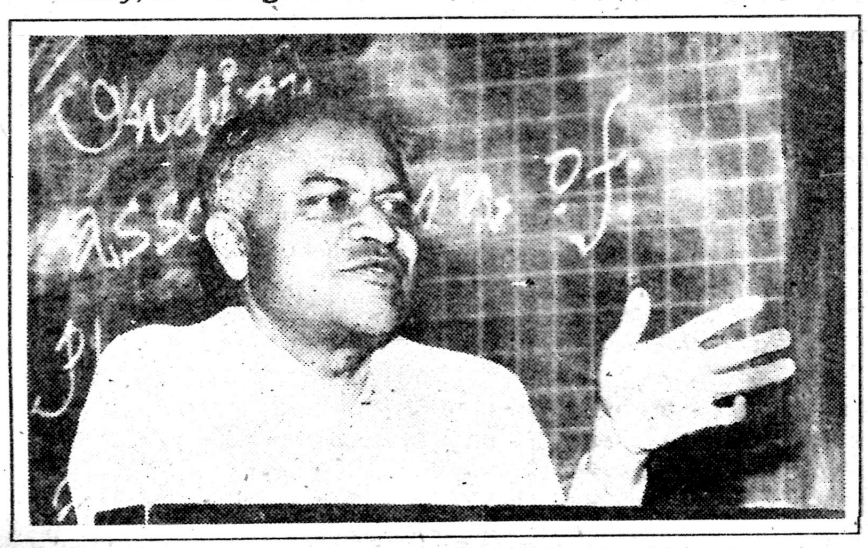
Solar Eclipse: Beliefs, Superstitions And Facts

By Jayant V. Narlikar

This year, on 24th October, some parts of India will witness a rare astronomical event. If on that day you happen to be in a narrow belt ranging from north of Bikaner through south of Agra and Allahabad upto the south west tip of bengal, you will see for a brief period, the unusual-seconds, depending on where you are in the belt, but even that period can bring unforgettable experience.

Total Solar Eclipse (TSE) as this event is called has been repeatedly seen from different parts of the world since time immemorial. In the early times the sudden disappearance of the Sun caused great consternation leading to superstitious beliefs like a monster (Rahu) or a dragon swallowing the Sun. Such beliefs are found all over the world in different cultures and at different epochs.

Today, in the age of science, we know what actually takes place. It is shadow play: with the Moon coming between the Earth and the Sun. If you are in the narrow zone where the Moon's shadow falls on the Earth, you will see TSE. From other nearby regions you will see the Sun partially eclipsed.



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A TSE can be a series of spectacular events. First, you see a partial eclipse as the Sun is progressively covered by the Moon. Birds are confused by this diminishing of light and they make way towards their nests ! If you are lucky, close to totality, you may see the "Shadow bands " which are the wavy patterns of shadow creeping across... the wavy nature coming from the perturbations in the atmosphere through which light travels. These are best seen on a sheet of white cloth spread on the ground. Just before totality takes place the tiny part of the Sun peeps from behind the Moon giving the appearance of a diamond ring. This lasts for a very small period... like a flash it is gone as darkness takes over.

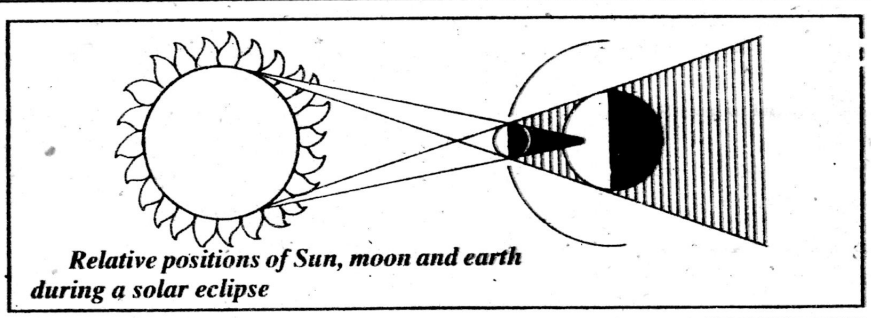
During the period of darkness, Sun's outer atmospheric envelope, called the corona, normally outshone by its bright disc begins to show up as a faint glow. You may also see flares on the solar surface flashing from behind the Moon. Likewise, because the Moon's surface is uneven, with valleys and craters, bits of the Sun may be seen through the gaps. These are called Bailey's beads. As the totality is over you will see the diamond ring again and then the partial phase begins again.

Let me come to modern superstitions next. It is widely believed that it is dangerous to come out of the house during eclipse and that you should take a bath afterwards. You will also be told that harmful rays are emitted during eclipse. What are the facts ?

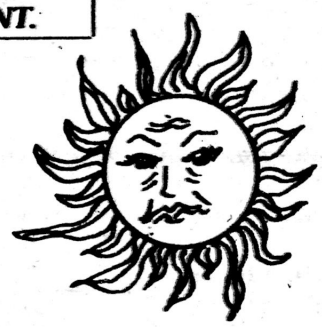
The Sun emits infrared as well as ultraviolet rays besides visible light at all times. At a TSE all these are blocked, but during the partial phase we get them in reduced amount. However, because during the partial phase the Sun has unusual (crescent) shape and it is less bright we are tempted to look at it directly. AVOID DOING THIS AS YOUR EYES WILL BE DAMAGED BY THE INFRARED AND ULTRAVIOLET RAYS. The best way to see the Sun is to project its image on a white surface through a pinhole camera. You can make such a camera by making a 1-2 MM hole in a cardboard box with the opposite surface taken out. Hold the box suitably against the Sun whose image will be formed through the hold.

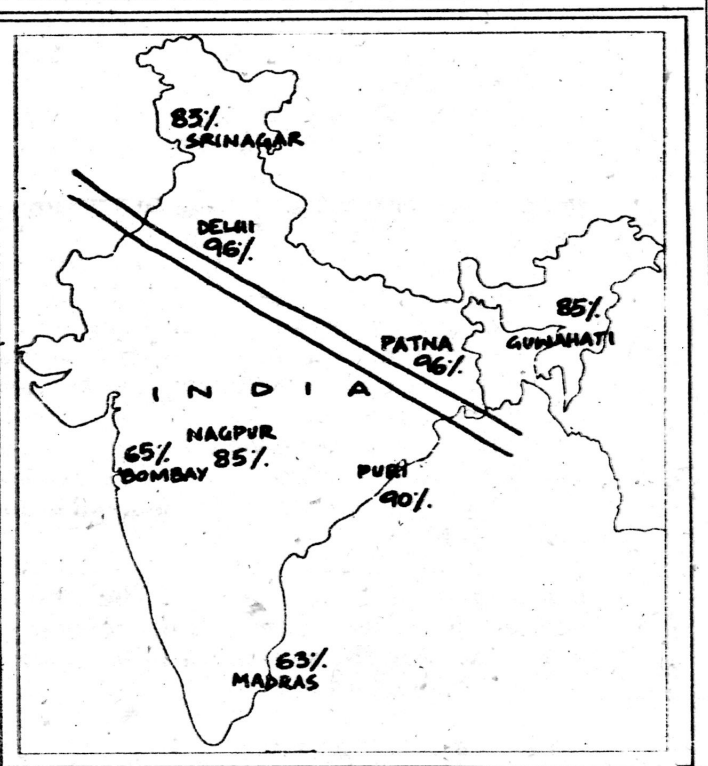
It is safe to look at the totally covered Sun. But if you wish to look at the partially covered Sun do so through specially prepared filters certified by reputed scientific organizations. These cut off most of the harmful radiation. DO NOT USE DARKENED GLASS OR SUN-GLASSES.

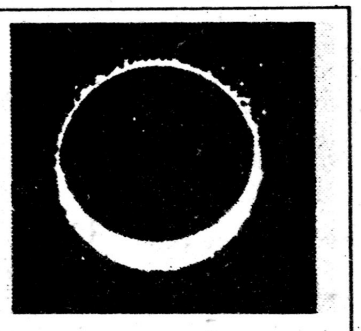
With these precautions DO WATCH THIS UNIQUE EVENT.



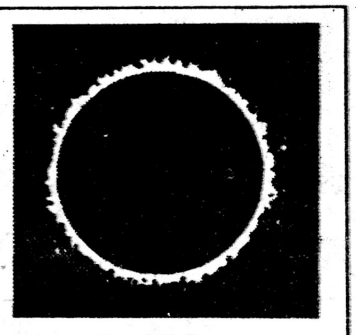
Relative positions of Sun, moon and earth during a solar eclipse







Partial Eclipse



Total Eclipse