

ASTRONOMY

Jupiter Makes Appearance

March, the month that sees the official end of winter with the coming of the vernal equinox on the 20th, is also a good time for observing the planets.

By JAMES STOKLEY

➤ WITH THE COMING of March the planet Jupiter enters the evening sky early enough to appear on the accompanying maps. These show how the sky looks about 10:00 p.m., your own kind of standard time, on March 1, an hour earlier at the middle of the month and two hours earlier at the end.

Jupiter is low in the east, in the constellation of Virgo, the virgin, to the left of the star Spica. The planet is so bright, minus 1.9 on the astronomical scale, that even with the dimming of its light by reason of its low altitude it is a conspicuous object.

But Jupiter is not the only planet to be seen on March evenings. About the 29th, seldom-seen Mercury will put in a brief appearance. For several evenings around this date you may see it low in the west as the sky darkens, until about two hours after sunset, when it, too, will descend below the horizon. It is not as bright as Jupiter, but is more brilliant than any nearby star, so it will be easy to locate if you have a clear view. It is not shown on our maps, since it sets before the times for which they are drawn.

Brightest star of the March evenings is Sirius, the dog-star, in Canis Major, the great dog, which stands in the southwest. To the right is Orion, with two first-magnitude stars, Betelgeuse and Rigel, and the three stars between them that mark the belt of this warrior. That was the way he was depicted on the old star maps. The pictures of the figures were drawn around the stars.

Farther right, and a little higher, you can Taurus, the bull, with bright Aldebaran to mark his eye. And moving upwards, you come to Gemini, the twins, with Castor and Pollux, the latter a star of the first magnitude. To the south of Pollux is Procyon, the brightest star in the figure of Canis Minor, the lesser dog.

Following the Zodiac Path

To the left of the Gemini is Cancer, the crab, a rather inconspicuous constellation although it is one of the 12 marking the zodiac, the path through which the sun, moon and planets seem to move. But to the left of Cancer is Leo, the lion, quite a prominent group. The eastern part, which includes the lion's head, forms the "sickle," with Regulus the star at the end of the handle.

Continuing along the zodiac, next, below Leo, is Virgo, in which Jupiter now stands, alongside Spica. To the left of Virgo,

toward the northeast, is Bootes, the bear driver, with the star called Arcturus.

Next to this group, higher and to the left, is the familiar great dipper, which is part of Ursa Major, the great bear. A good way to locate Arcturus, in fact, is to follow the curve of the dipper's handle around to the south. This brings you first to Arcturus, then to Spica.

The other planets may be seen in March later in the night. Saturn, which is in Ophiuchus, the serpent-carrier, rises into view about 2:00 a.m. It is followed, about 4:00 a.m., by Mars, which is in Sagittarius, the archer. Only a few minutes later, about two hours before sunrise, Mars is followed by Venus. This is the brightest of all. It now shines in the east in the early morning as brilliantly as it did in the west in the evening a few months ago.

Vernal Equinox

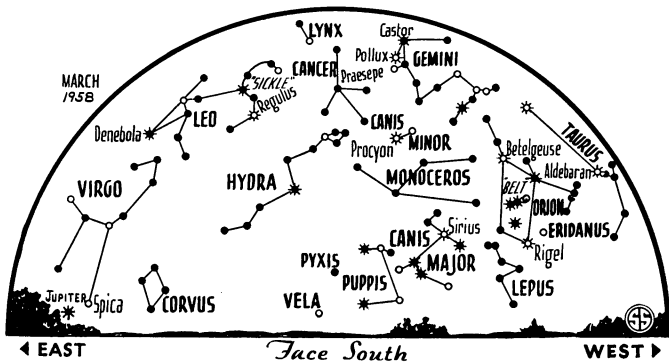
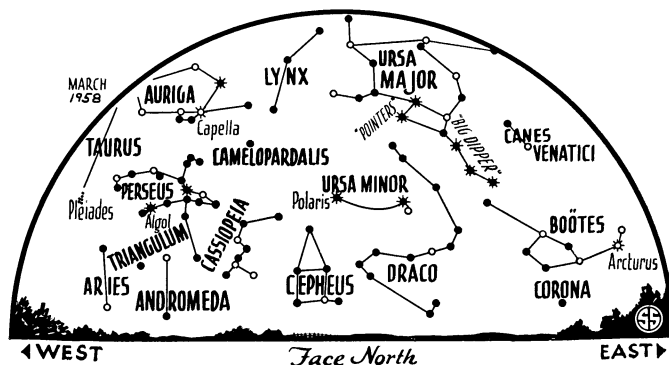
With March comes the end of winter. Officially, in the Northern Hemisphere, this season ends and spring begins when the sun stands directly over the earth's equator. It is then at the halfway point on the northward journey it starts in December, at the beginning of winter, and ends in June, when summer begins.

The sun reaches this halfway point on March 20, at 10:06 p.m. EST. This is called the "vernal equinox": "vernal" because in this part of the world it marks the beginning of spring, while "equinox" refers to the day and night which are now about equal, with the sun rising directly east, setting directly west, and above the horizon for exactly half of the 24-hour day.

Equal Days and Nights

Actually, however, this is not the case, and the equality of day and night, or the periods during which the sun is above and below the horizon, comes a few days earlier. There is an effect refraction, whereby the earth's atmosphere acts as a prism and bends toward the earth rays of light entering from outside. This has the effect of making any celestial object (unless it is exactly overhead) appear a little higher than it would if there were no atmosphere. Refraction is greatest at the horizon, where it raises an object a little more than the apparent diameter of the sun and moon. As a result we can see the sun before it has actually risen, and continue to see it after it has really set.

The fact that we call this the spring equinox is evidence of our Northern Hemisphere background. As the sun moves northward, it is daily climbing higher into our skies. Its heating effect is increasing and summer is on its way. But, to the people in southern countries, this northward journey means that the sun is gradually getting



* * * • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

lower in the sky. March 20, in Australia, for example, is the beginning of autumn. In Chile, winter begins in June.

About March 29, as noted earlier, Mercury will be visible low in the west in the evening twilight and this will be the best opportunity this year to see it.

Mercury's Revolution

Mercury is the innermost planet of the solar system; it is 36,000,000 miles from the sun, compared to the earth's distance of 93,000,000 miles. The diameter of Mercury is 3,010 miles, that of the earth is 7,918 miles, and it revolves around the sun once in 88 days.

While it makes one such revolution, marking its "year," the earth also has been moving, so Mercury catches up to us every 118 days, when it comes nearly between earth and sun, in the position called "inferior conjunction." Then, of course, it cannot be seen, but about 22 days before this and 22 days afterwards, it is seen farthest away from the sun, either to the east or west. This is called an elongation, and it is the eastern elongation that comes on the 29th. Then it follows after the sun in its daily movement across the sky, and sets well after sunset. Only at such a time can Mercury be seen in the evening sky.

The reason that an elongation to the east in the spring is more favorable than one in the autumn is found in the way the planet stands with respect to the sun.

On Nov. 20 it will be just as far away from the sun as it will be on March 29, but then it will be to the left of the sun and not as much above it. This month it will be well above the sun, and the same amount of elongation will make for the greatest delay in setting after the sun has gone down.

So look for Mercury at the end of March. You will not have as good a chance to see it for another year.

Celestial Time Table for March

March EST

- | | | |
|----|------------|--|
| 3 | 3:00 p.m. | Mercury on far side of sun (superior conjunction with sun). |
| 4 | 5:00 a.m. | Venus (in early morning sky) at greatest brilliancy (magnitude, -4.3). |
| 5 | 1:28 p.m. | Full moon. |
| 6 | 4:00 a.m. | Moon nearest, distance 222,100 miles. |
| 8 | 4:04 p.m. | Moon passes Jupiter. |
| 12 | 5:48 a.m. | Moon in last quarter. |
| | 12:44 p.m. | Moon passes Saturn. |
| 15 | 6:20 a.m. | Moon passes Mars. |
| 16 | 6:00 a.m. | Moon passes Venus. |
| 19 | 8:31 p.m. | Algol (variable star in Perseus) at minimum brightness. |
| 20 | 4:50 a.m. | New moon. |
| | 2:00 p.m. | Moon farthest, distance 252,600 miles. |
| | 10:06 p.m. | Sun over equator, spring commences in Northern Hemisphere. |
| 21 | 4:58 p.m. | Moon passes Mercury. |
| 22 | 5:21 p.m. | Algol at minimum. |
| 28 | 6:18 a.m. | Moon in first quarter. |
| 29 | 2:00 a.m. | Mercury farthest east of sun; visible for a few days around this date, low in west in evening just after sunset. |

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

Science News Letter, February 22, 1958

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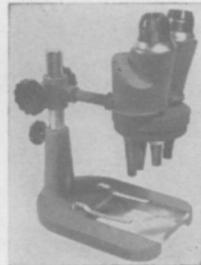
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