No. 534 Registered Charity 271313 July 2017

OASI News

The newsletter of the Orwell Astronomical Society

The globular cluster M13 in Hercules.

Meade C8 telescope with Canon 60Da camera. 6x480 seconds at iso 400 ***Photo: David Murton***

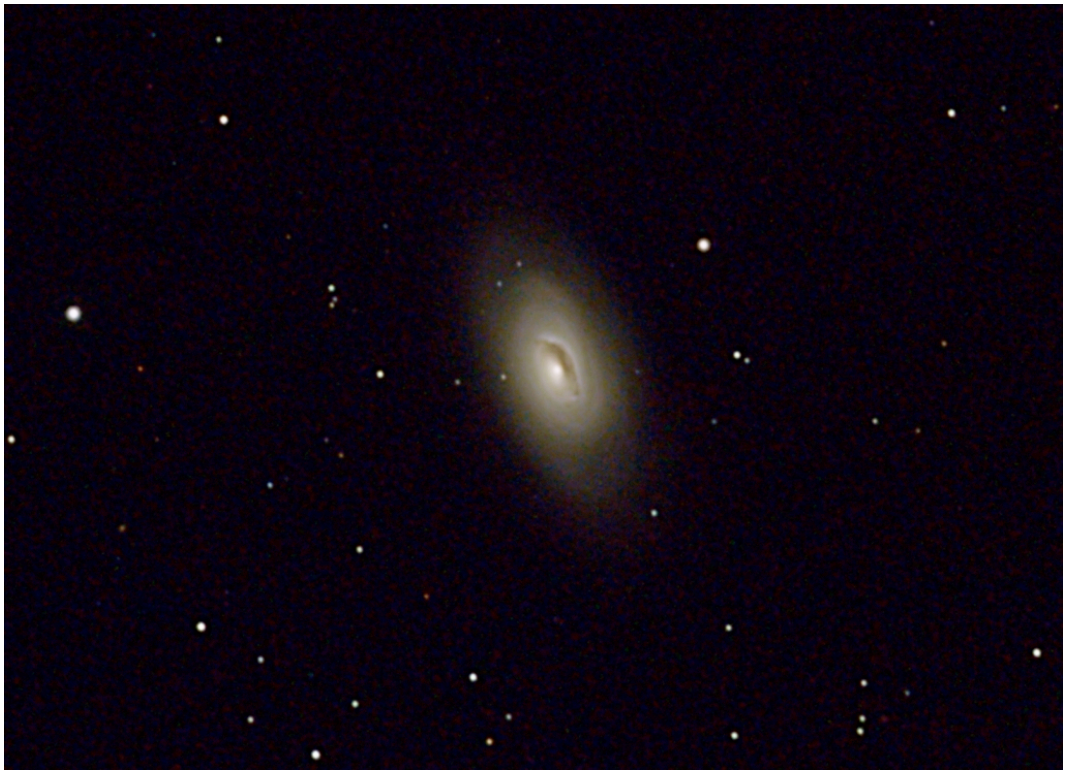
It's OASI's 50th Anniversary on 29 July
Get you tickets now! *See page 21*

Trustees: **Mr Roy Adams** **Mr David Brown** **Mr David Payne**
Honorary President: **Dr Allan Chapman D.Phil MA FRAS**

Astrophotographs 1

by David Murton

The Black eye galaxy. M64 in Coma Berenices.

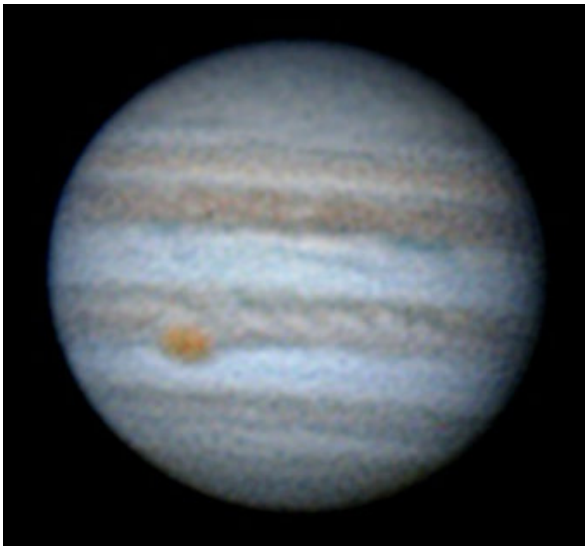


The Black eye is caused by a dust cloud obscuring the star light behind. Magnitude 9.36, 24 million light years away.

Skywatcher 190Mn telescope with Canon 60Da camera. 14x480 secs at iso 400.

Planets again!
Saturn and Jupiter, taken 17 June, and Venus at 9.20am 18 June.

All taken with an Altair GPCAMV2 IMX224 camera with a 2x Barlow and Meade SC8 telescope.



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Society Contact details

Observatory (meeting nights only)
See page 17 07967 519249

Email queries: info@oasi.org.uk

Yahoo group:https://groups.yahoo.com/neo/groups/oasi/info

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

Twitter: @OASIpswich

The OASI Facebook pages are now 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 or emailed directly to those who only receive the e-version of the News.

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, 07967 519249 during meeting hours.

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

The key to the toilets in the school gym is located in the seating area in the Belvedere room.

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, rtfd, 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."*?

Articles win points! See page 25.

The full colour version is available from the OASI web site.

Newsletter archive 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 2017

Chairman	David Murton	Set overall agenda for OASI, Chair committee meetings, Press and publicity, 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, Visits by outside groups, Observatory tours, Public appreciation of astronomy (jointly with Chairman).
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
	John Wainwright	Equipment curator
	Mike Whybray	Astronomy Workshops, Child protection officer, Orwell Park School Astronomy Club.
	Avtar Nagra	Newbourne Observing Group
	Matt Leeks	Safety & security
Co-opted	Andy Wilshere	Librarian

Society Notices

Welcome new members

David Hughes

Committee Meeting

The next committee meeting will be on Tuesday 11 July 2017, Black Horse Public House, starting 8.15pm. The main focus will be on the 50th Anniversary Convention.

Contacts

A printed list of Committee and other activity contacts is available from the Secretary or the Observatory. Email links are available in the A4 pdf version of this newsletter.

For general enquiries please email info@oasi.org.uk and your enquiry will be forwarded for action.

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.

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.

Download the OASI 2016 year planner from the web site. An A3 printer is advised.

For other astronomy news and astro pictures try our

Twitter feed https://twitter.com/OASIpswich

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

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

Date and 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
Monday 26 June From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group + Star Guide by Bill Barton + Workshop: Binocular collimation with Ray Larsen
Monday 10 July From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group + Star Guide by Bill Barton
Tuesday 11 July 20:15	Black Horse pub	Roy Gooding secretary@oasi.org.uk	Committee meeting. The main focus will be on the 50th Anniversary Convention.
Saturday 15 July	Chelmer Valley High School, Chelmsford CM1 7ER	https://northessexastro.wordpress.com	**NEAS Starfest**
Monday 24 July From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Saturday 29 July 09:00–17:30	UCS, Ipswich	David Murton chairman@oasi.org.uk	**Public access event. Major event to mark OASI's 50th anniversary. Lectures by big-name speakers, exhibitions, trade stands and much more.**
Wednesday 9 August	Holywells Park	Roy Gooding secretary@oasi.org.uk	**Public access event.** Solar observing. Booking not necessary.
Monday 14 August From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
21 August	USA	www.greatamericaneclipse.com	Total solar eclipse

Date and Time	Location	Contact	Event
Monday 28 August From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group + Star Guide by Bill Barton
Wednesday 06 Sept	Felixstowe Ferry Golf Club	David Murton chairman@oasi.org.uk	50th Anniversary Dinner for current and former members of OASI.
Sun 10 Sep 2017, Time TBC	Bentley Village playing field (bottom of Case Lane).	Roy Gooding secretary@oasi.org.uk	**Public access event.** Solar observing during village Family Fun Day. Booking not necessary.
Monday 11 Sept From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Monday 25 Sept From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group + Star Guide by Martin RH (Bill away)
30 Sept	Department of Physics, University of Birmingham		FAS Annual Convention and AGM
2 October	Orwell Park School observatory	Paul Whiting treasurer@oasi.org.uk	Observatory Open Evening.
Friday 20 October 20:00	Museum Street Methodist Halls,	Pete Richards lectures@oasi.org.uk	Lecture: Dr Sarah Hutton has kindly offered to come to speak to us about "AGNs (Active Galactic Nuclei)".
13 November	Orwell Park School observatory	Paul Whiting treasurer@oasi.org.uk	Observatory Open Evening.
Wednesday 25 October	Location TBD	James Appleton info@oasi.org.uk	Field trip to observe the graze of V4190 Sgr. More info.
Friday 17 Nov 20:00	Museum Street Methodist Halls,	Pete Richards lectures@oasi.org.uk	Steve Hubbard and Malcolm Brown will be "Talk with ET? We think not."
Sat 09 Dec 2017, 05:30	Location TBD	James Appleton info@oasi.org.uk	Field trip to observe the graze of ZC1522. More info.
11 December	Orwell Park School observatory	Paul Whiting treasurer@oasi.org.uk	Observatory Open Evening.
9 January 2018	Orwell Park School observatory	Paul Whiting treasurer@oasi.org.uk	Observatory Open Evening.
13 February	Orwell Park School observatory	Paul Whiting treasurer@oasi.org.uk	Observatory Open Evening.

Newbourne Observing Group

Avtar Nagra nog@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 December and January).

The Newbourne Observing Group (The NOGs) 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.

The car park at Newbourne Village Hall has recently been much enlarged. OASI donated £100 towards this much-needed improvement.

Newbourne Observation Group Stargazer's guide

On the first meeting each month Bill Barton 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.

NOG Meetings in 2017

16 Jan	30 Jan	13 Feb	27 Feb (S)
13 March	27 March (S)	10 April	24 April(S+W)
15 May	29 May	12 June	26 June (S+W)
10 July	24 July (S)	14 Aug	28 Aug (S)
11 Sept	25 Sept (S)		

We open up for all meetings at 7pm. Star Guide (S) and Workshops (W) start at 8pm.

Please check the web site diary for any changes during the year.

Astronomy Workshops

Contact Mike Whybray **Location: Newbourne Village Hall IP12 4NP**

Doors open at 7:00pm. **Workshops start at 8:00pm**

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!

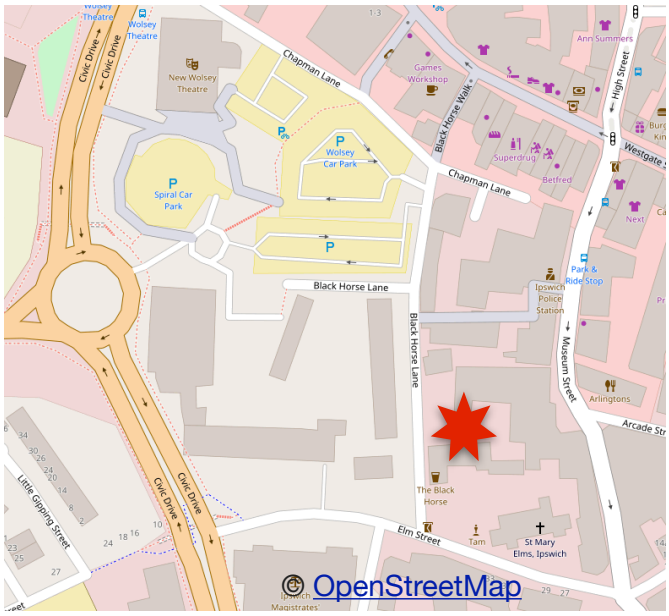
Given a clear night, we can make use of the field for a workshop or continue afterwards with some observing.

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

Lecture Meetings

Contact: Peter Richards **lectures@oasi.org.uk**

These take place in Museum Street Methodist Halls, Upstairs room, Black Horse Lane, Ipswich



20 October

Dr Sarah Hutton has kindly offered to come to speak to us about *AGNs (Active Galactic Nuclei)*.

Sarah also studies Galaxy Evolution.

She is a fully qualified teacher and lectures to primary and secondary schools and is very active in promoting the public understanding of science.

17 November

Steve Hubbard and Malcolm Brown *"Talk with ET? We think not."*

Parking

Please arrive early to ensure entry to the lecture venue. At the request of the venue's management we will lock the main entrance door before the start of the talk. The lock is a front door latch-type so it will be easy to leave the building (in an emergency for example) but you will not be able to get in.

There is fairly ample car parking at the venue case and you can park in any of the marked bays except for the row - with numbers painted on the ground - outside the house on the North (end of the car park (the left hand side as you look form the road). Just in case you can't find a suitable parking space you can find an alternative car parks at the end of Black Horse Lane and in Elm Street. These alternative car parks charge: at the time of writing the Elm Street car park is cheaper. In both cases remember to select the night rate option at the ticket machine.

DASH Astro Events – 2017

See http://dash.moonfruit.co.uk for the latest details.

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

Date	Event
02.09.2017	David Murton - Beginners Observing - with Q&A "Ask the Panel"

The Night Sky in July

Martin RH

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

Times are in BST (GMT+1) unless otherwise stated.

Moon

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

New Moon	1st Quarter	Full Moon	Last Quarter
	01 July 01:51	09 July 05:07	16 July 20:26
23 July 10:46	30 July 16:23		

Sun, Moon and planets

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

Object	Date	Rise	Set	Mag.	Notes
Sun	1	04:40	21:18		
	31	05:16	20:46		
Moon	1	13:32	00:54		Apogee: 405,934 km 06 July 05:29
	31	14:35	00:08		Perigee: 361,236 km 21 July 18:13
Mercury	1	05:30	22:06	-1.1	Maximum eastern elongation Jul-30
	31	08:02	21:25	0.5	
Venus	1	02:24	17:24	-4	
	31	02:13	18:20	-3.9	
Mars	1	05:19	21:46	1.7	Superior conjunction Jul-27
	31	05:07	20:44	1.7	
Jupiter	1	13:30	00:49	-1.9	
	31	11:50	22:52	-1.7	
Saturn	1	19:49	03:44	0.1	
	31	17:44	01:39	0.2	
Uranus	1	01:09	14:53	5.8	
	31	23:08	12:58	5.8	
Neptune	1	23:54	10:42	7.9	
	31	21:55	08:41	7.8	

Pluto will be at opposition Jul-10

Asteroids

Source: http://heavens-above.com/Asteroids.aspx

Asteroid	Brightness	Altitude	Constellation
4 Vesta	8.2	27.0°	Cancer
1 Ceres	8.6	59.5°	Taurus

Occultations during July 2017

James Appleton

The table lists the only occultation during June under favourable circumstances. The event 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.

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

Please note that times are shown in UTC. Add an hour for BST.

Only two lunar occultations occur during the month under favourable circumstances, detailed below. The data relates to Orwell Park Observatory, but will be similar at nearby locations.

Date	Time (UT)	D/R	Lunar Phase	Sun Alt(º)	Star Alt(º)	Mag	Star
02 Jul 2017	22:30:33	D	0.68+	-13	16	6.5	94 Vir
31 Jul 2017	21:08:00	D	0.62+	-10	16	7.5	ZC 2200

Comets due in 2017

Bill Barton

Here are the comets listed in the BAA Handbook with single figure peak magnitudes:-

- 41P/Tuttle-Giacobini-Kresak, peak magnitude 3 was in April and visible from the UK from January to July. Brightness in July is down to 12.
- Johnson (2015V2), peak magnitude 7 in June and visible from the UK from January to July. Brightness in July is down to 7.5

Meteor Showers

Source: BAA Handbook 2017 p97-99

Shower	Limits	Maximum	ZHR at Max	Notes
α-Cygnids	July – August	Jul 21 Aug 21	5	Weak, apparently stationary radiant producing steady activity throughout northern summer.
Capricornids	July – August	Jul 9 Jul 16 Jul 26	5	Bright yellow-blue meteors. May have three maxima and multiple radiant. Favourable in the second half of July.
δ-Aquarids	Jul 15 – Aug 20	Jul 29 Aug 6	20 10	Fine southern shower with double radiant. S component is the richer. Meteors tend to be faint
Piscis Australids	Jul 15 – Aug 20	Jul 31	5	Southern shower in need of observation. Favourable.

Visible ISS passes ≥15º max altitude

Martin RH

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

Times are BST. Predictions are approximate (data taken on 16 May) due to craft adjustments. Check the day before.

Date	Mag	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
11 Jul	-2.0	03:15:43	13°	S	03:17:30	19°	SE	03:19:57	10°	E
12 Jul	-3.3	03:58:02	10°	SW	04:01:11	46°	SSE	04:04:20	10°	E
13 Jul	-2.9	03:07:04	19°	SSW	03:08:51	32°	SSE	03:11:49	10°	E
14 Jul	-2.4	02:16:22	22°	SSE	02:16:33	22°	SSE	02:19:10	10°	E
14 Jul	-3.8	03:49:24	10°	WSW	03:52:39	67°	SSE	03:55:55	10°	E
15 Jul	-3.6	02:58:14	20°	SW	03:00:14	51°	SSE	03:03:26	10°	E
11 Jul	-2.0	03:15:43	13°	S	03:17:30	19°	SE	03:19:57	10°	E
12 Jul	-3.3	03:58:02	10°	SW	04:01:11	46°	SSE	04:04:20	10°	E
13 Jul	-2.9	03:07:04	19°	SSW	03:08:51	32°	SSE	03:11:49	10°	E
14 Jul	-2.4	02:16:22	22°	SSE	02:16:33	22°	SSE	02:19:10	10°	E
14 Jul	-3.8	03:49:24	10°	WSW	03:52:39	67°	SSE	03:55:55	10°	E
15 Jul	-3.6	02:58:14	20°	SW	03:00:14	51°	SSE	03:03:26	10°	E
11 Jul	-2.0	03:15:43	13°	S	03:17:30	19°	SE	03:19:57	10°	E
12 Jul	-3.3	03:58:02	10°	SW	04:01:11	46°	SSE	04:04:20	10°	E
13 Jul	-2.9	03:07:04	19°	SSW	03:08:51	32°	SSE	03:11:49	10°	E
14 Jul	-2.4	02:16:22	22°	SSE	02:16:33	22°	SSE	02:19:10	10°	E
14 Jul	-3.8	03:49:24	10°	WSW	03:52:39	67°	SSE	03:55:55	10°	E
15 Jul	-3.6	02:58:14	20°	SW	03:00:14	51°	SSE	03:03:26	10°	E
16 Jul	-3.2	02:07:27	35°	S	02:07:50	36°	SSE	02:10:53	10°	E
16 Jul	-3.9	03:40:51	10°	W	03:44:07	82°	S	03:47:24	10°	E
17 Jul	-2.1	01:16:37	21°	ESE	01:16:37	21°	ESE	01:18:15	10°	E
17 Jul	-3.9	02:49:14	17°	WSW	02:51:38	71°	SSE	02:54:54	10°	E
18 Jul	-3.8	01:58:20	41°	SW	01:59:10	56°	SSE	02:02:23	10°	E
18 Jul	-3.9	03:32:17	10°	W	03:35:34	86°	S	03:38:52	10°	E
19 Jul	-3.0	01:07:25	35°	ESE	01:07:25	35°	ESE	01:09:50	10°	E
19 Jul	-3.9	02:40:01	12°	W	02:43:03	85°	S	02:46:19	10°	E
20 Jul	-1.7	00:16:24	15°	E	00:16:24	15°	E	00:17:12	10°	E
20 Jul	-4.0	01:48:59	29°	WSW	01:50:31	76°	S	01:53:47	10°	E
20 Jul	-3.9	03:23:41	10°	W	03:26:57	77°	S	03:30:14	10°	ESE
21 Jul	-3.9	00:57:50	60°	S	00:58:00	61°	SSE	01:01:14	10°	E
21 Jul	-4.0	02:31:08	10°	W	02:34:24	85°	S	02:37:41	10°	E
21 Jul	-3.4	04:07:37	10°	W	04:10:45	42°	SSW	04:13:51	10°	SE

Date	Mag	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
22 Jul	-3.1	00:06:21	35°	ESE	00:06:21	35°	ESE	00:08:39	10°	E
22 Jul	-4.0	01:38:53	12°	W	01:41:51	86°	S	01:45:08	10°	E
22 Jul	-3.8	03:15:01	10°	W	03:18:15	58°	SSW	03:21:29	10°	ESE
22 Jul	-3.2	23:10:05	10°	SW	23:13:02	32°	SSE	23:16:00	10°	E
23 Jul	-4.0	00:46:00	10°	WSW	00:49:17	79°	S	00:52:33	10°	E
23 Jul	-4.0	02:22:27	10°	W	02:25:43	73°	SSW	02:28:58	10°	ESE
23 Jul	-2.8	03:59:05	10°	W	04:01:53	26°	SSW	04:04:40	10°	SSE
23 Jul	-2.6	22:18:02	10°	SSW	22:20:37	22°	SSE	22:23:14	10°	E
23 Jul	-4.0	23:53:28	10°	WSW	23:56:43	66°	SSE	23:59:58	10°	E
24 Jul	-4.0	01:29:52	10°	W	01:33:08	83°	S	01:36:24	10°	E
24 Jul	-3.4	03:06:22	10°	W	03:09:26	38°	SSW	03:12:29	10°	SE
24 Jul	-3.7	23:01:00	10°	SW	23:04:10	50°	SSE	23:07:22	10°	E
25 Jul	-4.0	00:37:16	10°	W	00:40:33	86°	S	00:43:50	10°	E
25 Jul	-3.8	02:13:43	10°	W	02:16:55	52°	SSW	02:20:07	10°	ESE
25 Jul	-2.2	03:50:50	10°	WSW	03:52:52	16°	SW	03:54:54	10°	S
25 Jul	-3.3	22:08:38	10°	SW	22:11:40	36°	SSE	22:14:41	10°	E
25 Jul	-4.0	23:44:39	10°	W	23:47:56	82°	S	23:51:12	10°	E
26 Jul	-3.7	01:21:06	10°	W	01:23:53	57°	WSW	01:23:53	57°	WSW
26 Jul	-4.0	22:52:04	10°	WSW	22:55:19	71°	SSE	22:58:34	10°	E
27 Jul	-4.0	00:28:28	10°	W	00:31:45	81°	S	00:32:14	61°	ESE
27 Jul	-3.8	21:59:32	10°	WSW	22:02:44	55°	SSE	22:05:57	10°	E
27 Jul	-4.0	23:35:50	10°	W	23:39:07	86°	S	23:40:57	24°	E
28 Jul	-2.0	01:12:18	10°	W	01:13:33	20°	W	01:13:33	20°	W
28 Jul	-3.9	22:43:11	10°	W	22:46:28	84°	S	22:49:45	10°	E
29 Jul	-3.6	00:19:38	10°	W	00:22:24	54°	WSW	00:22:24	54°	WSW
29 Jul	-3.9	21:50:33	10°	WSW	21:53:49	75°	SSE	21:57:05	10°	E
29 Jul	-4.0	23:26:58	10°	W	23:30:15	77°	S	23:31:19	39°	ESE
30 Jul	-3.9	22:34:18	10°	W	22:37:34	85°	S	22:40:15	14°	E
31 Jul	-2.6	00:10:46	10°	W	00:12:50	31°	WSW	00:12:50	31°	WSW
31 Jul	-3.9	21:41:37	10°	W	21:44:53	86°	S	21:48:10	10°	E
31 Jul	-3.8	23:18:03	10°	W	23:21:17	59°	SSW	23:21:48	50°	SSE

Iridium flares

Too many to list but see http://heavens-above.com/IridiumFlares.aspx

Paul's Astronomy Podcast for July

Paul Whiting FRAS Podcast, April 2017 www.oasi.org.uk/2017_07_pod.mp3

David's Radio Broadcast

On the 1st Tuesday of the month, 1.40pm on the Lesley Dolphin show on BBC Radio Suffolk.

Bill's Radio Broadcast

ICRFM (Ipswich Community Radio) 105.7 MHz at about 08:25 in the morning of the first Wednesday of each month. 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. www.icrfm.com

Snippets from the Interweb

Astronomy & Nature YouTube series

https://www.youtube.com/channel/UCIwQ5bWXAf57sE5HN6IdW3Q

Top 20 Astronomy Tips

https://www.youtube.com/watch?v=UPoh76f60kA&feature=em-subs_digest-vrecs

This has a simple DIY focussing guide.

Getting started with your new telescope

https://www.youtube.com/watch?v=2oG73hVHzf0

and for you history buffs

The manufacture of high-precision brass telescope tubes 1780 to 1990

https://www.youtube.com/watch?v=rf93q626KhQ

OASI Member of the Year Competition

- Open to any non committee member (at time points earned)
- Runs from 1st September to 31st August each year
- It is the members responsibility to check that they have been credited the points for a particular event

Activity	Points	Activity	Points
Helping at an OASI outreach event	10	Writing a newsletter article (per page)	3
Giving a workshop/monthly sky notes	20/10	Introducing a new member	5
Astro photo published	2		

Top 5 Members' points to date

Bill Barton	175
Andy Gibbs	78
Alan Smith	68
Joe Startin	55
Mike O'Mahoney	50
Nicky Richards	50

Come and help at one of our outreach events and earn 10 points. You don't need to be an expert!

Write a short article for the magazine, e.g.

> Bought some new astronomy kit? Tell us about it – successes and pitfalls.

Martin RH

BAA News

BAA's Sky Notes video is now available to both members and non-members and available here: skynotesvideo

This was recorded at the BAA meeting held at Burlington House in London on Wednesday May 31. You can hear Nick James talking about recent and forthcoming events in the sky. I do hope you enjoy watching it.

In addition, our Sky Notes article covering events in the sky during June and July has just been published in the June edition of the BAA Journal. The article can be read online at our website here:

https://britastro.org/journal_item/10343

There is other content in the current edition of the Journal which readers may find interesting, including:

- Sandra Brantingham's notes on auroral activity
- Janice McClean's report on the Kelling Heath Star Party
- Michael O'Connell's report on the Dunsink Observatory in Dublin joining the NEMETODE video meteor detection network
- As well as my editorial round up.

As ever, if there are ways you think the BAA can help support local clubs and societies and amateur astronomers in general please do let me know.

If individuals or groups would like to receive the link to the Sky Notes on a regular basis please email: webadmin@britastro.org.

Jeremy Shears BAA President

Neptune

On 2017 June 10, Australian amateurs Darryl Milika and Pat Nicholas imaged a bright spot in Neptune's northern hemisphere. They used a C14 Schmidt-Cassegrain, with IR, R, G and B filters.

A series of images taken from 19:45 UT until 21:02 UT showed the spot moved with the rotation of the planet. Further observations are urgently required to see if this storm persists.

Mike Foulkes. Saturn, Uranus and Neptune Section director

The Sun

There is a new Observing Challenge. This time the subject is the Sun and the challenge has been set by Solar Section Director, Lyn Smith - The Sun at Solar Minimum.

BAA Autumn Weekend

Coming up quickly is the 08-10/09/2017 - BAA Autumn Weekend Meeting in Chester - Bookings have just opened for this event. Stars: Life and death of the Universe. Plus a chance to visit the OpTIC Technology Centre, part of the UK Space Agency. A must see. Organised by Hazel Collett, Meetings Secretary.

FAS News - Federation of Astronomical Societies

30th September 2017 is the date of the next FAS Annual Convention, which will be held again this year at the Department of Physics, University of Birmingham. There is an exciting programme of speakers in preparation, so be sure to make yourself free that weekend.

At the convention we will be holding the AGM, where there will be a number of posts with no current candidate. If you would like to help the FAS and volunteer for a role, please let us know. Please get in touch with me if you would like an informal chat in advance.

Callum Potter, President, Federation of Astronomical Societies president@fedastro.org.uk

19th Century Aurora Observations in Suffolk

P.J.Whiting FRAS

Scientists quite often find useful information by searching through ancient records. Take for example the discovery of previously unknown, early 20th century images of Pluto taken at the Lowell Observatory that helped pinpoint Pluto's orbit. This enabled the NASA New Horizons spacecraft to successfully pass within 8,000 miles of the dwarf planet.

It was with this in mind that I decided to review several historic documents for various keywords to see if anything interesting turns up or perhaps identify something scientifically valuable. The documents chosen were as follows:

- *The Ipswich Journal (1800 – 1900)*
- *The East Anglian Daily Times*
- *The English Mechanic and World of Science (1865 – 1926)*

The Ipswich Journal was published from June 1749 until July 1902 *[Ref. 1]*. However the British Library search engine has only the 19th century issues currently on-line, which somewhat limited the searching capability.

I would like to thank Bill Barton for lending me his DVD collection of the English Mechanic, which comes with a built-in search engine. I have previously searched this particular collection for astronomical references to Northamptonshire as part of my duty as county coordinator for the Society for the History of Astronomy County Survey *[Ref. 2]*.

This paper concerns the results of Aurora references in the Ipswich Journal. Using the simple search terms "aurora" and "northern lights", around a hundred references were returned. Similar search parameters returned over sixty references from the English Mechanic. Care had to be taken with references from the English Mechanic as its remit was much wider than the Ipswich Journal. For example references to aurora seen in Alaska or Norway were ignored. All reports from England and Wales were included.

Quite a number of these references used the poetical term aurora in prose and poetry to depict the sun's rays at dawn – "... to see Aurora's charms at dawn ..." Many other references were made to various boats and ships containing the word Aurora, including some nefarious references to bogus insurance claims after such a craft was "lost" at sea.

Some references were a bit oblique. For example several articles in the Journal referred to the London fire brigades being kept busy all night by being called out to false alarms by people confusing bright auroras for real conflagrations.*[Refs. 7, 8]*.

The research task was made quite a bit easier by two keen weather observers based in and around Ipswich each trying to outdo one other by providing weather reports for the preceding month and forecasts for the coming weeks.

One of these forecasters was Orlando Whistlecraft of Thwaite, Suffolk *[Ref. 4 eg.]* who was perhaps the most scientific of the pair, but both annotated their columns with poetry appropriate to the season. What started as a very polite letter to the editor transformed over the years to a long column giving a day-by-day account of the weather complete with wind speed and direction, max & min thermometer readings and rainfall.

The other forecaster was W.H.B. Webster of 14, St. Helen's Terrace *[Ref. 5]* and later 145, Woodbridge Road, Ipswich *[Ref. 6]*. His reports remained in letter to the editor form. His approach was more poetic than scientific, constantly trying to introduce cycles and "repeating periods" into his observations. His forecasts were based on these repeating patterns. He tried to link this to his aurora observations, but from his correspondence he only appeared to look for year on year patterns rather than longer cycles.

I must admit I was surprised by the number of observations in the papers. I can only assume that the sight of the aurora was known but not understood and so remained an awe inspiring sight, worthy of reporting in print. Also lack of light pollution would have enabled even low levels of aurora to be clearly seen.

It was also interesting to see “experts” (usually former military or naval men) writing or giving lectures on the causes of the aurora. The most common explanation being sunlight reflecting from the polar ice caps. One article in 1882 *[Ref. 3]* mentioned a particularly large sunspot group seen on the Sun. There was also a particularly magnificent aurora that night. Unfortunately there was no thought of linking the two together.

The first causality debates occurred in the English Mechanic around 1868 with an article by A. Dawson on “Theories of the Solar Process” *[Ref. 11]*.

However there were a number of reports in the latter half of the century making links between rapid changes in the Earth’s magnetic field and the appearance of the aurora, making several references to the Magnetic Observatory at Kew *[eg. Ref. 12]*. Our own John Isaac Plummer, the Orwell Park Astronomer, pulled together the current thinking on the formation of aurora in a lecture to a large audience in the Lecture Theatre in Ipswich on Friday February 19th 1875 *[Ref. 9]*.

It is interesting that the Carrington Event of September 2 1859 *[Ref. 10]*, which was widely reported around the world, was not specifically mentioned in the Ipswich Journal; although the heightened aurora activity during September and October 1859 were the subject of several letters from Webster. The Carrington Event was a solar super storm that caused a major geomagnetic storm and auroral activity visible at really low latitudes. It was named after astronomer Richard Carrington who reported seeing a visible flare coming from the Sun.

After years of sometimes heated debate within the columns of the English Mechanic between 3 or 4 parties as to the nature of the aurora, W.T. Lynn of the Royal Observatory, Greenwich published a treatise on “The Periodicity of Sunspots and Aurora” *[Ref. 13]*; this should hopefully put the debate to rest. Of course it didn’t, but debate turned to the physical process within the atmosphere – such as at what height the phenomena was produced and whether aurora was accompanied by sound. Several correspondents proposed and described balloon ascents to investigate. On one such ascent the aeronaut described hearing a loud noise and the smell of sulphur *[Ref. 14]*.

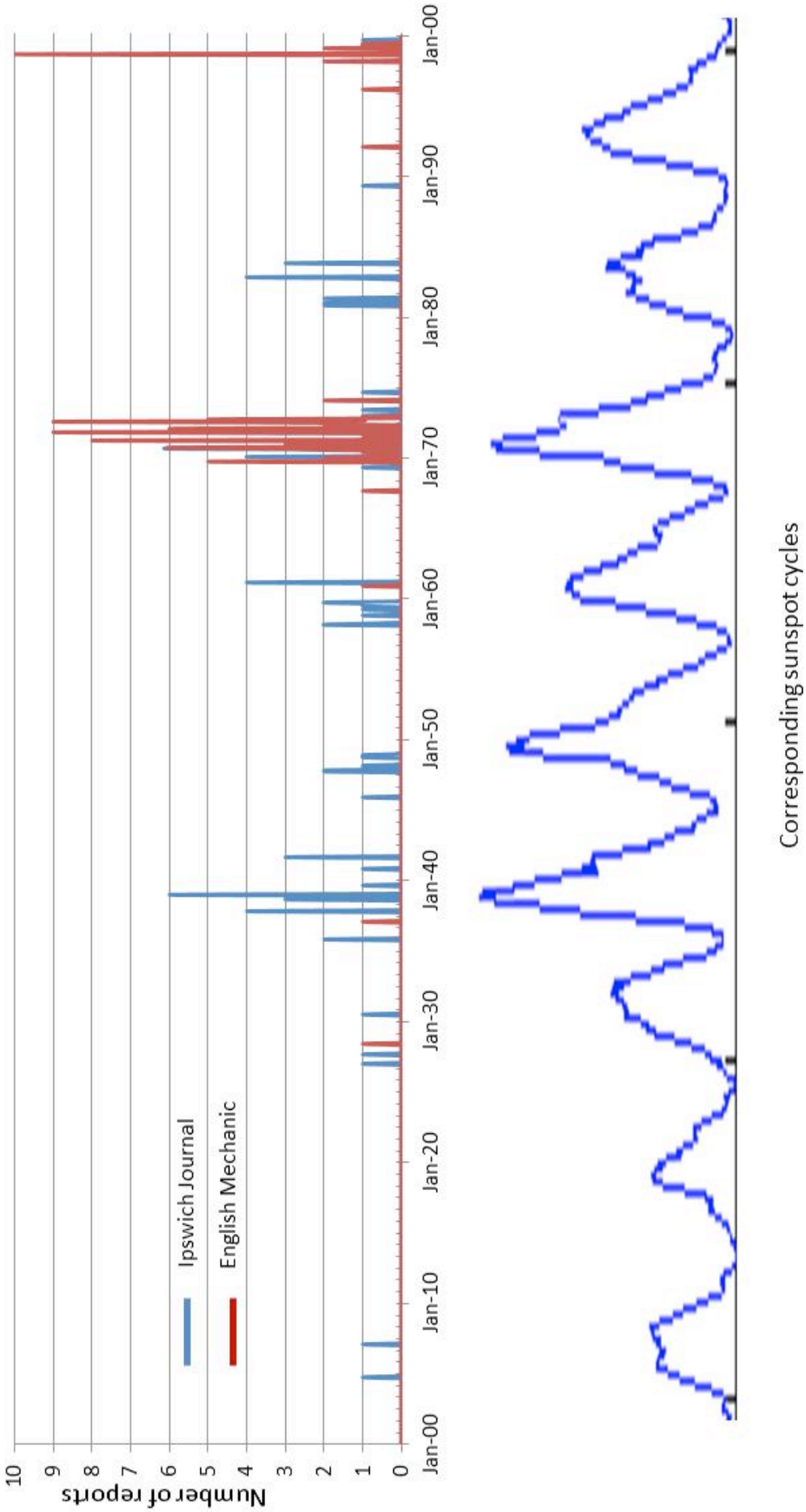
For several months articles mainly concentrated on reporting auroral colour and appearance; one correspondent estimating the auroral height as being from “several to 100 miles”. However at the end of 1872 the old chestnut of linking the aurora to the weather and earthquakes reared its head again. There was also a final gasp for the reflection of sunlight from the polar ice fields theory.

Over this time experiments were reported about observations of the spectrum of the aurora, most notably in 1869 a paper by J.A. Angstrom on the “Spectra of Aurora” *[Ref. 15]*. An interesting paper was reported in the English Mechanic – “New Theories of Solar Light, Heat and Actinism” by a T.B.Barkas, which discussed ‘auroral radiation around the Sun’, namely the corona *[Ref. 18]*. A spectroscopic link between the aurora and the solar halo was reported in an 1898 article, suggesting the discovery of a new element within the Sun, called Coronium *[Ref. 16]*.

The nicest snippet I found came from a US Telegraphist who calculated the energy contained within an aurora. He claimed that this would be greater than 32×10^6 horsepower per cubic mile of space *[Ref. 17]*. Good old pre-SI units! Like the acceleration due to gravity on Earth is 7.1×10^{10} furlongs per fortnight squared.

The results of this literature search may be found below. The histogram of numbers of references found and the sunspot cycles over the same period are shown. Note that there is data missing from the English Mechanic between 1874 and 1894 because the DVD media has become corrupted. It can be seen that there is a general agreement between the two graphs. This is very pleasing even if it isn’t very scientifically important.

Press Aurora Report Frequency during the 19th Century



References.

1. www.britishnewspaperarchive.co.uk/
2. shasurvey.wordpress.com/england/northamptonshire/
3. Ipswich Journal 8061, Nov 18, 1882
4. Ipswich Journal 6848, Oct 4, 1870
5. Ipswich Journal 6285, Oct 22, 1859
6. Ipswich Journal 6813, Feb 5, 1870
7. Ipswich Journal 5096, Nov 21, 1835
8. Ipswich Journal 5160, Feb 17, 1838
9. Ipswich Journal 7297, Feb 23, 1875
10. en.wikipedia.org/wiki/Solar_storm_of_1859
11. English Mechanic, **6**, 156, March 1868
12. English Mechanic, **10**, 257, February 1870
13. English Mechanic, **12**, 294, November 1870
14. English Mechanic, **13**, 338, October 1871
15. English Mechanic, **10**, 236, September 1869
16. English Mechanic, **66**, 1741, August 1898
17. English Mechanic, **2**, 51, March 1866
18. English Mechanic, **6**, 151, February 1868

The Hubble Space Telescope.

A basic Guide from the Library

Andy Willshere.

The Hubble Space Telescope was launched in 1990 giving astronomers a superb view, above our atmosphere, (353miles above Earth), of the cosmos. During its lifetime, it has sent hundreds and thousands of images back to Earth for viewing. Many of these images have been used in scientific research to discern the existence of dark matter and pinpoint quasars. It has also given scientists the information gleaned from galaxies at all different stages of life as to how they formed, and where gamma ray bursts originate.

The rationale behind having a space telescope is that on Earth we have an atmosphere surrounding us. The atmosphere causes distortion due to variable air pockets and blocks or absorbs certain wavelengths of radiation, e.g. ultraviolet, gamma and X-rays. Looking at stars requires scientists to view it in all types of wavelength. Even today, with our up to date electronics we cannot correct for atmospheric distortion, so Earth based telescopes are at a great disadvantage.

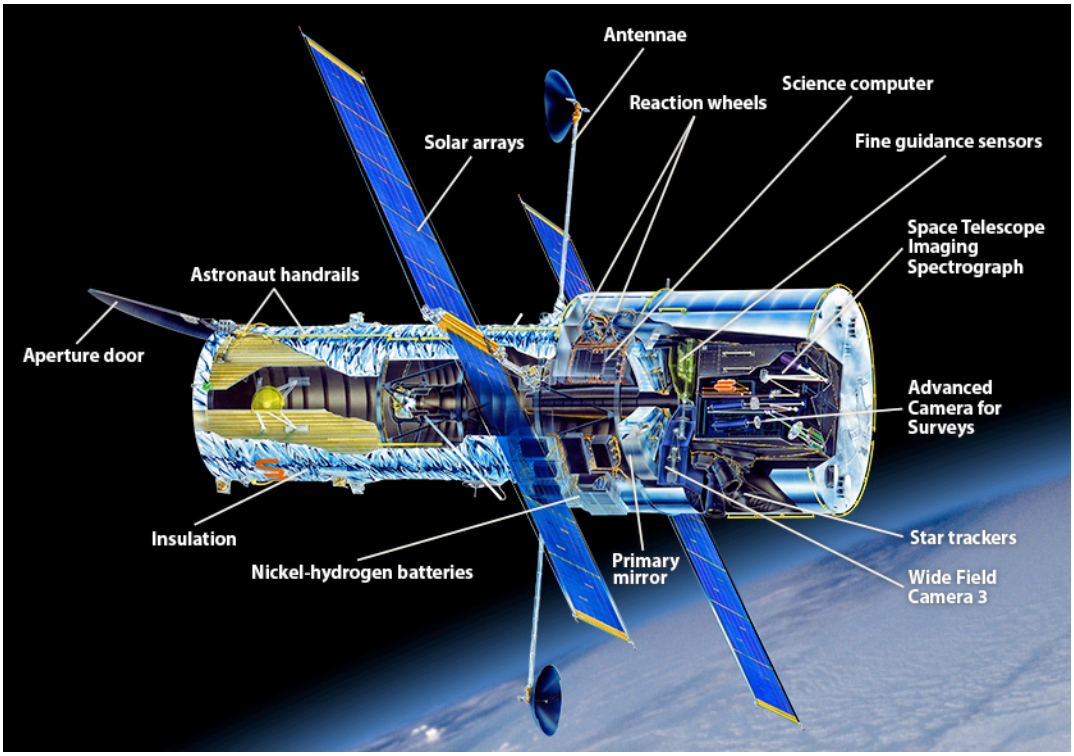
Hubble spins around Earth at about 8km per second, which takes a time of 97 minutes. As it goes around Earth, light is collected via its mirror where it is sent uninterrupted to various scientific instruments. Hubble's telescope is known as a Cassegrain reflector. This means that light strikes the primary mirror which passes it onto a secondary mirror. The primary mirror has a hole at its centre. The secondary mirror then directs this light through the hole of the primary and thus to the telescopes scientific instruments. Telescopes work by capturing a great deal more light than the human eye. The more light that is captured, the better the picture. Hubble's primary mirror is 2.4m in diameter, which allows it the clarity due to there being little or no atmospherical aberrations. This mirror is small in comparison to ground based telescopes, but does not have the atmosphere to contend with. At this point, Hubble's instruments take over to analyse the universe in different ways. Hubble uses solar arrays that convert sunlight directly in to electricity, some of which is put into battery storage. Information between the Flight Operations team and the telescope is communicated via satellites and four antennae. It also has three targeting cameras

called fine guidance sensors, two of which hold the target steady in the telescopes view finder, whilst the third performs scientific tasks. When used as scientific instruments, the fine guidance sensors can establish if certain stars are double, by looking for the "wobble" in the motion, measure angular diameters and clarify the locations and absolute magnitude scale for stars.

One of the camera's on board is the Wide Field camera, installed in 2009, which registers three different types of light, i.e. near-ultraviolet, near infra-red and visible, but not all at the same time. WFC3 is one of the newest instruments, and has a resolution and field of view much greater than any of the other instruments. It has two channels detecting and processing contrasting wavelengths. It will be used in dark matter and energy studies.

The other new piece of kit is the Cosmic Origins Spectrograph (COS). This sees in ultraviolet light only. From this the wavelength of the subject can be measured, which allows information about temperature, chemical composition, motion and density. It will also increase the ultraviolet sensitivity by 10 times. Another spectrograph, the Space Telescope Imaging Spectrograph (STIS) sees in near infra-red, visible and ultraviolet light. COS works better with limited light sources, STIS handles larger objects like galaxies. During 2004 STIS ceased to work, but was repaired later during Servicing mission 4. Spectrographic observations exhibit changes to outer space objects as the universe grows. STIS is also used to track black holes by looking at red and blue shifted material around the area of the supposed back hole. This would show that the material is moving at very high speeds. It is also capable of sampling 500 points along a celestial object at the same time, which increases Hubble's speed and competence. STIS provides direct and coronographic imaging in the optical, as well as spectroscopy in the U.V.

The Near Infrared Camera and Multi-Object Spectrometer (NICMOS) allows the infra-red to be viewed as heat, which means it can view objects hidden by interstellar dust, for example the birth sites of stars. It also allows imaging in broad, medium and narrow band filters, broad band polarimetry and coronographic imaging. The instrument works in the 0.8 to 2.5 micron wavelength. Each camera has 19 optical elements and is cooled to cryogenic temperatures. A coronographic imaging capacity of 0.3 arcsec is built into the intermediate resolution of Camera 2.



References:

http://www.stsci.edu/hst/ Google “Hubble telescope”

OASI 50th Anniversary Convention, 29 July 2017

On Saturday 29 July 2017, we will celebrate the 50th anniversary of OASI with an astronomy convention. The venue is the Waterfront Building, University of Suffolk. There will be lectures by prominent astronomers, displays by astronomy societies and trade stands.

Venue: The Waterfront Building is an ideal venue in a central location on the popular waterfront area of Ipswich. It boasts large lecture theatres together with abundant exhibition space on two levels. There is a café on site and a plentiful selection of eateries and bars nearby. Green marker.

Car Parking: Car parking is available at £4.50 for the day at postcode IP3 0AQ, less than five minutes walk from the venue. Map on web site. Many other car parks are available in town: see Parkopedia.

Accommodation: Many hotel chains are nearby, with a range of prices to suit all pockets.

Tickets: Entrance to the convention (displays and trade stands) will be free. Tickets for the lectures will be on sale in advance and at the door. The door price will be the same for both members and non-members. Save money by ordering tickets either by PayPal via our website or buy your tickets in person from the Treasurer at any club meeting. Buying in person will save you a further £1 against the PayPal price.

Full details of the event and booking details can be found on the front page of our web site at www.oasi.org.uk.

Speakers

Dr Allan Chapman, FRAS, of Wadham College, Oxford, is an accomplished speaker, TV presenter and author. He is a founding member and president of the Society for the History of Astronomy and Honorary President of OASI.

Nick James has been a member of the BAA from the age of 12. He was papers secretary for many years and is currently Director of the Comet Section.

Nik Szymanek has been the premier UK astro-imager for over two decades. He often collaborates with professional astronomers and his work frequently appears in the pages of astronomy magazines.

Dr John Mason is former President of the BAA and currently Director of the Meteor Section and Public Relations Officer. He has led trips all over the world to observe solar eclipses and aurorae.

Dr Nick Hewitt is a trustee of the BAA, former Director of the Deep Sky Section and President. He is a keen eclipse chaser and observer of the deep sky, Mars and active galactic nuclei.

Programme

09:00 – 18:00	Displays area (foyer)
09:30 – 10:45	Nick James
11:00 – 12:30	Nik Szymanek
13:00 – 14:15	Dr John Mason MBE
14:30 – 15:45	Dr Nick Hewitt
16:00 – 17:30	Dr Allan Chapman: 'Sir John Herschel, Astronomer in two hemispheres'

Trade Stands

The Widescreen Centre

Sneezums, Bury St Edmunds

Space Rocks UK

Display Stands

Athenaeum Astronomy Society

Breckland Astronomical Society

DASH Astro

LYRA Lowestoft and Yarmouth Regional Astronomers

British Astronomical Association

Commission for Dark Skies

Kesgrave High School Space Club

Geo Suffolk

Comet Watch, Neil Norman FRAS

OASI 50th Anniversary Dinner

Orwell Astronomical Society

50th Anniversary Dinner

FELIXSTOWE FERRY GOLF CLUB

Wednesday 6th September 2017 - 7 for 7.30pm

NAME: _____ **AMOUNT ATTACHED:** _____

PLEASE TICK PREFERENCE

STARTERS

MELON AND ELDERFLOWER COCKTAIL	☐
CHICKEN & MANGO KORMA SALAD, SERVED ON A BED OF MIXED LEAVES	☐
BUTTERNUT SQUASH HOMEMADE SOUP	☐

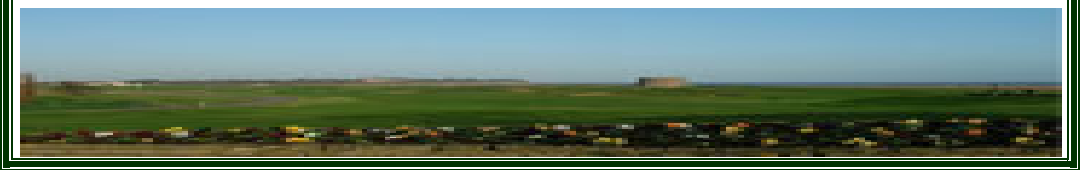
MAIN

SLOW BRAISED FEATHER BLADE STEAK IN A RICH RED WINE, SHALLOT AND MUSHROOM GRAVY	☐
HERB CRUSTED SEA BREAM	☐
MUSHROOM WELLINGTON STUFFED WITH TOMATOES, SPINACH AND BLUE CHEESE	☐

DESSERTS

MIXED BERRY CRUMBLE SERVED WITH HOT CUSTARD/POURING CREAM	☐
LEMON POSSET SERVED WITH MINI MERINGUES	☐
SELECTION OF CHEESE & BISCUITS	☐
TEA/COFFEE	☐

2 COURSES £16.00 / 3 COURSES £20.00



This is open to all current and past oasi members so book your places early! Please let paul whiting have your booking, menu choices and payment either at one of our meetings or via email at treasurer@oasi.org.uk.

OASI at Kirton

Martin RH

A huge thanks to all those who helped over the two weekends – David Murton, Bill Barton, Paul Whiting, Pete & Nicky Richards and me.

3 June:

Kirton & Falkenham Fete – a typical family day with interest from young and old. Next year's fete is on Saturday 2nd June.

11 June:

ESWR (East Suffolk Wireless Revival) was a gathering of the geeks so we had both optical (white light and Ha filtered telescopes) and some radioastronomy gear on view. VHF detection of meteors using the Graves radar on 143.05MHz, monitoring of VLF stations (23.4kHz) to observe SIDs (Sudden Ionospheric Disturbances).

Paul Whiting G4YQC was, on this occasion, wearing his radio "hat" as Hon. Sec. of FDARS (Felixstowe & District Amateur Radio Society).

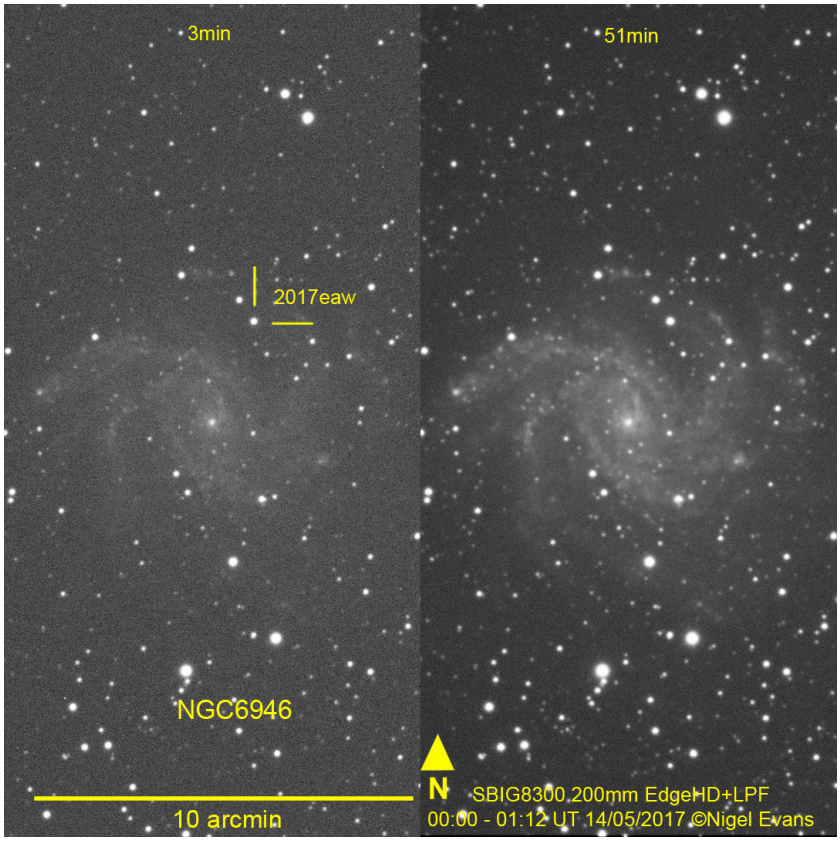
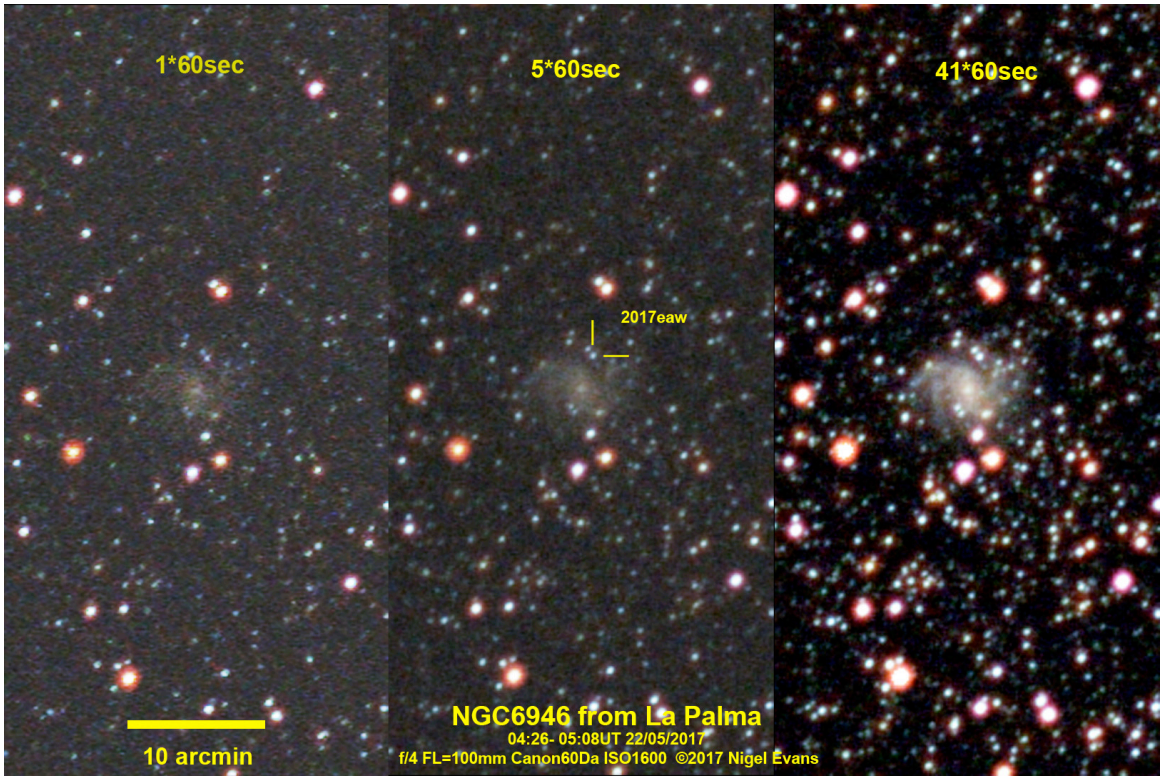
We had quite a bit of interest on both days, from beginners (with telescopes that had been lurking in an attic) and people looking to upgrade telescopes or explore new fields.

OASI @ ESWR

Astrophotographs 2

Nigel Evans

A (focussed!) 3 minute exposure on a C8 certainly shows the SN against a rather indistinct galaxy - increasing the exposure certainly brings out the detail in the galaxy.



But you need not use a light-bucket to capture this. I have recently come back from the obscenely dark skies of La Palma (Canaries). Here I used a (driven) Canon camera with a 100mm focal length set at f/4 - yes, the aperture is only 25mm!. The image-scale is a bit pokey but you can certainly capture the SN even with an exposure of 60seconds although, as before, it is clearer with increasing the total exposure.