

ASTRONOMY

Mercury Appears

Planet will appear just after sunset. Venus now brightest of stars and planets; Saturn also shines nearby. Full moon heralds coming of Easter.

By JAMES STOKLEY

► OF ALL the five planets of the solar system that are visible to the naked eye, the one that is hardest to see is the innermost — Mercury — which revolves around the sun at a distance of 36,000,000 miles, or about 39% of the average distance of earth from the sun. Most of the time it is too nearly in line with the sun for us to observe. When it is farthest west of the sun, it appears in the east before sunrise; when it is farthest east, it remains in the west after sunset. But not all such "elongations" are equally favorable for bringing the planet into view. It happens that when an eastern elongation occurs in the spring time, it is highest in the evening sky. We have such an elongation on April 30.

Thus, on this evening, and for several evenings before and after, Mercury will appear low in the sky, directly west, just after the sun has gone from sight and as darkness is falling. Since it, too, will have set before darkness is complete, it is not shown on the maps. But there will be little difficulty in recognizing it because it is so bright.

Bright Planets Together

However, care must be taken not to confuse it with Venus, which will shine a short distance above it and even more brightly. Venus, indeed, is now the brightest star or planet and will have magnitude minus 3.5. Jupiter, in another part of the sky, comes next, with minus 1.7. Then ranks the dog star, Sirius, with minus 1.6, and Mercury comes fourth with minus 1. Saturn, which is near Venus, is fainter with plus 0.3 magnitude, still much brighter than most of the stars.

Venus will be visible in the evening western sky throughout April, as it has been since early this year. Thus, you will have a chance to get acquainted with her long before the end of the month. Then, about April 30, when you see that she has been joined by a fainter, but still very brilliant object below, you will know that the new one is Mercury.

On the maps are shown the appear-

ance of the skies at about 11 p.m., your war time, on April 1 and an hour earlier on the fifteenth. The planets are shown as they appear at the middle of the month, for Venus is moving rapidly. On the twenty-fourth it passes Saturn, and then, with the star Aldebaran, in Taurus the bull, nearby, they will form an interesting trio.

Leo, the Lion, Stands Out

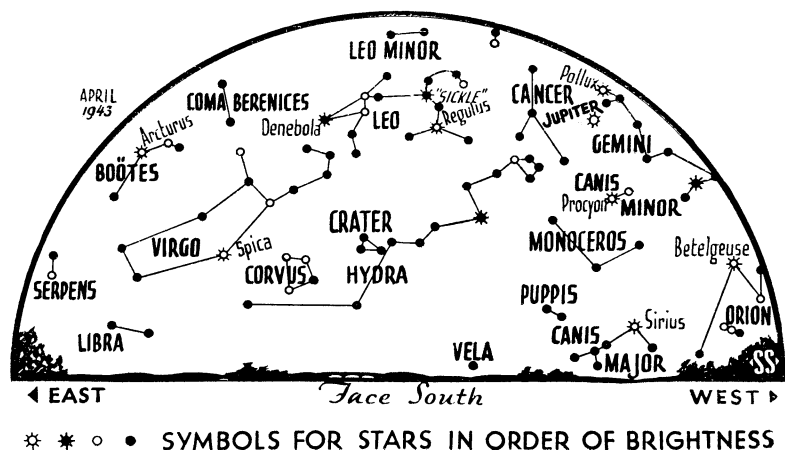
Though Orion and Canis Major are still visible, as they were during the winter, a different group of constellations have assumed a conspicuous position. High in the south is Leo, the lion, part of which is a smaller group called the sickle. Regulus marks the end of the handle. High in the west are Gemini, the twins. The two principal stars, Castor and Pollux, are joined by brilliant Jupiter. The great dipper—part of Ursa Major, the great bear—is high in the north, and upside down. The handle of the dipper points in an easterly direction. If you follow its curved line on to the south, you will come to Arcturus, in Boötes and then to Spica, in Virgo, the virgin.

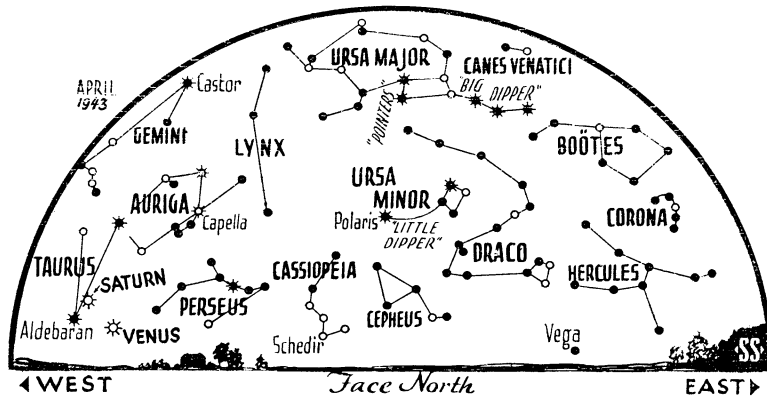
Only one planet remains unaccounted for, and that is Mars. Just now it is very far away, and quite faint—of magnitude plus 1.2. It is low in the southeast at sunrise.

Some writers, who should have known better, have made the mistake of describing the appearance of the crescent moon with a star inside its horns. In the "Ancient Mariner," for example, Coleridge wrote of "the horned moon with one bright star within the nether tip." On the evening of April 9, if it is clear, you will be able to see the crescent moon with a star about as close as it can get. In the eastern part of the country there will be an occultation. That is, the moon will actually pass in front of, and "eclipse," the star Aldebaran, in Taurus, the bull. In the Rocky Mountain and Pacific states, the occultation will be over before sunset, but even there, on that evening, the star and crescent will be close.

Calculations made at the U. S. Naval Observatory in Washington, and published in the astronomer's bible, the "American Ephemeris," give the times of occultations for Washington and three other locations. One is in southern California, where this will not be seen. For Washington, the star will hide at 10:56 p.m., EWT. At a point in western Massachusetts, it will vanish at 10:50 p.m., EWT. For both of these locations, the reappearance will not come before the moon has set. But the last location, in southern Illinois, will watch the star covered by the moon at 9:55 p.m., CWT, and will see it emerge at 10:48 p.m., CWT.

The moon will appear in a crescent phase because of the fact that only four days before it will have been almost in





line with the sun. Even on the ninth, most of the sunlit half of the moon will be turned away from us, and we will only see a narrow sliver that forms the crescent. Aldebaran will be occulted by the dark edge of the moon, though it may not be entirely dark. Often when the moon is a crescent, it is possible to see faintly its complete circle. This is sometimes called "the old moon in the new moon's arms." The bright crescent is illuminated directly by sunlight. The dark part is lighted by earth-shine. This is light from the sun that is reflected by the earth, and then reflected by the moon back to us again. To a person on the moon, the earth would undergo phases like those which the moon has for us. When we see a new moon, they would see a full earth, and it would be about 40 times as bright as we see the full moon.

Thus, the moon's dark edge will hide the star, and it will vanish instantaneously, because there is no atmosphere around the moon to cause a gradual diminution of its light. And out in the midwest, where the end of the occultation will be visible, the reappearance, from behind the sunlit edge, will be equally sudden. Such occultations, not only of bright stars, which are rather rare, but of fainter ones, which occur almost nightly, are regularly watched by astronomers. They can be timed very accurately, and permit them to check accurately their predictions of the moon's motion.

Celestial Time Table for April

April	EWT	Event
4	5:53 p.m.	New moon.
7	6:54 a.m.	Moon passes Venus.
8	8:36 p.m.	Moon passes Saturn.
9	10:56 p.m.	Occultation of Aldebaran (not visible in far west).
12	1:28 a.m.	Moon passes Jupiter.
	11:04 a.m.	Moon in first quarter.
	6:00 p.m.	Moon farthest, distance 251,100 miles.
20	7:11 a.m.	Full moon*.
21	early a.m.	Meteors of Lyrid shower visible.

24	midnight	Venus passes Saturn.
25	noon	Moon nearest, distance 229,500 miles.
27	3:51 a.m.	Moon in last quarter.
29	12:33 p.m.	Moon passes Mars.
30	5:00 a.m.	Mercury farthest east of sun, visible in western evening sky for a few days around this date.

*The full moon on April 20 is the Paschal full moon, that is, the first after the vernal equinox, which occurred on March 21. Easter is thus on the following Sunday. Subtract one hour for CWT, two hours for MWT, and three for PWT.

Science News Letter, March 27, 1943

PLANT PATHOLOGY

Plant Disease Fighters Recommend Seed Treating

➤ MORE INTENSIVE warfare on a little-noticed sector of the home front—defense of fields and gardens against plant diseases—was called for by the War Committee of the American Phytopathological Society. The committee offered a ten-point schedule of recommendations, stressing especially the need for treating seed before planting, to prevent the development of fungi that kill vast numbers of seedlings before they can even get fairly started.

Of particular interest to Victory Gardeners is the suggestion that they disinfect their own seed, to make the present limited supplies go farther. It was also recommended that seed growers and dealers give their seed this protective treatment before packaging, or at least print treatment directions on each package for the guidance of the Victory Gardener.

Science News Letter, March 27, 1943

ENGINEERING

Planes Cast on Plastic

➤ A NEW plastic to make dies, jigs and forming blocks that will speed up plane production has been developed in the Columbia University chemical engineering laboratories, Prof. James M. Church announced to the Columbia Scholastic Press Association.

The tough ethyl cellulose plastic, produced in cooperation with plastic makers and plane manufacturers, replaces strategic materials. It can be melted and cast into shapes without the use of pressure somewhat the same as metal, but at much lower temperatures and with more exactness of mold dimensions, Prof. Church asserted.

It weighs only a fifth as much as steel yet has a high impact strength, hardness and durability that makes it practical to be cast into forms upon which metal plane parts are fabricated.

The new plastic, known as Thermo-Cast, opens up the possibility that the plane of tomorrow can be stamped out in very large sections on plastic forms and with the use of plastic punches, Prof. Church stated, much the same as the auto body has been made all in one piece.

Mass production of warplanes by using methods of the automotive industry has encountered some difficulties.

"Not only were some of the older methods for metal fabrication inadequate for aircraft production," Prof. Church declared, "but the metal used in the tools for forming these metal parts was found to be critically needed for other war uses and also inefficient for the production methods of the aircraft industry."

Metal is not only conserved by using the new plastic, but many man-hours are saved because machining and grinding operations have been eliminated.

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● RADIO

Saturday, April 3, 1:30 p.m., EWT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Edwin G. Boring, professor of psychology at Harvard University, will discuss "Psychology for the Fighting Man."

Monday, March 29, 9:15 a.m., EWT; 2:30 p.m., CWT; 9:30 a.m., MWT; and 1:30 p.m., PWT

Science at Work, School of the Air of the Americas over the Columbia Broadcasting System, presented in cooperation with the National Education Association, Science Service and Science Clubs of America.

"Freedom from Fears" will be the subject of the program.