

ASTRONOMY

Three Planets Now Visible

Venus, Mars and Jupiter are visible on May evenings as the sky darkens. Saturn becomes visible as midnight approaches.

By JAMES STOKLEY

► **THREE PLANETS** are visible to the naked eye on May evenings, as soon as the sky darkens, while a fourth appears before midnight.

The brightest of these is Venus, now so brilliant it can be seen soon after sunset, while dusk is gathering. After that, until it sets about three hours after the sun, Venus dominates the western sky, situated in the constellation of Gemini, the twins.

Mars is also in Gemini, but is about 1/130th as bright as Venus, due to its great distance at present, about 180,000,000 miles. This makes it appear similar to a star of the second magnitude, while Venus is many times brighter than first: minus 3.6 on the astronomical scale of brilliance.

Look to the southeast for the third May planet. This is Jupiter, currently on the border between Libra, the scales, and Scorpius, the scorpion. Although less than a quarter as bright as Venus, its magnitude is minus two, far exceeding any nearby star or planet. Thus it dominates the southeastern sky, much as Venus does in the west.

Saturn is May's fourth planet; it rises about 11:15, your own kind of standard time (add one hour for daylight saving time) at the first of May and about 9:15 at the end of the month. It is in Sagittarius, the archer, and is equal to a bright first magnitude star in prominence.

All these planets (except Saturn), as well as the stars of the May evening, are shown on the accompanying maps. These depict the skies at about 10:00 p.m. (standard time) at the first of May and an hour earlier at mid-month. They would also show them as they appear at 8:00 p.m. at the end of May, but at that time of year the sky does not become dark, over most of the United States, until after 9:00 p.m.

Vega Is Brightest

The brightest star is Vega, in Lyra, the lyre, in the northeast. The next is Arcturus, high in the southeast in Bootes, the bear-driver. A good way to locate this star is to look first in the north at the familiar Great Dipper, which is part of Ursa Major, the great bear. In the bowl of the dipper are the pointers; if followed downwards they bring you to Polaris, the pole star, which stands directly over the North Pole. But if you follow the curve of the handle of the Big Dipper around to the south, you come to Arcturus. Continuing farther, it brings you to another first-magnitude star: Spica, in Virgo, the virgin.

To the right of Virgo, high in the south-

west, is Leo, the lion. This group contains a smaller figure known as the sickle. (The blade of the sickle forms the head of the lion.) In the handle of this implement is the star called Regulus.

In addition to Mars and Venus, the constellation of Gemini contains Pollux, another star of the first magnitude. Castor, which represents the other twin, is of the second magnitude. Looking to the right of this group, you will find Auriga, the charioteer, with the bright star Capella.

The maps also show two other first-magnitude stars, but each is so low in the sky that it appears many times fainter. One is Antares, in Scorpius, a little below Jupiter. The other is Deneb, in Cygnus, the swan, near the northeastern horizon, below Lyra. In a few months both will be prominent in the evening.

On May 18 Jupiter will be in opposition. This means that it is directly opposite the sun, so it rises at sunset and sets at sunrise. Also, since we are then in the same direction from the sun as Jupiter, it is closest to the earth. Its distance will be 405,800,000 miles.

This is a good time to observe Jupiter.

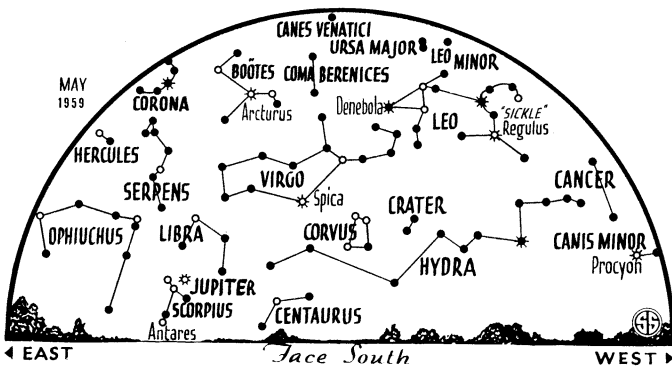
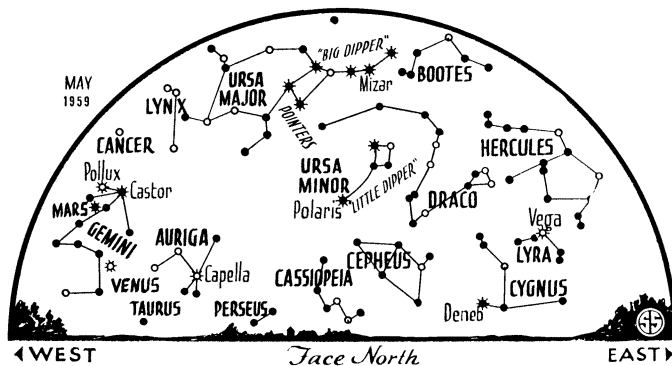
It makes a striking sight, even through a small telescope. It has 12 moons, four of which are as large as our moon, or larger. Two, in fact, are larger than the planet Mercury. These four can be seen with even rather small telescopes, and they are fascinating to watch, night after night, as they swing from one side of Jupiter to the other. Occasionally they even disappear from view, as they hide behind Jupiter, or suffer eclipse when they pass through its shadow.

Dimensions of Jupiter

Through a telescope that magnifies only 40 diameters, Jupiter would look about as big as the moon does to the naked eye. Its shape is elliptical, rather than circular. Its diameter at the equator is 88,770 miles, but that from pole to pole is about six percent less, or 83,010 miles.

This flattening at the poles is a result of rapid rotation, for Jupiter turns on its axis in only 9 hours 55 minutes. Because of its enormous size, the speed of rotation at the equator is about 28,000 miles per hour. This results in centrifugal force so great that the planet's equator is thrown to a distance of nearly 3,000 miles farther from the center than are the poles, where there is no centrifugal force.

The equatorial bulge of the earth is only a little more than 13 miles. This is a result



* * ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

of the earth's much smaller size and slower rotational speed, about 1,035 miles per hour.

If you look at Jupiter through a telescope, you will be impressed with the amount of detail that is visible. It is crossed by light and dark bands, parallel to the equator, which display a variety of color: orange, red, brown and even green. These features may change rapidly, so it is apparent that they are not part of a solid surface. Instead, what we see are tops of clouds which perpetually cover Jupiter.

Venus, too, is continually enshrouded in clouds, but they are merely a thin layer, like the clouds of earth.

Those of Jupiter make up much of that planet's volume. If you could land on what appears to be its equator, and then descend, you would go some 8,000 miles before you reached the bottom of the atmosphere, according to the widely accepted theories of Dr. Rupert Wildt of Yale University.

Jupiter's "Slushy" Region

There you would come to a layer of ice, but probably there would be no sharp boundary; rather a slushy region which became more and more solid as you penetrated toward the center. Some 17,300 miles deeper, at a total depth of more than 28,000 miles, you would reach the bottom of the ice, and the top of the solid core, more than 28,000 miles in diameter, and probably of rock and metal. This accounts for only about eight percent of Jupiter's volume, while the core and the frozen ocean around it are only 55%; the rest is the atmosphere.

This consists of methane and ammonia, which have been detected by analysis of Jupiter's light. Probably a considerable amount of hydrogen is also present, although this cannot be so easily detected. At the "surface" of Jupiter, the top of the cloud layer, the temperature is about minus 150 degrees Fahrenheit. In many respects it would fail to qualify as a place where space ships could land. However, the moons of Jupiter might be more suitable for some future expedition. From one of these much could be learned about the giant planet, and many of its current puzzles could be solved.

Celestial Time Table for May

May	EST	
5	early a.m.	Meteors visible, radiating from constellation of Aquarius.
7	3:11 p.m.	New moon.
	11:00 p.m.	Moon farthest; distance 252,600 miles.
11	9:11 a.m.	Moon passes Venus.
12	9:49 p.m.	Moon passes Mars.
15	3:09 p.m.	Moon in first quarter.
18	3:00 p.m.	Jupiter opposite sun; distance 405,800,000 miles.
21	midnight	Moon nearest; distance 221,900 miles.
22	12:43 a.m.	Moon passes Jupiter.
	7:56 a.m.	Full moon.
24	4:19 p.m.	Moon passes Saturn.
29	3:13 a.m.	Moon in last quarter.

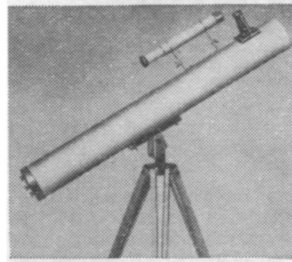
Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, April 25, 1959

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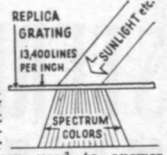
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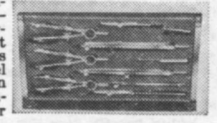
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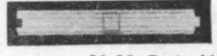
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