



10-11 Dec 2117	23:58	05:38
8 Dec 2125	13:14	18:48
11 Jun 2247	08:41	14:25
9 Jun 2255	00:50	07:50

## SIGNIFICANCE OF A TRANSIT OF VENUS

At the present time, the significance of a transit of Venus lies primarily in the rarity of the event. No-one saw such an event in the 20th century.



*This image of the Sun showing the transit of Venus on June 8, 2004, was taken with a 35mm camera fitted with a 600mm telephoto lens. The disc of Venus, shown in silhouette against the solar surface has an angular diameter of just under 1 minute of arc, which is about 1/32 the apparent diameter of the Sun. A neutral density filter was used to reduce the Sun's light to acceptable levels.*

As can be seen from the above photograph, the actual event itself does not present all that spectacular a view. Sunspot groups looking not dissimilar, frequently cover a larger area of the Sun's surface.

However, in the past, a transit of Venus presented a rare opportunity to measure the distance to the Sun, and thus the size of the solar system. For just this purpose Captain James Cook led a scientific mission to observe a transit of Venus from the island of Tahiti in the year 1769. Following this mission, he then went on to discover, explore and claim the eastern part of Australia for the British Crown.

There are two interesting phenomena that were reported during previous Venusian transits when Venus was close to the edge or limb of the Sun. One is a ring or "aureole" seen around the part of Venus not yet on the solar disc. This is very faint and difficult to see, but is produced by the refraction of sunlight in the Venusian atmosphere. The second, and more easily observable phenomenon, is the black drop effect, whereby the disc of Venus seems to be attached to the limb of the Sun by an extended area of darkness. This is shown in the white light photograph below. What was unexpected was that this effect does not show up in narrow band imaging.

*This image is of a white light projection of the Sun. The black drop effect is due to turbulence in the Earth's atmosphere, and is only seen in wideband (unfiltered) views of the Sun.*



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