

ASTRONOMY

Beauty at Her Brightest

Venus, Though at Crescent Phase, at Peak of Brilliance; Can Even Be Seen in Daylight During Month of May

By JAMES STOKLEY

OF ALL heavenly objects, except the sun or moon, the planet Venus becomes brighter than any other. This month it reaches greatest brilliance as it shines in the western evening sky, toward the constellation of Gemini, the twins. With such grandeur, it is easily the first star or planet to be seen in the evening. In fact, if one knows where to look, it can be seen quite easily in broad daylight. The moon passes south of Venus on the evening of May 10, so on that date or the next, one might locate the moon first, and then look north of it to see the planet. A pair of opera glasses will help to pick it up. Then, once located, it can be seen without difficulty.

Mars Now at Faintest

Besides Venus, one other planet is visible these evenings, and is indicated on the maps, in which appear the skies of 10:00 p.m. (standard time) on May 1, 9:00 p.m. on May 15, and 8:00 p.m. on May 31. This other planet is Mars, below Venus and farther north. Quite the opposite of his brilliant sister, Mars is now about at his faintest, more than a hundred times dimmer than Venus.

Among the stars, we can easily find Castor and Pollux, of Gemini, the twins, which are just above Venus. Pollux is the northernmost member of the pair. High in the southwest is Leo, the lion. The westernmost part of this figure forms the "sickle," so-called from its resemblance to that implement. This is supposed to represent the lion's head and shoulders. A triangular group, farther east, constitutes the haunches.

In May, the great dipper is about at its evening best, for it shines almost overhead, part of Ursa Major, the great bear. The pointers, Dubhe and Merak, two stars of the bowl farthest from the handle, indicate Polaris, the pole star, or the north star, below. This, in turn, is in the little dipper, which is part of the little bear, Ursa Minor.

Hydra Longest Constellation

The handle of the great dipper points toward the southeast. If its curved line is followed on around, one can easily find Arcturus, in Bootes, the bear-driver, then Spica, in Virgo, the virgin. And, even beyond Spica, is a quadrilateral, resembling the mainsail of a ship, called Corvus, the crow. Extending underneath the crow, from a point over near the western horizon, is a long row of stars, some in a zig-zag arrangement, making Hydra, the water snake. This is the longest constellation in the entire sky. So long is it indeed that it is possible, from a point in the tropical regions, to have the head of the snake directly overhead, or at the zenith, and the end of the tail below the horizon.

Low in the southeast, Scorpius, the scorpion, is beginning to appear. On the map are shown his claws, and the star Antares, which is in his heart. Later at night, the scorpion is higher and more easily seen. In the northeast Vega, in Lyra, the lyre, is appearing. This is the brightest star now visible, though it is many times fainter than Venus. Below Vega is Cygnus, the swan, or the north-

ern cross, lying on its side, with Deneb, forming the swan's tail, at the top.

With Venus shining so brightly this month in the evening, we have a chance to see earth's nearest neighbor, a planet which resembles ours more than any other, and which, in some ways, seems the most likely to have life upon it. Through a telescope, Venus now will appear in a crescent phase, like the moon, 5 or 6 days after new.

These phases of Venus are caused in the same way as those of the moon. Like the moon, and the earth too, the half of Venus toward the sun is lighted, the other half is dark. Sometimes, when Venus is on the opposite side of the sun from the earth, the entire sunlit hemisphere is turned toward us, and then, through a telescope, it appears round, or "full."

But now it is coming between the earth and the sun. The bright half is more nearly turned away, and we have the crescent phase.

Distance to Venus Varies

There is, however, an important difference between the phases of Venus and those of the moon. The latter remains approximately the same distance, about 240,000 miles from us, whether new or full.

But when Venus is full, it is farthest away. Then its distance from the sun, 67,200,000 miles, is added to the earth's distance, 92,900,000 miles. Thus we are separated by some 160,100,000 miles.

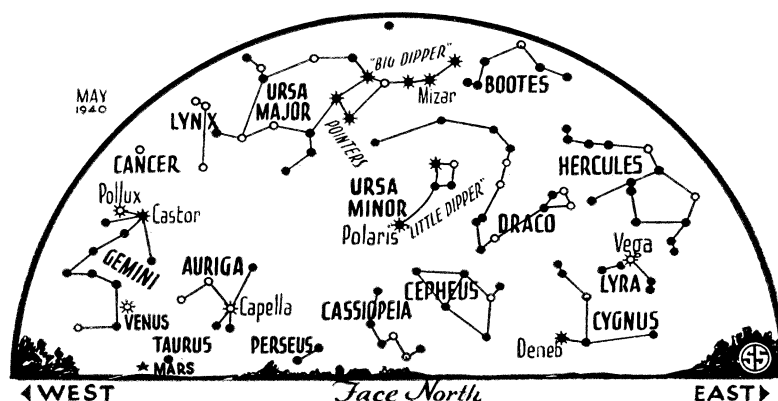
The new phase, on the other hand, occurs when the planet is this side of the sun, when the distance from us is only 25,700,000 miles. This makes it look larger, the more nearly new it is.

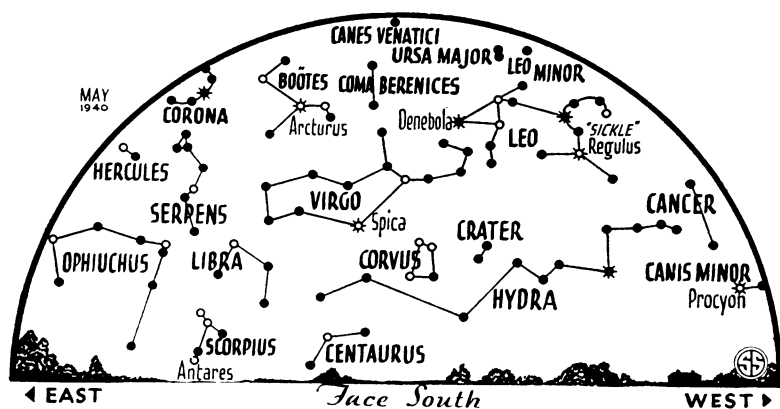
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That is why the greatest brilliance comes when it is a crescent, and not, as with the moon, when it is full.

Venus' diameter is 7580 miles, compared with the earth's 7918, so they are nearly the same size.

Because it is nearer the sun, Venus is warmer than the earth, but probably not too hot for life, like Mercury, where lead would melt on the sunlit surface. However, we know very little about the surface of Venus, since we never see it.

Venus is continually covered with clouds, and that is what makes it so very bright, because the tops of these clouds reflect a much greater percentage of light than would a surface of soil or rock, or even of vegetation.

What is below these clouds, we do not know. However, there is a thin atmosphere above them. This contains a considerable proportion of carbon dioxide, but no oxygen. Because carbon dioxide is heavier than oxygen, it is probably even more plentiful below the clouds. Plants have the power of absorbing carbon dioxide, and liberating oxygen, so the lack of the latter element makes it seem that there can be no plant life on the surface of Venus. And without plant life, there could probably be no animal life either. Therefore, like all the planets except earth, Venus seems unlikely to have life upon it.

No Landmarks Visible

Its visible surface only one of clouds, Venus has no permanent markings, and thus we have no way of telling how long it takes to rotate, that is, to find the length of the planet's "day." If it turned as fast as once in several of our days, we could detect such a motion by the spectroscope. On the other hand, if it were so slow that it always kept the same face to the sun, as Mercury does, then one side would be very cold, the other very

hot. Another instrument, the thermocouple, shows that all around the planet, on the daytime as well as the nighttime side, the temperature is the same. Thus it is believed to turn slowly, perhaps about once every thirty days.

Celestial Time Table for May

Thursday, May 2, 6:00 p.m., Moon farthest—251,900 miles away. **Tuesday, May 7**, 7:07 a.m., New moon. **Friday, May 10**, 7:46 a.m., Moon passes Mars; 10:52 p.m., Moon passes Venus. **Tuesday, May 14**, 3:51 p.m., Moon in first quarter. **Saturday, May 18**, 2:00 p.m., Moon nearest—226,700 miles away. **Monday, May 20**, 11:00 a.m., Venus greatest brilliancy—magnitude 4.2. **Tuesday, May 21**, 8:33 a.m., Full moon. **Tuesday, May 28**, 7:40 p.m., Last quarter of moon. **Thursday, May 30**, 12:00 noon, Moon farthest—251,300 miles away.

Eastern standard time throughout.

Science News Letter, April 27, 1940

PHYSICS

The Queen Elizabeth Wore A "De-Gaussing Girdle"

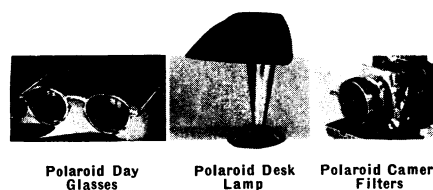
NEWS that the British are using a new and secret type of mine in their reported 60,000 square miles of mine fields off the German, Netherlands and Norwegian coasts may mean that British scientists have played a major role in offensive mine warfare, just as they helped to conquer the menace of the magnetic mines, sprung on the Allies by Germany a few months ago. In the case of the magnetic mines, British specialists in magnetism left their regular scientific investigations in order to develop protection for ships against the magnetic mines. The nature of this protection became known when the Queen Elizabeth arrived at New York with a "girdle" around her hull. The girdle, supplied with electric current of the necessary strength and characteristics, sets

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