP (Solar Winds Electrons Alphas and Protons). This will measure the properties of the plasma in the solar atmosphere.
5. HeliOSPP (Heliospheric Origins with Solar Probe Plus) A representative and theoretical approach from all data obtained.

Scheduled Events:

The Parker solar 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. This position is well within the orbit of Mercury.



Picture credit: <https://www.nasa.gov/content/goddard/parker-solar-probe>

Year	Date	Event	Distance from the sun(Gm)	Speed (km/s)	Orbital period (days)	Year	Date	Event	Distance from the sun(Gm)	Speed (km/s)	Orbital period (days)
2018	Aug-12	Launch	151.6		174	2022	Jun-01	Perihelion #12	9.2	163	96
	Oct-03	Venus flyby #1					Sep-06	Perihelion #13	9.2	163	96
	Nov-06	Perihelion #1	24.8	95	150	2023	Dec-11	Perihelion #14	9.2	163	96
	Apr-04	Perihelion #2	24.8	95	150		Mar-17	Perihelion #15	9.2	163	96
2019	Sep-01	Perihelion #3	24.8	95	150		Jun-22	Perihelion #16	9.2	163	96
	Dec-26	Venus flyby #2					Aug-21	Venus flyby #6			
2020	Jan-29	Perihelion #4	19.4	109	130		Sep-27	Perihelion #17	7.9	176	92
	Jun-07	Perihelion #5	19.4	109	130		Dec-29	Perihelion #18	7.9	176	92
	Jul-11	Venus flyby #3				2024	Mar-30	Perihelion #19	7.9	176	92
	Sep-27	Perihelion #6	14.2	129	112.5		Jun-30	Perihelion #20	7.9	176	92
2021	Jan-17	Perihelion #7	14.2	129	112.5		Sep-30	Perihelion #21	7.9	176	92
	Feb-20	Venus flyby #4					Nov-06	Venus flyby #7			
	Apr-29	Perihelion #8	11.1	147	102		Dec-24	Perihelion #22	6.9	192	88
	Aug-09	Perihelion #9	11.1	147	102	2025	Mar-22	Perihelion #23	6.9	192	88
	Oct-16	Venus flyby #5					Jun-19	Perihelion #24	6.9	192	88
	Nov-21	Perihelion #10	9.2	163	96		Sep-15	Perihelion #25	6.9	192	88
2022	Feb-25	Perihelion #11	9.2	163	96		Dec-12	Perihelion #26	6.9	192	88

Data only credit: <https://www.nasa.gov/content/goddard/parker-solar-probe>

References:

<https://www.cfa.harvard.edu/sweap/>

<https://link.springer.com/article/10.1007%2Fs11214-014-0114-y>

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[https://www.researchgate.net/publication/](https://www.researchgate.net/publication/285415584_Integrated_Science_Investigation_of_the_Sun_ISIS_Design_of_the_Energetic_Particle_Investigation)

285415584_Integrated_Science_Investigation_of_the_Sun_ISIS_Design_of_the_Energetic_Particle_Investigation

Open Evenings at Orwell Park School Observatory

19 & 20 October

I would like to thank all the members who turned out Friday night and Saturday night for what turned out to be a most spectacular re-launch of our annual open weekend.

Despite the unexpected cloud cover Saturday evening, we had 190 paying visitors over the two evenings. We also had 3 new members join and several more possible members who have been invited to OASI@Newbourne on Monday evening.

Over 20 members turned out to help – once again a big thankyou to all.

Paul

OASI Chairman

Newbourne Report – 22 October

Andy Gibbs

Despite the nearly-full Moon, once we achieved focus, we had a successful Video Astronomy session with the Atik Infinity camera at Newbourne on Monday 22 Oct. We observed M27, M57, M31 and M33. Many thanks to Martin Richmond-Hardy for supplying the 80mm refractor and HEQ5 mount.

The Atik Infinity has a Sony ICX 825 CCD Sensor, it is a 2/3" format. The pixel size is 6.45um.

Given the 500mm focal length of Martin's scope, the magnification would be about 30x

Here's the formula to work this out [Ed.].

Chip diagonal (d) = 2/3" $\approx$ 16.9mm

Magnification = f_{scope}/d

M = 500/16.9 $\approx$ 29.5

i.e. about 30x

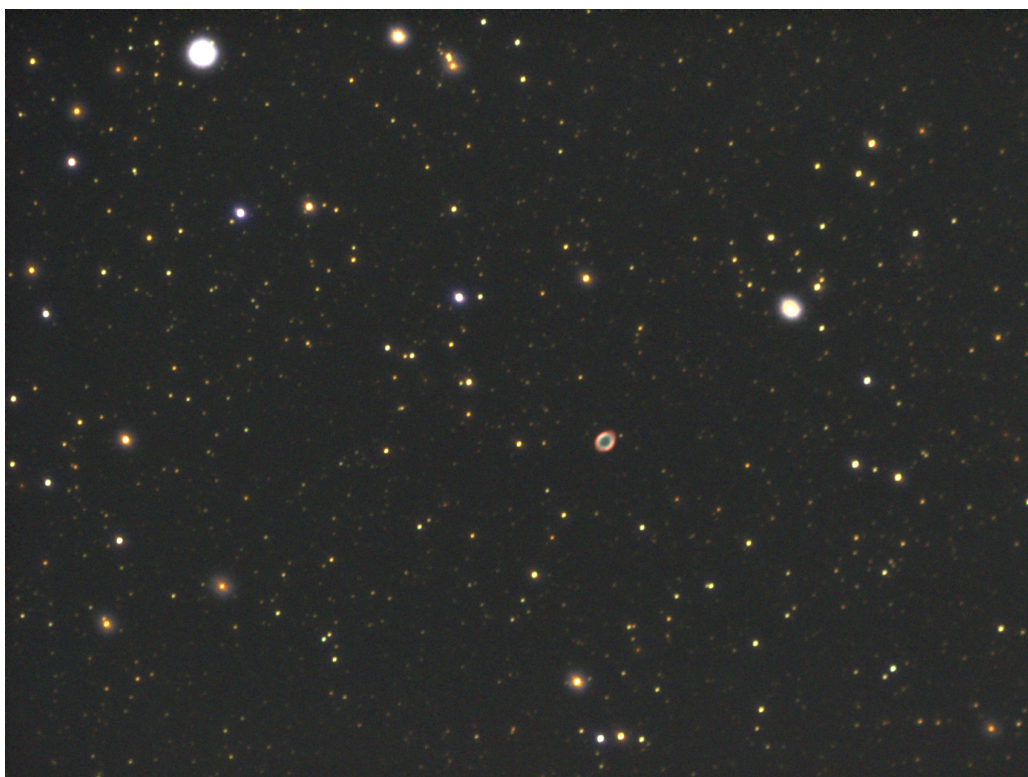
When we imaged M31, we just about managed to fit the whole Galaxy on to the sensor.



M31 The Andromeda Galaxy

M57 (The Ring Nebula) lies within the constellation of Lyra (whose brightest star is Vega), almost directly overhead during August. It is a planetary nebula with radius about 1 light-year, lying at a distance of approx 2000 ly from earth and formed about 4000 years ago.

These two images show the live stacked view, (10 second exposures) and a cropped, slightly processed view.



M57 – live stacked view, (10 second exposures)



M57 – cropped, slightly processed view