Transit of Venus on 8th June 2004

Contact times for your location can be found at: http://sunearth.gsfc.nasa.gov/eclipse/OH/transit04.html

A demonstration on how to safely view the Transit of Venus

Remember those very dark sunglasses you had for observing the last solar eclipse? I hope that you didn't throw them out because they will come in very handy this June to see something that no living human has yet seen, an event much rarer than a total solar eclipse - a transit of Venus!

The last such transit of the silhouette of the planet Venus across the Sun's disk occurred in 1882 and only four other transits have ever been recorded as there are no ancient records, even from China (the Chinese were very adept at recording spots on the Sun seen through thin cloud or at low solar elevation). The first sighting of a transit of Venus was by Jeremiah Horrocks (who predicted the event) and his friend William Crabtree in England in 1639.

Transits of Venus come in pairs separated by 8 years (the next will be on 6th June 2012). The famous astronomer Sir Edmund Halley, of comet fame, realised that this event could be a very valuable way of working out exactly how far the Earth is from the Sun. He realised that if one could observe the transit from the southern hemisphere and time the event accurately, it would be possible to compare the measurements with those made at the numerous northern hemisphere observatories. Using the parallax effect it would then be possible, knowing the baseline, to calculate the Earth-Sun distance and therefore scale the Solar System accurately for the first time by direct observation. Plans were therefore made by the English and French to send teams to far-flung places in order to observe the transit pair of 1761 and 1769. The long voyage of Captain James Cook was basically a transit-viewing expedition to Tahiti. Cook was more successful than others who had crossed the seas to be cheated by cloud or misfortune at the critical time. Many of these adventurers wrote about their travels upon return adding to the mystique of this celestial peculiarity. The transit pair of 1874 and 1882 were photographed and could be measured more accurately.

The 2004 event can be viewed in its entirety from Europe, most of Africa, and most of Asia. Australasia and Japan see the start of the transit, most of the Americas see the end of the event. The whole thing lasts more than six hours during which time Venus appears as a very large round black "sunspot" moving slowly across the southern section of the solar disk.

You should be able to spot Venus with your eclipse-viewing spectacles over your eyes. For best effect, use a small telescope or pair of binoculars pointed at the Sun to project its image onto a sheet of white paper held some way away from the eyepiece (it can burn if too close!). DO NOT LOOK DIRECTLY AT THE SUN - YOU WILL GO BLIND or burn a hole right through your head if you are silly enough to do it repeatedly. Practise this a few days prior to the event (if it's sunny of course), there's nothing worse than messing about when you could be observing the crucial moment.

However, it is the ingress/egress of the planet onto/from the Sun's disk that is the thing to look for. It

will take only about 20 minutes from the time the planet first touches the Sun's limb (1st contact) until the time when it is totally surrounded by sunlight (2nd contact). Because Venus has a thick atmosphere there is a pronounced refraction effect and the planet appears "reluctant" to venture onto the Sun's disk causing the famous "black drop" effect. The same happens as Venus leaves the Sun's disk (3rd and 4th contacts). It was this unexpected phenomenon that caused considerable problems for those timing the 18th century events. In the UK the show starts at 05.20 (1st contact), 2nd contact is at 05.39, 3rd contact at 11.03 and 4th contact at 11.22 UT (allow for summer time) - just in time for a Champagne lunch to celebrate? If you miss this one there's always 2012 but you will have to move to the Pacific arena to enjoy the full show.

Good observing!

SEARCH TIPS

Information on the Inspec Database dealing with transits can be found using the Thesaurus Term "transits" (introduced in 1993) or the Classification code a9510G. A really "hot topic" at the moment is the photometric detection of Earth-like planets as they transit across the disk of Sun-like stars.