

ASTRONOMY

Five Naked-Eye Planets

Venus, Mars, Jupiter, Mercury and Saturn, the only planets ever visible to the unaided eye, all can be seen next month. Sirius is brightest star of March evening skies.

By JAMES STOKLEY

➤ ALL FIVE of the planets that are ever visible to the naked eye will be seen during March evenings, although not simultaneously.

Most conspicuous of these is Venus, which is seen in the west and reaches its greatest brilliance, of magnitude minus 4.3 on the astronomical scale, on the evening of March 7. However, for the first part of the month the brightness will not change perceptibly as far as the eye can tell.

Venus is drawing near to the sun. On March 1, it sets more than three and one-half hours after sunset, but by the end of the month it follows the sun by less than two hours. By the middle of April it will be nearly in front of the sun and gone from the evening sky.

The planet Mars is in the same part of the sky as Venus, that is, the constellation of Pisces, the fishes, but with magnitude 1.5, it is less than a two-hundredth as bright. This still makes it equal to a bright second-magnitude star.

On the evening of March 17, Venus passes Mars, a little to the north. The crescent moon, two and a half days past new, will also be nearby, toward the east, having passed the two planets earlier, before they rose for American observers.

Mercury Seldom Observed

A little above Venus in the west, and about one-eleventh as bright, Jupiter shines in the constellation of Aries, the ram. At the first of March it sets a little after 11 p.m. and about an hour and a half earlier at the end.

These planets are all indicated on the accompanying maps, which show the appearance of the skies about 10:00 p.m., your own kind of standard time, on March 1, an hour earlier on the 15th and two hours earlier on the 31st.

However, Mercury will also make a brief appearance at the beginning of the month, but is not shown, because it sets before the time for which the maps are prepared. On March 2, Mercury will be farthest east of the sun and will set about an hour and a half after it.

Since it descends below the western horizon just as twilight is ending, it will not be seen against a fully dark background, but in the dusk. For several days around this date it should be possible to get a glimpse of Mercury, which is seldom observed.

Saturn, the fifth planet, shown toward the east in Virgo, the virgin, rises at the beginning of March about 9:30, just about when Venus is setting. By the end of the month it comes up a couple of hours earlier, about an hour after sunset. Of 0.5 magnitude, it is fainter than the other planets mentioned, with the exception of Mars.

Brightest star of the March evening skies is Sirius, in Canis Major, the great dog, toward the southwest. Above and right is Orion, the warrior, with Betelgeuse and Rigel, both of the first magnitude. Still higher is Aldebaran, in Taurus, the Bull.

Venus View May Surprise

Directly above this group are Gemini, the twins, with Pollux as the brightest star. To the right of Aldebaran is Auriga, the charioteer, in which Capella shines. Low in the east, near Saturn, is Spica, in Virgo, the virgin. Above this is Leo, the lion, with Regulus, while toward the left is Arcturus, in Bootes, the bear-driver.

Many college observatories have their public nights, and often groups of amateur astronomers provide their neighbors with a chance to look at the celestial objects with some optical aid. If they do so in March, it is likely that Venus will be one of the objects they show, greatly to the surprise of the viewers who see it for the first time. For at present Venus is seen in a crescent phase, like that of the moon when about five days past new.

Venus undergoes a complete cycle of changing phase, just as the moon does—and for the same reason. Like the earth and other planets, Venus has no light of its own, but shines by reflected sunlight. Its

hemisphere turned toward the sun is bright, while the opposite one is dark.

Last June Venus was behind the sun, as viewed from the earth, and hence invisible. Then it moved to the east of the sun, remaining visible in the west after sunset, and thus began to appear in the west in the early evening. However, it was still far beyond the sun, so practically all of the sunlit hemisphere was visible, and through a telescope it looked like a complete circle.

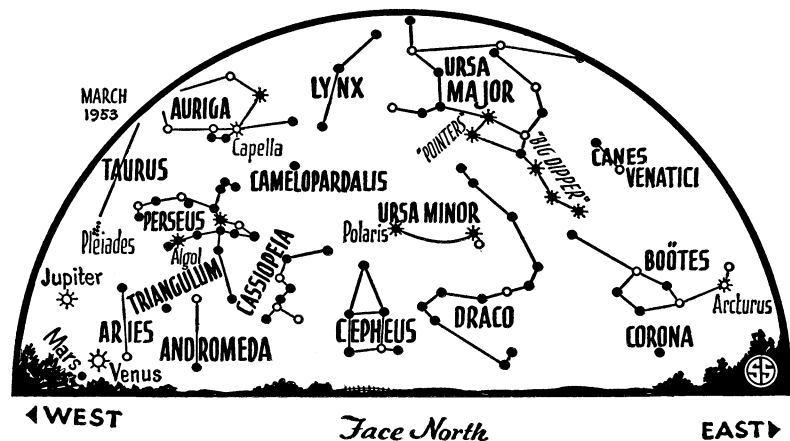
Then, around the beginning of 1953, it had moved to about the sun's distance from us, and was far to the east of that body. Through a telescope at that time, it would have appeared a semicircle, like the moon at quarter phase. Since then, the illuminated half has been turning away from us, so we have had a crescent phase, which will continue to get thinner and thinner until April 13, when the planet comes nearly between the earth and sun.

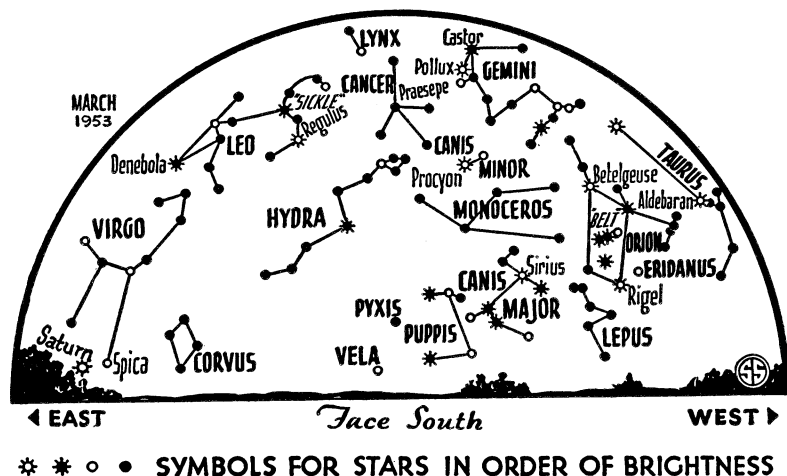
Unlike the moon, however, there is a change in size of Venus with the alteration in phase. All through the month, as the moon swings around the earth, it changes relatively little from its mean distance of about 240,000 miles.

Closest Planet Approach

Venus, on the other hand, was about 160,000,000 miles away when it first appeared last summer. On March 8, it will be 40,484,000 miles from us, so the circle of which its crescent forms part is much larger than the entire disk was last year. Thus its closeness much more than makes up for the fact that a large part of the illuminated part is not visible. With the moon, of course, the circle it presents in the sky changes very little in diameter, and it is brightest when full, that is, when we see all of the bright half.

On April 13, when Venus comes between the sun and the earth, it will only be 26,417,000 miles from us. This is closer than





any other planet gets to the earth, and would be a good time to observe Venus, were it not for the fact that it is then practically in line with the sun. Mars behaves quite differently, for since it revolves in an orbit that is outside the orbit of the earth, Mars comes closest to us when opposite the sun.

Celestial Time Table for March

- March EST
- 2 3:00 a.m. Mercury farthest east of sun, visible in evening just after sunset low in western sky around this date.
 - 4 5:47 p.m. Moon passes Saturn.
 - 7 7:00 p.m. Venus at greatest brilliancy.
 - 8 2:42 a.m. Algol (variable star in Perseus) at minimum brightness.
 - 1:26 p.m. Moon in last quarter.
 - 10 11:30 p.m. Algol at minimum.
 - 13 8:24 p.m. Algol at minimum.
 - 14 6:00 p.m. Moon nearest, distance 222,100 miles.
 - 15 6:05 a.m. New moon.
 - 16 5:12 p.m. Algol at minimum.
 - 17 2:58 p.m. Moon passes Mars.

- 3:06 p.m. Moon passes Venus.
 - 6:00 p.m. Venus passes Mars.
 - 18 8:00 a.m. Mercury between sun and earth.
 - 19 1:08 a.m. Moon passes Jupiter.
 - 20 5:01 p.m. Vernal equinox, sun directly over equator; spring begins in northern hemisphere, autumn in southern.
 - 22 3:10 a.m. Moon in first quarter.
 - 27 1:00 p.m. Moon farthest, distance 252,200 miles.
 - 30 7:55 a.m. Full moon.
 - 31 1:18 a.m. Algol at minimum.
- Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, February 28, 1953

CHEMISTRY

Los Angeles' Sunshine May Be Factor in Smog

LOS ANGELES has long boasted about its famous sunshine, but sunshine also may be a contributing factor to its notorious smog.

Thomas C. Hall, graduate research chemist at the University of California at Los Angeles, who is investigating a reaction that involves sunlight, nitrogen dioxide and hydrocarbons, believes this reaction may be the center of the smog problem.

Sunlight is absorbed by nitrogen dioxide molecules, activating them. The energetic molecules react with hydrocarbons. The products of this latter reaction may be the source of eye irritating toxicants.

In the laboratory this reaction has been reproduced for a controlled, detailed study. Ultraviolet light source represents the sun. Products of the nitrogen-dioxide-hydrocarbon reaction are carefully analyzed through the use of the mass spectrometer, an instrument that can measure infinitesimal amounts of gas mixtures. From this information some idea of the process whereby smog is produced may be obtained.

Mr. Hall's investigation is also related to rocket fuel studies. Nitrogen dioxide is included in such fuel and rocket experts are interested in the reaction of the substance to light and heat.

Science News Letter, February 28, 1953

WHAT MISTAKES IN DRIVING DO YOU MAKE?

CAN you start a wet motor, take curves without rubbing off miles of rubber, get juice from a battery that seems dead, put out a fire beneath the hood, start on ice without spinning the wheels, pull out of a skid without whirling into approaching traffic?

What common mistakes do you make on flooded roads, on icy hills? What do you do when a car darts out at you from a side road? Do you know how to stop a car FASTER when emergency demands you stop on a dime? Do you know how to avoid a sideswipe, pass a truck crawling up a hill, even what to do in that split second you can act when a head-on collision seems inevitable? Do you KNOW what to do or will you do the first thing that comes to mind in that moment of panic?

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INVENTION
Pliers Straighten Badly Bent Nails

AMATEUR CARPENTERS will like a pair of pliers which straighten out bent nails. This pair of pliers, according to the inventor, will bring an "even acutely bent" nail back to a straight condition.

The pliers are constructed so that the bent nail will not fly out of the pliers during the operation. And, the inventor says, you cannot over-straighten the nail, thus bending it the other way.

One face of the nipping end of the pair of pliers has a groove to hold each end of the bent nail. The other face has a groove to hold the angle of the bent nail. The pliers are pressed together. Result, a straight nail. Patent number is 2,628,519 and inventor is Wilfred C. Hand, Mountainside, N. J.

Science News Letter, February 28, 1953