No. 511 Registered Charity 271313 **August 2015**

OASI News

The newsletter of the Orwell Astronomical Society

Last view of #Pluto sent 13July from range of 476,000 miles before New Horizons Pluto flyby

Source: pluto.jhuapl.edu/Multimedia/Science-Photos/pics/P_LORRI_FULLFRAME_COLOR.png

Observing the Sun at Nowton Park, Bury St Edmunds (Photo MartinRH)

I've recently been to Dubrovnik on holiday and managed get photos of the conjunction of Venus and Jupiter above the city walls with my Nikon 3300. Taken on 27/6 at 21:10 local time.

Ray Hooper

Contents

Society Contact details

Observatory (meeting nights only) 07967 519249
Email queries: info@oasi.org.uk
Facebook: https://www.facebook.com/groups/445056098989371/
Twitter: @OASIpswich
Forum: forum.oasi.org.uk/index.php

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 now 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.

OASI on BBC Radio Suffolk

David Murton does a monthly spot on Lesley Dolphin's afternoon show. Initially it is standing in for Tom Bowles for a few months then possibly having a separate monthly slot.

He publicises OASI events (& DASH ones!), talks about a couple of upcoming astronomical events plus a general talk about something else each month.

The Newsletter

We use an outside printer. The cost of doing so means that only the cover pages can be printed in colour. **The full colour version is now available from the OASI web site.**

Newsletter archive 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 2015

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
	Kevin Fulcher	Safety & security, Newbourne Observing Group
Co-opted	Pete Richards	Lecture co-ordinator
	Vacancy	Librarian

Society Notices

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.

Next Committee Meeting

Tuesday 8 Sept 2015, starting 8.00pm. at the Shepherd & Dog.

This is an open meeting, any member is welcome to attend.

Welcome to New Members

Edward Hill David Robinson Raymond Hooper Chris Bunyan

Member News

We are delighted to hear that **Charlie Green** had been invited to work at CERN for the summer holidays.

2015 Outreach Meetings

Contact: Roy Gooding or David Murton

Nowton Park, Bury St Edmunds

19 September Stargazing

Holywells Family Day

Wednesday 5th August

Landguard Fort Solar Event (TBC)

This has now been confirmed

We have been asked NOT to set up anything in front of the the main entrance to the fort

Venue Landguard Fort (the Fort's moat will probably be our location)

Date **15 or 16 August** (depends on which day has the best weather)

Time 11:00 to 16:00 Setup time from 10:00

Bentley Village Family Day

The Bentley Family Fun Day is on **Sunday 6th September** (date confirmed) 11:00 to 15:00

Set up time from 09:30. The playing field is at the bottom of Case Lane. There is parking in the field..Location to be arranged on the day. It will probably be down the left hand side of the field.

Bury St Edmunds Branch of OASI?

Interested in setting up a branch for the western end of Suffolk? Contact David Murton.

Snippets from the Twittersphere @OASIpswich

@OASIpswich currently has 332 followers and follows 286 astronomy-related sites.

- History of Astronomy @hist_astro: A Brief History of Pluto Viewing: From Its Discovery to New Horizons Flyby shar.es/1sas1T via @SPACEdotcom www.space.com/29911-pluto-exploration-history-new-horizons.html
- Astronomical Compendium by V.C., English c.1554 @MHSOxford. Sundial, nocturnal, compass, star-maps, lunar volvelle... https://twitter.com/hist_astro/status/620231271571062784
- Pluto was originally discovered by a young astronomer, Clyde W. Tombaugh (1906-1997), on Feb 18, 1930. https://twitter.com/johnrmoffitt/status/620087884565995520 1oz (28g) of his ashes are in New Horizons.
- @astrotweeps We now know over 600 Wolf-Rayet stars in our Milky Way - I maintain the database www.pacrowther.staff.shef.ac.uk/WRcat/ - plus many more in nearby galaxies https://twitter.com/astrotweeps/status/620530159876218880

Society Events Diary

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

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
Discussion Forum http://forum.oasi.org.uk/index.php
Subscribe to the OASI Yahoo group by emailing oasi-subscribe@yahoogroups.com

Date and Time	Location	Contact	Event
Weekly, every Wednesday, 20:15	Orwell Park Observatory	Martin Cook, Roy Gooding	General observation (weather permitting) using a variety of telescopes.
Sunday 2 Aug, 12:00-16:00	Bawdsey Radar Trust Ltd	Paul Whiting FRAS treasurer@oasi.org.uk	Public access event. Observing the Sun safely during Bawdsey Radar Trust Ltd open day celebrating the 75th anniversary of the Battle of Britain. Booking not necessary.
Wed 5 August	Holywells Park, Ipswich	Roy Gooding	**Public Solar Event** Observing the sun safely during Holywells Park Families Day. Booking not necessary.
Monday 10 August 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group. Bring your telescope to our dark-sky site. (Talks on astronomy if weather unsuitable for observing.)
Saturday 15 August 11:00 – 16:00	Landguard Fort	Roy Gooding	**Public Solar Event** If cloudy postpone to 16th.
Monday 24 August 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group.
Monday 31 Aug	Alnesbourne Priory	Mike Norris michael.norris17@btopenworld.com	**Public access event.** Observing the sun safely. Booking not necessary (but lunch booking advisable)
Friday Sept 4 - 19:00 to Sunday Sept 6 - 12:00	Rutherford Appleton Laboratory, near Didcot	http://britastro.org/meetings	BAA Autumn Weekend Meeting "Astronomy in Space"

Date and Time	Location	Contact	Event
Sunday 6 Sept	Bentley	Roy Gooding	**Public Solar Event** Bentley Village Family Day
Friday 11 September	Institute of Astronomy Observatory Building, Madingley Road, CB3 0HA	See more at: www.opencambridge.cam.ac.uk/events/open-observatory#	The neo-classical styled Cambridge Observatory (built in 1823) will be open to visitors. Inside there will be a small display of historic astronomical books and stereoscopes. In the grounds, are two 19th century telescopes, the Thorrowgood (1864) and the famous Northumberland (1838).
Friday 11 September 16:00 – 18:00	Methodist Church Hall	Pete Richards lectures@oasi.org.uk	Lecture Meeting. Andrew Lound: *Lunatick Astronomy*.
Saturday 19 Sept	Nowton Park, Bury St Edmunds	David Murton chairman@oasi.org.uk	**Public event. Star party for International Observe the Moon Night".** *Booking is necessary.* Book a place via the West Suffolk website. See https://www.whatsonwestsuffolk.co.uk/whats-on/event/2480/the-nowton-park-star-party
Monday 28 Sept from 00:11			Total Lunar eclipse. See online Diary for timings
Friday 02 October 01:00	Location TBD	James Appleton info@oasi.org.uk	Field trip to observe graze of ZC 618. More info.
Friday 02 October 20:00	Methodist Church Hall	Pete Richards lectures@oasi.org.uk	Lecture Meeting. Professor Michael Rowan-Robinson: *Night Vision: Exploring The Infrared Universe*.
Friday 23 October 18:00	Chantry Library	Paul Whiting FRAS treasurer@oasi.org.uk	**Public event.** Talk and telescopes evening. Talk at 18:00, telescopes at 19:00.

Date and Time	Location	Contact	Event
Sat 07 Nov, 19:00 Note earlier start time.	Methodist Church Hall	Pete Richards lectures@oasi.org.uk	**Public event.** Lecture Meeting. Damien Peach: *The Giant Planet Jupiter*. Access is free to members of OASI; £2 per head for non-members.
Thu 17 Dec, 18:00	Location TBD	James Appleton info@oasi.org.uk	Field trip to observe graze of Tycho 5248-0249-1. More info.
2016			
9 May 2016	Orwell Park Observatory	Martin Cook membership@oasi.org.uk James Appleton info@oasi.org.uk	Observation of the Transit of Mercury

The Diary includes BAA meetings and other non-local astro events which may be of interest.

DASH Astro Events – August

See http://dash.moonfruit.co.uk/events-calendar/4585090668 for the latest details.

Athenaeum Observatory

You may not be aware that atop a building in central Bury St Edmunds is an astronomical observatory built in 1859. The building is the Athenaeum, built early in the 18th century as Assembly Rooms where people could play cards and attend balls[1]. It became the Athenaeum in 1854 and the inspiration for building the observatory was a visit from Sir George Biddle Airy and the presence in the night sky of Donati's Comet. The Athenaeum Club are hoping to raise funds and awareness of the observatory. I've been in touch with the Athenaeum Club to arrange a visit from OASI. The visit is most likely to be arranged for daytime on a weekend. If you are interested in visiting the Athenaeum observatory email me (Pete Richards) on p.r.richards@btinternet.com or speak to me on a Wednesday evening at the observatory. If you don't have access to email and don't visit the observatory you can phone me on 01473 659806.

Our Late Chairman Ken Goward co-authored, with Martin Mobberly, an article about the history of the Athenaeum observatory published in the Journal of the British Astronomical Association of October 2005. There is a piece about it in the June 2007 OASI Newsletter (OASI Newsletters are available to view on the OASI website).

1. http://www.localhistories.org/burysteds.html

Newbourne Observing Group

How many astronomers does it take...

Avtar Nagra nog@oasi.org.uk Kevin Fulcher

We meet at Newbourne Village Hall, Mill Lane, IP12 4NP

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.

Newbourne is also the new location for OASI Workshops.

July 27th August 10th. & 24th

We open up for all meetings at 7pm. Although we have light evenings during summer, this might give opportunities for some evening solar observing and it seems most members enjoy an early cuppa!.

Small Telescope Observing Nights (STONs)

Contact: Paddy O'Sullivan and Dave Robinson

These currently take place at Orwell Park Observatory on the most moonless Tuesday in the month, starting at 20:15. See online Diary

These are organised by Paddy O'Sullivan and Dave Robinson.

If the weather looks unsuitable those wishing to attend may need to check with Paddy or Dave as the evening may possibly be abandoned.

If members cannot gain access due to lack of Fob, etc., please ring the observatory telephone number 07967 519249.

Astronomy Workshops

Contact Mike Whybray **Location: Newbourne Village Hall IP10 0EU**

Doors open at 7:00pm. **Workshops start at 7:45pm**

If you are a new OASI member, or haven't been to one of these informal workshops before, they are a mixture of events of different characters including beginners talks, interactively 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!

Newbourne Village Hall is our new location for workshops. Given a clear night, we can make use of the field for a workshop or continue after the workshop with some observing.

Do you have a subject you could workshop? Give Mike Whybray a call! workshops@oasi.org.uk

Lecture Meetings

These take place in The 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. There is also the spiral car park by the New Wolsey theatre.

Andrew Lound — "Lunatick Astronomy" (an historic talk).

Saturday 11th September at 8pm

Professor Rowan-Robinson, Imperial College – "Night Vision: Exploring The Infrared Universe"

Friday 2nd October at 8pm

Damian Peach – "The Giant Planet Jupiter"

Saturday 7th November

7pm start – earlier than usual

Members – free Non-members £2-00

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. There is also the spiral car park by the New Wolsey theatre.

Read about planetary photographer, Damian Peach, here:

www.damianpeach.com/about.htm

Roger Pickard "Why observe variable stars?"

14th October 2016. Note this is next year.

Roger is director of the variable stars section of the BAA.

Astronomy Course for Beginners

Paul Whiting FRAS

There will be a 9 week astronomy course for beginners held at the Ipswich Institute in Ipswich, starting in October. The course is open to anyone – you don't have to be a member of the Institute.

The course runs on a Monday night between 6.30 and 8.30pm from 19th October 2015 to 14th December 2015. Week 3 is a guided visit to the Observatory, on Tuesday 2nd November.

The details are as follows:

- Week 1: History of Astronomy
- Week 2: The Solar System Family
- Week 3: Visit to Orwell Park Observatory
- Week 4: Earth Based Phenomena
- Week 5: The Big Bang and the History of the Universe
- Week 6: Exo-planets and life
- Week 7: Telescopes and Satellite Communication
- Week 8: Radio Astronomy and Radio Telescopes
- Week 9: The Night Sky

The cost will be £63.

Now the bad news – I will be your tutor!

If you would like more details or would like to book, please contact the Ipswich Institute via:

www.ipswichinstitute.org.uk/course.php?id=221&cat=5&public=1

Library & Reading Room, Library/Office: 01473 253992 library@ipswichinstitute.org.uk

15 Tavern Street, Ipswich, IP1 3AA

The Night Sky in August

Martin RH

Times are **BST** (unless otherwise stated) at Orwell Park Observatory 52.0096°N, 1.2305°E

Moon

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

Full Moon	Last Quarter	New Moon	1st Quarter
(31 July 11:43) 14 August 15:53	07 August 03:03	14 August 15:53	22 August 20:31

Sun and planets + Pluto

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

Object	Date	Rise	Set	Mag.	Notes
Sun	1	05:16	20:46		
	31	06:03	19:48		
Mercury	1	06:06	21:13	-1.1	Mercury is at aphelion on 29 August followed by max eastern elongation on 4 Sept.
	31	08:48	20:12	0.3	
Venus	1	07:42	20:47	-4.2	
	31	04:33	18:04	-4.2	
Mars	1	03:59	20:09	1.9	
	31	03:50	19:01	1.9	
Jupiter	1	07:08	21:25	-1.5	Jupiter is at superior conjunction on 26 August.
	31	05:47	19:39	-1.5	
Saturn	1	15:38	00:26	1.1	
	31	13:44	22:25	1.2	
Uranus	1	22:52	12:10	5.8	
	31	20:54	10:09	5.8	
Neptune	1	21:45	08:14	7.8	Neptune is at opposition on 1 Sept
	31	19:45	06:11	7.8	
Pluto [1]	1	19:09	03:18	14.1	Minor planet Pluto is in Sagittarius
	31	17:10	01:18	14.1	

From http://www.nasa.gov/mission_pages/newhorizons/overview/index.html

1. New Horizons launched on Jan. 19, 2006; it swung past Jupiter for a gravity boost and scientific studies in February 2007, and will conduct a five-month-long reconnaissance flyby study of Pluto and its moons in summer 2015. Pluto closest approach is scheduled for July 14, 2015. As part of an extended mission, the spacecraft is expected to head farther into the Kuiper Belt to examine one or two of the ancient, icy mini-worlds in that vast region, at least a billion miles beyond Neptune's orbit.

Meteor Showers

Source: BAA Handbook 2015 p97-99

Shower	Limits	Maximum	ZHR	Notes
α-Cygnids	July - Aug	July 21 Aug 20	5	Weak , apparently stationary radiant producing steady activity throughout northern summer.
δ-Aquarids	July 15 - Aug 20	Jul 29 Aug 6	20 10	For those on holiday abroad, the Delta Aquarid meteor shower favours the Southern Hemisphere and tropical latitudes in the Northern Hemisphere.
Perseids	July 23 - Aug 20	Aug 16 6am	80+	Rich shower of fast meteors. High proportion of bright events leaving persistent trails. Very favourable.

Occultations during August 2015

James Appleton

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

Date	Time (UT)	D/R	Lunar Phase	Sun Alt (d)	Star Alt (d)	Mag	Star
22 Aug 2015	20:53:58	D	0.50+	-15	10	4.1	Theta Lib
27 Aug 2015	22:03:09	D	0.95+	-23	23	5.2	Tau Cap

Visible ISS passes ≥15º max altitude

Martin RH

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

NB predictions are approximate. Check the day before. Night shift observers only this month.

Date	Mag	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
01 Aug	-2.9	02:37:44	42°	SSE	02:37:44	42°	SSE	02:40:16	10°	SE
01 Aug	-1.6	04:11:05	10°	WSW	04:12:59	14°	SW	04:14:49	10°	S
01 Aug	-2.9	22:27:47	10°	SW	22:30:49	37°	SSE	22:33:52	10°	E
02 Aug	-3.5	00:03:46	10°	W	00:06:52	78°	SW	00:06:52	78°	SW
02 Aug	-2.3	21:34:25	10°	SSW	21:37:08	25°	SSE	21:39:54	10°	E
02 Aug	-3.5	23:09:58	10°	WSW	23:13:13	72°	SSE	23:15:10	22°	E
03 Aug	-1.6	00:46:19	10°	W	00:47:43	23°	W	00:47:43	23°	W
03 Aug	-3.3	22:16:13	10°	WSW	22:19:23	55°	SSE	22:22:35	10°	E
03 Aug	-3.5	23:52:27	10°	W	23:55:42	86°	S	23:55:45	85°	SSE
04 Aug	-2.8	21:22:32	10°	SW	21:25:35	39°	SSE	21:28:39	10°	E
04 Aug	-3.5	22:58:32	10°	W	23:01:48	84°	S	23:03:39	23°	E

Date	Mag	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
05 Aug	-1.4	00:34:54	10°	W	00:36:11	21°	W	00:36:11	21°	W
05 Aug	-3.5	22:04:38	10°	WSW	22:07:52	74°	S	22:11:07	10°	E
05 Aug	-3.4	23:40:58	10°	W	23:44:01	73°	SW	23:44:01	73°	SW
06 Aug	-3.5	22:46:59	10°	W	22:50:15	86°	S	22:51:49	28°	E
07 Aug	-1.1	00:23:22	10°	W	00:24:20	17°	W	00:24:20	17°	W
07 Aug	-3.4	21:52:59	10°	W	21:56:14	85°	S	21:59:29	10°	E
07 Aug	-3.0	23:29:20	10°	W	23:32:06	53°	WSW	23:32:06	53°	WSW
08 Aug	-3.5	22:35:17	10°	W	22:38:32	76°	S	22:39:49	33°	ESE
09 Aug	-3.4	21:41:12	10°	W	21:44:27	85°	S	21:47:32	11°	E
09 Aug	-2.5	23:17:35	10°	W	23:20:03	37°	SW	23:20:03	37°	SW
10 Aug	-3.3	22:23:26	10°	W	22:26:38	58°	SSW	22:27:43	35°	SE
11 Aug	-3.4	21:29:16	10°	W	21:32:31	74°	S	21:35:24	12°	ESE
11 Aug	-1.8	23:05:46	10°	W	23:07:55	25°	SW	23:07:55	25°	SW
12 Aug	-2.7	22:11:28	10°	W	22:14:31	40°	SSW	22:15:34	29°	SSE
13 Aug	-3.1	21:17:12	10°	W	21:20:23	56°	SSW	21:23:13	12°	ESE
13 Aug	-1.2	22:54:05	10°	W	22:55:44	16°	SW	22:55:44	16°	SW
14 Aug	-1.9	21:59:26	10°	W	22:02:12	25°	SSW	22:03:23	20°	S
15 Aug	-2.4	21:05:01	10°	W	21:08:03	38°	SSW	21:11:02	10°	SE
16 Aug	-1.1	21:47:35	10°	WSW	21:49:39	16°	SW	21:51:13	12°	S
17 Aug	-1.6	20:52:47	10°	W	20:55:29	24°	SSW	20:58:10	10°	SSE

There's an app for that: Try ISS Spotter for iPad/iPhone, which alerts you to impending passes of the ISS. For Android-based phones/tablets there's ISS Detector. If you use Twitter @twisst or @ISS_spotter will send you a tweet when the international space station (ISS) will be visible at your location.

Paul's Astronomy Podcast for July

Paul Whiting FRAS

Podcast, August 2015 www.oasi.org.uk/2015_08_pod.mp3

Short articles for OASI News

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."*?

History: Dennis Jack Fulcher

Dennis Jack Fulcher, founder member of IDAS (and grandfather of Member Kevin Fulcher)

at the Tomline telescope.

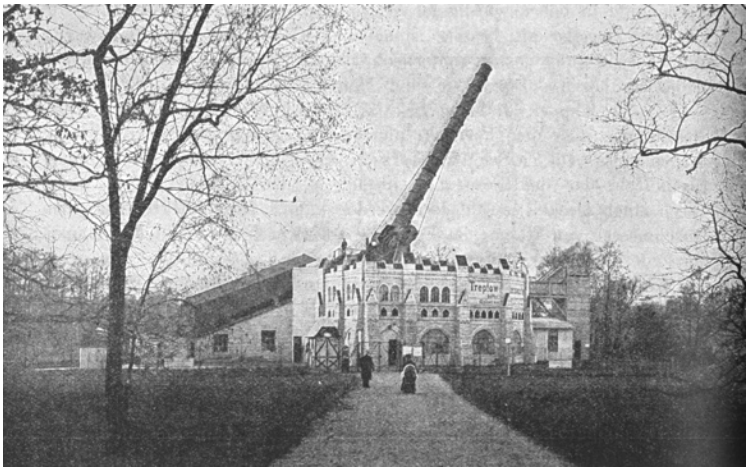
See also 1410OASINews, p14

The Archenhold Observatory, Berlin

Bill Barton, FRAS.

This observatory is located in the south-east of Berlin in Treptow Park (lat 52° 29' 09" N, long 13° 28' 34" E. IAU observatory number 604). It contains what might well be Europe's most unusual refracting telescope. To make it easy for public use this instrument it is pivoted at the eyepiece end and so, although not stationary, the eyepiece hardly moves. The telescopes dimensions are 0.68m (26 $^{3}/_{4}$inches) aperture by 21m (68ft 10in) focal length, making a focal ratio of 30.8. An instrument this long would be difficult to accommodate under a conventional dome, which would have to be up to 50m (164ft) in diameter (if the telescope were mounted in the same way) and so it operates in the open air. It is entirely possible that the seeing conditions experienced by this telescope are improved by the lack of a dome. There are two removable covers, one protects the objective lens and the other the mounting, eyepiece and observing platform. It is the longest movable telescope in the world and is seven feet longer than that of the great Yerkes Refractor. It is also the eighth largest aperture refractor. To keep the instrument balanced it is fitted with very large counter-weights and the total moving mass is around 130 tons. Having said all that you need to be quite brave to use it as you need to stand on the roof of the observatory building with only handrails preventing you from having a very nasty accident!

A contemporary American account of the observatory's construction states the cost of was $62,500 of which $11,500 was for the object lens, a product of Steinheil of Munich. A 5kW motor was used to elevate the telescope and a 350W motor was used to track night sky objects.



It came to be built following a German industrial exhibition to mirror the ones held in London in 1851 and Paris in 1878. This was the Große Berliner Gewerbeausstellung 1896 (Great Industrial Exposition of Berlin 1896). A young German astronomer envisaged he could use the money generated by such an exhibition to finance the modern observatory which he felt Germany needed. He was in dispute with the journal Astronomische Nachrichten (Astronomical Notes) over the discovery of a nebula in Perseus and such a facility could have been used to verify his claim.

Although the exhibition opened on the 1st May the telescope was only operational from September, just before the exhibition closed on the 15th October. At first it was accommodated on a temporary wooden structure. This was replaced by the current masonry building in 1908 when subsequent fundraising efforts paid off. It would appear that the telescope was originally destined for a serious scientific institution, but as it proved so popular with the population of Berlin that it was retained for public education. An astronomical museum and library were also major priorities. This held copies of virtually all the most important astronomical works of the 19th century, as well as the standard books on astronomical history. Technical journals and popular scientific books were also carried which brought the total number of volumes available to over ten thousand.

The director was extremely active on the German science scene for many years. From 1900 onwards he published a monthly magazine "Das Weltall" (The Universe), which appeared until 1944 (however, after 1936 it was no longer under his control). He travelled extensively in England, Scotland, Spain, Algeria and the United States. He visited the island of Hven in 1902 to see the remains of Tycho Brahe's (1546 - 1601) observatory. Two years later he met the American industrial magnate Andrew Carnegie (1835 – 1919) and gained financial support for his research work. On a later journey through the U.S. in 1907 he met the American inventor Thomas Alva Edison (1847 - 1931) and the Canadian astronomer and mathematician Simon Newcomb (1835 - 1909). Some journeys were also made to observe solar eclipses.

He founded the Kinematografische Studien-gesellschaft e. V. (Cinema Study Group) in March 1913, with the aim to "promote the production of scientific school and culture films". This followed a rebuff from the city council to his suggestion that films of astronomical events, such as eclipses, could be used for educational purposes. While 1928 saw him became honorary chairman of the Berliner Flugverein (Berlin Aviation Society), which actively promoted aviation.

The observatory is also noted as the location, on the 2nd June 1915, of Albert Einstein's first public lecture on the Theory of Relativity. The hall where this happened was named the 'Einstein Room' on the 15th March 1979 to commemorate Einstein's centenary. There were also many other famous speakers to visit the observatory including the polar explorers Roald Amundsen (1872 - 1928) and Fridtjof Nansen (1861 - 1928), the geologist Alfred Wegener (1880 - 1930), and the space pioneer Hermann Oberth (1894 - 1989).

The observatory changed its name from the 'Berlin Treptow Observatory' at its half century in 1946 to honour its founder Frederich Simon Archenhold (2 October 1861 -14 October 1939), who was the director until he retired on his 70th birthday in 1931. Frederich's son, Günter (28 August 1904 - 21 February 1999) succeeded him until he was forced from office in 1936 under Nazi anti-Jewish pressure. Richard Sommer, a civil servant without any astronomical knowledge, but who was acceptable to the Nazis, was appointed in his place. Frederich died in Berlin a broken and disillusioned man just after his 78th birthday. Frederich's wife, Alice (27 August 1874 - 9 February 1943) and daughter, Hilde (12 April 1900 - 31 March 1944) both died in Theresienstadt Concentration Camp. While his father was director Günter was given the task of lubricating the mighty telescopes bearings, which involved removing the ocular end of the tube and climbing inside it. He later claimed to know the instrument 'inside and out'!

Günter, with help from friends in England, managed to escape from the oppressive regime with his brother Horst following arrest on Kristallnacht and incarceration in Sachsenhausen prison. After the war Günter stayed in our country to become a school master, and continued astronomy as an amateur. He was a member of the British Astronomical Association until his death just before the Millennium. His written articles on solar studies and terrestrial atmospheric phenomena appeared in the Monthly Notices of the Royal Astronomical Society, The Observatory magazine and the JBAA.

The family residence was on Berlin's Seestrasse. They also owned a holiday home at Bansin, a popular resort on the German Baltic sea coast, where in the summer of 1938 Günter observed noctilucent clouds. They lost everything as a result of Nazi oppression and the war. The observatory also suffered during this period, damage was caused by allied air-raids probably because the telescope looked like an anti-aircraft gun. When the war was over the building was repaired and the objective lens was re-figured by Zeiss. During the ensuing 'Cold War' and especially between the 1961 to 1989 'Berlin Wall' period, Treptow Park was in East German territory and thus little known in the west.

As mentioned above the telescope operates without the protection afforded by a dome and it consequently suffered due to weather damage and became inoperable in 1958 after some sixty-two years service. It was, however, restored to full working order between 1977 and 1983. Further renovation work was carried out at the observatory's centenary in 1996.

Over the history of the observatory extra instruments have been added and the following can be found in the grounds:-

- A 500mm Cassegrain reflecting telescope,
- A Coudé refractor,
- A solar physical building, dating from 1965 where a Jensch coelostat directs sunlight to a fixed horizontal telescope inside the building. The projected solar image is 80cm in diameter.

While on the roof of the observatory are:-

- An astro-graph,
- The Urania refractor,
- A 250mm comet seeker telescope,
- and a 250mm Newtonian reflector.

Other exhibits include an beautifully restored Meridian Circle from the Bogenhausen Observatory near Munich. Dating from 1891 it is displayed in a reconstructed period observatory. Sundry exhibits illustrate the work undertaken in astronomical measurement at the time, and an impressive set of period precision instruments are displayed in the adjacent "Astronomers Study".

There is an on-site planetarium, the Zeiss Minor Planetarium a type "ZKP-2" installation. It is under an 8m (26ft) dome. This was the first Zeiss Minor Planetarium in East Germany and dates from 1959. In 1982 the projector was replaced by a modern "ZKP-2" model. The audience seating was re-designed in 1994. The projector can mimic the sky seen from anywhere in the world.

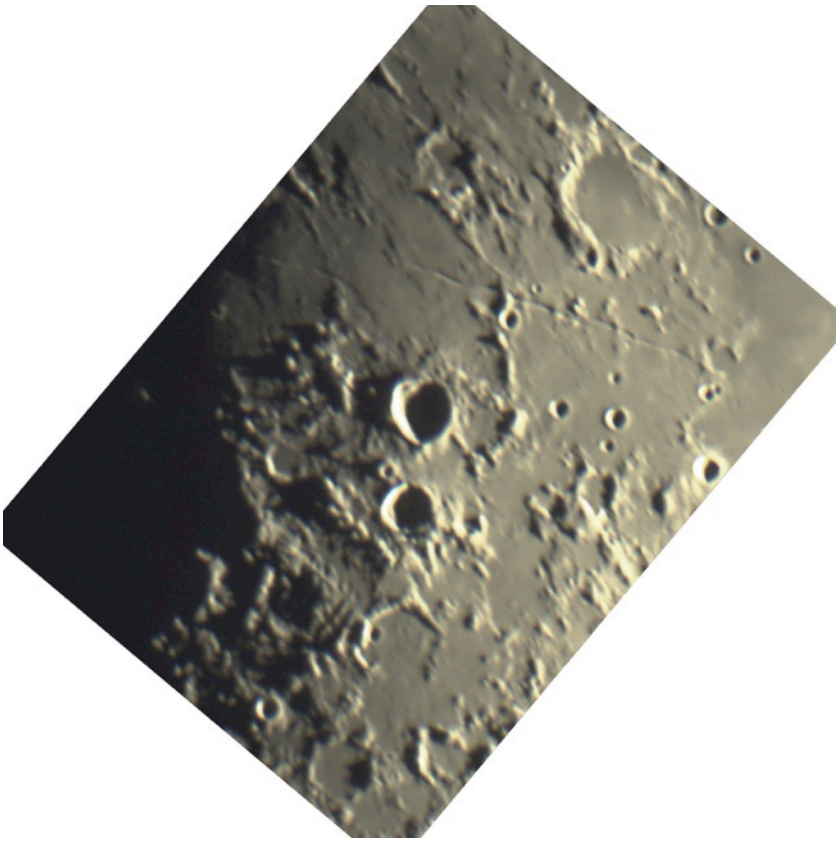
On 2 March 1984 minor planet 4030 was discovered from the European Southern Observatory in La Silla, Chile and now carries the name 'Archenhold' to honour the achievements of Frederich Archenhold.

After the reunification of Germany the Archenhold Observatory became part of the Deutsches Technikmuseum. It is currently open to the public between 14:00 and 16:30 from Wednesday to Sunday each week. Guided tours (in English on request) happen on Thursdays at 20:00 and Saturdays at 15:00 when the subject is "Stars over Berlin". On Sundays at 15:00 the subject is "The Treptower Giant Telescope". The observatory is a short twelve minute walk from the Berlin S-Bahn Plänterwald station (S8, S9 & S85 trains), an alternative is Treptower Park station (S8, S9, S41, S42 & S85 trains) which is a longer twenty minute walk away along the river Spree.

Berlin also boasts a second, larger, planetarium also operated by the Deutsches Technikmuseum. It is the 292 seat, 23m (75ft) diameter Zeiss Major Planetarium (Zeiss-Großplanetarium), located in Prenzlauer Berg in southern Pankow District. It dates from 1987.

Hyginus and the Ariadaeus Rilles

David Murton



International Observe the Moon Night

Saturday 19 Sept

Nowton Park,
Bury St Edmunds

Public event. Star party for International Observe the Moon Night

Booking is necessary.

Book a place via the West Suffolk website.

See https://www.whatsonwestsuffolk.co.uk/whats-on/event/2480/the-nowton-park-star-party

Lunar Maria (Seas)

You can see a number of maria tonight. These are large, flat plains of solidified basaltic lava. They can be viewed in binoculars or even with the unaided eye.

A. Mare Frigoris
B. Mare Serenitatis
C. Mare Crisium
D. Mare Tranquillitatis
E. Mare Fecunditatis
F. Mare Nectaris

Selected Telescopic Objects

Some of the more interesting lunar landforms that have favorable lighting for viewing tonight are identified here.

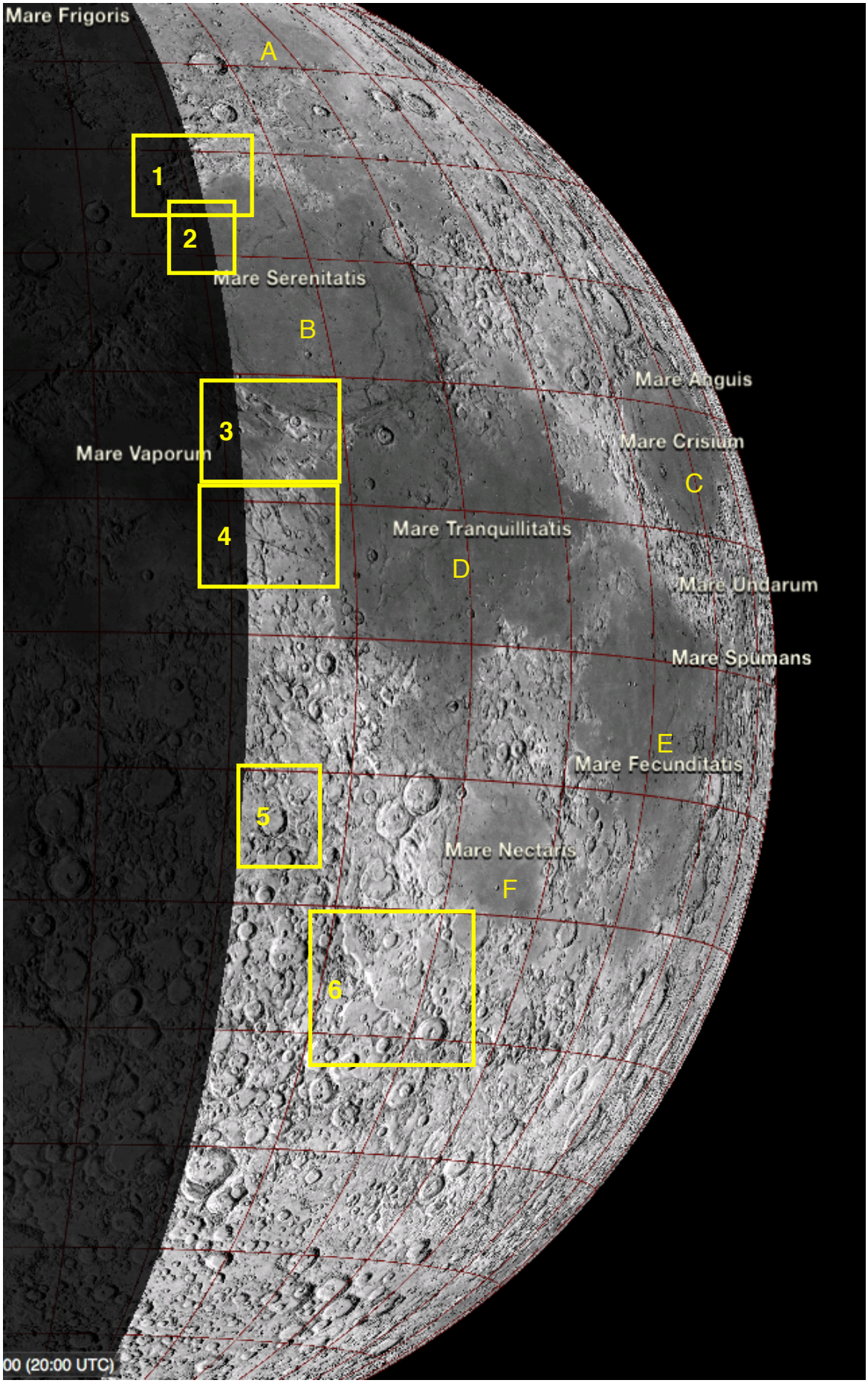
1. Caucasus Mountains
2. Valentine Dome
3. Haemus Mountains
4. Hyginus and Ariadeus Rilles
5. Descartes Highlands (Apollo 16)
6. Altai Scarp

The map is for the northern hemisphere with north up and depicts the Moon as it will appear at approximately 20:00 BST (19:00 UTC) on International Observe the Moon Night, September 19, 2015. Many of the most detailed views will occur along the terminator (the line between the day and night side) of the Moon. Some may only be visible after midnight.

Image reconstructed using Moon Atlas (£4.49 from the Apple App Store) as the publicity is for US evening times. http://www.lpi.usra.edu/observethemoonnight/materials/2015/InOMN-Map2015.pdf

See http://observethemoonnight.org/ for more resources.

For those of you who prefer battery-free calculators there is the Moonstick http://www.moonstick.com/moonstick.htm

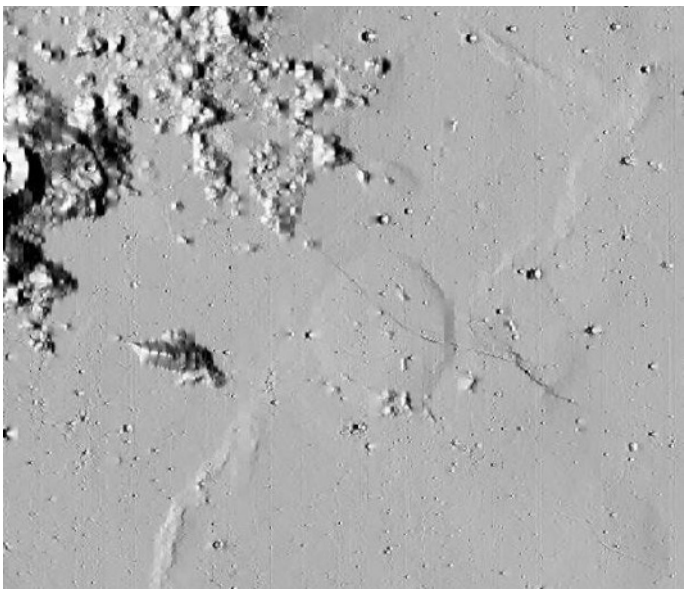

Mare Frigoris
A
1
2
Mare Serenitatis
B
Mare Anguis
3
Mare Vaporum
Mare Crisium
C
4
Mare Tranquillitatis
D
Mare Undarum
Mare Spumans
E
Mare Fecunditatis
5
Mare Nectaris
F
6
00 (20:00 UTC)

All 6 images on the following pages were retrieved using NASA's Lunar Mapping and Modeling Portal - http://lmmp.nasa.gov

*Lunar Reconnaissance Orbiter LROC Wide Angle Camera image

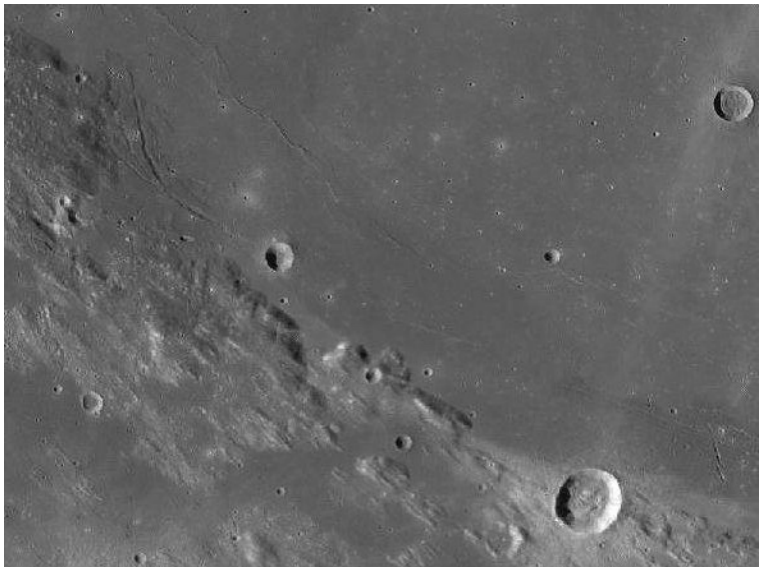
**Lunar Reconnaissance Orbiter Laser Altimeter map - http://lro.gsfc.nasa.gov/

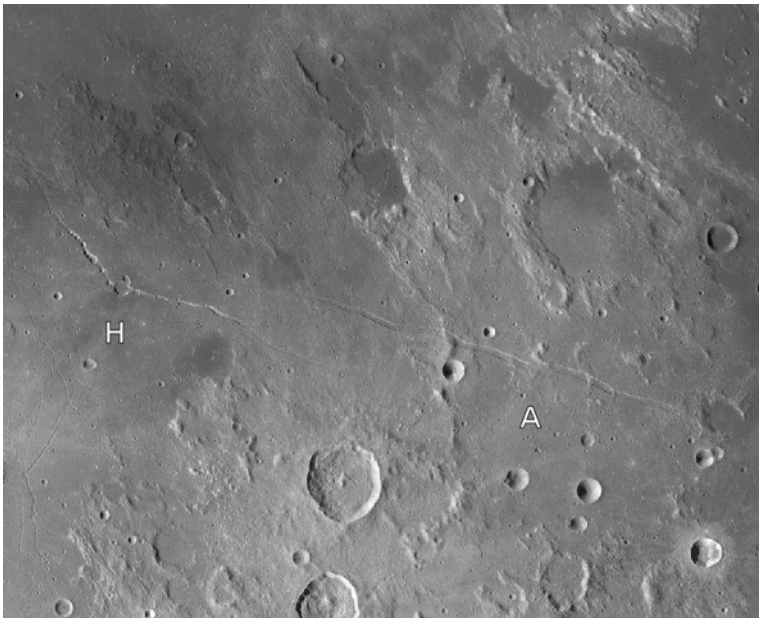
1. Caucasus Mountains: Mountain range on the northwest edge of Mare Serenitatis. 520 km long and 6 km high. *



2. Valentine Dome: A low-profile volcanic dome just east of south tip of Caucasus Mountains. Visible only when very near the terminator. 39 km across and about 350 m tall. **

3. Haemus Mountains: Mountain range at the southwestern edge of the Mare Serenitatis. 400 km long and 2.4 km high. *



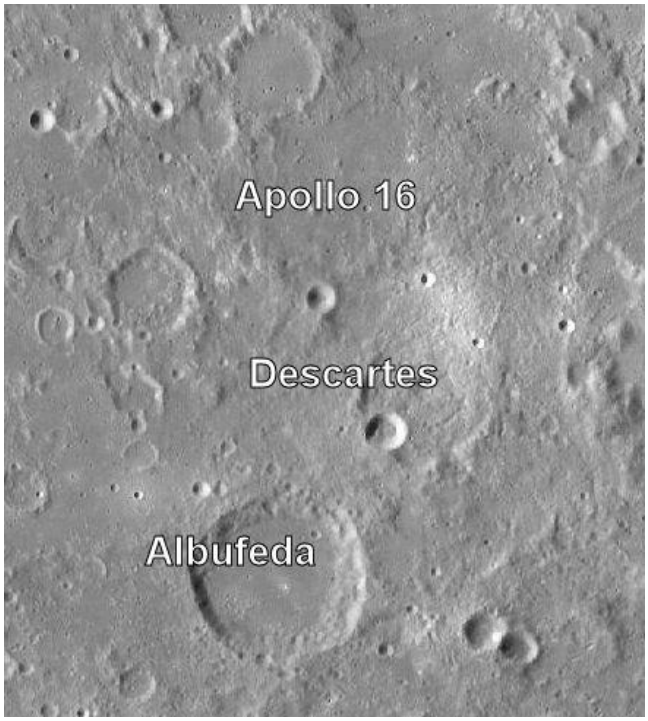


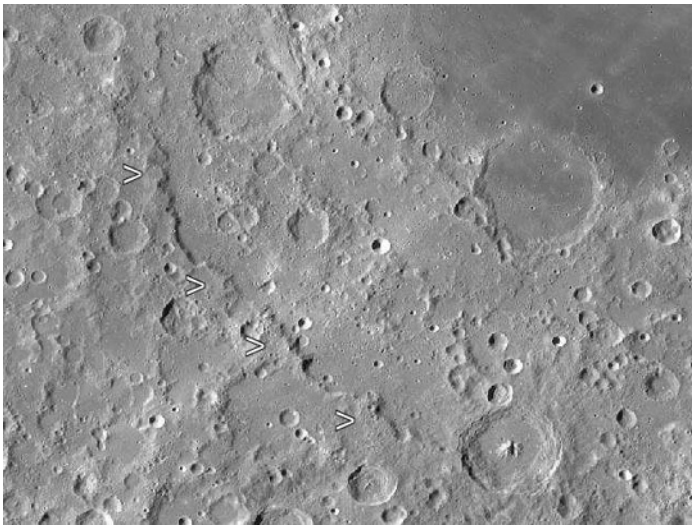
4. Hyginus and Ariadaeus Rilles: Formed by magma rising up through and widening cracks in the lunar crust. Hyginus (angled) to the west and Ariadeus to the east. *

See also David Murton's photo (p.20) Hyginus and the Ariadaeus Rilles

www.oasi.org.uk/Obsvns/Moon/20150623_Moon_DM.jpg

5. Descartes Highlands: Apollo 16 landed north of the crater Descartes. *





6. Altai Scarp: An arcing, 3.5-4 km high cliff (highlighted by white arrows in the image), 480 km long that is part of the outer ring of mountains around the impact basin that contains Mare Nectaris. *

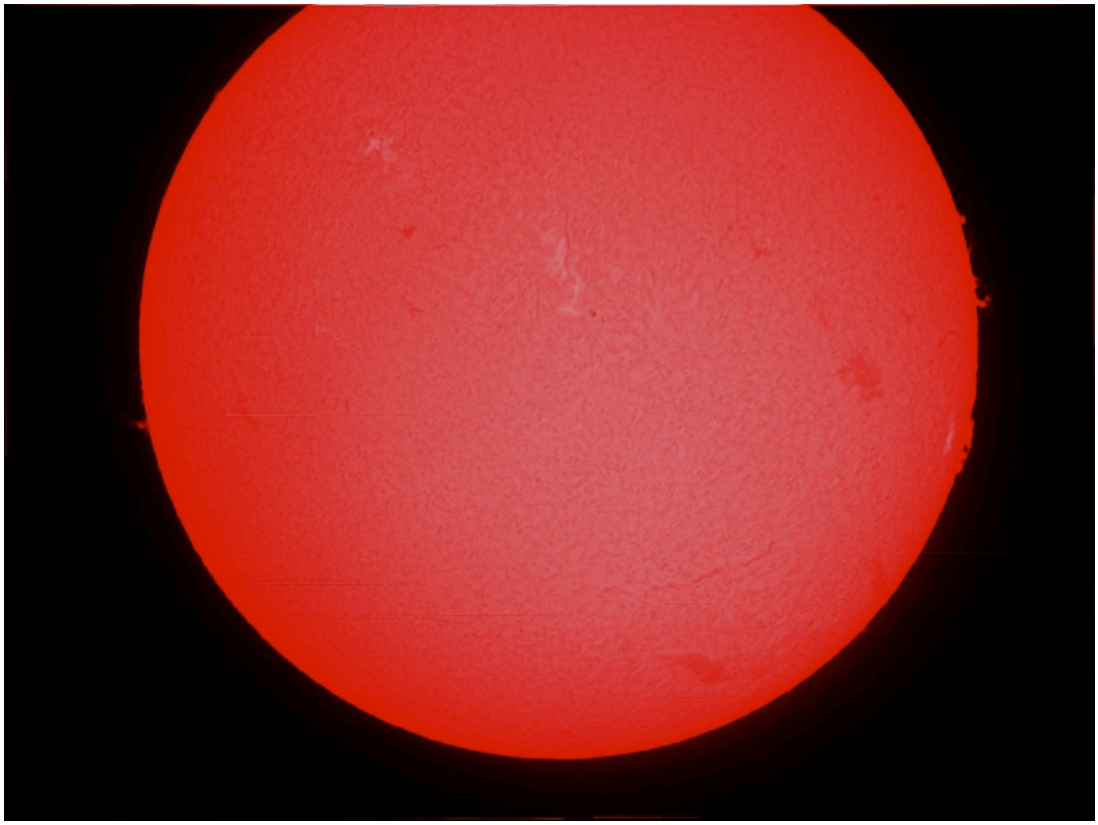
OASI BBQ

Bill Barton with his Questar 3.5, 89mm catadioptric telescope at the OASI BBQ

Photo: MartinRH

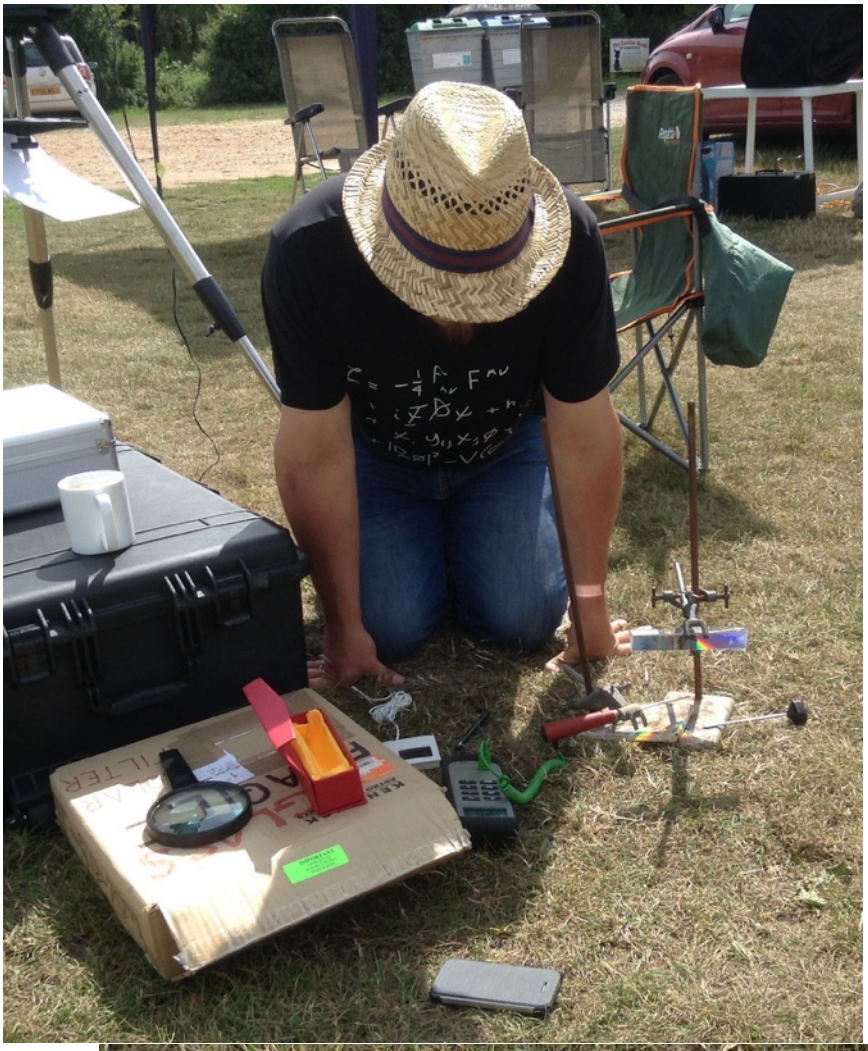
“I used a 'Thousand Oaks' filter over the front end to give a white light image. Three groups of sunspots were seen.

When the haze lifted I swung the telescope round and a few lucky members got the chance to see a narrow crescent of Venus before the clouds rolled in again.”



Sun in Hα taken through the PST with QHY5L-II camera (David Murton)

Solar-powered solar viewing with John Wainwright, Avtar Nagra and Charlie Green



Kevin Fulcher repeating Herschel's experiment, measuring the temperature beyond the red.

and a result!...

28.8C ambient : 30.9C infra-red

Thumbs up (and a halo) to the Organisers!

Ready, steady, cook!