

ASTRONOMY

Lion Shines High in South

Leo, the lion, roams the southern sky in April. Gemini, the twins, watch Orion hunting with his dogs, Canis Major and Canis Minor, in the west, James Stokley reports.

➤ SHINING HIGH in the south on April evenings is the constellation of Leo, the lion. Its position is shown on the accompanying maps. These show the appearance of the heavens about 10 p.m., your own kind of standard time, at the beginning of April; an hour earlier in the middle; and two hours earlier as April comes to a close.

The brightest star in Leo is Regulus, which is part of a sub-group called the sickle. The blade of this implement, which is pointed toward the southwestern horizon, forms the head of the lion, as pictured on old star maps. These showed the constellation figures around the stars. Denebola, a second-magnitude star off to the left, marked the tail.

Next to Leo, lower and toward the left, you will see Virgo, the virgin. In it stands the star Spica, which is first magnitude, like Regulus. In the east, and a little higher, is another of this brilliance: Arcturus, in Bootes, the herdsman. (Part of this constellation is shown on the map of the northern sky.)

Mars Is Only Evening Planet

Look toward the west and you will see the only planet visible these April evenings. This is Mars, which stands in Gemini, the twins.

Since last December, when it came within about 56,000,000 miles of earth, it has been drawing away from us, and now its distance is about 120,000,000 miles. At the same time it has been getting fainter, although it still ranks as first magnitude. Mars is slightly brighter than the star Pollux, just above. By the end of April, however, it will become fainter than Pollux, and by summer it will have faded to the second magnitude of celestial brightness.

Lower than the Gemini, in the western sky, are some of the constellations that shone so brilliantly high in the south on midwinter evenings. There is Canis Minor, the lesser dog, with Procyon; below, near the horizon, is the big dog, Canis Major, with Sirius. To the right of this group is Orion, the warrior, partly below the horizon. However, the bright star Betelgeuse is still visible. And farther to the right (shown on the map of the northern sky) is Taurus, the bull, with Aldebaran, shown fainter than its customary first magnitude, because it is so low. In this position, much of its light is absorbed by the earth's atmosphere. And to the right of Taurus, you will find Auriga, the charioteer, with Capella.

The familiar "Big Dipper," which is part of Ursa Major, the great bear, shines high in the north. The pointers are aimed downward, toward Polaris, the pole star, in the

"Little Dipper" and also in Ursa Minor, the lesser bear. Winding its sinuous length between the two dippers is the fainter constellation of Draco, the dragon.

In recent months the planet Venus has been shining in the western evening sky, more brilliant than any other star or planet. On April 10, it comes between sun and earth, and will not be visible. After that it will move across the sky ahead of the sun, rising before sunrise. In another month or so it will be visible in the east at dawn, just as prominent as it has been recently in the west at twilight. Jupiter is also a morning star, shining in the southeast for a few hours before the sun appears. Saturn, considerably fainter, is near it.

Venus and Mercury (which is not visible at all in April) are the only two planets nearer to the sun than earth. Our average distance is about 93,000,000 miles, while that of Venus is about 67,000,000. We go around the sun in 365 days, Venus in 225 days.

The last time that Venus came between earth and sun, reaching the position called "inferior conjunction," was on Sept. 1, 1959. By last April it had completed a full circuit of its orbit around the sun, but the earth was in another direction from the sun. By last November Venus had made one more

such circuit but still had not caught up to earth again, as it will on April 10.

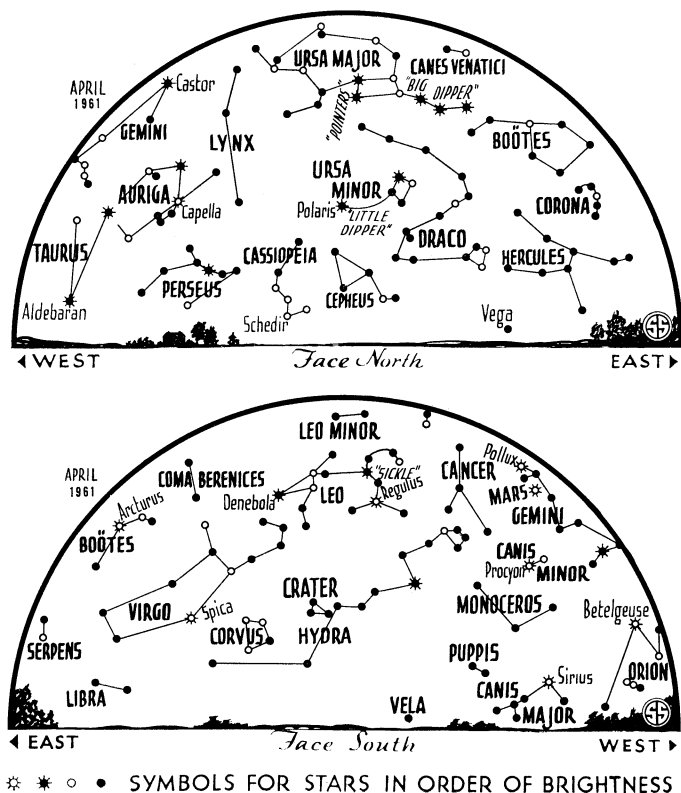
When Venus is on the far side of the sun, at the position called "superior conjunction," its distance is about 160,000,000 miles, which is the sum of its distance from the sun and ours. But at inferior conjunction when it comes closest, it is only about 26,000,000 miles away (67,000,000 subtracted from 93,000,000). No other planet comes as close, but since it is in line with the sun it cannot be observed at this close approach.

Probe Sent at Best Time

It is, of course, because of its present proximity that the Russian space scientists chose this spring to fire their Venus probe, which is now speeding toward that planet.

Many people are wondering whether the space vehicle will actually hit Venus, as the moon was hit with the Lunik rocket. But the moon is less than a quarter of a million miles away, and it is far more difficult to hit Venus at 26,000,000 miles. It would take highly accurate guidance to get the probe there. If it misses the planet by just a little, it will be pulled by the Venus gravitational field into an orbit around that body. In other words, it will become a satellite of Venus. With a miss at a greater distance, its path will be affected, but it will go on, to become an artificial planet, like Mechta and Pioneer V, continually encircling the sun.

The probe is evidently equipped with in-



struments to gather data about Venus, for example, the magnetic field, and the radiation of heat from the planet. Even at a distance of a few hundred thousand miles, far more accurate results could be obtained than can be determined from earth. The readings of these instruments will be sent back by radio. But just as the glare of the sun prevents observations of Venus visually at the time of inferior conjunction, so also might there be some interference with radio transmission.

The sun itself sends out radio waves, and with the probe in the same direction as the sun, they might interfere with the transmissions giving data about Venus. Perhaps, however, the probe will be able to store the data, and transmit the information later, when the sun is not in quite the same direction. Then radio telescopes could be pointed to the probe, and could pick up its message more easily. Or if, as originally announced by the Russians, the probe reached Venus in May, which would be about a month after the closest approach, the added distance would not be serious, and again there would be less interference.

In any event, this April astronomers all over the world are awaiting with interest what news of Venus the Soviet probe may tell.

Celestial Time Table for April

| April | EST | |
|-------|------------|---|
| 1 | 12:48 a.m. | Full moon |
| 8 | 5:16 a.m. | Moon in last quarter |
| 9 | 1:00 a.m. | Moon passes Saturn |
| | 9:00 a.m. | Moon passes Jupiter |
| 10 | 7:00 p.m. | Venus at inferior conjunction (i.e., between sun and earth) |
| 11 | 3:00 a.m. | Moon nearest, distance 228,600 miles |
| 15 | 12:38 a.m. | New moon |
| 17 | 8:00 p.m. | Mercury passes Venus |
| 21 | Midnight | Moon passes Mars |
| 22 | 4:50 p.m. | Moon at first quarter |
| 23 | 5:00 a.m. | Moon farthest, distance 251,100 miles |
| 30 | 8:00 a.m. | Neptune (planet not visible to the naked eye) nearest earth, distance 2,724,000,000 miles |
| | 1:41 p.m. | Full moon |

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

• Science News Letter, 79:186 March 25, 1961

ROCKETS AND MISSILES

Russian Venus Vehicle Halfway by April 3

See Front Cover

► THE SOVIET space vehicle sent to probe the secrets of Venus, the mystery planet, is scheduled to be about halfway on April 3.

At that time, the space vehicle, launched Feb. 12, will be about 13,000,000 miles from earth. Radio contact, lost for a while, has again been established with the vehicle that is expected to be in the vicinity of the planet some time in May.

The front view of the Venus vehicle, seen on the cover of this week's SCIENCE NEWS LETTER, shows the two banks of solar batteries and the blinds of the thermal control system. The rod antenna in this view is half opened.

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GET READY FOR THE SPACE and SCIENCE ERA! SEE SATELLITES, MOON ROCKETS CLOSE UP

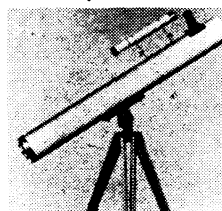


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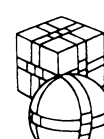
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