

ASTRONOMY

Venus at Its Brightest

Earth's nearest sky neighbor, Venus, reaches its greatest brilliance, magnitude minus 4.4, on Oct. 11. Mars is still prominent in the evening sky.

By JAMES STOKLEY

► THE PLANET Venus, which has been getting more and more prominent in the western evening sky since we first glimpsed it there early last spring, now reaches its climax.

On Oct. 11 it will be at greatest brilliance, with a magnitude of minus 4.4 on the astronomical scale. This is about 150 times as bright as the average star of the first magnitude.

Of all the objects that appear regularly in our skies only the sun and moon exceed the present brightness of Venus.

Venus appears in the southwest, as dusk is falling, in the constellation of Libra, the scales. In fact, if you know where to look, it can be seen without much difficulty even in full daylight.

No doubt many will see it in this way and, not knowing what it is, will report it as some strange object—perhaps a flying saucer!

However, Venus is not our only evening planet. Mars, although many times fainter than it was last July, when it was closest, and about a fiftieth as bright as Venus, is still quite prominent.

It shines in the south, with characteristic red color, in the constellation of Sagittarius, the archer.

The position of Mars is shown on the accompanying maps, which depict the skies as they appear at about 10:00 p.m., your own kind of standard time, at the beginning of October, an hour earlier in the middle of the month and two hours earlier at the end. Because Venus sets before these hours, it is not shown.

Brightest of the October evening stars is Vega, in Lyra, the lyre, which is high in the northwest. With a magnitude of 0.1, it is about a sixtieth as bright as Venus.

Directly above Vega is Cygnus, the swan, with Deneb as the brightest star. Below Cygnus is Aquila, the eagle, in which Altair shines prominently.

Low in the south can be found the star Fomalhaut, part of Piscis Austrinus, the southern fish. This is so far south in the sky that for us it never rises any higher than it is seen at present.

Because of its low altitude, its light has to travel through a greater thickness of the earth's atmosphere than stars that are higher in the sky. This causes a dimming of its brightness, and explains why, even though it is a first-magnitude star, its symbol on the map is that for one of the second magnitude.

This is also true for Aldebaran, in Taurus, the bull, seen low in the east. During the coming months of winter, however, Aldebaran will climb high in the southern sky.

Just to the left of Taurus is Auriga, the charioteer, with Capella, still another star of the first magnitude.

Around midnight a third planet comes into view. This is Jupiter, in the constellation of Cancer, the crab. Of magnitude minus 1.8, it is only about a tenth the brightness of Venus, although it exceeds the other stars and planets.

On Sept. 6 Venus was at its greatest distance east of the sun, and is now rapidly drawing toward that body. Thus, its greatest brilliance on Oct. 11 represents a last blaze of glory, just before it disappears from our evening sky entirely, as it does in a few weeks.

On Nov. 15 it will come between sun and earth. Then, as it passes to the western side of the sun, it will precede that body in its

daily motion across the sky, appearing as a "morning star" in the eastern sky before sunrise.

Just before Christmas it will be shining there as brightly as it does now in the evening. But by the end of 1955, it will again begin to be visible in the west after sunset.

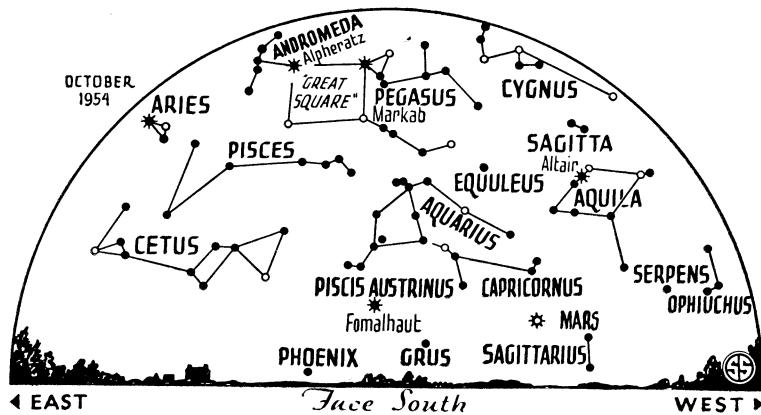
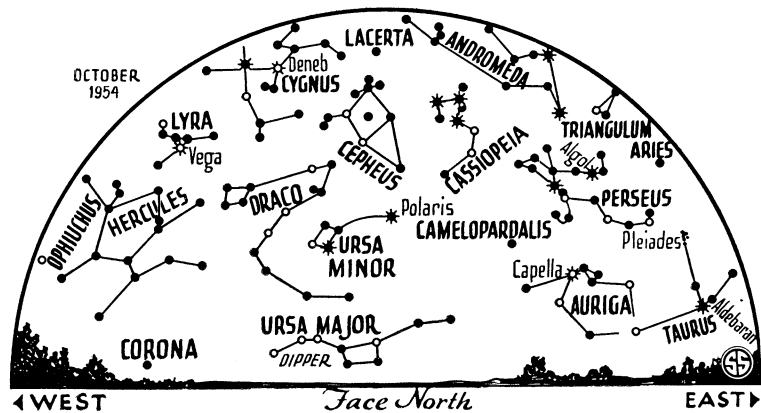
Venus has often been termed a twin of the earth. (See SNL, Aug. 21, p. 122.) It is almost the same diameter, with 7,580 miles as compared with ours of 7,927 miles. Its slightly smaller size, with its lower density (about 86% of the earth's), means that the pull of gravity at its surface is less than it is here.

A man weighing 200 pounds on earth would find himself reduced to 172 pounds on Venus.

Since Venus, on the average, is 67,200,000 miles from the sun, compared with 93,000,000 for earth, it gets more light, but that does not fully explain its great brilliance.

Whereas the earth reflects about 29% of the sunlight that falls upon it, Venus reflects 59%. Analysis of the reflected light shows the surface to be yellow in color.

What we see, however, is not the surface of Venus itself, but tops of clouds that perpetually surround it. These are not



☼ * ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS



clouds of water droplets, like those often covering parts of the earth.

Their composition is not known, although a German astronomer, Dr. H. E. Suess, has suggested that they are composed of salts, sodium chloride, which is ordinary table salt, and magnesium chloride. They might have resulted from oceans that dried up.

If there were once oceans on Venus, it does not seem that any are there now, for there is no evidence of any water vapor in the atmosphere above the clouds. Certain atmospheric gases absorb particular colors, and some of the constituents may be identified by an analysis of the light from Venus through a spectroscope.

In this way, for example, it has been found that the planet's atmosphere contains large quantities of carbon dioxide, but no perceptible water vapor or oxygen.

This, in turn, seems to indicate the absence of vegetation, since planets on the earth take in carbon dioxide and give off oxygen. It has been estimated, in fact, that every few thousand years the oxygen in the earth's air is completely renewed by such a process.

With other instruments it is possible to measure the temperature of the visible surface of Venus, and this turns out to be about ten degrees Fahrenheit, not as cold as corresponding levels high above the earth.

However, the solid surface below must be quite hot, since the thick concentration of carbon dioxide in the atmosphere would act in much the same way as the glass of a greenhouse. That is, it would let in the short waves of the sun's radiation, so that they could warm the surface. Then the longer waves emitted by the heated surface itself would not be able to get out again through the carbon dioxide layer, and so the temperature would build up.

Thus, under the clouds, Venus must be very hot, like the hottest deserts on the earth, and maybe even up to the boiling point.

Celestial Time Table for October

Oct. EST	
5	12:31 a.m. Moon in first quarter. 6:47 p.m. Moon passes Mars.
	11:00 p.m. Mercury farthest east of sun.
8	2:01 a.m. Algol (variable star in Perseus) at minimum.
10	10:50 p.m. Algol at minimum.
11	3:00 a.m. Venus at greatest brilliance.
12	12:10 a.m. Full moon (Hunter's moon). 9:00 p.m. Moon nearest, distance 222,500 miles.
13	7:39 p.m. Algol at minimum.
18	3:30 p.m. Moon in last quarter. 10:53 p.m. Moon passes Jupiter.
22	early a.m. Meteors of Orionid shower visible.
26	12:47 p.m. New moon.
27	6:00 p.m. Moon farthest, distance 252,600 miles.
28	6:15 p.m. Moon passes Venus.
29	4:00 p.m. Mercury between sun and earth.
31	12:31 a.m. Algol at minimum.

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

Science News Letter, September 25, 1954

ORNITHOLOGY

Birds With Single Song Tend to Get Bored

➤ BIRDS GET bored when they sing the same song over and over again, Prof.

Charles Hartshorne of the University of Chicago, an amateur ornithologist, told the American Ornithologists' Union meeting in Madison, Wis.

Birds that tend to sing one short song repeatedly are silent about 70% of the time.

Science News Letter, September 25, 1954

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