The Messenger

Mexborough & Swinton Astronomical Society

May 2016

The Transit of Mercury : May 9th 2016



Member's event at J. A. Jones Observatory from 10:00am.
We will have solar scopes available for viewing
Bring your own scopes, but beware of sun watching!

The Transit of Mercury May 9th 2016



On May 9th 2016 a transit of Mercury across the face of the Sun takes place. Mercury transits are relatively rare events and the entirety of this transit can be seen from the J A Jones Observatory at Hoober. However since this involves viewing the Sun, extreme caution must be taken when attempting to observe it.

During the transit, Mercury will be seen as a tiny black dot moving slowly in an East-to-West direction across the Sun. The transit commences on May 9th at 12:12 BST (British Summer Time), and ends later that same day at 19:42 BST, with mid-transit taking place at 15:57 BST. The total duration is therefore about 7½ hours. It will take the planet about 3 minutes to completely cross the edge of the sun both at ingress (beginning of transit) and egress (end of transit). The planet crosses the Sun in a North-east to South-west direction. After this May's event the next two Mercury transits will take place on November 11th 2019 and November 13th 2032.

Transits of Mercury can only occur whenever the planet is close to its ascending node or descending node (the points in its orbit where the planet crosses the ecliptic - the apparent path of the Sun against the background stars) heading Northwards or Southwards, respectively. For such an event to take place, the planet must be close to inferior conjunction (i.e. positioned directly between the Earth and the Sun) and also be positioned within about 2° of one of these nodes. Because of the positioning of the nodes in relation to the Earth's orbit, in the present era transits can only take place in the second week of May (descending node) or in the second week of November (ascending node). The ascending and descending nodes of the planets are positioned exactly 180° apart - hence the six-month difference between these two dates. Because the node positions change very slowly over time, the dates of Mercury transits are drifting later in the calendar. In the 18th century, for example, transits took place between May 2nd and 7th, whereas in the 21st century they occur between May 7th and 10th, a drift of about 1½ days per century.

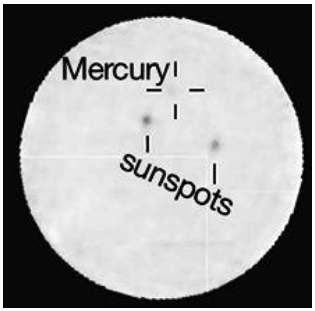
At the moment of mid-transit in 2016, Mercury is positioned about 0°.9 away from its descending node (measured relative to the Sun's centre), the planet having passed through the node some 3½ hours before the start of the transit. Viewed from the Earth, the node is positioned some 29 arcminutes (29' or 0°.48) ENE of the Sun's apparent centre. Mercury transits at the descending node take place when the Sun and Mercury are positioned in the constellation of Aries, the Ram whilst those at the ascending node take place when the two celestial bodies are positioned in Libra, the Balance.

November transits of Mercury repeat at intervals of 7, 13 and 46 years whilst those in May repeat at intervals of 13, 33 and 46 years. November transits outnumber May transits in the approximate ratio of 7:3. May transits are slower than November transits because Mercury is then closer to the aphelion point in its orbit (i.e. its furthest point from the Sun) and its orbital speed is therefore slower (the longest possible duration of a May transit is a little under 9 hours). Conversely, November transits are swifter because the planet is then near perihelion (its closest point to the Sun) and so its orbital speed is faster. The 2016 transit lasts about 2½ hours longer than the previous one on November 8th-9th 2006; the track (chord) of Mercury also passes closer to the Sun's centre and is therefore slightly longer.

A transit of Mercury and Venus sometimes occur at the same time (or both planets can be seen at the same time on the disc of the sun. However it doesn't occur very often and will next happen on 26 July 69,163, and again on 29 March 224,508. (Note: It'll be cloudy at Hoober!)

A double transit last occurred on 22 September 373,173 BC, even Les wasn't around then!

Mercurial Transit seen from Mars!

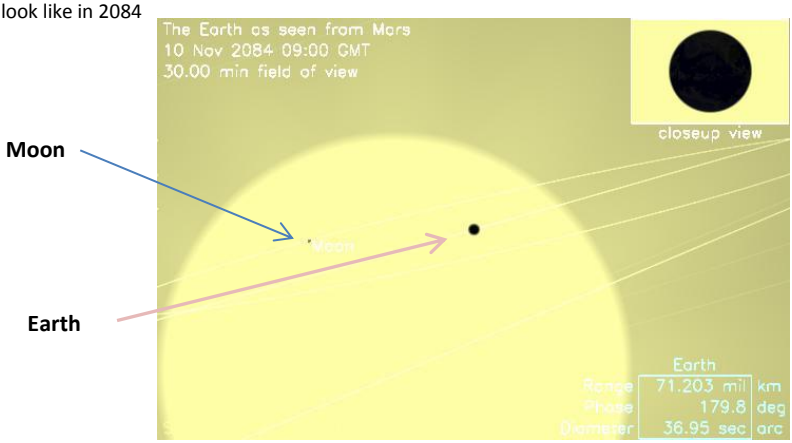


NASA's Curiosity Mars rover has imaged the planet Mercury passing in front of the sun, visible as a faint darkening that moves across the face of the sun.

This is the first transit of the sun by a planet observed from any planet other than Earth, and also the first imaging of Mercury from Mars. Mercury fills only about one-sixth of one pixel as seen from such great distance, so the darkening does not have a distinct shape, but its position follows Mercury's expected path based on orbital calculations.

Earth & Moon Transit seen from Mars

Transits of Earth from Mars usually occur in pairs, with one following the other after 79 years or 100 years depending on where in the orbit the transit takes place. The next transit will take place on November 10, 2084, so there may be someone there to see it! Picture below is a JPL simulation of what the transit would look like in 2084



During the event, the Moon could almost always also be seen in transit, although due to the distance between Earth and Moon, sometimes one body completes the transit before the other begins.

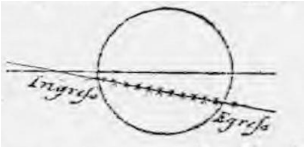
A science fiction short story published in 1971 by Sir Arthur C. Clarke, called "Transit of Earth", depicts a doomed astronaut on Mars observing the transit in 1984. This short story was first published in the January 1971 issue of Playboy magazine.

For those of a really nerdy disposition there will be a double transit of Earth and Venus as seen from Mars in the year 571,471 CE – (if man is still alive!)

Old Newspaper Articles regarding Transits of Mercury

Caledonian Mercury - Thursday 02 May 1799

On Tuesday the 7th of May, there will be a Transit of Mercury over the Sun's disk. The annexed is a true representation of the Transit at Edinburgh, and will serve pretty nearly for all parts of Great Britain. — The beginning and ending of this Transit at London will be almost a quarter of an hour later than at Edinburgh



	H	M	
Beginning of this Transit	7	35	Morning
Middle	11	20	
End	3	6	Afternoon
Duration	7	31	

Morning Post - Thursday 26 April 1832

On the 5th of next month (we learn from an article in Time's Telescope), in the morning, the planet Mercury will cross the disc of the sun, and appear on it as a circular Mack spot for nearly seven hours. The celestial phenomenon will be visible, from its commencement to its termination, to the whole of Europe and a great part of Africa; the ingress will be visible to Asia and the egress to America. The beginning of the transit will lie 9 h. 2 m. 57 sec. apparent time, and its end 3h. 54 m. 31 sec. In order to see it well, the observer should have, for some time previous to the beginning of the transit, his telescope properly fixed and prepared with dark glasses to defend the eye, which he should keep fixed upon that point of the sun's limb where the plane is suspected to enter. It the instant he suspects the- con tact to have taken place he must note the time, and proceed to observe, in order to be certain that he was not mistaken. The last transit of Mercury occurred 4th November, 1822, but invisible in this country; it was witnessed in India by Major J. A. Hodgson, Revenue Surveyor-General, whose account is inserted in the "Memoirs of the 'Royal Astronomical Society of London". A very pleasing method of observing the phenomenon will be by transmitting the- sun's image through a telescope into a darkened room; the image of the sun can be received on paper, and the whole transit observed without distressing the sight.

.**Edinburgh Evening News - Friday 09 November 1894**

The transit of Mercury will be (should the weather be clear) shortly before sunset today. Mercury will be seen as a small black ball sailing across the sun. Many eminent astronomers have gone to the United States to get better view, the owners one steamer have lowered their fares meet the means of poor scientific men. The next transit of Mercury will take place in 1907 and so the same interest is scarcely expected as for the last transit Venus, for no one living will see the next, which will take place 2007. Those wishing to observe the transit are reminded that telescope is necessary. The transit begins at 3h. 55m. 40s. p.m .

Cheltenham Chronicle - Saturday 17 November 1894

The transit of Mercury was visible Saturday for a few minutes in this country, and satisfactory observations have been made. The planet, passing between the earth and the sun, appeared in midway as a mere black spot across the solar disc. The transit commenced at about 4 o'clock, and was not complete till after 9; so that, sunset being at 4.45, under the best conditions and with telescopic aid it could only be watched for a short time. The ingress was well observed Sidmouth by Professor Turner, of Oxford, and Mr Lindeman. The most useful results are expected from America, where the sun would be visible during the whole time of transit. The chief questions on which light is required are those of the existence of Mercurian atmosphere and of a possible planetary satellite

London Daily News - Wednesday 30 October 1907

With regard to the transit of Mercury, which, if the weather is favourable, will be wholly visible in England on Thursday, Nov 14th, Mr. W. F. Doak writes to us from the "Nautical Almanac'* office, in Gray's Inn. to say that the time of ingress will 10 24 a m. On the occasion of previous transits some observers have, they supposed, detected a ring encircling the planet, and bright spots on its disc; while others have thought that the planet on emerging was pear-shaped. It is hoped in the coming transit to set these matters to rest.

The Sky in May

Moon	6th New Moon 13th First Quarter 21st Full Moon 29th Last Quarter
Mercury	Transit on the 9th
Venus	Not observable
Mars	Rises 11:50.pm on 1st At opposition on 22nd May, low to horizon at 14°, Magnitude -2.0 and 18.5" angular size. Rises 9:10.pm on 31st
Jupiter	Evening object, setting at 4am on 1st and 2:15 am on 31st Moon will pass Jupiter within 2° on Sun 15th May at 9:25pm
Saturn	Rises at 11:30 pm on 1st, and at 9:30pm on 31st. Heading for early June opposition. Low in southern sky.
Uranus & Neptune	Not observable
Asteroid 3 Juno	On 1st May will be in Virgo, RA14h33m08s Dec -00°25'44 mag 9.7, by 31st May will have moved to RA14h12m43s Dec +01°17'08" and dimmed to mag 9.9.

SOLSTICE DINNER

We are now after your money and your menu decision for this years event which is to be held on Friday June 17th at the Rockingham Arms, Wentworth.
Total cost will be £25 per head
Note: No extra charge for Non-Members, wives, children, siblings and others

FRIDAY JUNE 17th 2016 **ROCKINGHAM ARMS – Wentworth 7pm**

Menu

STARTER	MAIN	PUDS
Whitebait	Half Roast Chicken	Chocolate Fudge Cake
Stilton Mushrooms (V)	Roast Beef Topside	Ice Cream Sundae
Soup of the Day	Roast Pork	Apple & Blackberry Crumble
	Halloumi & Chips	

Keynote Speaker – Alan Chapman

Ancient observations of Mercury

The early Egyptians also gazed at the night skies and became skilled in astronomy. The names they applied to the planets were those of their gods. Mercury was called Thoth, the great measurer - a divinity associated with knowledge, and the inventor of speech, writing, and arithmetic.
Around 450 B.C. the Greeks started studying the motions of the planets and using geometry to measure the size of the Earth, Sun and Moon. Mercury was known by two different names, associated with its evening and morning appearances. These were Apollo (god of truth, the arts, archery, plagues, and divination) and Hermes (god of writing and messenger to the other gods). Plato and Eudoxus reported that the synodic and sidereal periods of Mercury were 110 days and 1 year respectively.
The Sumerians named the Sun, the Moon and the visible planets - including Mercury - after their greatest seven gods. Translations from surviving cuneiform tablets reveal that Mercury was designated by many names, including that transcribed by archaeologists as “Mulud.and “Idim”. Mercury was often associated with Nabu, or Ninurta, the god of water and writing. Later, in Akkadian, it became known as Shikhtu, meaning “jumpy”.
The Babylonians named Mercury after their divinity Nebo or Nabu, - the record keeper, god of writing, and messenger to the gods. Mount Nebo, in present-day Jordan, is named after the Babylonian god of the planet Mercury. In Babylonian astronomy Mercury was associated with both sexes because of its appearance as both an evening and a morning star.

As did other ancient civilizations, the Hindus interwove astronomy and astrology. They believed that the location of the planets in the sky at the time of birth determined a person’s future. The Hindus called the planets collectively “navagrahs” and references to them can be found on temple markings. As in other early cultures, the planets were given the names of divinities; Mercury was called Budha.
The Mayas were also deeply interested in the planet Venus, believing it to be as important as the Sun. But the Mayas charted the motion of the planet Mercury as well; records of their detailed observations are found in the Dresden Codex. These include the appearance of Mercury as a morning star in 733 B.C. and as an evening star in 727. The Mayans also calculated that Mercury would rise and set in the same place in the sky every 2,200 days.
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Babylonian God Nabu (Mercury)

BAA Historical Section Meeting, Liverpool

Venue: Quaker Meeting House, School Lane, Liverpool (click to see map)
Date: Saturday, 2016, May 21 - 10:00 to 17:00
This year's historical section meeting will take place in Liverpool on 2016 May 21.
The cost will be £5 for BAA members and £10 for non-members, including refreshments but not lunch.
Timetable

09:30	Doors open
09:30 – 10:00	Refreshments & Registration
10:00 – 10:00	Introduction and Welcome – Mike Frost
10:10 – 11:05	Gerard Gilligan –'West Kirby to the Moon - The History of Liverpool Astronomical Society'
11:05 – 12:00	Kevin Kilburn –'The Bridestones Legacy'
12:00 – 13:30	Lunch Break (The Meeting House has a café and there are lots of eateries nearby)
13:30 – 13:35	Welcome back
13:35 – 14:30	Christopher Taylor – 'William Herschel and the Expansion of the Universe'
14:30 – 15:25	Bob Marriott – 'Lancashire Emigrants'
15:25 – 15:50	Refreshments
15:50 – 16:50	Prof. Bill Leatherbarrow – 'Patrick Moore and our volcanic Moon'
17:00	The Quaker Meeting House closes.

Booking information
You are welcome to either book in advance, or pay on the day. To book in advance, you should either Book through the BAA online shop.
Print out our paper booking form and return it to the BAA office before 2016 May 13.
Contact the BAA office on 0207 734 4145 (staffed 9am to 5pm, Mon-Fri).

The Leaning Tower of Gingin

Repeat Gallileo's experiment in Australia.

At the Gravity Discovery Centre near Gingin, north of Perth, in Western Australia, there is a steel tower that was built specifically for this purpose. The Leaning Tower of Gingin, as it is called, rises 45 meters and leans at an amazing angle of 15 degrees — not too far from the 18-degree lean of Abu Dhabi's Capital Gate building which holds the Guinness World Records for the "World's furthest leaning man-made tower". The Leaning Tower of Pisa leans at only 5.5 degrees. Visitors, can climb up the 222 steps to the very top of the Leaning Tower of Gingin from where they can drop water filled balloons and watch through the grilled platform as the balloons fall to the ground. The incredible lean gives them a clear drop to the sand below.



Programme for May & June 2016

Date	Time	Location	Subject / Event	
Thu May 5th	19:45	Club Room	"Solar Observing"	*Mick Nicholls*
Mon May 9th	All Day	Observatory	Transit of Mercury	*Andrew Kirton-Vaughan*
Wed May 11th	19:45	Club Room	Executive Committee Meeting	
Thu May 12th	19:45	Club Room	TBC	*Prof Clive Dickinson*
Thu May 19th	19:45	Club Room	Terrestrial Planets a Comparative Planetology	*Peter Jalowiczor*
Thu May 26th		PO	Visit to Herringthorpe School	*Alan Birch*
Thu May 26th	19:45	Club Room	"Summer Sky"	
Thu June 2nd	19:45	Club Room	The Solar System in Fiction	*Paul Money*
Sun June 5th	14:00	Observatory	CAE – Solar Observing	
Wed June 8th	19:45	Club Room	Executive Committee Meeting	
Thu June 9th	19:45	Club Room	AGM	
Sun June 12th	10:00	Old Moor RSPB	PO - View the Sun as never before	
Thu June 16th	19:45	Club Room	Astro Images	*Tony Morris*
Fri June 17th	19:30	RA	Keynote Talk	*Alan Chapman*
Thu June 23rd	19:45	Club Room	Astro Quiz	*Les Marsden*
Thu June 30th	19:45	Club Room	Observatories of UK Part 2	*Steve Taylor*

Old Moor RSPB – Manvers Way, Barnsley, S73 0YF
RA – Rockingham Arms, Wentworth
Clifton Park –Clifton Lane, Rotherham, S65 2AA
Thryberg Country Park – Doncaster Rd, Rotherham, S65 4NU
PVE – Public Viewing Event – Bookable Only
CAE – Community Access Event
PO – Public Outreach
TBA – To be announced – (otherwise – We don't know!)

Web site: http://msas.org.uk
Meeting room is at Swinton Working Men's Club, Station Street, Swinton, South Yorkshire, S64 8AU.
Observatory is at Lee Brook Lane, Hoober, S62 7SH
Mexborough & Swinton Astronomical Society is Registered Charity N° 1064103 in England & Wales

For submissions to The Messenger - Editor: Roy Gunson: royg@gmx.co.uk