

ASTRONOMY

Moon Eclipse Coming

Though only partial, eclipse will be most interesting sight visible in February evening skies. Bright planets on view.

By JAMES STOKLEY

➤ A PARTIAL ECLIPSE of the moon just after midnight on the night of Feb. 19 is the chief astronomical event of the month. But that night may well be cloudy. However, on any clear night during the month we have a fine display of bright stars and three planets. Look at the accompanying maps. These show the appearance of the skies at 11 p.m., your own war time, at the beginning of the month, and 10 p.m. on the fifteenth.

They do not, however, show the brightest planet now visible. This is Venus, which sets earlier. Look to the southwest just after the sun has set, and there you may see it, low in the heavens. Even at sunset it is only some 15 degrees above the horizon, so by the time it begins to get dark it will be even lower. But it is so bright, about minus 3.3 on the astronomer's scale, that it should easily be seen despite its disadvantageous position, provided, of course, the western sky is clear.

Jupiter is the brightest planet shown on the map. Its magnitude is minus 2.1, and it is in the constellation of Gemini, the twins. Nearly as bright as Jupiter, however, is the star Sirius, in Canis Major, the great dog, which shines in the south. Unlike the planets, which are visible only because of the sunlight they reflect to us, Sirius is itself a distant sun, shining with its own light.

Brighter Than Saturn

Next in order of brightness is the star Capella, in Auriga, the charioteer, which is almost exactly overhead at the times of our maps. It is slightly brighter than Saturn, our next planet, which appears to the west in Taurus, the bull. It is somewhat hard, however, to compare the brightness of the two bodies. The star is a scintillating point of light, while the planet has a steadier glow, and a telescope shows it as a small disk rather than a point.

To the left of Saturn is another star, Aldebaran, which marks the eye of the bull. And below and to the left of Alde-

baran is the great constellation of Orion, recognizable easily because of the row of three stars which form the belt of this famous warrior. This group is about halfway between Aldebaran and Sirius. South of the belt stars is Rigel, and north of them is Betelgeuse.

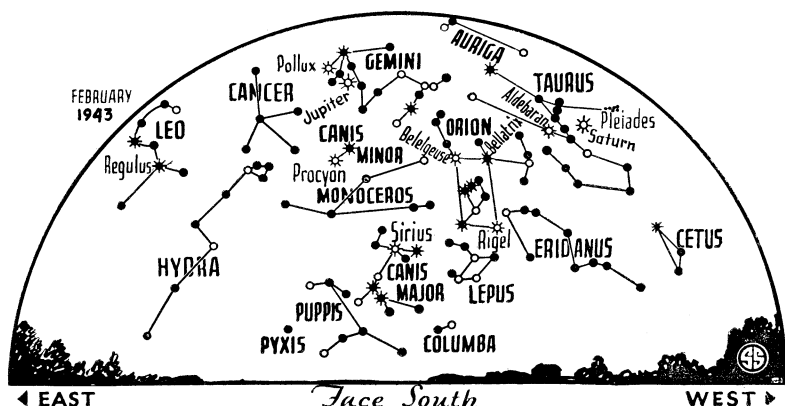
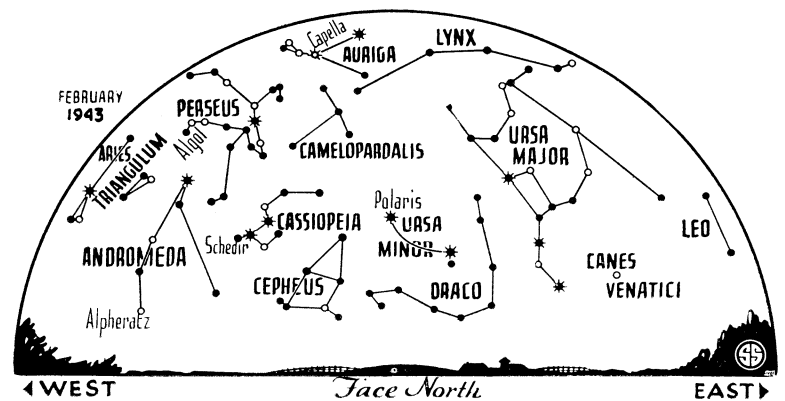
Three other stars of the first magnitude are indicated. One is Procyon, in Canis Minor, the lesser dog, just below Jupiter. Then there is Pollux, which is itself one of the twins. And, over to the east, is Regulus, in Leo, the lion.

There are two other naked eye planets besides those we have mentioned above. Mercury, the innermost of the sun's family, will be farthest east of the sun on Feb. 18, and will be visible low in the southeast just before sunrise. Its brightness is about the same as that of Saturn. Mars is in the same part of the sky, and

may also be glimpsed in the southeast before dawn, though it is much fainter than Mercury.

As the moon swings around us in its monthly journey, there is always one occasion when it is practically between earth and sun. This is the time of new moon. Then, about two weeks later, it is in the opposite direction from the sun, and we have full moon. Both moon and earth cast shadows into space, and it might seem that at every new moon, the shadow of that body would fall on our planet, giving us an eclipse of the sun. This does not happen because the path in which the moon revolves around the earth is not quite in the same plane as that in which the earth goes around the sun. Generally the moon's shadow misses the earth at new moon. For similar reasons the shadow of the earth does not usually fall on the moon when it is full, and give us a lunar eclipse.

During February, however, the moon has reached one of the nodes of its path, which is a place where it goes through



☼ * ○ ● SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

the plane of the earth's orbit. And therefore, when the moon is new on Feb. 4, its shadow will sweep across the earth.

In the western part of the United States and Canada the sun will set partially eclipsed, and at least a partial eclipse will be visible over most of the north Pacific Ocean.

The path of totality, with strict neutrality, favors both us and our enemies. The core of the moon's shadow touches earth first in Manchuria near Harbin. Here the sun will rise totally eclipsed. Then the shadow crosses Siberia north of Vladivostok, the Japan Sea, the island of Hokkaido, one of the northern islands of Japan. Next it swings over the Pacific, south of the Aleutian Islands, and over Kodiak and Anchorage, Alaska, where the eclipse will be seen, if it is clear, low in the west. The shadow leaves the earth in the Yukon.

Perhaps our soldiers in Alaska will witness the event, though the chances of good weather are not very favorable. The same is probably true in Japan. It is perhaps unfortunate that the Japanese do not retain their primitive superstitions and fear an eclipse. In that case, it might have an effect on the progress of the war. (See SNL, Jan. 23 for map).

Two Weeks Apart

Two weeks later, on the night of Feb. 19, when the moon has made half a revolution around the earth, it will still be near enough to the node to pass partly through the shadow of the earth. Thus will come a partial eclipse of the moon.

At 10:43, EWT, on the evening of the 19th, the eclipse begins its first stage, when the moon enters the outer part of the earth's shadow. Not much will be noticed for about an hour, when it gets close to the umbra, the inner part. At 12:04 a.m., on the 20th, the edge of this shadow will begin to creep across the lower left-hand edge of the moon. At 1:38 a.m. the moon will be most nearly immersed in the shadow, with 77% of its diameter being covered. At 3:13 a.m. the moon leaves the umbra, the last trace of it being seen at the western edge.

This eclipse will be seen throughout North and South America, and parts of Europe as well.

As usual, the edge of the earth's shadow will at all times be an arc of a circle, because the shadow is cast by a spherical body.

Also, the shaded part will have a coppery red color, because it will be illuminated by light which has been bent into the shadow by the earth's atmosphere.

This process extracts some of the blue from the sunlight, and makes it red. This same thing gives the setting sun its red color.

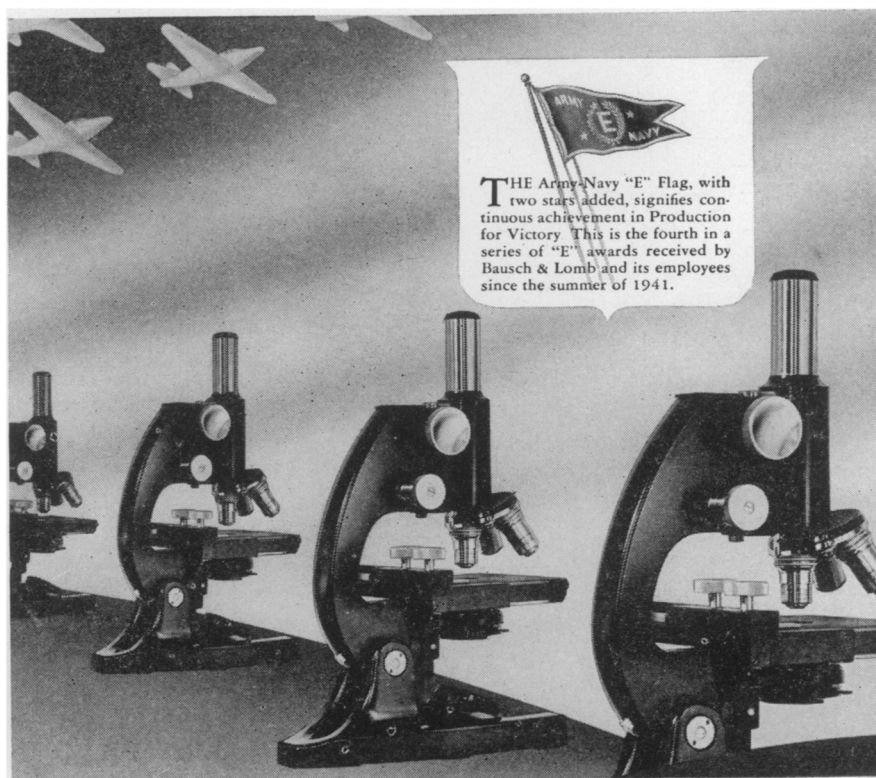
Celestial Time Table for February

| Feb. | EWT |
|------|--|
| 2 | 3:09 a.m. Moon passes Mars. |
| 3 | 11:25 a.m. Moon passes Mercury. 8:00 p.m. Moon nearest; distance 227,940 miles. |
| 4 | 7:29 p.m. New moon. Total eclipse of sun, visible in Pacific Ocean area. |

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| 6 | 5:37 a.m. Moon passes Venus. |
| 11 | 8:40 p.m. Moon in first quarter. |
| 12 | 9:17 p.m. Moon passes Saturn. |
| 16 | 4:00 a.m. Moon farthest; distance 252,120 miles. 8:57 a.m. Moon passes Jupiter. |
| 18 | 6:00 a.m. Mercury farthest east of sun, visible for a few days as morning star. |
| 20 | 1:45 a.m. Full moon. early a.m. Partial eclipse of moon. |
| 27 | 2:22 p.m. Moon in last quarter. |

Subtract one hour for CWT, two hours for MWT, and three for PWT.

Science News Letter, January 30, 1943



Sentries Along America's Battle Lines

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