ASTRONOMY

Bright Planets in West

Both Venus and Jupiter shine brilliantly in January evening skies. Five eclipses, three partial solar and two total lunar, are scheduled for the year 1953.

By JAMES STOKLEY

➤ THE TWO bright planets, Venus and Jupiter, which have been visible in the evening sky since last autumn, are still with us, and on January evenings they shine brilliantly in the southwestern sky.

Their positions, along with those of the stars now visible, are shown on the accompanying maps, which give the appearance of the heavens about 10:00 p.m., your kind of standard time, at the beginning of January, about nine o'clock at the middle, and around eight at the end.

Venus is about 5¼ times as bright as Jupiter, which itself is far more brilliant than any other star or planet. Since Venus sets about four hours after the sun, it is seen rather low in the sky.

This causes greater absorption of its light than with Jupiter, which is higher, in the constellation of Aries, the ram, and tends to lessen somewhat the apparent difference in brightness between the two planets.

Mars also is visible, but has drawn so far away since its close approach of last April that it is only equal to one of the fainter of the first magnitude stars.

On the evening of Jan. 17 Venus passes Mars, a little to the north, so at that time it will be easy to find the location of the fainter planet. However, since Venus exceeds it in brightness about 120 times, Mars may be lost in the glare. Looking at it with a pair of opera glasses or binoculars should help to show it.

Sirius Is Brightest

Brightest star visible these January evenings is Sirius, in Canis Major, the great dog, in the southeast. Above and to the right of this group stands the glorious figure of Orion, probably the finest of the constellations. The three stars in a row mark the warrior's belt; above it is Betelgeuse and below is Rigel, both of them stars of the first magnitude.

Continuing upward and to the right we come to Taurus, the bull, with first-magnitude Aldebaran. Still higher, almost at the zenith, is Capella, in Auriga, the charioteer, and descending toward the east we come to Gemini, the twins. Pollux is the first-magnitude star in this group.

Between Pollux and Sirius is another brilliant star, Procyon, in Canis Minor, the lesser dog.

Two other stars of the first magnitude are shown in other parts of the sky. One is Deneb, in Cygnus, the swan, near the northwestern horizon, and made faint by its low altitude. In the east, also low, can be seen Regulus, in Leo, the lion.

Turning to coming events, we find that the year 1953 brings five eclipses. Three of these are partial eclipses of the sun, but none are visible from the United States. The other two are total eclipses of the moon.

The first one comes on the evening of Jan. 29. It will be visible, in part at least, over practically all of the United States. Along the Atlantic seaboard the partial phases will have started before the moon rises, but the entire time that the moon is completely eclipsed will be seen. Farther west less and less will be observable, but even residents of the far west will get a glimpse of the final phases.

Shadows Cause Eclipses

An eclipse of the sun occurs when the moon's shadow falls on the earth. To an observer in the area of the shadow, therefore, the sun is partially or completely hidden. An eclipse of the moon, on the other hand, occurs when that body, which is normally illuminated by the sunlight falling on it, enters the earth's shadow. This is what will happen on the evening of Thursday, Jan. 29.

The earth's shadow has two parts. The outer region, the penumbra, is that from which our globe only partly hides the sun. Inside this is a core called the umbra, where the sun is completely hidden.

Technically, the lunar eclipse on the 29th begins when the moon starts to enter the penumbra, at 3:40 p.m. EST (subtract one hour for CST, two hours for MST and three hours for PST). Of course, this will be well before the moon has risen in the United States, but even if it were visible, nothing unusual would be noticed.

When the moon reaches position I on the accompanying diagram, at 4:54 p.m. EST, it starts to enter the dark inner shadow of the earth. Soon after this, at about the time the moon rises in the eastern part of the country, the southeastern, or lower edge of the moon, will be appreciably darkened. Gradually the curved edge of the shadow will be seen creeping across the lunar disk until position II is reached, at 6:05 p.m. EST.

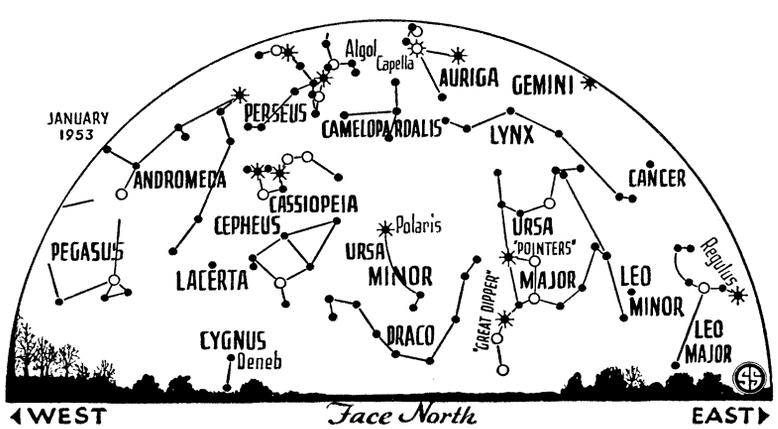
This is the beginning of the total eclipse, which will last until 7:30 p.m. EST. By this time the moon will have risen throughout most of the central part of the nation. Many people will have the unusual experience of seeing the moon rise while eclipsed.

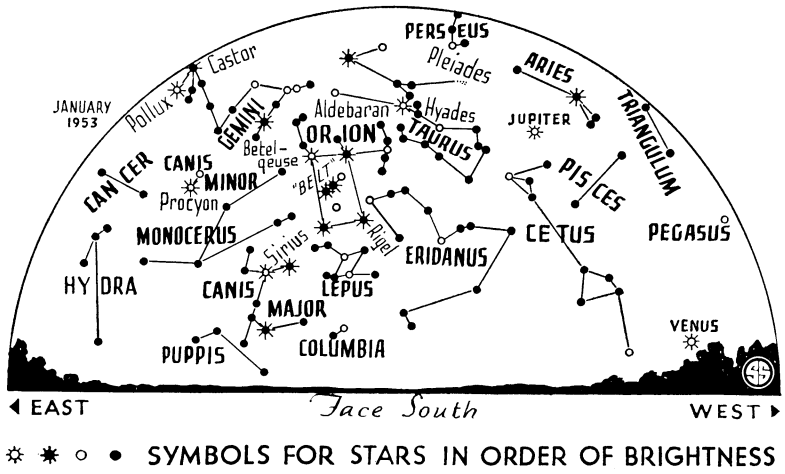
For some it may be possible to see both the totally eclipsed moon and the sun above the horizon at once, though at first glance this might seem impossible. In order to be in the earth's shadow, the moon has to be in a direction exactly opposite to that of the sun, so if one of the bodies is above the horizon, the other would have to be below the horizon.

Prism Effect of Atmosphere

This, however, neglects the effect of refraction, the prism-like action of the atmosphere which bends the light from heavenly objects and makes them appear a little higher than they actually are. For one at the horizon it amounts to a little more than the diameter of the sun or moon, which is about half a degree of arc.

Thus, when we see either of these bodies right on the horizon, it is really below it. The same effect, therefore, makes it theoretically possible to see the sun and the totally eclipsed moon in the sky at once, but





since a very clear and unobstructed sky down to the horizon is required both in the east and west, it is seldom that one can actually do this, even when other conditions are right.

Continuing with the phases of the eclipse, between 7:30 and 8:40 p.m. EST, the moon is emerging from the umbra, and once again the curved edge of the earth's shadow will be seen crossing the disk. By the time it is over, the moon will have risen even along the Pacific coast, and observers there will be able to see the final phases.

Between 8:40 and 9:55 p.m. EST, the moon will still be in the penumbra, but again it will be hard to notice it. However, if one watches carefully during this period, he may see that the moon gets appreciably brighter as it comes into the full brilliance of the sun.

While the moon is partially eclipsed, it will still be visible, even though completely immersed in our shadow. This also is due to refraction of the atmosphere, which bends the sun's light enough to let it fall in the umbra. However, as this light passes through the atmosphere, some of its blue rays are scattered, thus giving the daytime sky its blue color. With blue removed, the light falling on the eclipsed moon is predominantly red, which gives it a characteristic coppery color.

Celestial Time Table for January

Jan.	EST	
2	1:00 a.m.	Earth nearest sun, distance 91,446,500 miles.
3	7:42 p.m.	Algol (variable star in Perseus) at minimum.
4	5:00 p.m.	Moon farthest, distance 251,800 miles.
6	4:30 p.m.	Algol at minimum.
8	5:09 a.m.	Moon in last quarter.
9	3:57 a.m.	Moon passes Saturn.
15	9:08 a.m.	New moon.
16	6:00 p.m.	Moon nearest, distance 223,600 miles.
17	9:00 p.m.	Venus passes Mars.
18	3:48 a.m.	Algol at minimum.
	8:01 p.m.	Moon passes Venus.
21	12:36 a.m.	Algol at minimum.
22	12:43 a.m.	Moon in first quarter.
	9:23 p.m.	Moon passes Jupiter.
23	9:24 p.m.	Algol at minimum.
26	6:12 p.m.	Algol at minimum.
29	6:44 p.m.	Full moon, moon totally eclipsed.
31	10:00 a.m.	Venus farthest east of sun; now visible longest after sunset in evening.

Subtract one hour for CST, two hours for MST, and three for PST.

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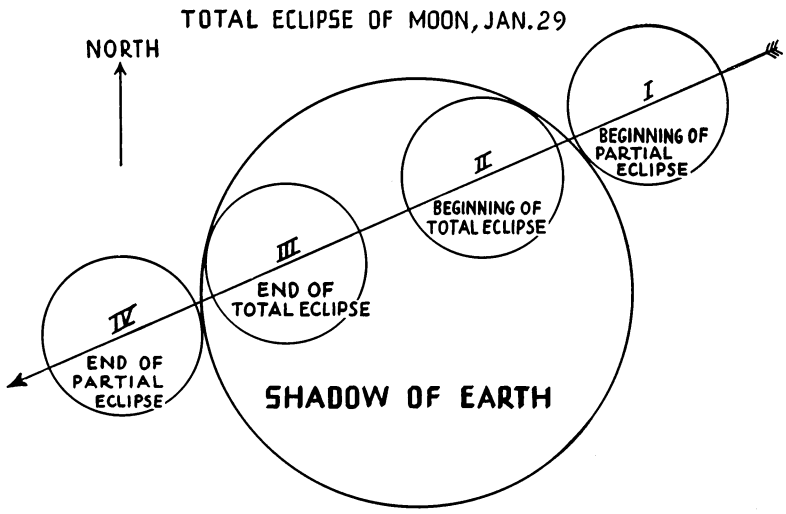

The large circle represents the shadow of the earth, and the small circles, I, II, III and IV, indicate the successive positions of the moon as it passes through the shadow. North is toward the top. The four phases shown occur at the following times:

I	4:54 p.m. EST	3:45 p.m. CST	2:54 p.m. MST	1:54 p.m. PST
II	6:05	5:05	4:05	3:05
III	7:30	6:30	5:30	4:30
IV	8:40	7:40	6:40	5:40

NUTRITION

Obesity Is Now No. 1 U. S. Nutritional Problem

➤ OBESITY HAS replaced vitamin deficiency diseases as the number one nutritional problem in the United States, Dr. W. H. Sebrell, Jr., director of the National Institutes of Health, U. S. Public Health Service, said.

Dr. Sebrell, speaking before the National Food and Nutrition Institute in Washington, said one-fourth of the adult population is sufficiently overweight to cause health disorders.

Reviewing the status of nutrition work and its possible future course, Dr. Sebrell said nutrition experts have focused their attention in the past on curing specific nutrition-linked diseases, like beri-beri and scurvy, with great success.

Now it is time to concentrate on nutrition problems affecting the over-all health of the people, he said, indicating obesity as one of the foremost of these.

Obesity is associated with diabetes, cirrhosis of the liver, cardiovascular disease, hernia, gall bladder disease, and some forms of cancer and arthritis.

Aside from these immediate health measures, American nutritionists must apply their knowledge to wider fields, Dr. Sebrell pointed out.

The food problems of other countries directly affect our own safety and well-being. In many regions of the world, inadequate diet has left the people weak, disease-ridden and poverty-stricken, he said. This situation is of the greatest economic, social and political significance to us.

In these areas food technologists must apply direct remedies for critical diseases like beri-beri, Dr. Sebrell said, and find ways and means to relieve the long-term food situation, such as improving crops and farming techniques.

These are not merely considerations for the distant future, Dr. Sebrell said. They are critical world nutritional problems and confront us now.

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