ASTRONOMY

Venus and Saturn Shine

Venus now outshines the next brightest star by some 30 times, dominating western sky. Saturn is prominent in the southern sky.

By JAMES STOKLEY

➤ OUTSHINING the next brightest star or planet by some 30 times, the planet Venus now dominates the western evening sky. At the middle of May it sets three and a half hours after the sun. It is in the constellation of Gemini, the twins, though Venus appears long before it is dark enough for the stars in this group to be visible.

In the south can be seen another planet, Saturn, in the position indicated on the accompanying maps, which depict the sky as it appears around 10:00 p. m. the first of May. In the middle of May they look the same way an hour earlier. (Add one hour if you are on daylight time.) Saturn is now close to the border between Virgo, the virgin, and Leo, the lion. Actually it is in the former constellation, according to the official boundaries. Though Saturn equals a typical star of the first magnitude, it is about one hundred and twentieth as bright as Venus.

Brightest star shown on these maps is Vega, in Lyra, the lyre, over in the northeast. Below this group is the constellation of Cygnus, the swan, but because it is so close to the horizon its brightest star, Deneb, appears fainter than the first magnitude. Actually, however, it is of this same class of brilliance, as one realizes later when it has climbed higher into the sky.

Both Virgo and Leo contain stars of this class; Spica in the former group, and Regulus in the latter, at the end of the handle of a smaller figure called the "sickle."

Big Dipper Points Out Arcturus

Above Virgo is Bootes, the bear-driver, with bright Arcturus. Another way to locate this star involves the Great Dipper, which is high in the northern sky, part of Ursa Major, the great bear. As is well known, the two stars in the bowl of the dipper, known as the pointers, indicate the direction of Polaris, the pole star, which stands almost directly over the north pole of the earth. But if one follows the curve of the dipper's handle around to the south, one comes to Arcturus and, still farther, to Spica.

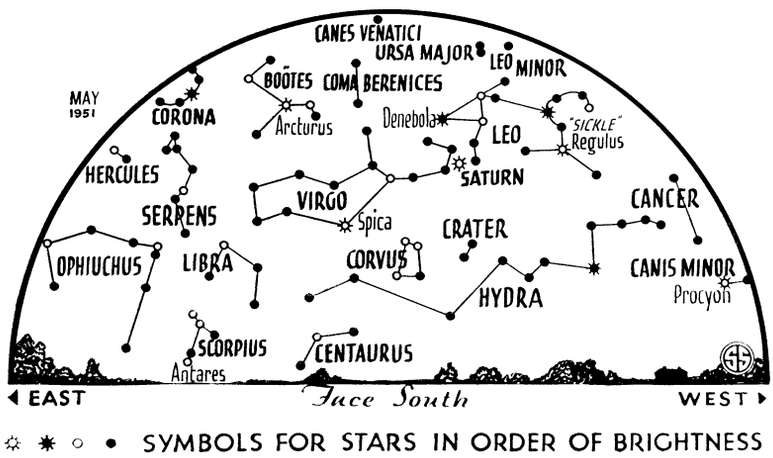
In the figure of Gemini, in which Venus stands, are the stars Castor and Pollux, the latter of the first magnitude. About the same height as Venus, but farther north, is the star Capella, in Auriga, the charioteer. In approximately the same position to the left of Gemini is Canis Minor, the lesser dog, with the star called Procyon.

Finally, low in the southeast, almost at the horizon as shown on the map, is the star Antares. Like Deneb, it is much fainter than normal because of its low altitude, and the resultant increased absorption by the atmosphere. Antares is in the constellation of Scorpius, the scorpion, just making its debut in the evening sky, and with only part of the group in view. In July the scorpion will be visible in its entirety during the evening.

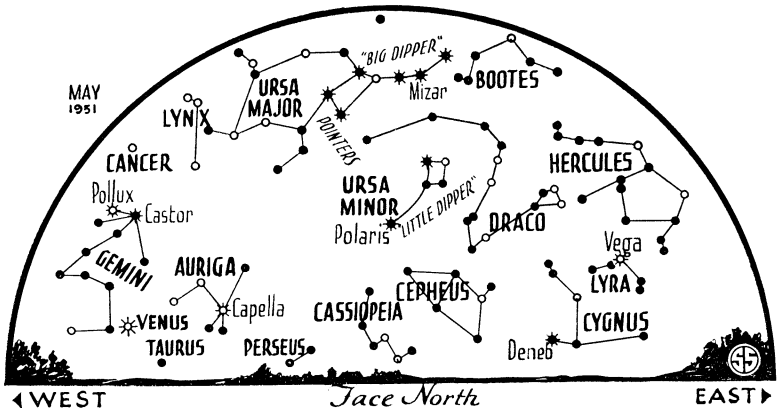
The planet Jupiter, brighter than any other except Venus, appears later in the night, in the constellation of Pisces, the fishes. In the middle of May it rises about two hours ahead of the sun. Mercury comes into the morning sky around May 22, but does not rise far enough ahead of the sun to be visible easily. Mars, likewise, is too close to the sun to be visible during May. On the 22nd it will be behind the sun and afterwards will come into the morning sky.

Although the other planets are spherical bodies like the earth, they do not always appear round. We are used to the phases of the moon and know that it is spherical, even though it may present to us a semicircular or even a crescent shape. The reason, of course, is the changing relationship of the earth, moon and sun, which supplies both of the former bodies with their light. With both earth and moon, the hemisphere toward the sun is bright and the other half dark. Thus, when the moon is new and almost or completely between sun and earth we cannot see it. This is not only on account of the glare of the sun in the sky, but also because only the dark half is then directed to us.

A couple of days after new, however, the moon has moved a little toward the east, and a narrow sliver of the sunlit hemisphere is turned toward us, which we see low in the west after sunset as a narrow crescent. As the moon moves more nearly to the part of the sky opposite the sun, more and more of the bright half comes into view. About a week after new we see it at first quarter, and after another week it is full. Then similar changes take place, in reverse order, through last quarter and back to new.



☼ ✱ ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS



Mercury and Venus both revolve around the sun, rather than the earth, but they, too, show the same change in phase. Early this year, when Venus first began to appear in the evening sky, it was far beyond the sun. Its illuminated hemisphere was almost completely turned toward us and it appeared, through a telescope, as the moon does when nearly full. But now Venus is swinging around toward the earth's direction from the sun. By May 1 a considerable portion of the dark hemisphere of Venus is turned earthwards. Its telescopic appearance is then like the moon in a gibbous phase a few days after the first quarter.

Half-Moon Phase

On June 25, when the planet is farthest east of the sun in the sky, it will have a half-moon phase, like the moon at first quarter. After that Venus will move between earth and sun. It will have the appearance of a crescent gradually becoming more and more narrow. By the end of August the crescent will be narrowest and Venus will be so nearly in line with the sun that it will set very soon after sunset.

Sept. 3 is the date of "inferior conjunction," with Venus practically between earth and sun and hence invisible. But a few weeks later it will have traveled far enough to the west of the sun to appear in the eastern sky before sunrise. Again most of the sunlit hemisphere will be turned away from us and, telescopically, it will appear as a crescent. This will get wider and next year Venus will again be "full," ready to start the cycle over again.

There is one great difference between the changing phases of the moon and those of Venus. The former remains at approximately the same distance, about 240,000 miles, regardless of phase. When Venus is full it is on the far side of the sun, about 160,000,000 miles away. At the quarter phase its distance is the same as the sun—93,000,000 miles—but when it comes closest and the crescent is narrowest, it is less than 30,000,000 miles from the earth. Then its apparent size is about six times as great as when it is farthest. Of course, even when closest, at what is called "inferior conjunction" with the sun, a telescope is needed to show it as other than a point of light.

Celestial Time Table for May

May	EST	
2	1:03 p. m.	Moon passes Jupiter
5	8:35 p. m.	New moon
9	12:00 noon	Moon farthest, distance 252,200 miles
	12:08 p. m.	Moon passes Venus
14	12:32 a. m.	Moon in first quarter
16	4:58 p. m.	Moon passes Saturn
21	12:45 a. m.	Full moon
	11:00 p. m.	Moon nearest, distance 222,700 miles
22	12:00 noon	Mercury farthest west of sun
27	3:17 p. m.	Moon in last quarter
30	5:22 a. m.	Moon passes Jupiter

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

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PHYSIOLOGY

New Clothing Protects At Low Temperature

➤ FIGHTING fliers, at high altitudes and temperatures as low as minus 65 degrees Fahrenheit, will be protected from the cold with a new one-piece electrically-heated flying suit developed at the Wright-Patterson Air Force Base, Dayton, Ohio.

The new model is described as an easy-to-wear, one-piece coverall which, when worn with electrically-heated gloves and foot wear, will keep its wearer comfortably warm for well over 48 hours at the frigid temperatures of high altitudes. It can be worn over standard uniforms and is as warm as a heavy flying suit, even without use of its electrical unit.

The suit has already had several thousands of hours of testing in Alaska. The heating elements used are the safest and strongest yet developed, and a new control enables the wearer to select different degrees of heat. The wiring is designed to give even heat to all parts of the body. Circuits are arranged so that shoes and gloves can receive normal electric current even if wattage of the heated suit itself has been reduced.

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