

ASTRONOMY

Crescent Moon Meets Venus

On 24th of This Month This Beautiful Sight May be Seen In Early Evening; On 9th Moon Passes Close to Saturn

By JAMES STOKLEY

THE DISPLAY of planets, which has been foreshadowed during recent months, has now reached its height in the evening. Every one of the five naked eye planets, Mercury, Venus, Mars, Jupiter and Saturn, can be seen in the evening sky during the month, though not all of them are well enough placed to be indicated on the accompanying maps. In addition, the summer constellations are now shining in all their glory, so that this month offers a splendid opportunity to become acquainted with the celestial bodies.

Mercury, nearest of all the known planets to the sun, is the least often seen of the five mentioned above. It is so close to the sun, only 36 million miles away (as compared with 93 million for the earth), that it never passes far out of the overpowering glare of that body. Once in 88 days it makes a revolution in its orbit around the sun, but the earth is also revolving around the sun, once in 365 days, and in the same direction. The result is that every 116 days the sun, Mercury and the earth are in the same relation to each other. Once in that period, Mercury is seen farthest to the west of the sun. This is called "greatest western elongation." Then it is seen low in the eastern sky just before the sun rises, after which the glare makes it invisible.

Next it passes around behind the sun, to reappear about ten weeks later on the eastern side, which is called "greatest eastern elongation." Mercury is in this position on July 2, and then it will be low in the west for about an hour and a half after the sun descends. It will be of the .8 magnitude, so if you have a clear western horizon, and a keen eye, you should have little difficulty in finding it on this date, or a day or two earlier or later. A pair of opera glasses will assist in detecting it.

The planet Venus, next in order from the sun, will be in the same part of the sky, and even brighter, but lower and farther north. During the rest of

the month it will rise higher and higher in the evening sky, at the same time increasing in brightness, so if you cannot locate it on the same date as Mercury, watch for it later. Its magnitude, on the fifteenth, is minus 3.3, far brighter than any star or other planet in the sky.

Next planet, of course, is our own earth, but one doesn't need to wait until evening to see it! The next that appears in the sky is Mars, and it is in the constellation of Virgo, the virgin, setting about three hours after the sun on the fifteenth.

Mars Has Faded

Because of its great distance from the earth, it has faded from the brilliance that it had earlier in the year, and is now of magnitude 1.1, which is, however, far brighter than all but a few of the stars. Its red color, and steady glow, so different from the twinkling stars, make it easy to locate as it shines in the southwestern sky.

Jupiter, largest member of the sun's family of planets, is the next in order, and it can be seen these July evenings to the right of Mars, almost directly west. It is considerably brighter than Mars, or indeed, than any planet except Venus, and, being higher in the sky, it remains visible after Venus has set. It is in the constellation of Leo, which, at

the time that the maps show, has half descended behind the western horizon.

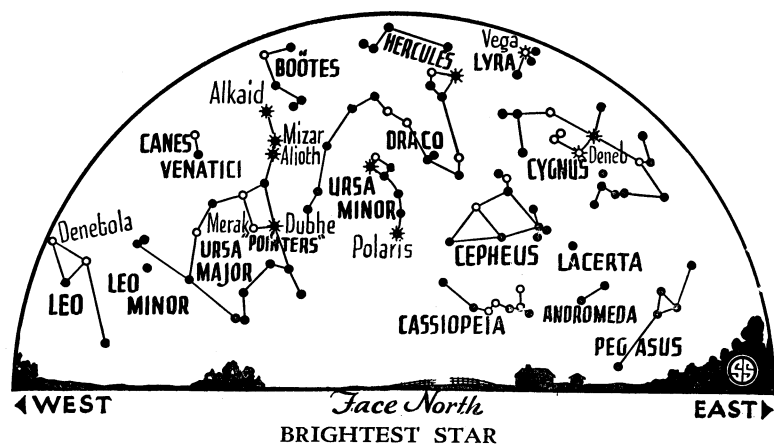
Saturn, most distant of the naked eye planets, and famous for the system of rings surrounding it, is now coming into view after months of invisibility in the evening sky. It rises in the east about an hour after sunset, and is in the constellation of Capricornus. About nine o'clock on an evening in the middle of the month, it can be seen low in the southeast, as indicated on the map. Its magnitude is .5, which is very brilliant, though greatly inferior to either Venus or Jupiter.

During the month the moon goes through its regular phases as follows: On the seventh it is full, rising at sunset and visible through the night. It is at last quarter on the fourteenth, when it rises at midnight. New moon comes on the twenty-second, when it is invisible, but a few days afterwards the slender crescent can be seen low in the west. Finally, first quarter comes on the twenty-ninth, when it is directly south at sunset and remains visible through the evening. Thus, one desiring moonlight evenings will find them from the beginning to about the ninth of the month, and again at the end, from about the twenty-fifth to the thirty-first.

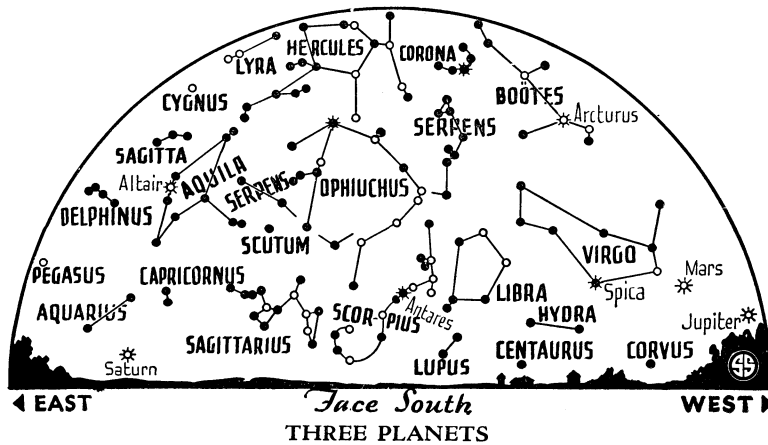
To Pass Saturn

On the twenty-fourth the crescent moon will pass close to the planet Venus, making an interesting spectacle in the western sky in the early evening. On the ninth it will pass close to Saturn.

✱ ✱ ○ ● SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS



The brightest star visible this month is the beautiful Vega, in its easily found triangle high in the north.



This map shows the location of three of the planets visible to watchers of the evening sky this month. As Saturn rises in the East, Jupiter and Mars are sinking in the West. The twisting tail of the distinctive summer constellation Scorpius is shown directly south.

At about 7:30 p. m., eastern standard time, the planet will be less than the moon's own diameter to the north, but then it will not be easily visible. When the planet and moon come into view, however, they will still be close together, especially for observers in the eastern part of the country. Those farther west will not have moonrise until correspondingly later, and by that time the planet and our satellite will have separated even more.

Moon to Hide Star

In the early morning hours of July 5, the moon will pass in front of a star known as tau Scorpii, in the constellation of Scorpius, the scorpion. The star is of the 2.8 magnitude, easily visible to the naked eye, but it will not be so conspicuous when close to the brilliant moon. With slight optical aid, such as a pair of field glasses, the occultation, as such a phenomenon is called, should be easily seen.

Six first magnitude stars decorate the July evening sky. In the eastern sky almost overhead is the constellation of Lyra, the lyre, in which we find the brilliant Vega, brightest of the stars now visible. Below Lyra is Cygnus, the swan, which is sometimes called the northern cross, from the arrangement of the stars that constitute the group. The cross is now horizontal. The northernmost star in the cross is Deneb, another of the six, though much fainter than Vega. To the south of Cygnus is a brilliant star, Altair, which marks Aquila, the eagle. Directly south is Scorpius, already referred to, in which there is a brilliant star of distinctly red color. This is Antares, and it is supposed to mark

the scorpion's head. The animal's long tail curves down and to the left.

High in the western sky is Bootes, in which we find first magnitude Arcturus, the light from which, after a journey of 40 years, was used a few weeks ago to inaugurate the Chicago Century of Progress Exposition. Lower, and in the southwest, is Virgo. Besides temporarily containing the planet Mars, Virgo has a bright star, Spica, which is to the left of the planet.

In the northern sky, Cassiopeia, shaped like the letter W, is near the horizon. Hanging in the northwest by the end of its handle is the great dipper marking Ursa Major, the great bear. The pointers are the two lowest stars in this figure, and continuing from them to the right you can locate the pole star, Polaris, which is approximately at the position of the north pole of the sky. It is only approximate, however, for the true pole, the point of the sky directly above the earth's north pole, is more than twice the moon's diameter away from the pole star.

Hundred Thousand Stars

Directly overhead is Hercules, which contains no very bright stars. However, it does contain one very remarkable object which can be seen under the most favorable conditions with the unaided eye as a faint patch of light but for which a telescope is required really to appreciate. This is the so-called "great cluster in Hercules," a globular swarm of perhaps a hundred thousand stars, each comparable in size with our own sun. Its distance is so great, however, that its light takes about 36,000 years to reach us, and it is so vast that a beam of light takes 320 years to cross it. The

immensity of these distances can be realized when it is recalled that light travels seven times around the earth in a single second! A number of such clusters are known, but this one is the most famous.

On July 2 there occurs an astronomical event which produces no striking visible effects in the sky. On that date the earth is in aphelion, at a greater distance from the sun than at any other time in the year. After that the earth will approach closer to the sun until next winter. Despite the greater distance, however, this is the warmest time of year because now the sun's light, and heat, fall most directly on us in the northern hemisphere. In the winter time, even though the sun is closer, the sun's rays strike at a slant, and the same amount of heat is spread over a greater area, which more than compensates for its nearness.

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ZOOLOGY

"Demon Frog" Brought To National Museum

ROCK-DWELLING frogs of Puerto Rico, dreaded as demons by the natives who, however, have never seen them, have been brought to the U. S. National Museum here by Gerritt S. Miller, Jr., recently returned from a West Indian collecting trip.

The "guajone," as the frog is called, won his fearsome repute among the Puerto Ricans by his resounding voice, which echoes and re-echoes from the wild mountain gullies where he lives. Some of them say he is not a living creature at all, only a voice; others pictured him in fearsome terms as over a foot long and armed with terrible teeth, when they tried to dissuade Mr. Miller from his quest.

But the museum scientist persisted, and finally found his guajones in boulder-filled mountain caves where the going was hard and somewhat dangerous. He located them with the aid of a flashlight, and dislodged them from their crevice habitats with a twig.

Once he had them safely bottled they appeared ordinary enough frogs, the biggest of them less than two inches long. The most distinctive feature about them was their eyes, which he says stuck out like "mouse-ears."

Oddly enough, these frogs dislike the water, and if they fall into it get out as quickly as they can.

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