

ASTRONOMY

Vega is Overhead

High in the East Shines Most Beautiful Star; Movement of Mars Will Interest Late June Star Gazers

By JAMES STOKLEY

MOST brilliant of the stars seen overhead on June evenings is Vega, high in the east in the constellation of Lyra the lyre. Just below is the northern cross, part of the figure of Cygnus the swan. Brightest star in the group is Deneb, toward the north and marking the top of the cross, now resting on its side. To the right, about as high, is Aquila the eagle. Here we find Altair, which can be identified because there is a fainter star just above it and another below.

These orbs are indicated on the accompanying maps, in which the heavens are pictured as they look at 10 o'clock (or 11 if you use daylight saving time), on June first and 9 o'clock on the fifteenth. They would look the same way at 8 o'clock on the thirtieth if you could see them at that hour, but you won't because the sky will then be too bright.

Still another bright star that, in this summer of two world's fairs takes us back to the Chicago Fair of six years ago, is visible high in the south. This, of course, is Arcturus, the light from which was used to open that fair. It is part of Bootes the bear-driver. And below this figure is that of Virgo the virgin, in which Spica appears. To the left of Virgo are the scales, Libra, with no star of the first magnitude. Then comes Scorpius the scorpion, with Antares shining red.

Twins Hard to See

Three other stars, which rank among the brightest in the sky, are also shown. One is Regulus, in Leo the Lion, occupying a position in the western sky about as high as that of Aquila to the east. Part of this constellation is in the shape of a hook and is called the sickle. The blade curves downwards; the handle, with Regulus at the end, is at the left. Our remaining two first magnitude stars are very low in the northwest, and will be rather difficult to see. Pollux, brighter of the twins, Gemini, is one; Capella, in Auriga the charioteer, is the other. An hour or two before the times of the maps, just as it is getting dark, they will be higher and more easily found.

There is no planet in a position this month to appear on the maps, but Mars is coming into the evening sky, rising before midnight. Mars is approaching very close to us, and in July will be closer than it has been at any time since 1924. It is in the constellation of Capricornus. This is next to Sagittarius the archer, which follows the curved tail of the scorpion across the sky. Mars is of magnitude minus 1.5, brighter than any star. It is not as brilliant as Jupiter, in the constellation of Pisces, which rises a little after midnight, of magnitude minus two.

Saturn, in Aries the ram, rises about three hours before the sun. It is yellow in color and pale compared to Mars and Jupiter, though still equal to a first magnitude star. Brightest of all is Venus, last of our morning "stars," which appears only about an hour before the sun after the dawn has started.

Summer Solstice

On June 22, at 2:40 a. m., eastern standard time, the sun reaches its farthest north position in the sky. This position, called the "summer solstice," marks the official start of the season of summer. After this the sun moves southward.

If you happen to be out late enough to watch Mars during these June evenings, you will be able to see a peculiar feature of its motion, one which was very puzzling to the ancients, and led them to a very involved theory to find an explanation. The stars are called fixed, because they remain in the same

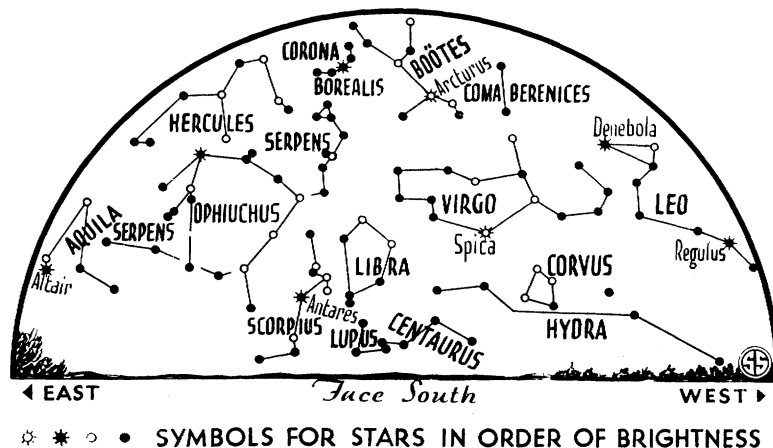
relative positions for centuries, as far as the naked eye can detect. But the planets, of which Mars is one, are "wanderers," they change their position from night to night. Note, for example, where Mars is this evening with relation to the stars about it. You might even make a small chart to show its place. Then, a few nights from now, look again, and you will find it has moved to the east. In recent months its motion has been continually eastward.

Motion Reversed

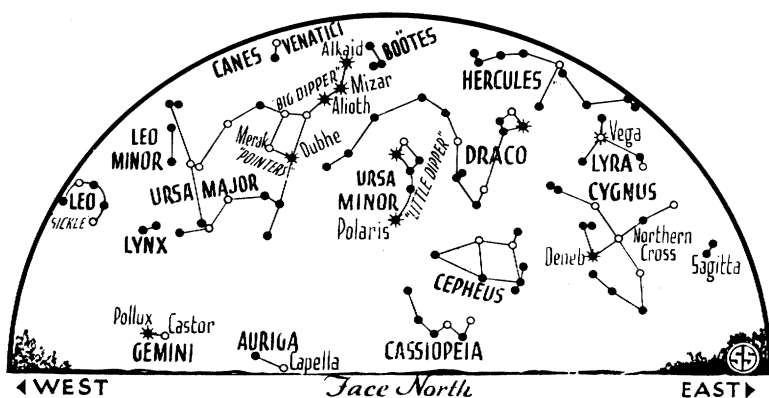
But during June, as you watch, you will find it slowing up, and then about June 24 there will be several evenings when no motion at all can be detected. After that, it will move in the opposite direction, to the west. If you keep on watching during the summer, you will find it still again, about August 24, after which it will be moving, as before, to the east.

Before the middle of the sixteenth century, it was the commonly accepted idea that the earth was the center of creation. The sun, the moon, Mars and the other planets all revolved around us. But why, then, should Mars, and the others, sometimes go to the east and occasionally to the west?

According to the theory of Ptolemy, which held sway for many centuries, the reason was that Mars moved, not around the earth itself, but in a circle, the center of which moved continually around the earth in a larger circle. In this way it went forwards or backwards, but always in motions that could be resolved into circles, most perfect of figures and the only ones thought appropriate for celestial bodies. At first this was not so bad,



☆ * ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS



but gradually more and more circles had to be introduced as new facts were learned about the planetary motions, and the system became most unwieldy.

In 1543 everything was simplified by the publication of the masterpiece of the Polish astronomer, Nicolaus Copernicus, a book generally known as "De Revolutionibus." This revived a suggestion made centuries before by Aristarchus, a Greek astronomer, that the sun is the center and the earth just one of the planets, revolving around it. Despite opposition, this theory prevailed, and now we know why part of this month Mars seems to move to the east, and during the rest of the month to the west.

We are observing it from a moving platform, for the earth moves around the sun at a speed of 18.5 miles per second. Farther out, Mars' speed is 15.1 miles per second. Thus, every time we are on the same side of the sun as Mars, we overtake it at a relative speed of 3.4 miles per second, and while we are doing this the planet seems to go the other way, to

"retrograde," as the astronomer says. In other words, the effect is similar to that observed by a person traveling along on an express train, and overtaking a slower freight train on the next track. Under such conditions, the freight may seem to be going backwards.

Celestial Time Table for June

Thursday, June 1, 10:11 p. m., full moon. **Tuesday, June 6,** 7:58 a. m., moon passes Mars, 17 lunar diameters to north. **Wednesday, June 7,** 4:00 a. m., Mercury on opposite side of sun; 6:00 p. m., moon farthest from earth—251,400 miles away. **Friday, June 9,** 11:07 p. m., moon in last quarter. **Sunday, June 11,** 11:45 a. m., moon passes Jupiter, 8.5 lunar diameters north. **Tuesday, June 13,** 6:34 a. m., moon passes Saturn, 6.5 lunar diameters north. **Saturday, June 17,** 8:37 a. m., new moon. **Monday, June 19,** 3:00 p. m., moon nearest earth, 225,800 miles away. **Thursday, June 22,** 2:40 a. m., sun farthest north—summer commences. **Friday, June 23,** 11:35 p. m., moon in first quarter. **Saturday, June 24,** 3:00 a. m., Mars stationary, after this moves to west instead of east.

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common. Both are caused by germs belonging to the class of so-called acid-fast organisms. These germs seem to owe some of their properties to the fact that they have an outer coating of a waxy substance. Extensive modern chemical studies of the tuberculosis germ are throwing light on the properties of both this outer waxy coating and other parts of the tb germ.

Other resemblances between leprosy and tuberculosis are their moderate degree of infectiousness and the prolonged incubation period which makes it almost impossible to trace the source of the infection. Both diseases are very refractory to treatment and both tend to run a prolonged course. For both ailments institutional treatment with some degree of segregation is advisable, both to reduce the chances of spread and because this form of treatment is best for the patient.

Hereditary predisposition seems to play a part in determining the victims of both diseases.

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ETHNOLOGY

Assyrians Know Customs Of Shepherd's Psalm

PROBABLY no Bible passage is so frequently explained as the Twenty-Third Psalm. And still the Western World has difficulty in realizing how completely the pictures of shepherd life suggest the fullness of living to the Near East.

A new small book by an Assyrian, who was a chief shepherd's son and who grew up to become an Episcopal theologian, presents the Assyrian ethnology—to view it from a scientific angle—of the well-known passage.

Nearly every one in Arabia, Palestine, and Mesopotamia knows something about sheep, because the desert people depend on sheep for a livelihood, explains Dr. George M. Lamsa, in *The Good Shepherd: The Twenty-Third Psalm*. (A. J. Holman Co.) But good shepherds are rare, and some become so famous that they are set up as examples to be emulated.

Sheep raising has been considered the highest occupation in that part of the world throughout the centuries, he continues. Experienced shepherds act as judges, arbitrators, instructors of young shepherds, musicians, legislators, and healers. Like statesmen, they make oral treaties with surrounding tribes.

"Indeed," says Dr. Lamsa, "a shep-

MEDICINE

Mystery of Leprosy And Tuberculosis

ONE of the unsolved questions in medicine and public health concerns the remarkable decline in leprosy in civilized countries since the Middle Ages. This horror of Biblical times still afflicts about 3,000,000 persons in various parts of the world. But in civilized countries it is so rare a disease as to be a medical curiosity. In the United States, for example, only about 30 deaths from leprosy are recorded each year out of an annual total of nearly 1,500,000 deaths.

Scientists would like to know exactly what has caused this decline in leprosy because, as public health experts of the Metropolitan Life Insurance Company point out, the answer might throw light on current medical problems, chiefly that of tuberculosis. This disease also seems on its way out, but if scientists knew just what happened to leprosy, they might be able to hasten further the elimination of tuberculosis, it is suggested.

The two diseases have many points in