No. 540 Registered Charity 271313 February 2018

OASI News

The newsletter of the Orwell Astronomical Society

"Old Knurly" – see Mike Whybray's srticle on page 17

Photo: Mike Whybray

Trustees: **Mr Roy Adams** **Mr David Brown** **Mr David Payne**

Honorary President: **Dr Allan Chapman D.Phil MA FRAS**

Contents

Cover picture: Old Knurly 1
Society Contact details 3
Access into the School Grounds and Observatory Tower 3
Articles for OASI News 3
Committee 2018 4
Message From Paul Whiting On Election As Chairman 4
Society Notices 4
2018 Membership Fees 4
Signing in and out 4
Welcome new/returning Members 5
Next Committee Meeting 5
2018 AGM Notes 5
Election of Officers for 2018 5
Election of Committee for 2018 5
OASI and BAA Events 5
Outreach meetings 6
1 Bentley Star Party 6
2 Framlingham Country Show April 8th and 9th 6
3 Sutton Hoo Solar Event June 16th or 17th 7
4 Other possible events 7
OASI Newbourne Observing Group 7
Stargazer's guide 7
Astronomy Workshops 8
Lecture Meetings 8
DASH Astro Events – 2018 8
The Night Sky in Febuary 9
Moon 9
Sun, Moon and planets 9
Paul's Astronomy Podcast for February 9
Occultations during February 2018 10
Visible ISS passes ≥15° max altitude 11
Iridium flares 11
Alexa 11
Meteor showers 11
David's Radio Broadcast 12
Bill's Radio Broadcast 12
Blue Moons 12
More on the 21 February Graze 12
Library Info: The James Webb Space Telescope 13
Astropics 15
Telescope Eyepieces 17
The BAA's latest newsletter 18
BAA Journal – February 18
Moon pictures 19
Supermoon from Australia 20

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: @OASIpswich

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. ***Please note this is a new number. Kindly 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

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."*?

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 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 Observing Group
	John Wainwright	Equipment curator
	Mike Whybray	Astronomy Workshops, Child protection officer, Orwell Park School Astronomy Club.
	Matt Leeks	Safety & security
	Andy Gibbs	
Co-opted	Andy Wilshere	Librarian

Message From Paul Whiting On Election As Chairman

It is customary for a new Chairman to pen a few words on taking over the role. This time is a little different as I have assumed this role for the limited duration of one year. However even though I may be termed a caretaker Chairman, I do still have an agenda, albeit short term, that I would like to advance. I would like to see the following:

a resumption in the open weekends at the School

I would like to see a cost effective means to keep a telescope permanently at Newbourne – whether that be a container or some other secure option.

I want to maintain the quality of our outreach programme to ensure that both our members and the general public maximise their enjoyment and understanding of astronomy.

I would like to thank my predecessor David for re-defining our outreach programme over the last four years.

Paul Whiting

OASI Chairman

Society Notices

2018 Membership Fees

At its November meeting the Committee unanimously agreed to maintain membership fees at £20 for 2018.

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.

Welcome new/returning Members

Mike Harlow Martin Newman

Next Committee Meeting

Friday 16 February 20:00 at Museum St Methodist Church rooms.

2018 AGM Notes

Methodist Church Hall Black Horse Lane, 19:30 Saturday 20th January 2018

The full minutes will be available to members from the Secretary in due course.

Election of Officers for 2018

Chairman: Paul Whiting [for one year only]
Treasurer: Paul Whiting
Secretary: Roy Gooding
All votes carried *nem con*.

Election of Committee for 2018

Committee: en bloc, carried *nem con*

The meeting closed 20:45

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, 29 January 19:00	Newbourne Village Hall	Newbourne Observing Group.	NOG
Friday & Saturday 9 & 10 February	Kensington Conference & Events Centre, London		European Astrofest http://europeanastrofest.com
Monday, 12 February 19:00	Newbourne Village Hall	Newbourne Observing Group.	NOG+Skynotes
Tuesday, 13 February 20:00	Orwell Park Observatory		**Observatory Tour Public access event.** Observatory tour. Booking essential.

Date and Time	Location	Contact	Event
21 February 17:37		See pp10, 12	Northern limit graze of the magnitude 4.3 star μ Cet.
Saturday 24 Feb Setup time: 18:30 Event: 19:00 – 21:00	Playing field at the end of Case Lane, next to The Case is Altered pub	Roy Gooding	**Bentley Star Party** A go/no go decision will be made on the preceding Wednesday
Monday, 26 February 19:00	Newbourne Village Hall	Newbourne Observing Group.	NOG
Monday, 12 March 19:00	Newbourne Village Hall	Newbourne Observing Group.	NOG+Skynotes
Tuesday, 13 March 20:00	Orwell Park Observatory		Observatory Tour Public access event. Observatory tour. Booking essential.
Sunday 25 March			**British Summertime begins**
Monday, 26 March 19:00	Newbourne Village Hall	Newbourne Observing Group.	NOG
Monday, 9 April 19:00	Newbourne Village Hall	Newbourne Observing Group.	NOG+Skynotes
Monday, 23 April 19:00	Newbourne Village Hall	Newbourne Observing Group.	NOG
Monday, 14 May 19:00	Newbourne Village Hall	Newbourne Observing Group.	NOG
Monday, 28 May 19:00	Newbourne Village Hall	Newbourne Observing Group.	NOG

Outreach meetings

1 Bentley Star Party

The meeting will be open to the villagers

Venue: Playing field at the end of Case Lane, next to The Case is Altered pub.

Option 2 Saturday 24h February

Setup time: 18:30

Event: 19:00 to 21:00 First quarter is on 23rd

A go no go will be made on the preceding Wednesday

2 Framlingham Country Show April 8th and 9th

Arrangements still in progress.

3 Sutton Hoo Solar Event June 16th or 17th

Venue: Sutton Hoo Visitors Centre on the grass outside the cafe

Option 1	Saturday 16th	Option 2	Sunday 17th
Setup time:	10:30	Setup time:	10:30
Event time:	11:00 to 16:00	Event time:	11:00 to 16:00

More details nearer the date

4 Other possible events

Holywells Park Family Day

August date not yet known

Solar Event in Christchurch Park

No dates fixed yet

Bentley Family Day

Date not yet known. Usually a Sunday in September.

OASI Newbourne Observing Group

Martin Richmond-Hardy 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.

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 2018

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

Editor's note: Avtar has stood down as Newbourne co-ordinator. We are very grateful for his hard work in liaising with the hall manager, opening up, organising refreshments and ensuring everything is tidied away at the end of the evening. I've volunteered to take on the role.

Astronomy Workshops

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

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

Mike Whybray

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.

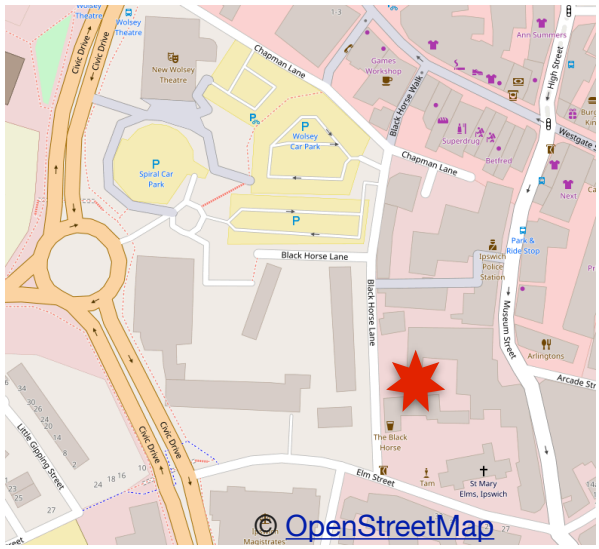
Do you have a subject you could workshop? You could do a short one, or share the effort with a partner. Drop Mike Whybray a line! workshops@oasi.org.uk

Lecture Meetings

Contact: Peter Richards lectures@oasi.org.uk

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

There is some parking at the venue but if there is no space at the venue you can drive to the end of Black Horse Lane and turn left to find a pay and display car park which charges (at the time of writing) £2 for parking between 6pm and 6am. Free after 8pm. There is also the spiral car park by the New Wolsey theatre.



DASH Astro Events – 2018

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. **Note these are now on Sundays.**

04 Feb	Meeting – Matthew Bothwell: From Big Bang to Big Rips ! A History of Modern Cosmology.
18 Feb	Dash Observing Session (Sunset 17:11 Moonset 20:09 7% Moon)
04March	Meeting – Paul Whiting: Cassini – Huygens.
18 March	Dash Observing Session (Sunset 18:02 Moonset 19:09 2% Moon)
01 April	Meeting – Annaliese Avery: Women in Astronomy.
15 April	Dash Observing Session (Sunset 19:51 Moonset 19:04 0.6% Moon)
29 April	Meeting – Nick James: Comets.

The Night Sky in Febuary

Martin RH

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

Times are in UTC (=GMT)

Moon

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

New Moon	1st Quarter	Full Moon	Last Quarter
		31 January 13:27	07 February 15:54
15 February 21:05	23 February 08:09	02 March 00:51	

Sun, Moon and planets

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

Object	Date	Rise	Set	Mag.	Notes
Sun	1	07:35	16:43		
	28	06:43	17:33		
Moon	1	18:08	08:08		Apogee 405,700 km 11 February 14:17
	28	15:38	06:01		Perigee 363,933 km 27 February 14:40
Mercury	1	07:26	15:23	-0.5	Superior Conjunction 2018-Feb-17
	28	07:10	18:19	-1.3	
Venus	1	08:02	17:01	-3.8	
	28	07:18	18:31	-3.8	
Mars	1	03:07	11:22	1.2	
	28	02:48	10:28	0.8	
Jupiter	1	01:57	10:53	-1.8	
	28	00:21	09:11	-2	
Saturn	1	05:37	13:20	0.6	
	28	04:01	11:45	0.6	
Uranus	1	09:54	23:26	5.8	
	28	08:10	21:45	5.9	
Neptune	1	08:46	19:25	8	
	28	07:01	17:44	8	

Paul's Astronomy Podcast for February

Paul Whiting FRAS Podcast, February 2018 www.oasi.org.uk/2018_02_pod.mp3

Occultations during February 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.

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
08 Feb	03:14:42	D	0.45-	-38	12	3.9	λ Lib
	04:17:45	R		-29	18		
20 Feb	20:50:43	D	0.24+	-33	14	6.8	ZC 291
23 Feb	16:39:13	D	0.55+	+6	50	0.9	Aldebaran
	17:46:31	R		-4	54		
24 Feb	00:07:48	D	0.57+	-48	17	7.1	ZC 729
24 Feb	20:29:18	D	0.67+	-29	54	7.3	ZC 862
24 Feb	20:41:30	D	0.67+	-30	53	6.7	127 Tau
24 Feb	22:00:44	D	0.67+	-40	45	6.7	ZC 871
24 Feb	22:11:33	D	0.67+	-41	43	7.5	Hip 27191
26 Feb	02:55:37	D	0.80+	-35	11	7.3	ZC 1060
27 Feb	03:00:35	D	0.88+	-34	19	7.1	ZC 1203

On 21 February at 17:37 there is a northern limit graze of the magnitude 4.3 star μ Cet. Details are on the OASI website: http://www.oasi.org.uk/Occs/Occ_summary_2018.php. An observing trip will be organised if weather conditions are favourable: details will be provided via the OASI email list.

More information here

Visible ISS passes ≥15º max altitude

Martin RH

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

Times are UTC. Predictions are approximate (26 Jan) due to craft adjustments. Check the day before.

Date	Mag	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
01 Feb	-3.1	17:27:40	10°	SW	17:30:47	44°	SSE	17:33:49	11°	E
01 Feb	-3.1	19:03:51	10°	W	19:06:28	54°	W	19:06:28	54°	W
02 Feb	-3.9	18:11:28	10°	WSW	18:14:43	78°	S	18:16:12	30°	E
02 Feb	-0.9	19:47:55	10°	W	19:48:51	18°	W	19:48:51	18°	W
03 Feb	-3.6	17:19:05	10°	WSW	17:22:20	65°	SSE	17:25:35	10°	E
03 Feb	-3.8	18:55:29	10°	W	18:58:34	77°	WSW	18:58:34	77°	WSW
04 Feb	-3.9	18:03:04	10°	W	18:06:20	86°	S	18:08:18	22°	E
04 Feb	-1.4	19:39:32	10°	W	19:40:57	23°	W	19:40:57	23°	W
05 Feb	-3.8	18:47:05	10°	W	18:50:20	70°	SSW	18:50:42	62°	SSE
06 Feb	-3.8	17:54:38	10°	W	17:57:54	81°	S	18:00:28	15°	E
06 Feb	-1.8	19:31:09	10°	W	19:33:07	27°	WSW	19:33:07	27°	WSW
07 Feb	-3.2	18:38:38	10°	W	18:41:49	49°	SSW	18:42:57	32°	SE
08 Feb	-3.5	17:46:08	10°	W	17:49:22	65°	SSW	17:52:37	10°	ESE
08 Feb	-1.7	19:22:55	10°	W	19:25:28	21°	SW	19:25:30	21°	SSW
09 Feb	-2.2	18:30:12	10°	W	18:33:08	31°	SSW	18:35:30	14°	SSE
10 Feb	-2.7	17:37:37	10°	W	17:40:46	44°	SSW	17:43:52	10°	SE
11 Feb	-1.2	18:21:58	10°	W	18:24:20	19°	SW	18:26:41	10°	S
27 Feb	-1	05:57:48	10°	S	05:59:50	15°	SE	06:01:52	10°	ESE

Iridium flares

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

Alexa

If you have an Alexa-enabled device, such as an Amazon Echo, just try saying "Alexa, enable Heavens Above". This should make the skill available on your device. You will still need to use the Alexa app to permit the skill to access your location information, because this is disabled by default.

Once the skill is enabled, you can ask questions like;

- Alexa, ask Heavens Above when will the Space Station next be visible.
- Alexa, ask Heavens Above when's the next Iridium Flare.
- Alexa, ask Heavens Above what are my coordinates.

Meteor showers

None this month

David'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).

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. 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

Blue Moons

In case you hadn't noticed, we have not one but two blue moons coming up. A blue moon is a second full moon within the same month, and this will happen on 31st January and 31st March. So how about a little observing challenge?

Take a photo of the Blue Moon. Use what you like – phone, tablet, camera, telescope, whatever. This is not a competition. We just want to see people getting involved. Take your pictures, select the best (or worst!) and send it toto me at chairman@oasi.org.uk

We will then prepare a display of your efforts Vision On style (for those old enough to remember!).

Paul Whiting (your new Chairman)

More on the 21 February Graze

Alan Smith

The first of this years grazing occultations will occur on the early evening of Wednesday the 21st February at about 1735 hours (GMT).

For the first time in many years, the graze path will cross the centre of the Ipswich area, with many members being located very close the ideal line.

Linked here is a 'KMZ' file which if downloaded and clicked should open Google Earth and show a YELLOW line (the 'nominal' graze path), and a RED line showing the ideal graze path.

On this occasion, the event will take place in early evening twilight but as the star is quite bright and quite high up, we should be able to see it quite clearly.

You will need a telescope (binoculars are not up to the job) capable of using a magnification of at least 100, some sort of recording device (most smart phones have voice recorders) and a means of noting the EXACT time (talking to yourself whilst watching an accurate clock or watch is the 'usual' way to set a reference time, and then again talking to yourself as the star disappears and reappears during the event). The event will last for about 5 mins but you would need to be in position at least 1/2 hour before to 'get your eye in'.

More concise instructions can be found on the OASI web site at:
http://www.oasi.org.uk/Occs/More.php

Although the scientific reasons for observing grazes have been largely replaced by satellites, these 'rare' events are spectacular, ethereal and quite beautiful !

If you are located anywhere close the red line (within a few hundred metres) and you would like to observe this occultation please let me know and I'll send more details.

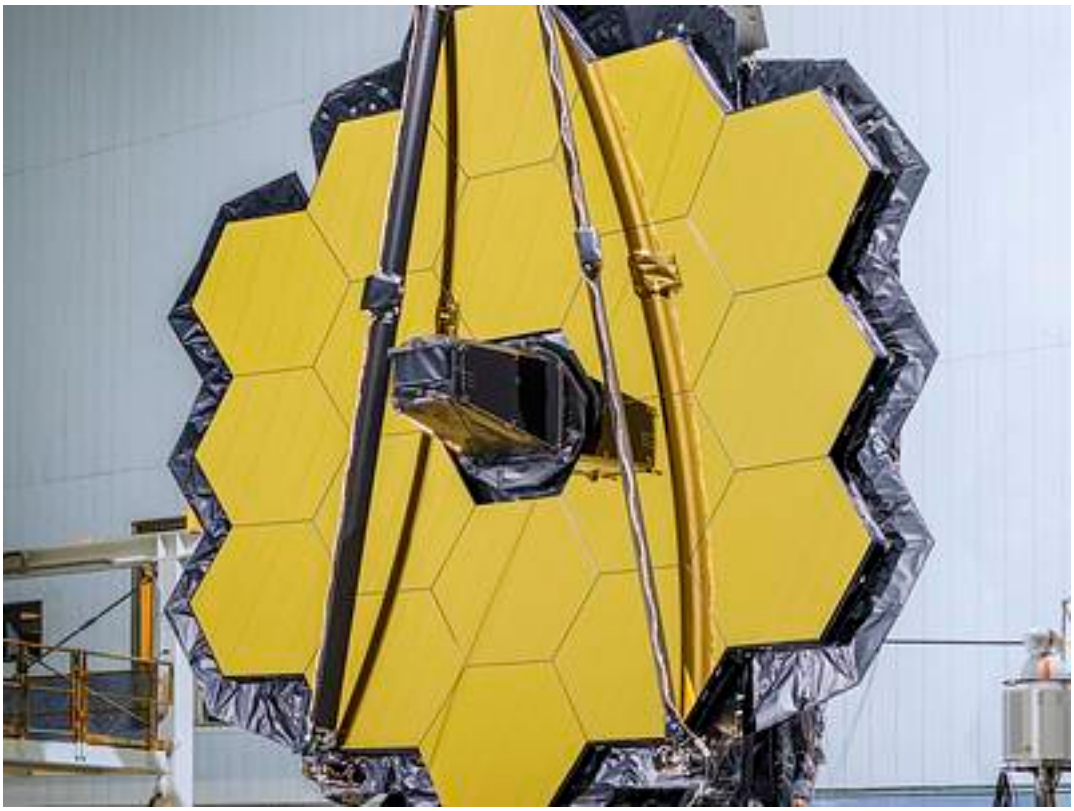
Alan Smith

Library Info: The James Webb Space Telescope

Andy Willshere

I thought that this year the library would try to put forward information that would interest astronomers in the upcoming years.

The James Webb Space Telescope will be the first of this series.



Credit for picture: https://www.nasa.gov/mission_pages/webb/images/index.html

The telescope is named after James.E.Webb who was the second administrator of NASA from February 14, 1961 until October 7 1968. He undertook the goal set by President Kennedy to put a man on the moon and to follow the Apollo program. It was on January 27, 1967, the Apollo-Saturn (AS) 204, was on the launch pad at Kennedy Space Center, Florida. It was going through some simulation tests, when a flash fire killed the three astronauts aboard--"Gus" Grissom, Edward White, and Roger Chaffee. Webb with the blessing of the American President Johnson left no stone unturned to find the cause of the disaster.

The James Webb is a new infrared space telescope now scheduled for launch between March and June 2019, and will be located near the Earth-Sun L2 Lagrangian point. This was discovered by Joseph Lagrange and is a position in space where orbital motions of a body and gravitational forces balance each other. The L2 point can be found 1.5 *106 km behind the Earth if it is viewed from the Sun, and is used by satellites to hover at this area, thus providing a very stable vantage point, staying in line with the Earth as it meanders around the Sun. It will take approximately 30 days for the JWT to get to the start of its orbit at L2 . It will initially be boosted from Earth by an Ariane rocket for about 8 minutes. The JWT will then detach from the Ariane launch vehicle after 30 minutes, and the solar array will be deployed at this point. The main partners for this telescope are NASA, the European Space Agency ESA and the Canadian Space Agency CSA.

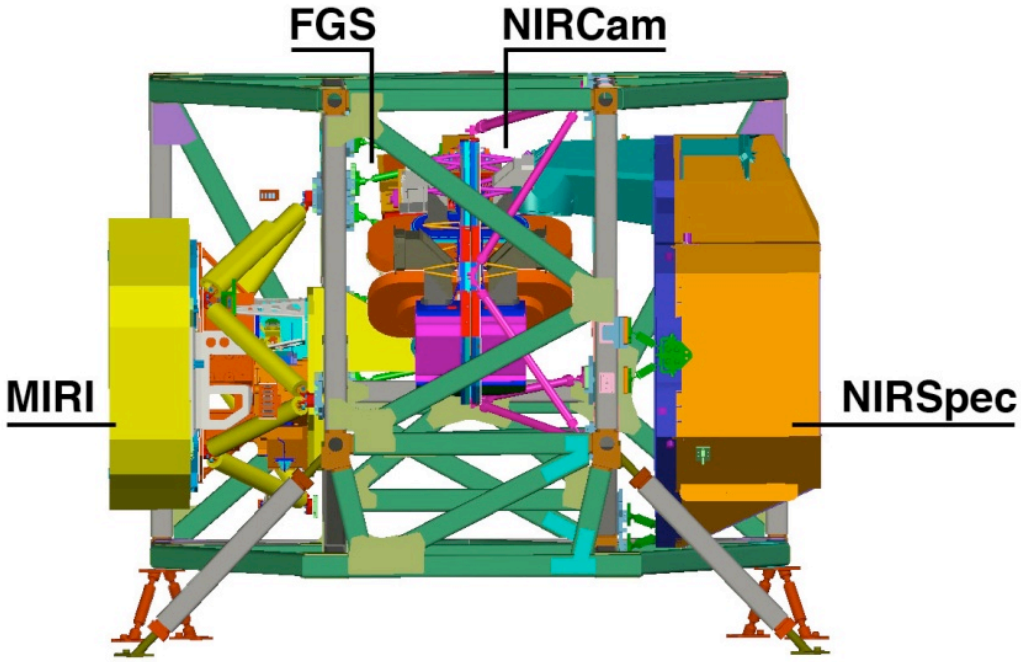
Why do we need another observatory in the sky? We already have The Hubble, Spitzer and Chandra as well as many more, performing many exciting scientific experiments. However as the universe is expanding, light is distended into much longer wavelengths, pushing it beyond both visible and near infrared areas. It is therefore necessary for a telescope to operate at infrared wavelengths and for this the James Webb Space telescope was devised. This will make

observation of distant galaxies whose light has been stretched into the infrared obtainable. Its mission goals are to search for the first galaxies or luminous objects just after the big bang, and to determine how galaxies evolved from formation to today, and to measure physical and chemical resources of planetary structures.

The telescope has a primary gold coated (1000 angstrom thick) beryllium mirror of 6.5 meter diameter (21.3 ft) which is much greater than Hubble's 2.4 meter diameter. This means that the collecting area of the James Webb is about seven times greater. It will be able to view infrared light from the most remote areas in the universe and find sources that created reionization. It will be launched by an Ariane 5 ECA launch vehicle with a total payload of 6200 Kg, for a period of 5 - 10 years. The mass of the primary mirror is 705Kg with each single segment weighing 20.1 kg. With segment assembly this is 39.46 kg. There are 18 hexagonal segments which will unfold when the telescope is in situ using precise micro- motors. Its wavelength coverage is 0.6 to 28.5 microns and its optical resolution is 0.1 arc seconds. Because the telescope will be viewing very faint infrared signals, a sunshield (SPF 1*106) is necessary to shield it from any bright and hot sources. (Sun, Earth etc). The size of the sunshield is 21.197m * 14.162 m. It is because these sources need to be located in the same direction that the L2 point was selected.

The instruments on board are:

- NIRCam, a near infrared camera;
- NIRSpec, a near Infrared spectrograph;
- MIRI, a mid Infrared instrument;
- FGS/NIRISS, Fine guidance sensors and near infrared imager with slitless spectrograph.



Labeled schematic of the ISIM for the James Webb Space Telescope, showing instrument locations.

Credit for picture: https://www.nasa.gov/mission_pages/webb/instruments/index.html

The wavelengths used by MIRI are from 4.9 to 28.8μm and are ideal for direct imaging and spectroscopy of juvenile warm exoplanets and investigating and analysing the redshifts (z>7) of first galaxies. It will also investigate dust and gas given off by protoplanetary disks.

The Near Infrared Camera (NIRCam) uses 0.6 to 5.0μm and has the ability to perform coronography at multiple wavelengths and slitless spectroscopy, as well as time series imaging. High-contrast imaging is used to identify faint source images detected close to bright point

sources. These brighter sources are usually stars and quasars. The faint ones include exoplanets. If normal imaging is used little can be seen of the faint source.

NIRISS will be used to present high - contrast interferometric imaging over wavelengths of 0.6 and 5.0μm. Although this unit is combined with the fine guidance sensor, the two instruments are used separately.

One of its proposed areas of investigation is in studying planets orbiting stars. If an exoplanet passes in front of its host star, filtration of starlight through the planets atmosphere occurs, absorbing specific colours of light that are contingent on the chemical composition. This absorption will be measured by the telescopes ability to obtain spectrographs and look for specific chemical fingerprints of the atmospheres gasses. Initially WASP- 39b and WASP-43b which are fairly easy targets for this procedure will be used.

The challenge from the engineering point of view to survive in very cold and mechanically stressing conditions was very difficult. The telescope is built at room temperatures and therefore must be precisely engineered, so that when all the parts shrink when in the cold environment, they all do so by the same amount. The stresses and strains placed upon the systems will be very large, without the problems associated with radiation from the Sun and galaxy.

References:

https://www.nasa.gov/mission_pages/webb/images/index.html

https://jwst.nasa.gov/science.html

https://www.space.com/21925-james-webb-space-telescope-jwst.html

Astropics

Andy Gibbs

A couple of images from a session on 18-12-17.

Alnitak in Orion with Flame and Horsehead Nebula.

Galaxy NGC 2403 in Camelopardalis.

Canon 1200D, 360 second exposures at ISO 800 with darks and flats. Explore Scientific ED80 CF refractor on HEQ5 mount. Processed in Deep Sky Stacker and Photoshop CC.

Telescope Eyepieces

Mike Whybray

Following my workshop on telescope eyepieces on 15th Jan I thought I'd write a summary of some of the ideas covered for the newsletter, and also refer to a couple of previous OASI articles about eyepieces which are well worth looking out.

My interest in eyepieces was sparked by the question of what was the focal length of the main eyepiece we tend to use on the Tomline refractor with visitors to the observatory – a chunky eyepiece known to some as *Old Knurly*. It is believed this is ex-military and probably came from W.H.English near Brentwood. The Tomline focuser adaptor was machined by Martin Cook. See picture —>

I used two methods to determine the focal length – both based on using the eyepiece to project a grating onto a screen - which are detailed in my slides available here: http://oasi.org.uk/Events/AW/20180115_Eyepieces.pdf

The result was a focal length of 37mm, which on the Tomline gives a magnification of 105.

I also measured 4 old eyepieces which we believe are 'original equipment' for the Tomline, and found focal lengths which agree reasonably well with those measured by Horace Dall as reported in the October 1973 OASI newsletter here http://oasi.org.uk/NL/NL_197310.pdf

Thanks to Martin Cook for finding this reference in the newsletter archives, and to James Appleton for his amazing effort in creating the archive itself – well worth poking around in!

The table below shows my somewhat hurriedly made measurements against Horace Dall's:

	Focal Length (Horace Dall)	Focal Length	Eye Relief from Lens Surface	Apparent Field Of View
Units →	mm	mm	mm	degrees
Old Knurly		37	19	76
Old X80	51	48	12	33
Old X??	52	51	15	39
Old F=0.60″	15	13	2	33
Old F=0.90″	23	22	4	48

The above table also shows my measurements of the eye relief of these lenses, and the Apparent Field Of View. It is interesting that the AFOV of Old Knurly is a very respectable 76 degrees, compared to the 45–55 degrees of many standard eyepiece designs such as the Plössl. I intend to check this measurement using the Star Drift method on the Tomline (see workshop slides) when we get a clear night.

I didn't go very deeply into the effects when observing of eyepiece exit pupil size, but I subsequently discovered that this and some other aspects of choosing and using eyepieces have been well covered by two existing OASI resources which I recommend:

1. Articles in April 2001 OASI Newsletter http://oasi.org.uk/NL/NL_200104.pdf by Neil Morley and C. Peter Davies.
2. An article on the OASI web site based on a combination of the above articles plus input from David Payne http://oasi.org.uk/Telescopes/Choose_eyepiece.php

Finally, if anyone wants to try measuring eyepiece focal lengths for themselves using the grating projection method, I'm happy to supply some of my printed 1.97 lines/mm grating to them – just email me at workshops@oasi.org.uk

The BAA's latest newsletter

9 -10 February 2018 - European Astrofest - Kensington Conference and Events Centre, The Town Hall, Royal Borough of Kensington and Chelsea, Hornton Street, London W8 7NX.

4 March 2018 - Deep Sky Section Annual Meeting - Victorian deep sky photography, Double stars, Arp catalogue, astro-imaging and Monsters in the Dark! Bedford School MK40 2TT click

10 March 2018 - Back to Basics Workshop - Bristol Photographic Society, Station Road, Montpelier, Bristol, BS6 5EE click.

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

BAA Journal – February

There's a copy in the Library.

This month we are treated to four papers submitted by our (increasingly international) members. Giovanni de Giovanni, based at the Colle Leone Observatory, Mosciano Santangelo, Teramo in Italy opens with a discusses how simple measurements of the apparent brightness of lunar eclipses can be used to probe the quality of the Earth's atmosphere. Then Martin Mobberley takes us back for an affectionate account of the great radio astronomer, Frank Wilsenham Hyde (1909-1984)[1]. John Simpson speculates how in 1580 the Spanish explorer, Pedro Sarmiento de Gamboa (who also wrote a history of the Incas, before their devastating western contact) in sailing around the Pacific Solomon Islands, may have been the first European observer of the aurora australis. Finally Richard McKim rounds up with a review of the 2017 publication of the BAA Memoirs. This is now available on DVD, at a bargain price of £25 for BAA members. https://britastro.org/memoirs-dvd

Paul Abel brings us somewhat back to our Solar System with issue 12 of the Absolute Beginners series – the motion of the planets. These are all easily followed via the BAA Website too in case you have missed any. And there is a feast of articles in the Observer's Forum, covering variable nebulae, frozen BAA members observing the Geminids, and the interesting work being undertaken on the archived Schmidt Camera plates housed at Crayford Manor House Astronomical Society Dartford, by Dr Rene Hudec (and his son, Lukas), of the Czech Technical University Prague. Thanks to a grant from the RAS, they are successfully digitising the plates thus making them available on line.

By the way - for all you Lunar Observers, there is a new version of QUICKMAP out. See Barry FitzGerald's article.

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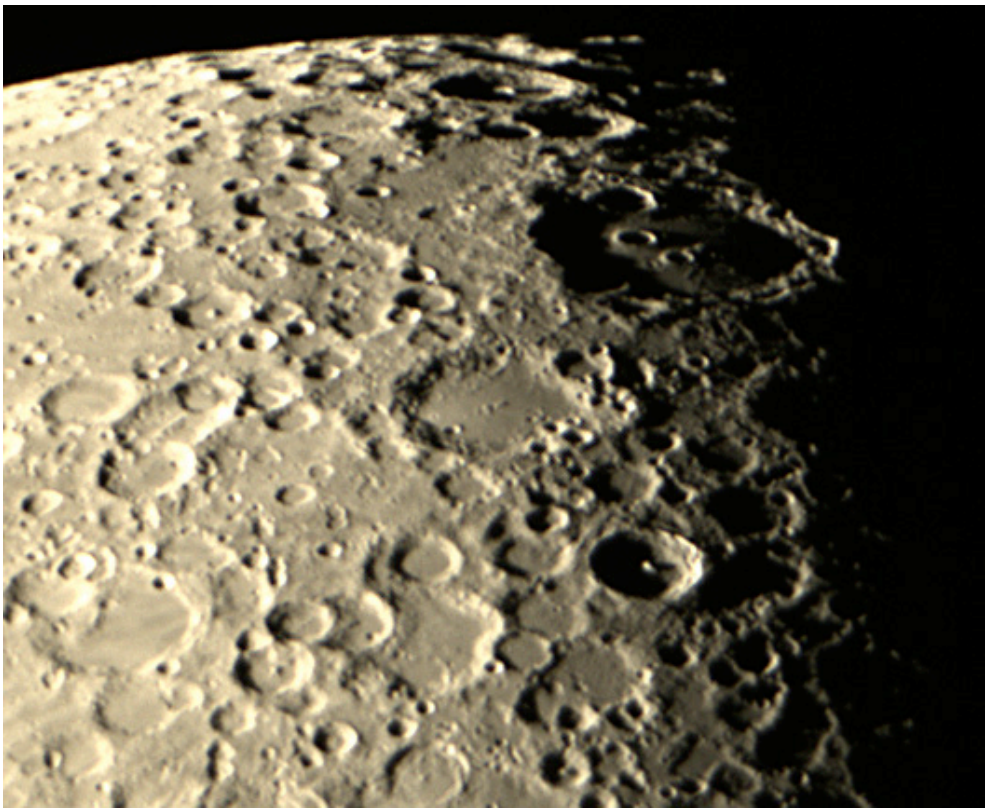
[1] I have a copy of Frank Hyde's book, *Radio Astronomy for Amateurs* , received as a school prize in1965 and built a Kooman array plus receiver made from an old valve TV tuner. It never worked. Ed.

Moon pictures

Martin Cook

Photos of the Moon taken on the25/1/2018 at 19.30-20.30. QHY 5L-II Imaging Camera 2 min of recording for each photo then stacked in Registax 5

1. Straight Wall (Rupes Recta) 110 km long, 240-300m high, 2–3 km wide



2. Moon south showing Tycho halfway between middle to bottom right corner 85km wide, 4.8 km deep, with a 2.25km-high central peak

Supermoon from Australia

Andy Willshere

One supermoon from Oz with basic compact.

Don’t forget the Chairman’s Challenge p12.