

ASTRONOMY

Four Planets Now Visible

Venus, Mars, Jupiter and Saturn will be visible to the naked eye in June. In addition, nine bright stars, ranging from Antares to Vega, will be visible during the month.

By JAMES STOKLEY

► FOUR of the five planets ever visible to the naked eye can be seen on June evenings. And the fifth, Mercury, may be glimpsed low in the east just before the sun rises.

Venus will be the first of these to make its appearance. Even before the sky has completely darkened after sunset you may be able to see it low in the west. It will set an hour or so after the sun, a little to the north of the horizon's western point. As it disappears before twilight is entirely over, you will not yet be able to see it in a completely darkened sky, as you will later in the year.

Venus and Mars in West

While Venus is brighter than any other star or planet, magnitude minus 3.3 on the astronomical brightness scale, the next planet, in the same part of the sky, is very much fainter. This is Mars, which was so brilliant last autumn at the time of close approach to the earth. Now that it has receded to a distant part of its orbit it has dimmed greatly, having now a magnitude of two.

Mars is low in the northwest in the constellation of Gemini, the twins, and just to the left of the stars Castor and Pollux.

The position of Mars is indicated on the accompanying maps, which depict the sky as it appears about 10:00 p.m., your own kind of standard time—add one hour for daylight saving time—at the beginning of June, or an hour earlier at the middle of the month.

Jupiter and Saturn in South

The other two June planets are in the southern sky.

Brightest is Jupiter, of magnitude minus 1.6. This make it about 27 times as bright as Mars but less than a quarter as bright as Venus. Jupiter is now in the western end of Virgo, the virgin. It is almost, in fact, in the next-door constellation of Leo, the lion. It is thus between the bright stars Spica, part of Virgo, and Regulus, in Leo, but it is considerably brighter than either.

Saturn, the last of our planets, likewise is about on the border between two star groups. It is in the southeast, actually in Ophiuchus, the serpent-bearer, but it is near the bright reddish star Antares, which is part of Scorpius, the scorpion. The planet surpasses the star in brightness by about two and a half times.

Bright Stars Visible

In addition to Pollux, Regulus, Spica and Antares, five other stars which the astrono-

mer ranks in the first magnitude can be seen on June evenings.

High in the south, above the eastern (left) end of Virgo, is the constellation of Bootes, the bear-driver, in which Arcturus shines.

Another way of finding this star is to look high in the northwest for the familiar group of seven stars that form the Big Dipper. A line through the two lowest stars in the dipper, Dubhe and Merak—also known as the pointers—if followed to the right takes you to Polaris, the pole-star.

If the curved handle of the dipper, through the stars Alioth, Mizar and Alkaid, is continued toward the south, it will bring you to Arcturus. Still extended, this same curved line also reaches Spica.

Even brighter than Arcturus is Vega, in Lyra, the lyre, high in the east and just above the northern cross, which is part of Cygnus, the swan. Another first-magnitude star, called Deneb, is in this group. Still another is just to the right — Altair in Aquila, the eagle.

The ninth and last that is shown on our maps is Capella, in Auriga, the charioteer, just barely above the northwestern horizon, and to the right of Castor and Pollux. Because it is so low in the sky, its light is greatly dimmed by absorption in the earth's atmosphere, and it looks far fainter than it did last winter, when it was shining high in the south.

Saturn and Jupiter Compared

With Jupiter and Saturn both in the evening sky, we have the opportunity of observing and comparing these giants among the planets that revolve around the sun. They are the biggest among the nine planets, which include Uranus, Neptune and Pluto—all too faint to be seen with the naked eye—as well as the earth and the five mentioned earlier.

Whereas the diameter of our earth is 7,918 miles, that of Jupiter is 86,900 miles and that of Saturn is 71,500 miles. For the latter, this is the diameter of the ball of the planet, around which revolves the curious system of rings.

Several thousand miles above Saturn's equator is the innermost ring. The outermost edge of the system is more than 40,000 miles above that, giving the rings a total diameter of 171,000 miles and making Saturn's overall size about twice that of Jupiter.

These rings are not solid, but they are made up of a swarm of millions and millions of small particles. According to the latest ideas, as expressed by Dr. G. P. Kuiper of the Yerkes Observatory, they seem to be made of snow. Probably the satellites of Saturn, nine in number, have a similar composition.

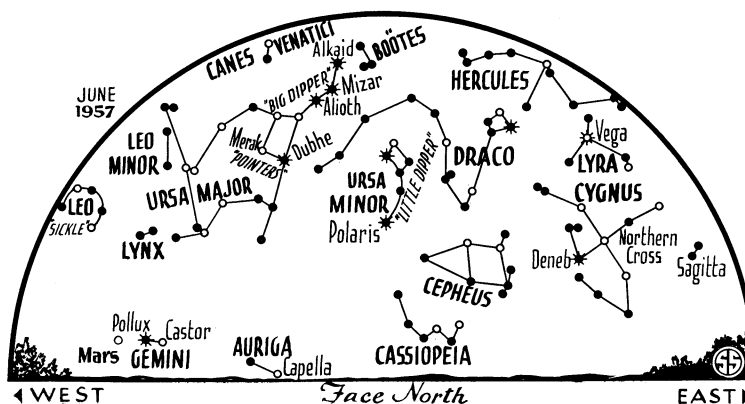
Jupiter's Structure

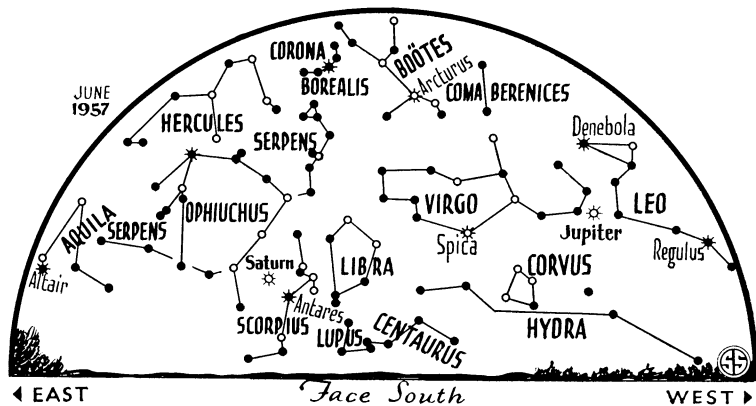
In its structure, Jupiter is very different from the earth, which is mostly a solid globe, covered with water and a relatively thin atmosphere.

Jupiter, it is believed, has a core, probably made of rock, which is about 44,000 miles in diameter, or roughly a half of that of the whole planet. Around that is a frozen ocean, a layer of ice some 16,000 miles thick. On the outside is an atmosphere, largely hydrogen, 6,000 miles in thickness, containing colored clouds that form the series of belts and other markings that are visible from earth through a telescope.

The ball of Saturn has a similar structure, with the rocky core perhaps 28,000 miles in diameter. The ice layer is estimated to be about 6,000 miles thick, but the depth of the atmosphere is something like 16,000 miles, relatively much deeper than Jupiter's.

Thus, the solid part of Saturn is much less in proportion, which makes its average density very low, about two-thirds that of water. With a big enough lake in which to immerse the planet, Saturn would actually float!





☼ * ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

Celestial Time Table for June

JUNE EST	Time	Event
1	3:50 a.m.	Moon passes Mars
	2:00 p.m.	Saturn in opposite direction from sun and nearest; distance 837,100,000 miles
	6:00 p.m.	Mercury farthest west of sun; visible for a few days around this date low in east before sunrise
2	11:00 p.m.	Moon nearest; distance 229,100 miles
5	2:10 a.m.	Moon in first quarter
	7:47 p.m.	Moon passes Jupiter

11	8:57 a.m.	Moon passes Saturn
12	5:02 a.m.	Full moon
18	6:00 a.m.	Moon farthest; distance 251,400 miles
20	5:22 a.m.	Moon in last quarter
21	11:21 a.m.	Summer solstice (sun farthest north; summer commences)
27	3:53 p.m.	New moon
30	3:00 a.m.	Moon nearest; distance 226,200 miles

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

Science News Letter, May 25, 1957

GENERAL SCIENCE

Scientists Needed

► A. H. BATCHELDER, vice president of the California Research Corporation, and general manager, Richmond Laboratory, spoke at the Eighth National Science Fair awards luncheon in Los Angeles, describing the job satisfactions in industry offers the scientist and engineer.

"In summing up the desirability of a position or profession, personnel specialists consider job satisfaction, opportunity, working conditions, and remuneration, pretty much in the order named. They are of course more or less interdependent and one is not a substitute for the other. It is easy to demonstrate that science and engineering are nearly superlative in all categories," he told the audience of young scientists, teachers, and professional scientists.

Mr. Batchelder compared the scientist today with explorers in the days of Cabot, Hudson and Columbus. Just as the early explorers had job satisfaction because their efforts gave them a feeling of accomplishment and recognition, the scientists and engineers receive the same, or an "even greater sense of accomplishment in making life richer and more secure for all of us," he said.

Emphasizing the important role played by the high school teacher in motivating young people toward a career in science or engineering, Mr. Batchelder said science teaching must be made more attractive as a life work if we are to avoid a shortage of scientists.

Science and technology offer a "triple threat" preparation for the future, Mr. Batchelder said "First of all, study in science or engineering can prepare you for a career in academic research or for instructing others.

"Secondly, it prepares for industrial work which is interesting and at the same time, rewarding in every sense.

"Third, it may lead to opportunity elsewhere; as the world becomes increasingly technical, more and more leaders in manufacturing, production, sales and business management are being drawn from the ranks of the technically trained."

AMA Banquet Speaker

DR. WENDELL M. STANLEY, Nobel Prize winner and director of the Virus Laboratory of the University of California, was the main speaker at the American Medical Association's awards banquet. In discussing the relationship between viruses, genes and "life," Dr. Stanley gave the young scientists in his audience a clear picture of past and current virus research.

He pointed out that eventual synthesis of a "small polynucleotide specifically arranged" means we may "dare to think" of synthesizing in the laboratory a structure possessing genetic continuity and of all of the tremendous implications of such an accomplishment. Scientists will one day be able to create living matter in the laboratory.

Science News Letter, May 25, 1957

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