Australian Astronomy

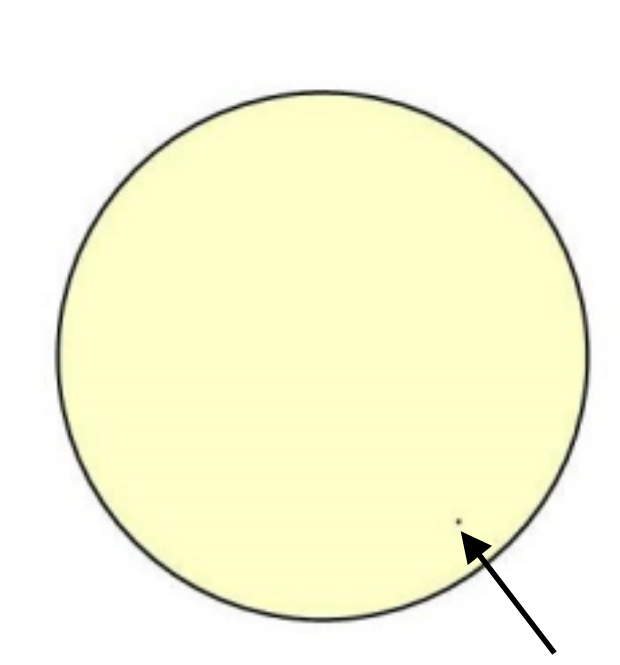
ASA Information Sheet No.12

Transit of Mercury
Wednesday 7 May 2003

The planet Mercury will appear to pass in front of the disc of the Sun on the afternoon of Wednesday 7 May 2003. Australians will be able to see this rare event from 3.14 pm Eastern Standard Time until local sunset. This event will be a forerunner to the transit of Venus in June 2004.

Although people across the country will witness at least part of the event, the most favoured locations are those in the far north and west, where the Sun sets later. For example, from Hobart, the Sun sets at 5.07 pm local time - less than two hours after the transit begins. From Perth, however, where the transit begins at 1.14 pm local time (due to the difference in time zones), sunset takes place a full four hours and 20 minutes later.

From much of Asia, eastern Africa, eastern Europe and the Indian Ocean, the Sun will be above the horizon for the entire transit, which lasts for five hours and 19 minutes.



The tiny disk of Mercury crossing the Sun

What is a transit?

A transit occurs when a planet appears to move across the disc of the Sun. Only the two inner planets, Mercury and Venus, can take part in a transit. Transits of Venus are very rare as they occur twice, eight years apart, and then not for over a century. They are the more famous than those of Mercury as scientists in the 18th and 19th century used them to establish the scale of the Solar System. They are of especial interest to Australians since Lieutenant James Cook's voyage to Tahiti to observe the 1769 transit of Venus led to the European settlement of the continent.

Transits of Mercury

Transits of Mercury are more common than transits of Venus. On average Mercury passes in front of the Sun 13 times each century. It can do so either in May or November. The last transit of Mercury was on 16 November 1999 and the next will be on 9 November 2006.

Timings for the transit of Mercury on 7 May 2003

The table below gives the times of the transit for major cities in Australia and New Zealand. Other observers can estimate their own local time from these.

First contact refers to the time when Mercury first touches the edge of the Sun's disk. Second contact, just a few minutes later, occurs when the disk of Mercury is fully onto the solar disk. For all Australasian observers, the transit is still underway when the sun sets at their location.

Place	First Contact	Second Contact	Sunset
Adelaide	2:44.3 pm	2:48.8 pm	5:28 pm
Auckland	5:13.9 pm	5:18.4 pm	5:30 pm
Brisbane	3:13.9 pm	3:18.3 pm	5:13 pm
Canberra	3:14.2 pm	3:18.7 pm	5:15 pm
Darwin	2:43.6 pm	2:48.1 pm	6:32 pm
Hobart	3:14.5 pm	3:19.0 pm	5:07 pm
Melbourne	3:14.4 pm	3:18.9 pm	5:27 pm
Perth	1:14.5 pm	1:19.0 pm	5:34 pm
Sydney	3:14.1 pm	3:18.6 pm	5:09 pm
Wellington	5:14.1 pm	5:18.6 pm	5:21 pm
All times in local time			

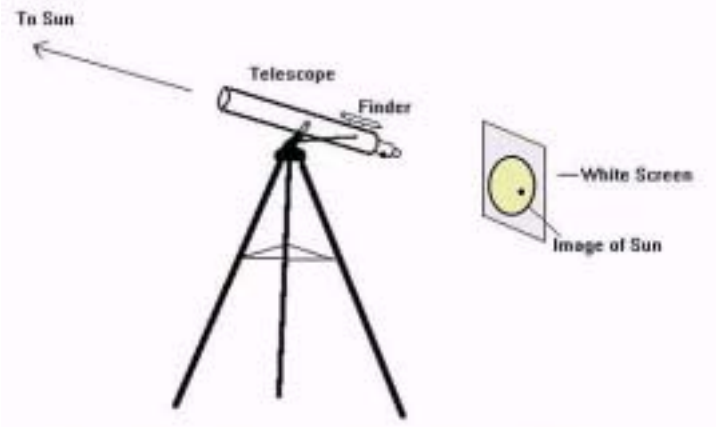
History

The astronomer Johannes Kepler was the first person to predict a transit of Mercury. He thought that he had seen one in May 1607, but after calculating the position of the planet he realised that he had only seen a sunspot. By 1629 he had developed his theory of the planets sufficiently to predict a transit for 7 November 1631. Though Kepler died before the event, on the appointed day the French astronomer Pierre Gassendi became the first person to knowingly watch a transit of Mercury.

What will we see?

During the afternoon of **7 May**, as Mercury starts moving slowly across the Sun, it will appear in silhouette as a small black disc. The width of the disc will be 1/167th of that of the Sun.

NOTE that it is always dangerous to look at the Sun directly. The safest way to view this event is to project an image of the Sun through a telescope (as shown at right).



How to use a telescope to project an image of the Sun.
NEVER look through the telescope or its finder!

Sydney Observatory will be open for safe public viewing and plans to show a live webcast of the transit on http://www.phm.gov.au/observe. Other observatories around the country are likely to hold observing sessions. Contact your local public observatory or planetarium for information.

Other exciting astronomical events in 2003

The transit of Mercury is only the first in a series of exciting astronomical events occurring in 2003. The next one is the Festival of Astronomy associated with an International Astronomical Union conference in Sydney in July. Then in late August the red planet Mars will be at its closest to Earth in recorded history. Finally in November there will be a partial eclipse of the Sun.

This information is provided by Dr Nick Lomb from Sydney Observatory (http://www.phm.gov.au/observe) with the assistance of Martin George from Launceston Planetarium (http://www.qvmag.tased.edu.au/planetarium.html). This sheet may be freely copied for wide distribution provided the Australian Astronomy and ASA logo are retained.

ASA Information Sheets are an initiative of the Astronomical Society of Australia's Education and Public Outreach Committee. Other sheets are available from the ASA's Australian Astronomy web site (http://www.astronomy.org.au/).

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