HOW TO SEE ECLIPSE—PHENOMENON VISIBLE IN FOUR STATES ON JANUARY TWENTY-FOURTH

Strange Shadows Noted—Even Amateurs Can Obtain Valuable Information For Astronomers. Says Scientists.

The eclipse of the sun, which will be total on January 24, over Connecticut and parts of the States of New York, Michigan, Wisconsin and Maryland, will be studied at the observatories within the zone and other observatories will send expeditions into the zone bringing their own instruments.

But anyone can do some observing on his own account without anything to assist him except a bit of smoked glass and perhaps a pair of binculars. One or two of the things he can do may be of service to astronomy.

For hundreds of years we have been trying to find out the exact path of the moon in the sky. Indeed, the first records go back more than 2500 years when the Chaldean found out a rule about the occurrence of eclipses. With every year this knowledge increases and an eclipse is a particularly favorable occasion to improve it because the edges of the shadow cast by the moon on the earth can be easily seen. And the exact time that the shadow passes can be obtained within a fraction of a second by a good observer.

The astronomer can predict the positions of these edges within a mile or so, but it can be observed much more closely than this. It is very easy for anyone near the edge to say whether the sun was totally eclipsed or not at the place where he happens to be. There are several ways in which this can be done. As the moon creeps over the face of the sun and covers up more and more of it there will finally be left a narrow crescent of the shape of the new moon, but of course very much brighter. If this narrow crescent completely disappears, even for less than a second, the eclipse is total at the place where the observer is stationed. It may be that before it has totally disappeared a bright point of the sun will appear at another part of the edge, and if this happens the eclipse is not total. A difference in position of the observer of even a hundred yards may make the difference between a total eclipse and one which it not quite total.

When the sun is very nearly obscured a fringe of light will begin to be visible on the side farthest away from the bright crescent. As the crescent lessens this fringe will appear to spread round the edge, and finally, when the crescent of bright light has totally disappeared, the fringe will be seen all round. Hence another test for totality is for the observer to say whether he saw this fringe of light the whole way round at any moment.

Even before the crescent of the sun has disappeared, stars will begin to be visible to those who are on the lookout for them, but it is not until the sun is totally obscured that any but the brightest stars are seen.

But perhaps the most impressive sight of the whole eclipse for those who are in the region where the sun is totally obscured is the moment before the face of the sun is quite blotted out. If he keeps his eyes fixed on the earth he will see a black shadow approaching from the west and covering up sky and earth as though some huge monster were closing his jaws. It travels with enormous velocity, rushes over the observer's head and passes off to the east. Even if one misses everything else in the eclipse this sight should not be missed.

Another curious appearance can be seen just before the eclipse becomes total and before the black shadow comes up. The light is diminishing rapidly and if one looks at the white surface such as the side of a house or on a sheet laid on the ground he will often see a number of parallel bands going by. These bands are usually about a foot apart and are alternately light and dark. It is generally thought that they are due to some peculiarity in our atmosphere because it is difficult to explain them in any other way. As they can never be seen except just before and after a total eclipse the chance to find something out about them should not be neglected.

A map showing the places within the band of territory where the eclipse is total has been published by the Naval Ovesrvatory at Washington and they have calculated the position of the edges of the band as exactly as possible. Some towns, for example, Duluth, Menominee, Fankfort, London, Dunkirk and Wilkes-Barre, are only just inside the southern edge, while Syracuse, Springfield and Providence are just outside the northern edge. New York city, north of the northern end of Central Park, is inside; the rest of the city is outside. It is hoped that for those who are near the edges, but outside, arrangements can be made with the transportation companies to run special cars or trains to take them within the region, so that they may see the sun totally eclipsed. For those who have automobiles the problem should not be difficult.

Always, however, we get back to the eternal question, will the weather be clear?

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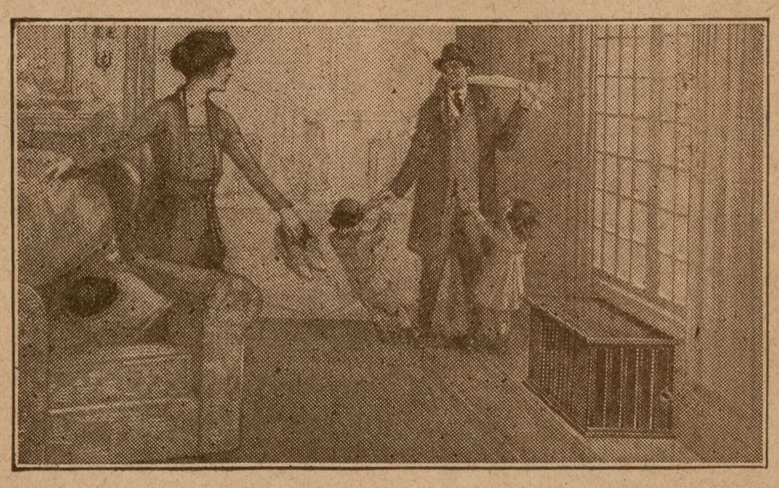

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