

ASTRONOMY

# Venus Brightens

Brilliance of planet increases as it nears earth. Surpassed in brightness by Jupiter during March. Anniversary of great astronomer observed.

By JAMES STOKLEY

► SOON AFTER the sun sets on March evenings, look to the west and there, low in the sky, you will see a very bright "star." But it isn't really a star, it's the planet Venus, which has been visible for some weeks now. But, as it draws away from the sun it sets later and later after sunset. This, added to the fact that it is swinging around closer to the earth, causes a continual increase in its brilliance, which will continue for some months to come. Venus is in the constellation of Pisces, the fishes. Its magnitude, in the astronomer's scale is minus 3.4. This is much brighter than any of the stars which, unlike the planets, shine by their own light rather than by the reflected illumination of the sun.

Venus sets too early to be shown on the accompanying maps, as these depict the skies a little later—at 11:00 p.m. your local wartime on March 1 and 10:00 p.m. on the 15th. The brightest object seen throughout the evening which they do show is Jupiter. This is in the constellation of Gemini, the twins, high in the southwest. Jupiter's magnitude is minus 1.9, or about a quarter of the brightness of Venus.

One other planet is also seen. It is Saturn, in Taurus, the bull, toward the west. Still fainter, its magnitude is plus 0.3, which makes it scarcely more than a tenth as bright as Saturn.

## Dog Star Brightest

The most brilliant star of the March evening is the same one that has held first place through the winter. Sirius, commonly known as the dog star, holds this place. It is in Canis Major, the great dog, low in the southwest, and just to the left of the prominent constellation of Orion, the warrior. Above Sirius is the lesser dog, Canis Minor, with Procyon. It is a very close star, hence its brightness, for it is not really very brilliant.

Sirius is the closest of the conspicuous stars, with a distance of 8.6 light years or about 52,000,000,000,000 (52 trillion) miles. Procyon is at 10.5 light years, or 63,000,000,000,000 miles. In contrast

Rigel, the star in Orion just below the three stars that form the belt, is at 543 light years. Since it seems to exceed Procyon in brightness, it must be very brilliant indeed. It is 21,000 times as bright as the sun, while Procyon exceeds that body only some seven times.

Above the three belt stars is another of the first magnitude—Betelgeuse. In the west, in Taurus, the bull, near Saturn, is Aldebaran. Above Taurus is Auriga, the charioteer, in which Capella is located. Pollux, which is one of the twins in the part of the sky where Jupiter is found, is also of first magnitude.

Low in the east, Bootes is coming into view, and this contains Arcturus, still another member of this brilliant class. Spica, in Virgo, low in the southeast, also belongs to it. So does Regulus, in Leo, the lion, toward the south. Thus, with a total of ten first magnitude stars, to which are added three planets also of this brightness or better, the March evening skies afford a magnificent display.

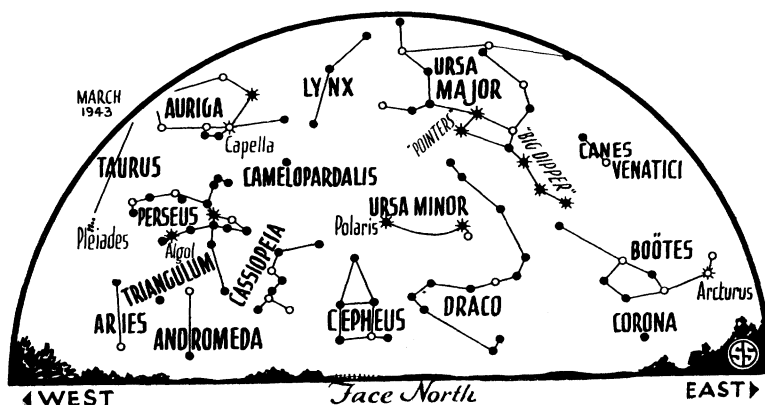
There are several important astronomical anniversaries being celebrated this year. They started with the 300th anniversary of the birth of Sir Isaac Newton, whose theory of gravitation lies at the basis of our modern astronomy. Actually he was born on Christmas day in 1642, which was before England adopted the Gregorian calendar. Correcting for the new style put his tercentenary on January 4, 1943. In May we shall commemorate the 400th anniversary of the

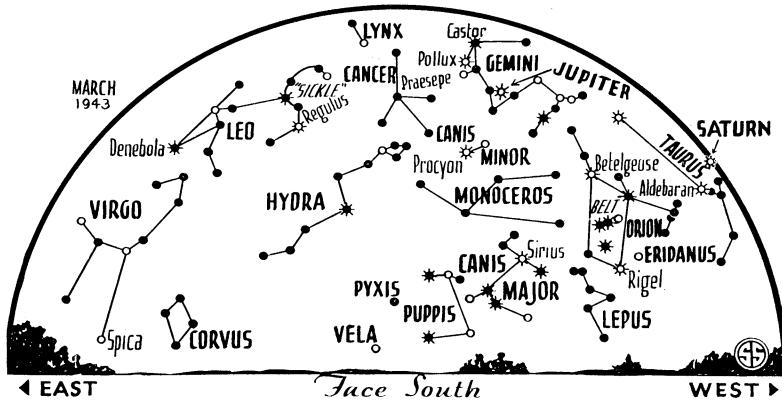
death of Nicolaus Copernicus—and of the publication of his great work, which overthrew the earth from the center of the universe. This month marks the 250th anniversary of another great astronomer, though one who is less widely known outside scientific circles. At the end of March, in 1693, James Bradley was born, and as a man he became the third of England's astronomers royal.

His most notable discovery concerned the "aberration of light." To understand what this is, imagine that you are out in the rain. The wind is not blowing, so the drops fall straight down. If you have an umbrella, you hold it directly over your head.

But now you start walking along the street. There is still no wind, the drops still fall straight down. However, you have to hold the umbrella slanted in front of you to keep dry. If you held it the same way you do when still, your legs would get wet, because the drops would come under the umbrella as you moved along. In other words, your motion makes the rain seem to fall slantingly. Often in a train, when it is raining outside, the same effect can be observed. When the train is standing in a station, the falling drops leave vertical streaks on the window. As it starts moving the streaks slant downwards toward the back, and as it gains speed they become more and more nearly horizontal.

In his observations of the stars, Bradley found that they did not stay put, but seemed to shift position a small amount through the year. He found that it depended on the position of the earth in its orbit and realized that it was the same effect as that described above. It is called "aberration" and of course astronomers





☆ \* ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

must allow for it in calculating positions of the stars.

If the earth did not move, there would be no aberration. But the movement of the earth around the sun causes another effect, which we can see this month. All the planets revolve around the sun in the same direction, but more slowly the farther out they are. Mercury rushes around at about 30 miles a second, Venus at 22, earth at 18.5, Mars at 15, Jupiter at 8 and Saturn at 6.

Perhaps you have been on a fast train, passing a slower one on the next track, and it looked as if the slow train were actually going backwards. In the same way, as the earth passes Jupiter, that planet for a time seems to be going backwards through the sky. The normal motion of the planets we see is from west to east, but during recent months, if you had watched Jupiter, you would have seen it apparently moving westward among the stars. This is called its retrograde movement, and then we were pass-

ing it. But now we have swung past, and on the 12th of March Jupiter is stationary. After that he will move eastwards, until we pass him again next year.

**Celestial Time Table for March**

Mar.	EW T	
2	11:25 p.m.	Moon passes Mars.
4	3:00 a.m.	Moon nearest, distance 225,600 miles.
6	6:34 a.m.	New moon.
8	4:16 a.m.	Moon passes Venus.
11	10:00 p.m.	Jupiter stationary, starts eastward motion.
12	7:21 a.m.	Moon passes Saturn.
13	3:30 p.m.	Moon in first quarter.
15	2:28 p.m.	Moon passes Jupiter.
	10:00 p.m.	Moon farthest, distance 251,500 miles.
21	8:03 a.m.	Sun crosses equator, Spring commences.
	6:08 p.m.	Full moon.
28	9:52 p.m.	Moon in last quarter.
31	1:00 p.m.	Moon nearest, distance 228,900 miles.

Subtract one hour for CWT, two hours for MWT, and three for PWT.

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resembling squirrel and wild duck. Actually, the animals are fairly closely related to squirrels, and Maryland muskrats have for some years been sold, especially on the Philadelphia market, as "marsh hare."

In addition to fur and meat, muskrats can produce still another source of revenue for trappers. Just under the skin, near the tail, are two glands which secrete the strongly musk-scented substance whence the animal gets its name. These can be used as a raw material in the perfume industry, to replace formerly imported musk.

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**"Cheaper Cuts" of Fish**

➤ RECOMMENDATION of kinds of fish that do not now reach many American tables, paralleling the boost that the cheaper cuts of meat received a few years ago, was put forth by several speakers at the meeting. Such species as carp, sucker, lake herring, etc., swim in our fresh waters in immense numbers; their flesh is nutritious but they remain neglected, J. Victor Skiff of the New York State Conservation Department pointed out. And even if American housewives began to ask for these cheaper fish they wouldn't be able to get them, because American commercial fishermen have neither the knowledge nor the equipment needed to take them in paying quantities.

One state's program to find the actual food values in these neglected fish and to tell the people about them was described by Fred A. Westerman of the Michigan Department of Conservation. Research is in progress, he stated, to determine the best methods for preparing, preserving, storing and cooking carp, suckers, herring and smelt.

There is also the possibility that one or another of these scaly Cinderellas may turn out to be a rich vitamin source, just as shark livers have recently done. At any rate, the Michigan program includes careful assays for mineral and vitamin contents.

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WILDLIFE

**Muskrat Is Tasty Dish**

Louisiana swamps produce meat equivalent of about 16,000 steers. Meat resembles squirrel or wild duck. Muskrat also produces fur and perfume material.

➤ MEAT from muskrats, hitherto largely wasted, is not only a very tasty dish but can replace really considerable quantities of more conventional meat, now made scarce by rationing, James N. Gowanloch of the Louisiana Department of Conservation told the eighth North American Wildlife Conference at Denver. One year's product of the lush Louisiana swamps dresses as nearly 6,

500,000 pounds, equivalent to the beef in 16,000 dressed steers.

Total muskrat production of North America amounts to more than 16,500,000 animals a year, Mr. Gowanloch said. Louisiana muskrats, a distinct subspecies, are rather smaller than those of the northern states, but at that they dress at about a pound of good meat apiece. Their flavor is described variously as

**Feeding Fish to Animals**

➤ FUR FARMERS, notably those who rear foxes and minks, are also looking toward these coarse-fleshed fish as possible replacements for the meat rations now so difficult to get, Charles E. Kellogg of the U. S. Fish and Wildlife Service told the meeting. (Turn to page 138)