



OASI News

The newsletter of the Orwell Astronomical Society



Diamond Ring: Solar Eclipse 21 August 2017 *Photo: Paul Whiting FRAS*

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

Astrophotographs:

by David Murton

25th/26th July 2017 efforts from a really good night sky.



IC 5146, the Cocoon nebula in Cygnus

First IC 5146 the Cocoon nebula in Cygnus. It is illuminated by the cluster of new bright stars inside it. The centre one is probably only a few hundred thousand years old. It is about 4000 light years away.

Surrounding it and spreading towards the top of the picture is dark nebula Barnard 168, a cloud of dust obscuring the stars behind. It is all deep in the Milky Way as we see it which explains all the stars you can see! 15x360 seconds at ISO 800.

While waiting for it to get dark enough I got a few shots of globular cluster M56 (above) which is nearby. Only 6x360 second exposures at ISO 800.

Both Canon 60Da camera on Skywatcher 190MN telescope. It is illuminated by the cluster of new bright stars inside it. The centre one is probably only a few hundred thousand years old. It is about 4000 light years away.



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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: @OASlpswich

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, 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."*?

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](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 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 Wilshire	Librarian

Society Notices

Welcome new members

David Hughes

Committee Meeting

The next committee meeting will be on **Tuesday 19 September 2017**, Black Horse Public House, starting 8.15pm.

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.



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 28 August From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group + Star Guide by Bill Barton + 'Neptune, Triton and 4UC 410-143659' (at the suggestion of Alan Smith, to initiate a possible occultation observation project 5 Oct)
Wednesday 06 Sept	Felixstowe Ferry Golf Club	David Murton chairman@oasi.org.uk	50th Anniversary Dinner for current and former members of OASI.
Saturday 9 Sept 11:00 - 16:00	Christchurch Park, Reg Driver Centre	Roy Gooding secretary@oasi.org.uk	Public access event. Solar observing. Booking not necessary.
Sunday 10 Sept, 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
Tuesday 19 Sept 20:15	Black Horse Public House	Roy Gooding secretary@oasi.org.uk	Committee Meeting
23–24 Sept	Kelling Heath Holiday Park Weybourne, Holt, NR25 7HW	http://las-skycamp.org	Kelling Heath Star Party
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)

Date and Time	Location	Contact	Event
Saturday 30 Sept 11:00 - 16:00	Christchurch Park, Reg Driver Centre	Roy Gooding secretary@oasi.org.uk	Public access event. Solar observing. Booking not necessary. This is a standby date in case the event is postponed from an earlier date due to poor weather.
Saturday 30 Sept	Department of Physics, University of Birmingham		FAS Annual Convention and AGM
Monday 2 October	Orwell Park School observatory	Paul Whiting treasurer@oasi.org.uk	Public access event. Observatory tour. Booking essential.
Thursday 5 October 23:44-23:59 UT (= 00:44-00:59, 06/10/2017 BST)	TBA	See Bill's NOG talk on 28 August	Triton Occults 4UC 410-143659. www.asteroidoccultation.com/observations/NA/
13-14 October	Stoneleigh Park Stoneleigh Road, Kenilworth, CV8 2LZ, England (map)	www.ukastroshow.com	International Astronomy Show
13-20 October	Haw Wood Farm Hinton, Saxmundham Suffolk IP17 3QT	www.hawwoodfarm.co.uk/events/astronomers-week/	Astronomers Week
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)".
Friday-Monday 20-23 October	Haw Wood Farm Hinton Saxmundham Suffolk IP17 3QT	www.hawwoodfarm.co.uk/events/family-star-gazing-weekend/	Family Star gazing Weekend
Wednesday 25 Oct	Location TBD	James Appleton info@oasi.org.uk	Field trip to observe the graze of V4190 Sgr. More info.
Monday 13 Nov 20:00	Orwell Park School observatory	Paul Whiting treasurer@oasi.org.uk	Public access event. Observatory tour. Booking essential.
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."
Saturday 09 Dec, 05:30	Location TBD	James Appleton info@oasi.org.uk	Field trip to observe the graze of ZC1522. More info.

Date and Time	Location	Contact	Event
Monday 11 Dec 20:00	Orwell Park School observatory	Paul Whiting treasurer@oasi.org.uk	Public access event. Observatory tour. Booking essential.
2018			
Tuesday 9 January 20:00	Orwell Park School observatory	Paul Whiting treasurer@oasi.org.uk	Public access event. Observatory tour. Booking essential.
Tuesday 13 February 20:00	Orwell Park School observatory	Paul Whiting treasurer@oasi.org.uk	Public access event. Observatory tour. Booking essential.

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 2017-18

28 Aug (S)	11 Sept	25 Sept (S)	
9th Oct	23rd Oct (S)	13th Nov	27th Nov (S*)
11th Dec			

* 27 November (seven weeks to cover Xmas/New Year)

2018

15th Jan (S)	29th Jan	12th Feb (S)	26th Feb
12th March (S)	26th March	9th April (S)	23th April
14th May	28th May	11th June	25th June
9th July	23th July	13th Aug	27th Aug
10th Sept	24th Sept		

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

Autumn star parties at Haw Wood Farm (yes plural!)

October 13 – 23

David Murton

At the public weekend I shall be giving the talk and leading the public opportunities for observing. If you fancy a nights observing (or more) I would welcome any offers of help. Those who did this in the last couple of years will confirm it is really worthwhile and good fun will be had by all!

Also note the serious observing weekend the previous one. I shall be attending both.

Oct 13–20 www.hawwoodfarm.co.uk/events/astronomers-week/

Oct 20–23 www.hawwoodfarm.co.uk/events/family-star-gazing-weekend/

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

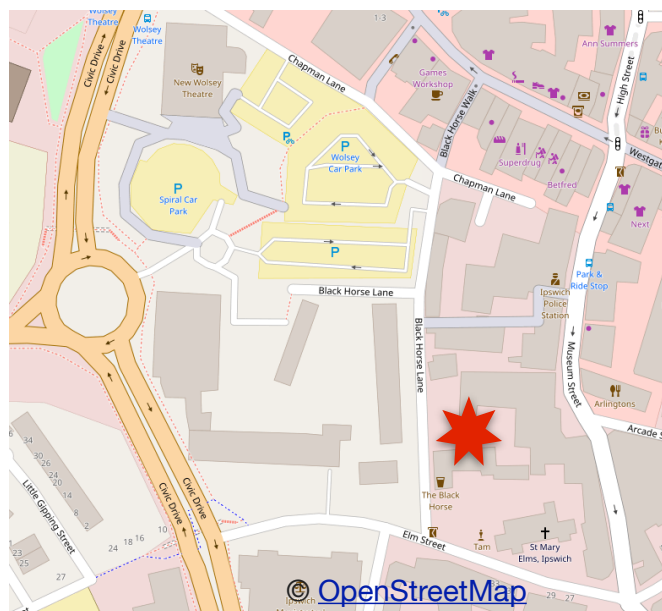
Dr Sarah Hutton has kindly offered to come to speak to us about *AGNs (Active Galactic Nuclei)*.

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-astro.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
------	-------

September

- | | |
|---------|---|
| 02 | Meeting - David Murton - Beginners Observing - with Q&A "Ask the Panel" |
| 16 & 17 | Solar Observing Outreach - Henham Steam Rally - Henham Estate |
| 23 | Dash Observing / Workshop Session - Westleton Common / Westleton Village Hall |
| 30 | Meeting - Members Talks - 4 Short talks by members on various subjects. |

October

- | | |
|----|---|
| 14 | Breckland A.S. Star Party - Haw Wood Farm |
| 28 | International Observe the Moon Night - Westleton Village Hall, Moon set 00:17 (29th)
68% |

November

- | | |
|----|---|
| 11 | Meeting - Paul Webb - Beginners Equipment - with Q&A "Ask the Panel" |
| 18 | Dash Observing / Workshop Session - Westleton Common / Westleton Village Hall |

OASI Anniversary Dinner 6 September

As I'm unable to attend the dinner, pictures and a report would be appreciated.

Martin RH

The Night Sky in September

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	1 st Quarter	Full Moon	Last Quarter
20 Sept 06:30	29 August 09:13 28 Sept 03:54	06 Sept 08:03 05 Oct 19:40	13 Sept 07:25

Sun, Moon and planets

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

Object	Date	Rise	Set	Mag.	Notes
Sun	1	06:07	19:42		Autumn Equinox Sep 22, 21:01
	30	06:55	18:35		
Moon	1	17:05	00:59		
	30	16:21	00:34		
Mercury	1	05:29	19:00	3.1	Max western elongation 2017-Sep-12 Perihelion 2017-Sep-15
	30	06:14	18:29	-1.3	
Venus	1	03:08	18:32	-3.8	
	30	04:32	17:56	-3.8	
Mars	1	05:00	19:22	1.8	
	30	04:52	18:01	1.8	
Jupiter	1	10:13	20:54	-1.6	
	30	08:52	19:10	-1.5	
Saturn	1	15:37	23:27	0.4	
	30	13:48	21:36	0.5	
Uranus	1	21:02	10:50	5.7	
	30	19:06	08:51	5.7	
Neptune	1	19:48	06:31	7.8	Neptune will be at opposition on Sep-05
	30	17:53	04:32	7.8	

Asteroids

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

Occultations during September 2017

James Appleton

The table lists occultations during the month 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(°)	Star Alt(°)	Mag	Star
02 Sep 2017	20:37:20	D	0.88+	-17	19	7.0	ZC 2935
28 Sep 2017	20:56:30	D	0.57+	-29	10	6.9	ZC 2760
29 Sep 2017	19:03:33	D	0.66+	-14	18	4.9	56 Sgr, f Sgr
	19:57:06	R		-22	17		

Meteor Showers

Source: BAA Handbook 2017 p97-99

Shower	Limits	Maximum	ZHR at Max	Notes
Piscids	Sept – Oct	Sept 9 Sept 21 Oct 13	10 5 ?	A multiple-radiant ecliptic complex with low rates

Paul's Astronomy Podcast for September

Paul Whiting FRAS Podcast, September 2017 www.oasi.org.uk/Podcasts/201709_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

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 (data taken on 20 August) due to craft adjustments. Check the day before.

Date	Mag	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
05 Sep	-1.7	04:55:21	10°	SSW	04:57:43	20°	SE	05:00:11	10°	E
06 Sep	-3.1	05:38:13	10°	SW	05:41:23	45°	SSE	05:44:34	10°	E
07 Sep	-2.6	04:47:26	20°	SSW	04:49:02	32°	SSE	04:52:02	10°	E
08 Sep	-2	03:57:05	22°	SE	03:57:05	22°	SE	03:59:22	10°	E
08 Sep	-3.7	05:29:43	11°	WSW	05:32:49	66°	SSE	05:36:05	10°	E
09 Sep	-3.4	04:39:19	34°	SW	04:40:22	51°	SSE	04:43:35	10°	E
10 Sep	-2.3	03:48:54	29°	ESE	03:48:54	29°	ESE	03:51:02	10°	E
10 Sep	-3.8	05:21:32	14°	W	05:24:15	82°	S	05:27:33	10°	E
11 Sep	-3.9	04:31:05	51°	SW	04:31:45	71°	SSE	04:35:02	10°	E
12 Sep	-2.1	03:40:38	30°	E	03:40:38	30°	E	03:42:29	10°	E
12 Sep	-3.9	05:13:16	17°	W	05:15:39	86°	S	05:18:57	10°	E
13 Sep	-4	04:22:50	72°	WSW	04:23:07	84°	S	04:26:24	10°	E
14 Sep	-1.6	03:32:25	24°	E	03:32:25	24°	E	03:33:51	10°	E
14 Sep	-3.9	05:05:03	22°	W	05:07:00	77°	S	05:10:18	10°	ESE
15 Sep	-3.8	04:14:41	75°	ESE	04:14:41	75°	ESE	04:17:44	10°	E
15 Sep	-3.3	05:47:38	10°	W	05:50:46	43°	SSW	05:53:54	10°	SE
16 Sep	-1.1	03:24:22	16°	E	03:24:22	16°	E	03:25:09	10°	E
16 Sep	-3.7	04:57:01	32°	W	04:58:16	58°	SSW	05:01:30	10°	ESE
17 Sep	-2.7	04:06:48	38°	ESE	04:06:48	38°	ESE	04:08:59	10°	ESE
17 Sep	-2.7	05:39:28	13°	W	05:41:52	27°	SSW	05:44:41	10°	SSE
18 Sep	-3.3	04:49:22	38°	SSW	04:49:24	38°	SSW	04:52:29	10°	SE
19 Sep	-1.2	03:59:27	15°	SE	03:59:27	15°	SE	04:00:05	10°	ESE
19 Sep	-2	05:32:07	15°	SW	05:32:49	16°	SW	05:34:54	10°	S
20 Sep	-1.5	04:42:24	14°	SSE	04:42:24	14°	SSE	04:43:06	10°	SSE
26 Sep	-1.5	20:52:49	10°	SW	20:53:40	16°	SSW	20:53:40	16°	SSW
27 Sep	-2.4	20:00:39	10°	SSW	20:03:12	21°	SE	20:03:28	21°	SE
28 Sep	-1.7	19:08:55	10°	S	19:10:41	14°	SE	19:12:29	10°	ESE
28 Sep	-2.9	20:43:24	10°	SW	20:45:45	37°	SSW	20:45:45	37°	SSW

Iridium flares

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

Iridium Satellites Keep the Fireworks Coming ... but Not Forever – Astro Bob

Snippets from the Royal Astronomical Society

Kepler satellite discovers variability in the Seven Sisters

The Seven Sisters, as they were known to the ancient Greeks, are now known to modern astronomers as the Pleiades star cluster – a set of stars which are visible to the naked eye and have been studied for thousands of years by cultures all over the world. Now Dr Tim White of the Stellar Astrophysics Centre at Aarhus University... [More](#)

Astrophysicists map out the light energy contained within the Milky Way

For the first time, a team of scientists have calculated the distribution of all light energy contained within the Milky Way, which will provide new insight into the make-up of our galaxy and how stars in spiral galaxies such as ours form. The study is published in the journal Monthly Notices of the Royal Astronomical... [More](#)

Milky Way's origins are not what they seem

In a first-of-its-kind analysis, Northwestern University astrophysicists have discovered that, contrary to previously standard lore, up to half of the matter in our Milky Way galaxy may come from distant galaxies. As a result, each one of us may be made in part from extragalactic matter. The study, which required the equivalent... [More](#)

Spiral arms allow school children to weigh black holes

Astronomers from Swinburne University of Technology, Australia, and the University of Minnesota Duluth, USA, have provided a way for armchair astronomers, and even primary school children, to merely look at a spiral galaxy and estimate the mass of its hidden, central black hole. The research was supported by the Australian... [More](#)

Snippets from the Interweb

- All back issue's of the Amateur Astrophotography Magazine are now available via iTunes <https://www.magzter.com/BG/Amateur-Astrophotography/Amateur-Astrophotography/Science/236377>
- The visionary astronomer who put the Sun at the centre of our solar system. More for stargazers here bbc.in/2w7HP1d
- The International Astronomy Show, Stoneleigh Park, Warwickshire 13–14 October <http://www.ukastroshow.com>
- Unravelling the mystery of 19th-century women who worked in the Harvard College Observatory as "computers." via @PRI <https://www.pri.org/stories/2017-07-27/team-women-are-unearthing-forgotten-legacy-harvard-s-women-computers>

BAA News

BAA Diary Dates

- 08-10 September 2017 BAA Autumn Weekend Meeting in Chester. The closing date for this was 21st August but there may a few places left.
- 30 September 2017 Observers' Workshop – Lunar and Solar in Burlington House, Piccadilly. A workshop to help you get the most out of observing our nearest star and our own satellite. We are limited to 70 places so availability is on a first come first served basis.
- 7 October 2017 Back to Basics Workshop in Kings' Lynn Norfolk. Highly recommended for all new astronomers. The line up of speakers is now confirmed. Please note that the venue had to be changed. It is now King's Lynn Academy, Queen Mary Road, King's Lynn, Norfolk, PE30 4QG
- 25 October 2017 Annual General Meeting and Ordinary Meeting in Burlington House, Piccadilly. The season starts again. Put this one in your diary for later.

For full details of all meetings please click -<https://britastro.org/meetings>

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.

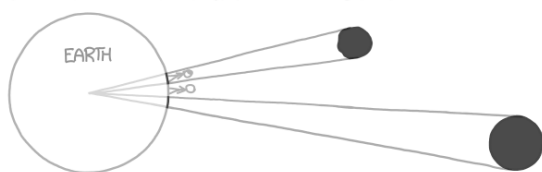
At the convention we will be holding the AGM, where there will be a number of posts with no current candidate. If you would like to help the FAS and volunteer for a role, please let us know. Please get in touch with me if you would like an informal chat in advance.

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

October OASI News

- Stellar Occultation by Triton 5 October 2017 – an observing challenge for those with telescopes of ≥ 14 in (350mm) aperture. See the article in the BAA Journal 127, 4, August p.194 and the [North American Asteroidal Occultation Program](http://www.asteroidoccultation.com/observations/NA/) www.asteroidoccultation.com/observations/NA/
- More from Paul Whiting on his Solar Eclipse trip.

THE SIZE OF THE PART OF EARTH'S SURFACE DIRECTLY UNDER VARIOUS SPACE OBJECTS

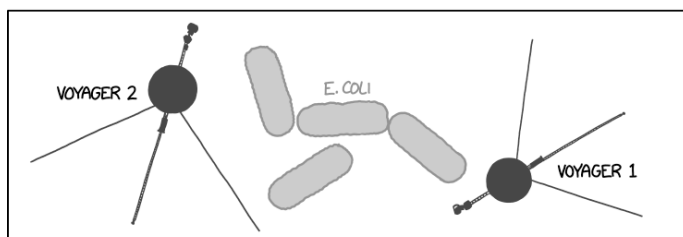
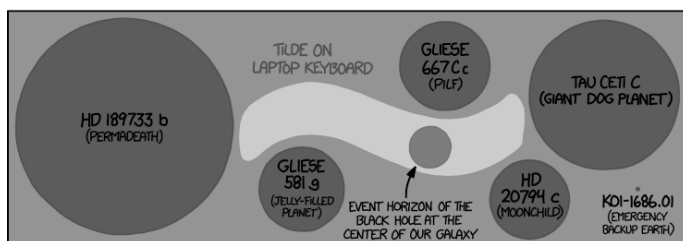
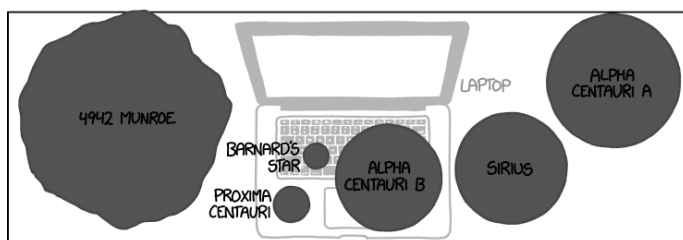
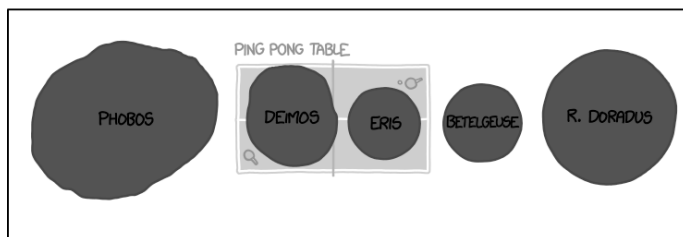
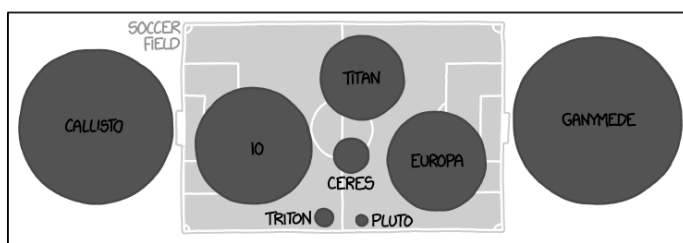
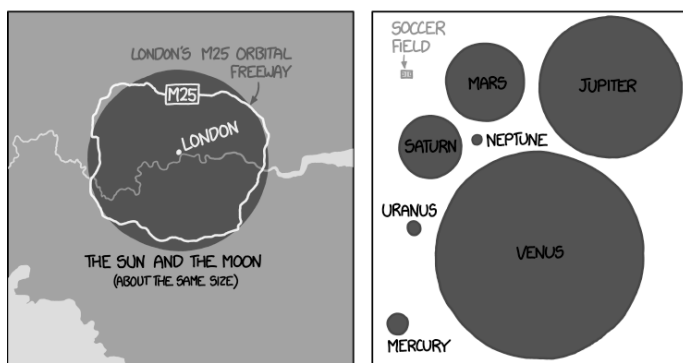


Angular size

– Another way of looking at how big and far away space objects are.

https://imgs.xkcd.com/comics/angular_size.png

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Library : How galaxies are formed : New considerations.

Beginners guide.

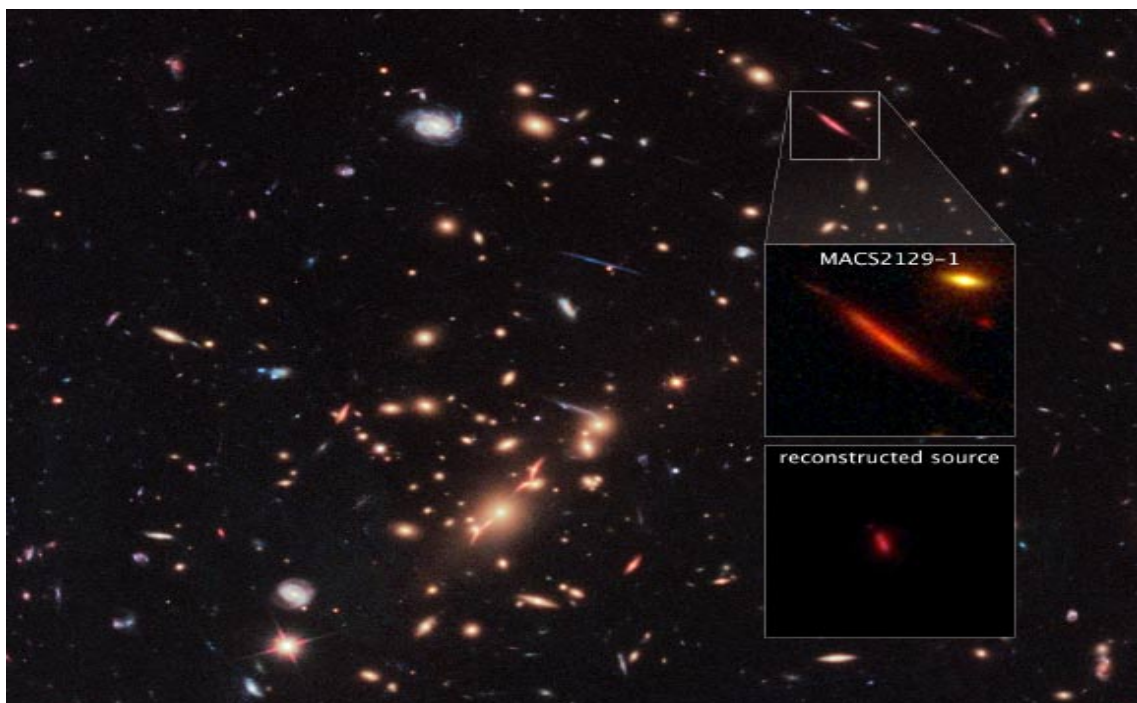
Andy Willshire.

It can be seen that the formation of galaxies is a fundamental problem for astronomers. Using powerful telescopes it is suggested that about one billion years following the Big Bang, the first galaxies started to form. In real terms that is 13 to 14 billion years ago.

There have been two main theories for this explanation. The first considers that the formation of galaxies occurred at the point when massive clouds of dust and gas breakdown under their own gravitational pull, thus forming stars. The second considers that the early young universe incorporated a plethora of small clusters of material that eventually clustered together to form galaxies. Hubble has photographed these clusters which may be forerunners of today's galaxies, most of which were suggested to be spiral in shape. These however have amalgamated to form elliptical galaxies.

Evolution of the universe continues with smaller galaxies being devoured by the larger ones. This happens quite frequently with the probability that a major proportion of brighter galaxies viewed today may have been formed from several smaller ones. This occurs owing to the congestion of the universe. The space between two galaxies can be quite tight and with their gravitational strength can end up attached to each other eventually merging. The brightest galaxies were almost fully coalesced by 4 to 5 billion years post Big Bang. (90%).

Recently however interesting research by Sune Toft and his group at the Dark Cosmology Center at the Niels Bohr Institute, University of Copenhagen, Denmark, have, by using the Hubble telescope found the first example of a massive compact, fast spinning, disk shaped galaxy. (MACS 2129-1,). It is considered that it stopped star formation a couple of billion years after the big bang. This questions today's interpretation of massive galaxy evolution and formation.



Once photographs of the galaxy were taken by Hubble, it was expected that disorganized jumbles of stars would be seen which had been formed by galaxies merging together, but in place of this stars were seen to form a flattened disk. This was the first preliminary evidence that a small proportion of "dead galaxies" as had been previously stated, had stopped manufacturing

stars just a few billion years later than the 'Big Bang'. This specific galaxy was found to be half the size of the Milky Way, with its old red stars spinning twice as fast as those at the centre of our own galaxy. The European Southern Observatories V.L.T. was used to demonstrate this, with the aid of gravitational lensing. The stellar mass, star formation rates and the ages of the stars were established by delving into data from the 'Cluster Lensing and Supernova' survey with Hubble called (CLASH). There is limited understanding of why the galaxy ceased in its star formation, with thoughts considering an active galactic nucleus with power flowing from a supermassive black hole. Power will reduce star formation by heating or expelling the gas. Another consideration is that it may be cold gas spurting onto the galaxy where it is speedily compressed and heated up, thus causing star formation to be curtailed. Toft hopes that by using the James Webb Space Telescope to look at larger samples of such galaxies they may find supportive evidence of how these compact disks evolve into elliptical galaxies.

References:

www.astro.ethz.ch/education/courses/formation-and-evolution-of-galaxies.html

VLT is a telescope facility operated by the European Southern Observatory on Cerro Paranal in the Atacama Desert in Northern Chile.

<http://blogs.discovermagazine.com/d-brief/2017/06/23/dead-galaxy-hubble/#.WZl8QK2ZOV4>

discovermagazine.com/d-brief/2017/06/23/dead-galaxy-hubble/#.WVvASCnTXIU

www.sci-news.com/astronomy/hubble-massive-dead-disk-galaxy-early-universe-04980.html

Total Solar Eclipse – 21st August 2017

Snake River Ranch, Jackson Hole, Wyoming, USA

43° 32' 44" N 110° 49' 58" W

Paul Whiting FRAS

This was the third of the annual run of eclipses before a break in 2018. This time the organised tour took us from San Francisco to Jackson Hole, Wyoming via Las Vegas, Salt Lake City and Idaho Falls. This took in five national parks (Yosemite, Zion, Bryce, Yellowstone and Grand Teton) and seven states (California, Arizona (just), Nevada, Utah, Idaho, Montana and Wyoming). The usual worry about the weather on eclipse day was somewhat overshadowed this time by the possibility that Guam closely followed by San Francisco may cease to exist due to nuclear conflict. This worry suddenly dissolved when the TV news stations suddenly switched from talking about impending doom and concentrated on the "Great American Eclipse". During the days before, all channels were full of it and on the day there was 24 hour continuous coverage. They can rightly call this one the Great American eclipse as the only landfall this one made was across the USA.

The national parks were great, each one being better than the last. The colours of the faces of the various geological rock formations were amazing, culminating in viewing Old Faithful geyser in Jellystone - sorry Yellowstone. Unfortunately we didn't see Yogi or any of his friends, although we did see plenty of bison and chipmunks.

We arrived at Jackson Hole the day before the eclipse in plenty of time to hear John Mason's talk. This was up to his usual standard, if not better – giving us the local circumstances and some background for the "eclipse virgins" amongst us, as he called them.

So the day dawned. The weather forecast was for 50% cloud cover at dawn, dissipating by lunchtime (the full eclipse running approximately 10am and 1pm). The actual weather was better than forecast with much less cloud, and that disappeared very quickly. So we were all set. This year I had the usual computer controlled camera, automatically timed to take appropriate exposures around and between second and third contacts. I also had the thermometer probe

linked via Bluetooth to an android tablet, measuring the shade temperature from before first contact to just after fourth contact. The results from this may be seen in figure 4. This year I also set up a white sheet on the ground to act as a screen to try to video shadow bands from a minute before C2 to a minute after C3. The idea was sound but the quality of the video did not really record the remarkable bands that were visible with the naked eye. Others took better videos of the bands using the backs of the white chairs provided. The bands themselves were easily visible just before C2 and persisted for a long time after C3.

The eclipse itself was superb. Bailey's beads leading in to totality and again after, forming a perfect diamond ring. Three large flares were visible on the Sun's edge during eclipse, possibly just visible with the naked eye with good eyesight, but easily visible with even small binoculars. It did go quite dark during totality – the mountains behind us forming an excellent backdrop on which to view the approaching and then receding shadow. Jupiter (very low down), Mercury, Venus and Mars may have been on show, but I only saw Mercury and Venus – I didn't hear of anyone seeing anything else.

Even though the shadow band recording was not good it did pick up the change in the lighting of the mountain background and also the audio of everyone's reactions to the eclipse – both old hands and "virgins". My imaging suffered two minor problems, firstly the focus was not as sharp as it could have been, and second, next time I must check that the PC time has been updated from the internet that morning, as it was a few seconds out, resulting in missing the C2 Bailey's beads.

The site was a working cattle ranch that hires a field out for conventions and weddings etc. We did hear cattle lowing during totality, and John Mason insisted he could hear a wolf howling. We had joked about this previously but he did insist. I am going over my audio recordings to see if I can corroborate this! We were also treated to an eagle flying over us during totality. There were a lot of these about, along with vultures and geese flying around us before and after the eclipse.

On a romantic note one couple celebrated their 41st wedding anniversary under the eclipse, while another got engaged under it – exchanging one diamond ring under another! A full account of this and pictures of our group observing the eclipse may be found in the Independent Newspaper online at the following:

www.independent.co.uk/news/world/americas/solar-eclipse-2017-british-tourists-watch-jackson-wyoming-a7905831.html

I was standing just to the left of the guy in the main photograph – so near yet so far!

This eclipse was a good one. It was the American's own and they did it proud. The hype before the event was as high as you would expect: the TV and press coverage; the many and various T-shirts, hats and other clothing; every town and state had their own eclipse guide books and, of course, every store, gas station and facility had their own personalised eclipse viewers. The planetarium in Salt Lake City even had a sign up after the eclipse saying that they would not accept for refund any eclipse merchandise.

On the way back to the airport on route home we discovered a tea and homemade chocolate shop. How many US tea shops sell delicious diabetic chocolate, have chandeliers and play piped classical music – not many! So, another successful eclipse. Roll on the two South America eclipses in 2019 and 2020.



Figure 1: 300mm lens f/5.6 ISO200 1/1000 sec



Figure 2: 300mm lens f/5.6 ISO200 1/4 sec. Mercury is clearly visible to the bottom left.



Figure 3: 300mm lens f/5.6 ISO400 1/1600 sec. The Diamond Ring

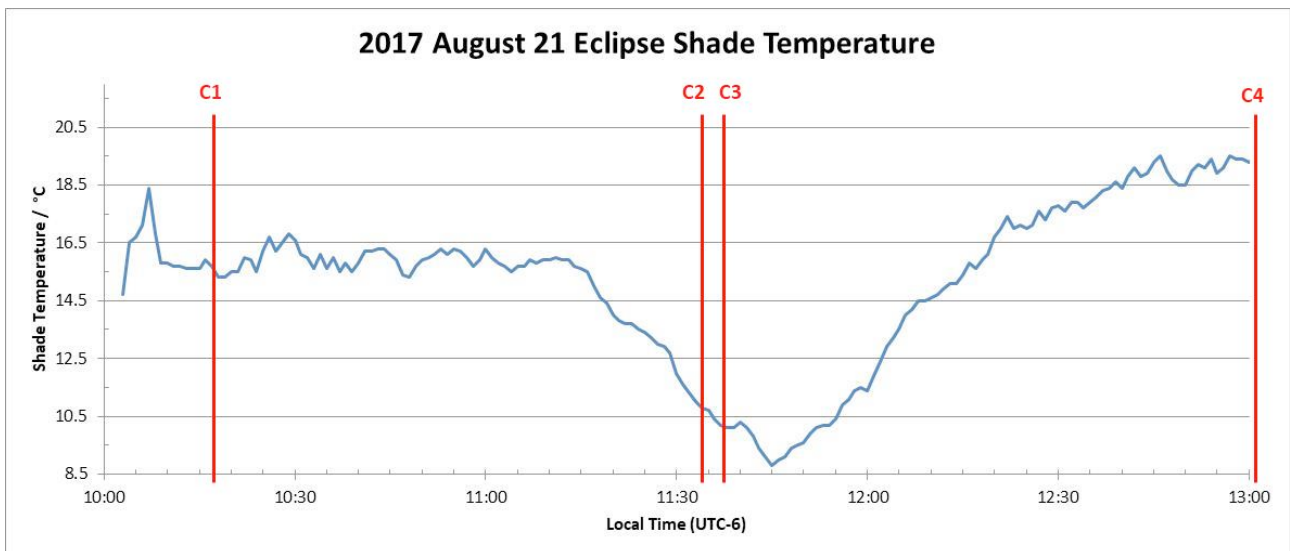


Figure 4: Shade temperature measured during eclipse

Note that the warming effect of the Sun is countered almost exactly by the increasing eclipse between C1 and 11:15. After this the expected curve then presents - the marked dip and a hysteresis delay in the warm up.



Figure 5: The beer of choice of this eclipse

Astrophotographs: M31, M101 & M32 + M11

by David Murton



M31 the Andromeda Galaxy with its two close associates M101 & M32

Making the most of the last couple of clear nights! Old favourite M31 the Andromeda Galaxy with its two close associates M101 & M32. Taken over the night of 31st July and 1st August. Very pleased with the amount of detail in the dark lanes throughout. Will have to go back to it when it gets higher in the sky.

14 frames of 360 seconds at ISO800. Skywatcher 190MN telescope and canon 60Da camera.

**Then M11 the wild
duck cluster in
Scutum.**

Just 3x 360 second exposures this time while waiting for it to get dark enough for M31. Other details as before.



M16 the Eagle Nebula with star cluster NGC6611 embedded in it and the famous pillars of creation at its centre.

Taken over the night of 29th/30th July. Really pleased with how it came out considering it is really low and skimming between the bushes in a hedge!

12 x 360 second exposures at ISO 800. Canon 60Da camera on skywatcher 190MN telescope.

