



STARS WILL SHINE DURING SEMI-DARKNESS

The obscuring of the sun during the totality of the eclipse will allow stars and planets to be seen. This shows how the western sky will appear. The sun and moon at beginning (upper) and ending (lower) of eclipse are also shown.

Sun's Darkening Makes Visible Sights Seen at No Other Time

Baily's Beads, Corona, Solar Prominences, and Stars Shining in the Day are Part of Rare Spectacle

A TOTAL ECLIPSE of the sun is probably the most impressive spectacle in nature's repertoire. To an observer fortunate enough to be in the path of totality a never-to-be-forgotten celestial drama will be presented.

Anyone who has ever seen an eclipse will recognize that no description can possibly do it justice, but let us try to give some idea of what is in store on the 31st at a point in the center of the path, such as Conway, N. H.; Kennebunkport, Maine; Derby, Vermont; or Sorel, P. Q.

The sun will rise in the morning, and ascend the sky until it reaches the meridian at noon, just as if nothing extraordinary were about to happen. But at about 2:15 p. m., Eastern Standard Time, the sun will begin to take on a strange aspect. No one, of course, should ever look right at the sun with unprotected eyes. To do so is to run the risk of permanent damage to the retina and possible blindness. Smoked glass is an old standby for solar observation, but even better, and more readily available in these modern times, is an old densely exposed and developed photographic negative.

If you have a small telescope, with a tripod, or some other firm support, it may be used. There are special solar

eyepieces for telescopes, which reduce the light sufficiently to permit the observer to look right through it when pointed to the sun. Still more convenient, and permitting a view by several people at once, is a white screen, placed where the back of one's head would be when looking through the telescope. A collar, consisting of a cardboard disc with a hole cut in the center, may be placed around the telescope to shield the screen from the direct rays of the sun. Then, if the instrument is pointed to the sun, and it is focussed by pulling the eyepiece in and out, an image of the sun several inches in diameter can be seen on the screen. Perhaps a few sunspots will be visible, though that is not so likely, because this is the time of fewest spots in the eleven-year cycle.

Begins as Nick

With such a device, at about 2:15 p. m., Eastern Standard Time, on eclipse day, a slight nick will appear in the sun's right hand edge, as seen in the sky. This nick will gradually increase in size, finally leaving only a narrow crescent of sunlight. The dark circle, of course, is the moon, invisible until it actually comes in front of the sun. At about 3:30, or about 3:25 in southern Quebec, totality will arrive. If you look

to the northwest, you will see the moon's shadow approaching, at a speed of about 2,000 miles an hour. Or, if you look at the sun at this same time, you will see the crescent of sunlight break up into a series of bead-like spots of light. These are called the Baily's beads, after the English astronomer who first described them, and they are caused by the sun's light continuing to shine through valleys on the moon, while adjacent lunar peaks have passed the sun's edge.

But the Baily's beads last only an instant, and there flashes out around the moon's dark disc, now visible in its entirety, the solar corona, which has been observed to extend for nearly 12 million miles from the sun. Now it is safe to look directly at the sun, for the light of the corona is about a millionth as bright as the uneclipsed sun, or about half as bright as the full moon. Possibly you may see some brilliant spots of red light, close to the lunar disc. These are the solar prominences, giant flames of hydrogen and other gases, often rising to a height of several hundred thousand miles. The prominences are the brightest things visible during a total eclipse.

Around the eclipsed sun, which will be in the west, 30 degrees above the horizon, the brighter stars and planets will come into view. The planet Jupiter will shine brilliantly just to the right of the corona; farther to the right, and lower, will be seen Mercury. The star Regulus will appear below Jupiter, Denebola will be above the sun and Spica to the left. Castor and Pollux, the twins, will be visible in the northwest. Though the sun will be obscured, the ground will not be as dark as on a moonlight night. In addition to the light from the corona, there is considerable illumination from the part of the atmosphere outside the conical shadow of the moon.

But not for long can one gaze on the eclipsed sun. At the center of the eclipse path, it will last for about a hundred seconds. Even forty miles either side of the center it will last for at least a minute. But in the outer ten miles of the strip, its duration falls off rapidly. Right on the edge, it may last only a fraction of a second. The end of the eclipse is heralded by the reappearance of the Baily's beads, this time on the right hand edge of the sun. The beads coalesce to form the crescent which increases in size as the moon moves off to the left. At about 4:35 there is again only a nick in the sun's edge, then this vanishes and the eclipse is over.

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