SCIENCE NEWS

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THE TOTAL ECLIPSE OF THE SUN

AMATEURS seeing the total eclipse of the sun on July 9 can help astronomers by paying special attention to the moon's shadow and the horizon glow. Descriptions of these and an estimate of the general brightness at mid-totality should be sent to Dr. John Q. Stewart, of the Princeton University Observatory.

The sunrise eclipse, which can best be seen from parts of Idaho and Montana, furnishes an opportunity for observations without instruments, such as have not yet been made satisfactorily with a low sun, according to an article by Dr. Stewart in *Sky and Telescope*.

Illumination during an eclipse seen near sunrise or sunset differs from that when the sun is high overhead in two important ways.

First, the cone of the moon's shadow, lying nearly horizontal, intersects the earth's surface near sunrise or sunset in an elongated ellipse instead of in a circle as with a vertical shadow cone. The ellipse is elongated toward and away from the rising or setting sun. Toward and away from the sun the shadow edge is relatively distant and the whole aspect of the sky will rapidly change as the shadow passes. In the two directions athwart the ellipse the glow will extend high above the horizon and show little or no reddening because the shadow edge there is close at hand.

The second way a sunrise eclipse differs from a noonday eclipse is that at exact sunrise the shadow is not moving horizontally eastward, but is falling through the air. Near the sunrise point the axis of the shadow is moving down from interplanetary space.

To make such observations, local knowledge of the terrain is needed to pick a site where there is an unobstructed view across lower mountains in all directions, and especially toward the rising sun. It would doubtless be necessary to camp the night before near the top of a favorable summit.

The sun rises totally eclipsed at 6: 14 A.M., MWT, about 10 miles southeasterly from Cascade, Idaho. Then the shadow passes about eight miles north of Salmon, Idaho, thence five miles south of Butte, Mont., two miles south of Saco in northeastern Montana, and one mile south of Opheim, which is eight miles below the Canadian border. Thus there are a number of places from which such observations may be made.

Because little attention has been paid to the study of the general illumination in an eclipse shadow, a large eclipse shadow was more or less expected to result in an unusually dark eclipse. Thus Dr. Stewart and James Stokley, now with the General Electric Company, were surprised to notice that although the circular shadow of the eclipse of June 8, 1937, which they observed near noon, was nearly 180 miles in diameter, the eclipse became no darker than in a summer afternoon's thunderstorm.

This year Dr. Stewart and Mr. Stokley, who observed the other eclipse from a freighter in the Pacific Ocean, plan to pay particular attention to the shadow, probably seeing it from the top of some mountain in Montana. Dr. Stewart is anxious for amateur astronomers to send him a report of their findings on the eclipse.

"Advance rehearsals are a necessity! The eclipse will not reoccur," Dr. Stewart warns those interested in making the observations. "Inspect the proposed site of your station and use your imagination to suggest all possible preparations.

"Record the weather conditions which prevail during the eclipse. State types of clouds, if identified. Note the color of the sky around the sun. State the distance at which hills and the like can be seen, as an indication of the purity of the air. Even if there is a high overcast the shadow may be apparent on the clouds.

"Be continuously on the alert for unexpected phenomena, and write everything down immediately after totality."

ITEMS

THE Azerbaijan Academy of Sciences at Baku, the oil center, has been added to the roster of the world's scientific bodies. Geologists, physicists, biologists and other scientists and technologists are now at work exploring the raw materials and working out new methods and processes for the industries and agriculture of this republic of the U.S.S.R. which lies on the eastern side of the Caucasian Mountains. Chromite, the ore of chromium needed for steel alloying, as well as ores of cobalt, barium and aluminum have been discovered. Cotton yields have been increased. The autonomous academy replaces a branch of the U.S.S.R. Academy, and the new organization starts with fifteen academicians under the presidency of Dr. M. Markazimov.

American Aviation reports that after July 1 weather maps for aviation will be the same all over the world, when the United States Weather Bureau replaces the presently used constant-level charts with constant-pressure upper-air charts as a basis for its domestic aero weather forecasts. The constant-pressure charts were developed through the combined efforts of the Army, Navy and Weather Bureau for world-wide combat and transport operations. Since the armed forces are using the constant-pressure charts, the Weather Bureau decided to adopt this type of chart for domestic forecast, in the belief that it will coordinate the continuity of weather maps over the world and increase the efficiency of upper air analysis. The domestic airlines, through the Meteorological Committee of the Air Transport Association, have opposed the move on the basis that airline operations in this country are accustomed to the use of the current type of chart. Therefore, the Weather Bureau will continue to report the constant-level types of charts on its teletype system for spot weather reporting until next year. This should give the airlines sufficient time to become adapted to the new method.