

ASTRONOMY

# Solar Eclipse

## South America and South Africa To Witness Totality; Our Glimpse Will Be in Florida Where It Is Partial

By JAMES STOKLEY

**M**OST important of the astronomical events of October is the eclipse on the first. Unfortunately, it is almost completely invisible in the United States. Only Florida is excepted. There, on that day, the sun will rise partially eclipsed. People at Miami, for instance, may be able to look out over the sea as the sun appears, and, if there is any mist to permit looking directly at it, a small piece will appear bitten out of its upper edge. This will be the moon, partly in front of it.

Farther south, along a path crossing northern South America, the south Atlantic Ocean and South Africa, the moon will come precisely in front of the sun; there a total solar eclipse will be visible.

Along this path are astronomers from five organizations in the United States.

In Brazil, in the region of Recife, which we used to call Pernambuco, are the parties representing Brown University, the Skyscrapers, amateur astronomical society of Providence, R. I., the National Bureau of Standards and the National Geographic Society. In South Africa is an expedition from the Cruft Laboratory of Harvard University.

These scientists will make the many observations possible only when the moon hides the sun. They will see and photograph the corona, the sun's outer layer, best observed then. They will study, by its spectrum, the sun's atmosphere. They will send radio waves up to the sky, and record the echo, to learn more about the sun's effect on radio transmission. Thus, they will contribute a little to our knowledge of the universe.

Look in the eastern sky these evenings and you will see two planets, neighbor

worlds that, with the earth, are revolving around the sun. Brightest is Jupiter, easy to find. Beside it, to the right, is Saturn, considerably fainter, but brighter than most of the stars.

At the beginning of the month Jupiter will be to the west of Saturn, but on October 11 they change places. This is the second time this year that one of these planets has passed the other. They did it August 15, when both were moving to the east. Jupiter was the more rapid.

Around September 1, as the faster-moving earth approached them, they seemed to turn and go backwards, that is, to the west, and they are now moving in that direction. Actually, they are now going the same way they did during the summer. Their retrograde movement is caused in the same manner as the apparent backward motion of a freight train when you overtake it in an express.

### Triple Conjunction

Early in 1941, when we have swung well past, the planets will resume their easterly course, and on February 20, for the third time in less than a year, Jupiter will pass Saturn. This phenomenon is called a "triple conjunction," and is extremely rare, occurring about four times in a thousand years.

On the night of October 17, Jupiter and Saturn will be joined by the full moon, which passes them earlier that evening. Ten days later the moon, then visible in a crescent phase some time after midnight, will pass the planet Venus, now the brilliant morning star, easily seen in the east for some time before sunrise.

It cannot be guaranteed, but there is a possibility that this month may bring a fine shower of meteors, or "shooting stars." On the evening of October 9, 1933, such a shower was seen in Europe. Some 500 meteors per minute were seen at the shower's height. By 11:00 p. m., European time, the shower was over, before sunset in the United States, so we did not see it.

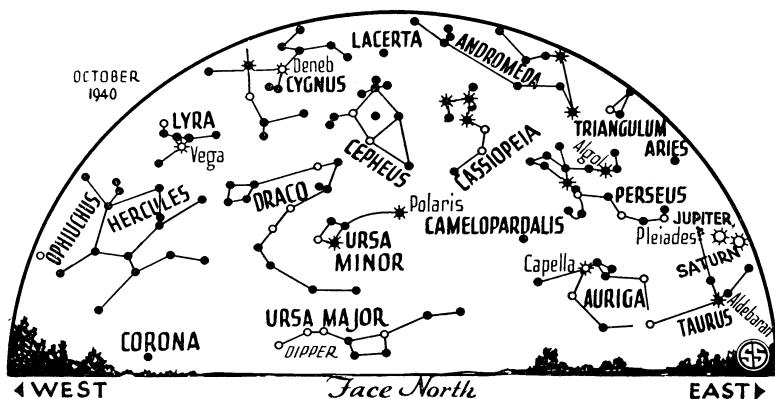
### Connected With Comet

These meteors seem to be connected with Giacobini's comet, which returns every 6½ years. A small shower was seen in 1926, seven years earlier. Now that another seven years have passed, there may be another, about October 9



**THE SCHWARZSCHILD CAMERA**

*This instrument will be used for the eclipse by Dr. Charles H. Smiley, who stands in the rear. To the right is W. Edwin Stevens and to the left is J. Frank Morrissey, amateur astronomers who built it. Light falls on a large mirror at the bottom, is reflected to the smaller mirror, of which the back can be seen in the tube, then down again to the photographic film.*



this year. These meteors seem to emerge from the constellation of Draco, in the north. Therefore one should watch this part of the sky from about the seventh until the eleventh, and a beautiful spectacle may be the reward.

In the eastern sky, there may also be seen the first contingent of those glorious stars that shine so brightly in the heavens of winter.

The accompanying maps show the way the heavens look, about 10:00 p. m. on October 1, 9:00 p. m. on the 15th and 8:00 p. m. on the 31st.

Lower than Jupiter, and to the left, is ruddy Aldebaran, marking Taurus, the bull. Above is a faint cluster of stars, of which most people can see six, called the Pleiades, the seven sisters, also in the constellation of Taurus. About as high, and farther north, is brilliant Capella, in Auriga, the charioteer.

Directly south we see Fomalhaut, of Piscis Austrinus, the southern fish, while to the southeast, a little higher, is Deneb Kaitos, the tail of Cetus, the whale. Above this is the large group, containing no very bright stars, of Pisces, the fishes. Above Fomalhaut is Aquarius, the water-carrier, and above that Pegasus, the winged horse, in which three stars com-

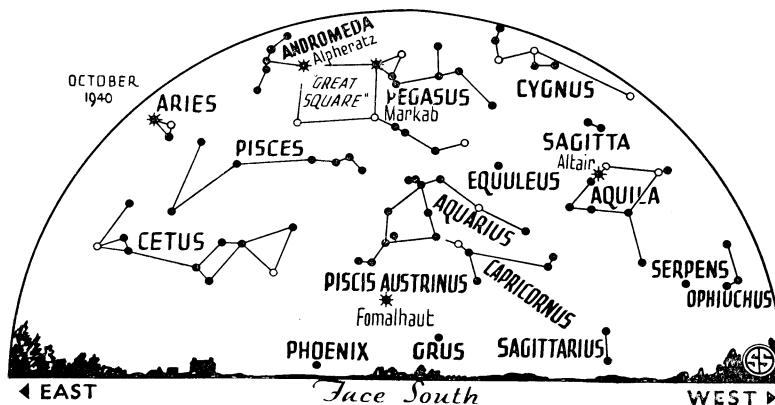
bine with a fourth in neighboring Andromeda to form the "great square."

In the west, soon to disappear from view, are some of the stars that we saw overhead in summer evenings. The most brilliant is Vega, of Lyra, the lyre. Above it is Deneb, in Cygnus, the swan, which has the shape of a cross, Deneb at the top. High in the southwest is Altair, of Aquila, the eagle.

Of the circle of stars in the north which never set, Cassiopeia, the queen, is now most prominent. Low in the north is the great dipper, in Ursa Major, the great bear, containing the two pointers, which show the way to the pole star. And above the dipper are the stars of Draco, the dragon, that huge snakelike creature which winds around the pole.

**Astronomical Time Table for October**

**Tuesday, Oct. 1**, total eclipse of sun, visible in South America and South Africa; 7:41 a.m., New moon; 11:00 a.m., Moon nearest—221,900 miles away. **Tuesday, Oct. 8**, 1:18 a.m., Moon in first quarter. **Friday, Oct. 11**, 6:00 p.m., Jupiter passes Saturn. **Tuesday, Oct. 15**, 5:00 a.m., Moon farthest—252,400 miles away. **Wednesday, Oct. 15**, 3:15 a.m., Moon full. **Thursday, Oct. 17**, 6:41 p.m., Moon passes Jupiter; 7:14 p.m., Moon passes Saturn. **Sunday, Oct. 20**, 11:00



◊ \* ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

**A NEW Tool for Science and Industry**

**RCA ELECTRON MICROSCOPE**

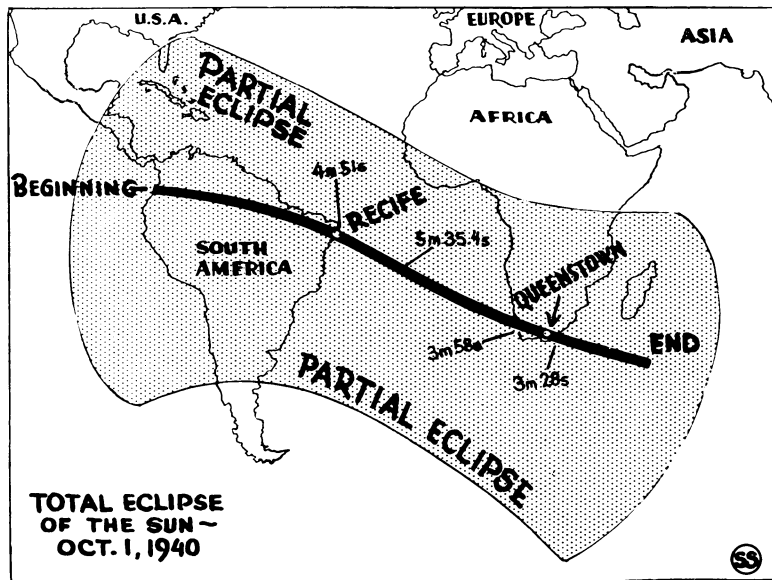


The RCA Electron Microscope makes visible objects whose very existence could previously only be surmised. It opens new avenues of research in the fields of industry, medicine, bacteriology and biology. RCA's new model microscope is compact, simple to use, and readily installed.

Magnification is variable from 1500 to 30,000 diameters, in ten electrically-controlled steps. 100-Ångstrom resolution permits further useful photographic enlargement—up to 100,000 diameters. Voltage is variable from 30,000 to 60,000 volts for varying penetrations of the specimen examined. Final image, 3½ inches across, can be viewed directly on a fluorescent screen as well as recorded photographically. Operates from 110-volt, 60 cycle A.C. line.

This new research tool is sold with power supply and controls in one integral unit, and with two compact mechanical vacuum-pumps. For complete descriptive data and literature, write Dept. SN-1.

**RCA Engineering Products Division**  
 RCA Manufacturing Co., Inc., Camden, N. J.  
 A Service of the Radio Corporation of America



**ECLIPSE PATH**

The heavy line shows where the total eclipse will be seen, beginning at sunrise on the coast of Colombia and ending at sunset in the Indian Ocean. A partial eclipse will be visible over the larger shaded area.

a.m., Mercury farthest east of sun. **Thursday, Oct. 24**, 1:04 a.m., Moon in last quarter. **Sunday, Oct. 27**, 10:43 p.m., Moon passes Venus. **Tuesday, Oct. 29**, 11:00 p.m., Moon nearest—222,500 miles away. **Wednesday, Oct. 30**, 5:03 p.m., New moon.

Eastern standard time throughout.  
*Science News Letter, September 28, 1940*

Dive bombers were first developed by the U. S. Navy.

**From Page 199**

son's studies are made at Needham, Mass., where he records nightly the intensity of signals received from a broadcast station in Chicago. Such a distance is required so that waves will travel up to one of these reflecting layers, a hundred miles above ground, and be sent down again.

During the day, the station cannot be received, but after sunset reception begins, and gradually improves, as the sun descends farther below the horizon.

**Domed Telescope Lens**

BY adding to the usual lens, consisting of two pieces of glass, a third one in the shape of a glass dome without any magnifying or reducing power, Miss Ann Estelle Glancy, of the American Optical Company, has designed a new lens for astronomical telescopes that will have many advantages over older types. It can be made larger, in proportion to the length of the telescope, which means that it will gather more light. This quality is sought by astronomers, both in visual telescopes and in star cameras.

Miss Glancy described the new design for the first time at the meeting. Even though the dome-shaped lens, which is called a plano-meniscus, does not have any magnifying power, it changes the course of the light rays in such a way as to give the characteristics desired.

**RADIO**

P. C. Sandretto, of United Air Lines, will describe the "Visual Highways of the Air," the visual radio range, as guest scientist on "Adventures in Science" with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System, Thursday, Oct. 3, 4:00 p.m. EST, 3:00 CST, 2:00 MST, 1:00 PST. Listen in on your local station. Listen in each Thursday.

Probably the same principle can also be used to advantage in lenses for ordinary cameras, microscopes and projectors, she said.

*Science News Letter, September 28, 1940*

**Hour Glass Star**

A STAR that may be shaped like an hour glass, with a tail extending from one bulb, was the strange object pictured for the astronomers by Dr. Gerard P. Kuiper, of the Yerkes Observatory of the University of Chicago. Such a construction, he explained, would account for the mysterious changes seen in the spectrum of the star called Sheliak, or beta Lyrae, in the constellation Lyra, the lyre. This group is now seen high in the west in the evening, and is marked by the bright star Vega.

Beta Lyrae, Dr. Kuiper suggested, is a double star in which the two parts are actually fused together. The larger part, about half again as big as the smaller one, tends to contract, and this sets up a circulation of material into the smaller part. So fast is this, some 200 miles per second, that a portion of the staff is actually ejected, forming the tail. This whips around as the hour glass rotates every thirteen days around its neck. Sometimes we view the rest of the star through the tail, and this causes certain of the changes in the spectrum.

*Science News Letter, September 28, 1940*

**TO EXPLAIN SCIENTIFIC FACTS TO LARGE GROUPS**



**USE S.V.E. PICTUROLS**

Picturols are 35 mm. filmstrips consisting of 40 or more pictures to each series, and can be projected on wall or screen large enough for the whole class to see. Practically every field of scientific study is covered, including Chemistry, Physics, and Biology. Write for latest Catalog.



Picturols are most conveniently projected by compact, inexpensive S.V.E. Projectors.

**SOCIETY FOR VISUAL EDUCATION, Inc.**  
Dept. 9 SNL, 100 E. Ohio Street, Chicago, Ill.

**LANGUAGES Made easy By LINGUAPHONE**

This amazing new Method enables you, in your own home, to speak and read any of 27 foreign languages in an incredibly short time. Endorsed by leading university professors and thousands of men and women as the quickest, simplest and most thorough language method.

**SEND FOR FREE BOOK**  
**LINGUAPHONE INSTITUTE**  
45 RCA Building New York City