

ASTRONOMY

# Heavenly Display Very Good

Venus reaches its greatest brilliancy by July 26. With Jupiter and Saturn, plus a full moon, mid-July nights will yield unusually interesting viewing.

By JAMES STOKLEY

WITH THE WARM weather of summer, many persons are likely to be out of doors on July evenings, and so they have a fine opportunity to see the stars that shine overhead. This year the display is particularly good, because three bright planets are added to the usual stars.

These are shown on the accompanying maps, which give the appearance of the heavens about ten o'clock your own kind of standard time (or eleven by daylight saving time) at the first of the month and an hour earlier at the middle.

The brightest of these planets is Venus, which appears in the west long before any other planet or star. Ever since it came into the evening sky at the beginning of the year it has been getting brighter, and on July 26 it reaches its greatest brilliancy. This is minus 4.2 on the astronomer's magnitude scale, about 40 times as bright as a typical first magnitude star.

Venus now sets some two hours after the sun, and that is why it is so low on the map. It is in the constellation of Leo, the lion, close to the star called Regulus, which does not appear on our map. In fact, on July 7 Venus passes in front of Regulus, in a very rare occultation. This, however, from points in the United States and Canada, will be visible only along the east coast and during daylight hours.

About a seventh as bright as Venus, but still of great brilliance (magnitude minus 1.9) is the second planet, Jupiter. This is in the south, in Libra, the scales.

The third planet is Saturn, of magnitude 0.3, equal to a bright star of the first magnitude. This is in Sagittarius, the archer. Some of the stars of this group form the outline of a teapot, with the handle to the left, the spout to the right. Saturn is close to the knob of the lid.

## Two Other Planets Visible

There are two other planets that also can sometimes be seen with the naked eye, and these also are in the July evening sky, although not very conspicuous. Mars is also in Leo. It has set by the times for which our maps are drawn, but is above the horizon earlier, a little lower than Venus and farther north. But its distance is now so great (about 214,000,000 miles) that it appears like a second magnitude star. In addition, its low altitude dims it still more, so you will have to look closely to find it.

Around July 8 Mercury makes one of its uncommon appearances in the evening sky. It too will be low in the west at twilight and set about an hour and a half after the

sun, before the sky is completely dark. On the morning of the eighth, when it is not visible from this part of the world, the moon will pass Mercury. Since the moon is new on July 5, it will be visible as a narrow crescent on the eighth, so it will make a striking display, along with Venus and Mercury, and possibly Mars. The next evening the moon passes to the south of Venus in another beautiful spectacle.

The moon reaches first quarter, when it will set about midnight, on July 13. It is full on the 19th, shining all night. Thus the middle of the month will have moonlit evenings.

Among the stars of July, the brightest is Vega, in Lyra, the lyre, which is high in the east. Second in brilliance is Arcturus, in Bootes, the herdsman, over toward the southwest. A good way to find it is to look for the great dipper in the north, part of Ursa Major, the great bear. At the lower end of this group are the pointers, Merak and Dubhe. A line through them to the right shows the position of Polaris, the pole star.

The handle of the dipper is formed by the stars Alioth, Mizar and Alkaid. If you follow toward the south the curved line they form, you will come to Arcturus. Followed further, it brings you to another first-magnitude star, Spica, in Virgo, the virgin.

Next to this group, to the left, is Libra, in which Jupiter now stands. And next to Libra is Scorpius, the scorpion. In this is the star called Antares, which is distinctly red in color, somewhat like Mars. In fact, the name of this orb means "rival of Mars."

Two other first-magnitude stars are in the east. One is Deneb, in Cygnus, the swan; the other is Altair, in Aquila, the eagle. Along with Vega these stars form a prominent triangle in the sky, which may help you to locate them.

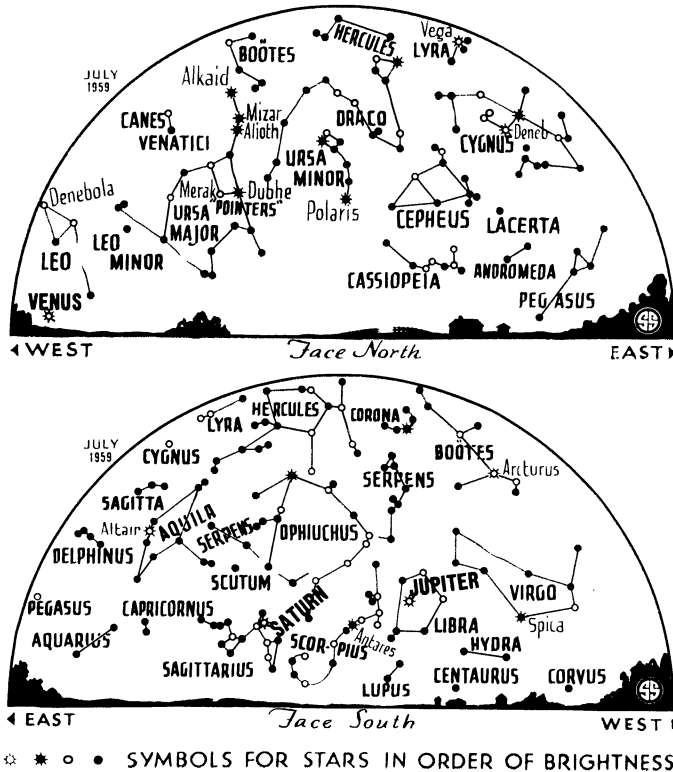
## Eclipsing Celestial Objects

The term "eclipse" usually refers to one of the sun or moon. A solar eclipse is caused by the moon's passing between sun and earth; a lunar eclipse, by the moon's entering the earth's shadow.

But there are other kinds of eclipses too. For example, there is a star called Algol in the constellation of Perseus (which now rises in the early morning) consisting of one dark and one bright sphere. Every few days the dark one comes in front of the latter, causing a partial eclipse which dims its light. This is typical of a class of stars known as "eclipsing binaries."

And the moon: not only can it come in front of the sun, but it can—and frequently does—pass in front of a star. This is termed not an eclipse, but an occultation. The moon "occults" the star.

With faint stars this happens frequently, but only rarely does the moon occult a very bright star, or a planet. Much rarer, however, is an occultation by a planet—of an-



other planet or a star—because it takes up so much less space in the sky. There is plenty of dark space between the stars for the planets to move, and not come in front of one.

The most unusual event on the celestial program for July is such a planetary occultation. This occurs on the seventh, when Venus occults Regulus, in Leo. This star is at the end of the handle (which is toward the south) of a smaller group, the sickle. Unfortunately, this occurs at 9:15 a.m., Eastern Standard Time, when Venus is low in the east in broad daylight, along the Atlantic Coast. Farther west, of course, it will not have risen.

While Venus is so bright that you can see it in daylight, if you know just where to look, you cannot see the star. The phenomenon will be visible in Europe and Africa, and parts of Asia. In some of these areas the sky will be darker when it happens.

But even though people in our country will probably miss the actual occultation, it will be interesting to watch Venus before and after the seventh, especially in relation to Regulus. On the evenings of the fifth and sixth, the planet will draw closer and closer to the star; and on that of the seventh it will have passed it.

### Celestial Time Table for July

#### JULY EST

1	2:00 p.m.	Moon farthest, distance 251,900 miles.
5	2:00 a.m.	Earth farthest from sun in 1959; distance 94,455,000 miles
	9:00 p.m.	New moon
8	5:28 a.m.	Moon passes Mercury
	4:00 p.m.	Mercury farthest east of sun; visible low in western sky at dusk for a few days before and after this date.
9	3:34 a.m.	Moon passes Mars
	5:31 p.m.	Moon passes Venus
13	7:01 a.m.	Moon in first quarter
15	11:36 a.m.	Moon passes Jupiter
17	9:00 a.m.	Moon nearest (for month); distance 226,300 miles
18	6:23 a.m.	Moon passes Saturn
19	10:33 p.m.	Full moon
26		Venus at greatest brilliancy
27	9:22 a.m.	Moon in last quarter
29	7:00 a.m.	Moon farthest, distance 251,400 miles

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

Science News Letter, June 20, 1959

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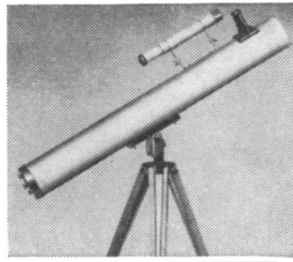
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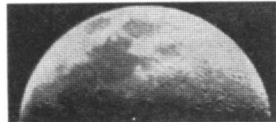
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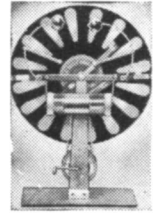
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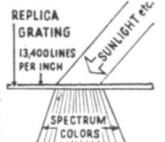


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