

## SCIENCE AWAITS SOLAR ECLIPSE IN OLD WORLD

Scores to Study Spectacle  
Tomorrow; Not Visible  
in This Country.

(Continued from Page One)

of Tripoli in North Africa will see a sun rise totally eclipsed. In Asia Minor the sun will be eclipsed shortly after sunrise.

The eclipse ends in the Pacific Ocean far west of Japan at sunset.

The greatest totality will be at the northern end of Lake Balkal at 12:30 p. m. in a path 82 miles wide. Totality will be 2 minutes 31 1/2 seconds.

An eclipse is caused when the moon, 2160 miles in diameter and 231,400 miles away from the earth, hides the sun, 865,000 miles in diameter and 94,500,000 miles from earth.

The next total solar eclipse will occur June 8, 1937, in the south Pacific Ocean but lack of islands in the path probably will prevent adequate astronomical observations. The last eclipse visible in the United States was on Aug. 31, 1923, and this country is due to witness another until July 20, 1963.

First to observe tomorrow's eclipse should be Prof. Horn d'Arturo, who hopes to secure corona photographs in Greece just after sunrise. Tourists on a Mediterranean cruise ship off the Greek coast may make snapshots.

Last to observe it will be a Cambridge (England) Observatory party under Prof. F. J. H. Stratton at Kamishiri in Hokkaido, Japan's northern island.

The duration of the eclipse, from sunrise to sunset, taking a whole-earth, local time view, embraces more than two hours, or the time necessary for the shadow to travel nearly half way around the earth, but only little more than two minutes at any one spot.

### Hope for Clear Skies

Due to the time differences the eclipse will start this evening as far as the United States is concerned.

Clouds are the great fear of eclipse observers, who spend months of time and hundreds of dollars in hope of seeing a few seconds of darkened sun. The chances are considered to be about 50-50 for clear weather at the principal observing stations.

Photographing the corona, outer layer of the sun, so faintly luminous that it can be seen only during total eclipses, will be one of the chief objectives. It extends as far as 12,000,000 miles from the sun.

The sun is believed to emit particles or corpuscles as well as light. These travel much slower than light and upon arrival upon the earth affect the earth's electrical conditions, important in transmission of radio waves. The moon interferes with these particles, causing a corona-like eclipse which occurs at a time and over an area different from the light eclipse. Cloudiness is no handicap to this study.

### Covers Wide Area

Over a wide area, including eastern Europe and all of Asia except its southern part, the eclipse will be seen in its partial phases only, the moon not completely obscuring the sun. The eclipse will be totally invisible from the Western Hemisphere.

At Moscow 25 Soviet and 11 foreign astronomical expeditions are ready to make observations from 16 main and specially prepared observation points in a zone extending from the Caucasus across the southern Urals and Siberia to the shores of the Pacific.

In addition to elaborate installations of telescopes, spectrographs, cameras and other astronomical apparatus at ground stations, Soviet airplanes and balloons are being made ready to rise far above the earth's surface to take photographs of the darkened sun, study the sky luminosity and observe the atmosphere's optical properties.

### Radio Waves to Be Studied

Because scientists expect that radio waves as well as light will be affected by the reflection of radio waves from the ionized or charged layers of the upper atmosphere, known as the ionosphere, will be studied by several expeditions, among them those of the Harvard's Crust Laboratory, the U. S. S. R. Academy of Sciences, Institute of Physics and the Siberian Physical and Technical Institute. The "radio eclipse" is more widespread than the visible light eclipse and while it will not be spectacular to observe it is likely to give information that will aid radio transmission techniques.

Because of widespread official and popular interest in the eclipse, the People's Commissariat of Communications has set up telephone lines between Moscow and the most important points from which the eclipse will be observed.

### Stationed in Urals

At Saratov in the southern Urals, Czechoslovakia and Italian expeditions as well as those of the Soviet's Pulkovo Observatory and Leesaff Institute will observe. Another Pulkovo Observatory expedition will base at Omsk, Siberia, where also is located a British party under Prof. J. A. Carroll of Aberdeen.

Expeditions of the University of Paris, the Moscow Institute of Astronomy and Georgetown University, United States of America, are located at Kustanai, in Orenburg province.

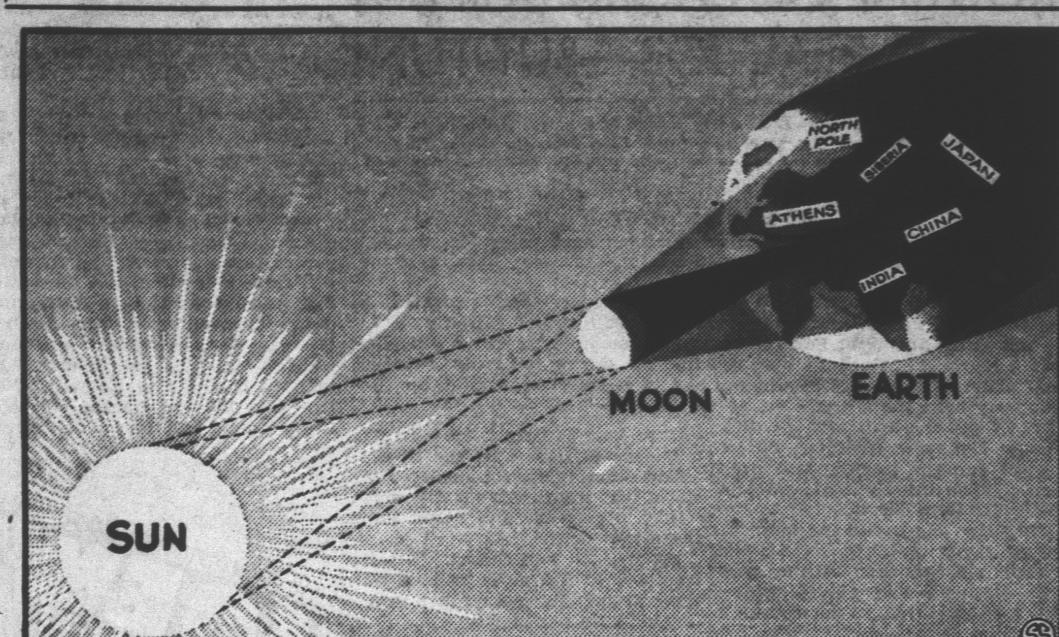
Checking of the Einstein theory of relativity is on the program of the Moscow Astronomical Institute expedition at Kujbyshev, in the Far East.

Leningrad astronomers are at Kalyazin, near the Urals. Krasnoyarsk is the location of the party from Tashkent Observatory. The French Astronomical Society and Kharov Observatory astronomers are at the village Belorechenskaya. Kharov Observatory sent its expedition to the village Yavlyenskoye, near Petropavlovsk.

### Hawaii Group Ready

A hill seven miles southeast of Ak-Bulak, U. S. S. R., is the eclipse observing position chosen by the Harvard University-Massachusetts Institute of Technology expedition headed by Drs. D. H. Menzel and J. C. Boyce. Spectroscopes and other instruments are already in position and tested. Daily drills have been held to rehearse what

## SCIENTISTS TO WATCH ECLIPSE OF SUN IN ASIA



Sweeping its shadow finger across all Asia, the total eclipse of the sun occurs tomorrow. At sunrise Algerians will awake to find the sun blotted out. Then swiftly through the hours of daylight out the moon's shadow races across Siberia and the islands north of Japan to "die" in mid-Pacific at sundown. American astronomers have traveled half-way around the world to view the solar spectacle but but little more than two and a half minutes. The artist's drawing (above) of necessity not drawn to exact

scale) shows the relative positions of the sun, moon and earth which make the eclipse possible. The Harvard-Massachusetts Institute of Technology expedition, headed by Dr. D. H. Menzel and Dr. J. C. Boyce, is stationed at Ak-Bulak, just west of the southern limits of the Ural Mountains. The Geography-National Geographic Society expedition, led by Dr. P. A. McNally, S. J., is located at Kustanai, just east of the southern limits of the Ural Mountain range.

## STRIKERS WAGE HARD GUN FIGHT

Fourteen Are Wounded by  
Fierce Firing at  
Ohio Plant.

By United Press

KENT, O., June 18.—Embattled

pickets besieging the Black and Decker Tool Co. plant were ordered

today to "cease fire" after a six-

hour battle in which seven strikers

and seven strike-breakers huddled

in the factory were shot and gassed.

The order was issued by a strikers'

council as Sheriff E. L. Burr at-

tempted to work out a plan for re-

moving the 40 beleaguered strike-

breakers from the bullet-battered

plant.

A mob of several hundred armed

pickets voted unanimously behind

their barricade of earth and iron to

permit the sheriff to remove strike

breakers from the plant.

National Guard observers worked

ceaselessly to remove the strike

breakers from the plant before the

force of 3000 strikers and sympa-

thizers was augmented by rubber

workers from nearby Akron.

Firing opened early today when

two van-loads of strike breakers

crashed the picket lines established

May 3 when the company refused

to grant a 10 per cent increase.

As strike breakers started for the

plant, pickets moved to stop them.

A barrage of tear gas, buckshot and

gunshot was laid down by the strike

breakers.

Some pickets fell, injured either

by the tear gas or shot. Others

ran for their rifles and returned

the fire. Before the strike breakers

could entrench themselves behind

the factory doors, seven of them

had been injured by bullet.

Infuriated pickets surrounded

the plant on three sides and laid down

a continuous fire.

Strike breakers and a few com-

pany officials huddled on the cement

floor of the factory as bullets whizzed

above their heads.

Officials appealed to county and

state authorities for aid. They said

two of the seven injured strike

breakers were dying because the

striking machinists refused to per-

mit physicians to enter the plant.

each member of the expedition

will do.

A special telephone line links the

observing site with Ak-Bulak.

American radio engineers are ready

to study with special apparatus the

effect of the eclipse on radio waves.

The American astronomers have

chosen as their chief task the mak-

ing of spectroscopic photographs of

the layers of the sun known as the

chromosphere and the corona. Two

concave grating spectroscopes with

moving plates are the key instru-

mets to be used.

Mrs. Menzel and Mrs. Boyce are

working members of the party,

which totals eight women and 12

men.

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