

ASTRONOMY

Four Planets Join Spring Stars

Brightest of These, Venus, Will Be Hidden By Moon's Disk On the Evening of May Fifth

By JAMES STOKLEY

TO JOIN the springtime stars this month in the evening sky, come four of the five planets that can ever be seen without a telescope. One, Mercury, will be seen only for a few days around May 26, when it will appear as a bright star low in the west after the sun has set. But the other three, Venus, Mars and Jupiter, will be seen all month through most of the evening. Venus is brightest of all and can be seen in the west as soon as the sky begins to darken, some time before any other star or planet comes into view. It is in the constellation of Gemini, the twins, and as the sky gets darker, Castor and Pollux will appear above it.

Farther north can be seen Capella, in Auriga, the charioteer, and still farther north the W-shaped constellation of Cassiopeia. High in the north appears the great dipper, part of Ursa Major, the great bear; and half way between this group and Cassiopeia is the little bear, Ursa Minor, in which is the little dipper, with the pole star at the end of the handle.

Directly south of the great bear is another animal, Leo, the lion, which can be recognized by the "sickle," to the right, with the blade curving to the west, and Regulus at the bottom of the handle, pointing downwards. A triangle of fainter stars, to the left, forms the flanks of the lion. Farther to the west and lower, appears Procyon, a star in Canis Minor, the lesser dog.

Next to Leo to the east is Virgo, the virgin, and it is in this group that we find another of May's evening planets. Red Mars shines brilliantly, to the right of the star Spica, and above the quadrilateral of stars that mark Corvus, the crow. Towards the southeast can be seen the planet Jupiter, even more brilliant than Mars, though not as bright as Venus. Jupiter is in the group of Libra, the scales, and below this can be seen the first part of Scorpius, the scorpion. The creature's tail is below the horizon until late in the evening.

The maps show the skies as seen at 10 p. m., May 1; 9 p. m., May 15; and 8 p. m., May 30.

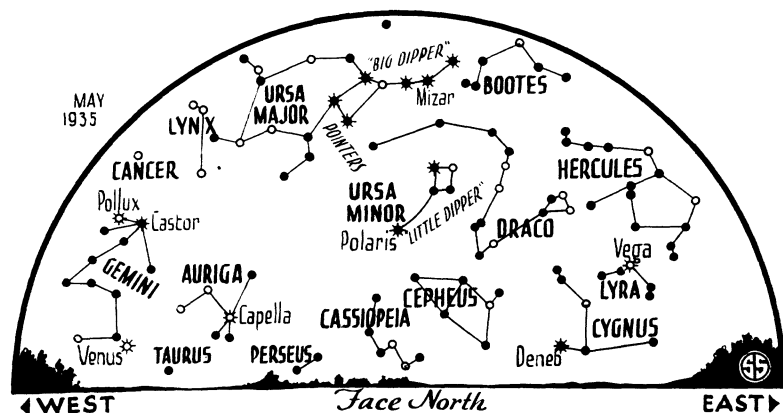
High in the southeastern sky is Arcturus, in the constellation of Boötes. A good way to find this well known star is to imagine the curve of the handle of the great dipper continued to the south. As you follow such an imaginary line you come first to Arcturus, then to Spica. Directly to the north of Boötes can be seen a little semicircle of stars, Corona Borealis, the northern crown, and below this is the large constellation of Hercules. Below Hercules is Lyra, the lyre, with the first magnitude star Vega, brightest star now visible, though considerably fainter than any of the three planets visible in the evening. Below Lyra is Cygnus, the swan, in which is the star Deneb.

The most interesting astronomical events of May are concerned with the moon and two of the planets now in view. When we think of eclipses, we generally think of the kind that happens when the moon passes in front of the sun, or into the shadow of the earth. But the moon is a solid body, and as it travels around through the sky, it frequently comes in front of other bodies besides the sun. Such an event is termed an occultation. Almost any night that the moon is visible, an occultation of some faint star can be seen. Those of stars bright enough to be seen with the naked eye are rarer, especially those of first magnitude stars. It might be thought that the moon is big

enough so that it would frequently hide stars. But the moon's size is deceiving. Ask a person how many full moons they think it would take to fill the sky completely. The chances are that their guess will be far below the correct figure, which is 115,200. But even with the best conditions we can never see with the naked eye more than 2,500 stars in the sky at one time.

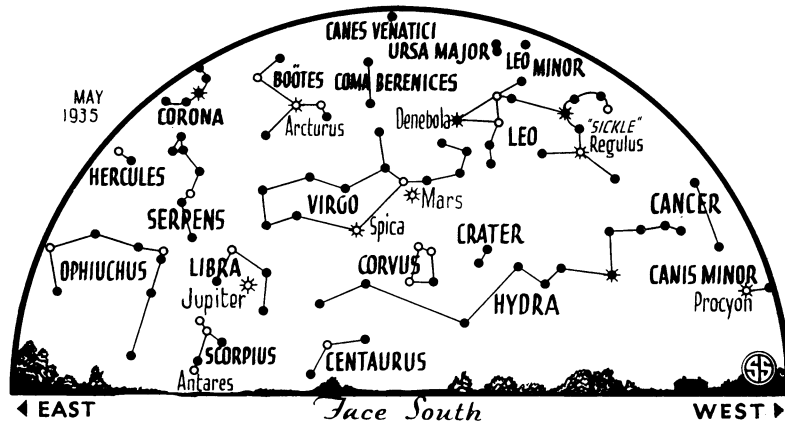
If they were uniformly spaced, the areas between the stars would be about 46 (115,200 divided by 2,500) times the area occupied by the moon. Or, if disks the area of the moon were scattered around the sky at random, it would take 46 of them, on the average, to cover a single star. That is why the chances that the moon will hide a single star are so slight. It can move through a considerable part of the sky without covering one.

The month of May, however, brings to most of the country an occultation of a bright star, as well as one of the still rarer occultations of a planet. The latter comes first. On the evening of May 5, at 7:08 p. m., eastern standard time, as seen from Washington, the moon, then a narrow crescent four days after new, will pass in front of the planet Venus. At 7:59 p. m., it will have moved completely across, and the planet will reappear. In other parts of the United States, the times will be slightly different, and farther west it will be increasingly difficult to see, because it will occur before the sun has set. Even there, it may be seen with proper optical aid. Venus is now so bright that it can be easily seen in full daylight even through small telescopes.



Watch Venus, low in the western sky in the early evening of May 5, if you wish to see her hide in the embrace of the new crescent moon.

* * ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS



HIDES HIS MOONS

If you have a small telescope and live in the eastern states, you may see, on May 8, three of Jupiter's four moons disappear into his brilliance.

The phases of the moon are caused by the fact that as it makes its circuit of the earth every month, we see varying amounts of the sun-illuminated lunar hemisphere. When sun and moon are on opposite sides of the earth, the entire bright half is turned towards us, and we see it full. When between the sun and the earth, the bright half is away from us, we cannot see the moon at all, and it is the time of new moon. The moon travels from west to east among the stars, and a few days after new, it has moved far enough to remain in the western sky a few hours after sunset, and by this time a narrow segment of the sun-lit hemisphere is turned towards us, which we see as a crescent.

Consequently because the moon is travelling eastward when it overtakes Venus on the fifth, the planet, though moving in the same direction, will vanish behind the moon's dark edge. However, the dark side of the moon will probably be faintly visible because of earthshine, sunlight reflected from the earth to the moon and thence back to us. As it takes an appreciable length of time before the moon completely covers the planet, the latter will disappear gradually. This will be especially interesting through a telescope magnifying as much as thirty or forty times enough to show Venus as an appreciable disk, itself in a gibbous phase similar to that of the moon between first quarter and full. The re-appearance will also be gradual, but this will be from behind the bright edge and will not be so noticeable. Probably the planet will not be seen with the unaided eye until entirely clear of the moon's disk.

May's second occultation comes on the nineteenth, and will be visible all over the United States, but the people in the East, making up for their favored position on May 5, will have to stay up until the small hours to view it. This is of the star Antares, in the scorpion, which at this time of night is seen well above the horizon to the south, as it is during the evenings of summer. Antares has a brilliant red color. Extending from it to the left is a hooked row of stars, which forms the scorpion's tail. The moon will be very bright, just a day past full. At 3:15 a. m., eastern standard time, from Washington, the star will be covered, and at 4:12 a. m., it will reappear. The star will disappear and reappear suddenly, instead of emerging gradually as did Venus. This happens because the star, even through a powerful telescope, has no appreciable disk, but appears as a point of light. As soon as it comes out at all, it is entirely visible. There is no atmosphere around the moon to produce absorption and to cause the star to appear slowly. In fact, this immediate disappearance and return of stars at occultations afford the very best proof that the moon has no layer of air surrounding it.

For those equipped with small telescopes in the eastern states, another interesting event during May will happen on the evening of May 8, in connection with Jupiter. With only a small instrument, the four large moons of this planet, which has nine altogether, can easily be seen. Sometimes one of the four will disappear behind Jupiter, or into its shadow, or else it may vanish as it passes directly in front of the planet, because they are of so nearly the same color.

Almost every night something of this kind can be observed, but on the evening of the eighth, three of the four will be gone at once. From 8:55 to 10:20 p. m., eastern standard time, only satellite number 4 will remain in view, to the west of the planet. In the western parts of the country, Jupiter will not have risen until 10:20 p. m., eastern standard time, and so they will miss this unusual sight.

Our moon is new on the second, at first quarter on May 10, full on the eighteenth and at last quarter on the twenty-fifth. On May 11, at 9:15 a. m., eastern standard time, it will be farthest from the earth, with 251,200 miles separating us. This is called apogee. Perigee, when the moon is closest the earth, happens on the twenty-fifth, at 11:30 a. m., and then we shall be only 229,650 miles away.

Science News Letter, April 27, 1935

EUGENICS

Sterilization Is Urged To Prevent Blindness

STERILIZATION was urged as a measure to prevent blindness at the meeting of the International Association for Prevention of Blindness.

For this purpose facilities should be made available everywhere for sterilization of persons suffering from hereditary eye diseases and pre-marital certificates regarding the freedom from such diseases should be required of brides and grooms, Dr. A. Franceschetti of Geneva, Switzerland, declared.

The chances of becoming blind are greatest in the first two years of life, Dr. M. Van Duyse of Ghent, Belgium, told members of the conference. The conditions responsible for the high proportion of blindness in the early years of life are babies' sore eyes, scientifically known as *ophthalmia neonatorum*, and injuries or sores of the cornea.

Cases of blindness from babies' sore eyes have been reduced 75 per cent. in the United States during the past 25 years, Lewis H. Carris of New York, managing director of the American National Society for the Prevention of Blindness, reported. This reduction has come about, Mr. Carris explained, as a result of state laws requiring physicians and midwives to wash the eyes of every new baby with a prophylactic solution.

Dr. Park Lewis, of Buffalo, N. Y., presided at the international conference in the absence, due to illness, of the president, Prof. F. de Lapersonne of Paris.

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