

ASTRONOMY

Mercury Visible at Twilight

Mars and Saturn are also in the evening sky in April. A total lunar eclipse, not visible from any part of North America, will occur.

By JAMES STOKLEY

► OF the eight major planets that, together with the earth, revolve around the sun to form the solar system, the outer three—Uranus, Neptune and Pluto—are too faint to be seen with the naked eye. Generally Mercury, the innermost, is also invisible, but for a different reason, since its brightness is ample. However, its mean distance from the sun is only 36,000,000 miles. It never gets very far away from the sun's direction, and is usually hidden in that body's glare. Every 116 days it swings around to the same side of the sun as the earth, and twice in this period it is seen farthest from the sun, as we see these bodies in the sky. When farthest west, it appears in the east before sunrise. When it is farthest to the east, at "greatest eastern elongation," it is an evening star, visible after sunset. That event occurs in April. It will afford the best opportunity of 1950 to see Mercury in the evening. There will be other eastern elongations in August and December, but the springtime ones are the best.

The actual greatest elongation occurs on April 22, at 9 p.m., E.S.T., but from about the 20th to the 27th there will be little change. At sunset Mercury will be well above the western horizon. As dusk gathers, and the sky becomes darker, the planet will appear in the twilight. It will have set by the time it is completely dark, but one should have little difficulty in finding the planet, since there is nothing else in that region with which it may be confused. Of course, in looking for it one should select a position where there is a clear view to the west, and the sky will have to be clear, even down to the horizon.

The accompanying maps show the heavens as they appear about 10 p.m., your own kind of standard time, at the first of April, and an hour earlier in the middle of the month. Mercury does not appear on them, but two other planets are shown. These are high in the southern sky. Brighter of the pair is Mars, which shines brilliantly in the constellation of Virgo, the virgin. Its magnitude, on the scale used by astronomers, is minus 0.8. Saturn, less than a quarter as bright and of magnitude plus 0.8, is a short distance to the right, though across the boundary in the next-door constellation of Leo, the lion. Each of these constellations contains a star of the first magnitude, Spica, in the case of Virgo,

and Regulus, in Leo. The latter is at the end of the handle of a smaller group generally called the sickle from its shape.

Sirius Is Brightest

Brightest star, however, that is shown on the maps, is Sirius, the dog star, in Canis Major, the greater dog, toward the southwest. Above it is Procyon, in Canis Minor, the lesser dog. Near Sirius, toward the west, is Betelgeuse, in Orion. So prominent in the winter sky, this group is now sinking lower and lower, and shortly will be gone from view. To the right of Orion we see Taurus, the bull, with Aldebaran, though when as low as indicated it looks much fainter than when it is higher. Above Orion is Gemini, the twins, with Castor and Pollux, the latter of the first magnitude. A little farther north, and lower, is Auriga, the charioteer, in which the bright star Capella shines.

Above Virgo is Bootes, the bear-driver, with another bright star, Arcturus. Extending above and toward the left is the great dipper, now upside down, and part of Ursa Major, the great bear. Lower down is Polaris, the pole star, in Ursa Minor, the lesser bear. This is also part of the little dipper.

The other two naked eye planets, Venus and Jupiter, are visible during April in the eastern sky before sunrise. Both are in the constellation of Aquarius, the water-carrier. Venus, to the west of Jupiter at the beginning of the month, is moving in an easterly direction and passes her big brother planet on the twelfth. After that Jupiter is to the west, and rises first, about two hours ahead of the sun. Venus is by far the brighter, of magnitude minus 4.0. This is

more than eight times as bright as Jupiter though even that planet exceeds in brilliance any of the other planets, or stars. On April 11 Venus is farthest west of the sun. After that date Venus starts moving towards it, getting fainter and fainter at the same time, until next autumn it will be gone from the early morning sky.

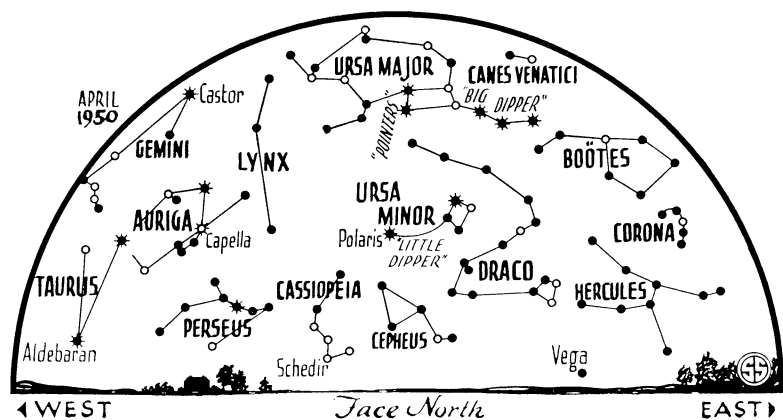
Asteroid Icarus Closest to Sun

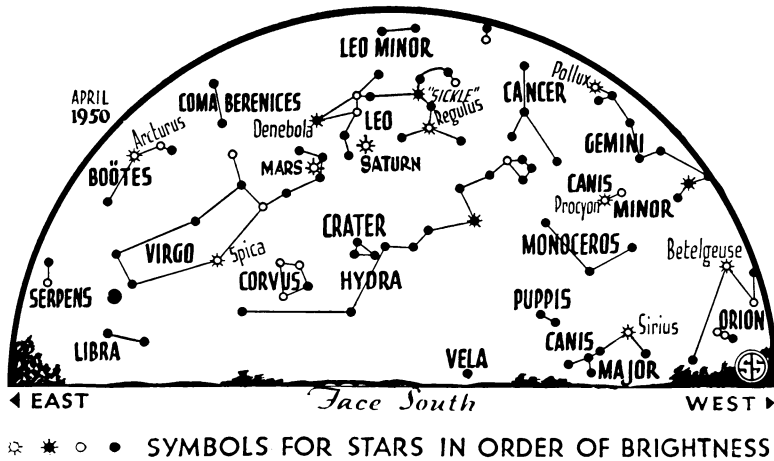
The last time we had occasion to discuss Mercury in one of these articles, we said that it was the nearest planet to the sun. This is still true, as far as the nine major planets are concerned, but only last year Dr. Walter Baade, at the Mt. Wilson Observatory, discovered a new asteroid, or minor planet, which comes even closer. It has been given the very appropriate name of Icarus, after the mythological boy who flew too close to the sun. His wings, the invention of his father, Daedalus, were held on by wax, which was melted by the hot solar rays, so that he became one of the first air casualties.

The asteroid Icarus, probably less than a mile in diameter, can come as close to the sun as 17,000,000 miles. The closest that Mercury may get is 28,600,000 miles. For a major planet, Mercury's orbit is very elliptical, since its greatest distance from the sun is 43,400,000 miles, but that of Icarus is stretched out to a far greater degree. When farthest from the sun its distance is about 180,000,000 miles, even farther out than Mars. The mean distance of the earth, incidentally, is about 93,000,000 miles.

Revolution of Mercury

As for Mercury itself, the planet revolves around the sun once in 88 days. However, as it does so the earth, which takes 365 days to complete its circuit of the sun, has gone about a quarter of the distance around, and thus Mercury has to go still farther to catch up to us. Thus it is that 116 days are required to bring it around to the same





direction from the sun that we are, i. e., to the position called "inferior conjunction."

Mercury is much smaller than the earth, with a diameter of 3100 miles compared to our 7918 miles. Because of its smaller size, gravity on the surface of Mercury is less than a third of what we experience. A man of 200 pounds here would weigh only 58 pounds on the surface of that planet.

Mercury Not Resort Material

However, even if some day men are able to travel by rocket ships to other planets, it is hardly likely that Mercury will be a very popular resort. Like our moon, it seems practically devoid of any atmosphere. In a manner similar to that in which the moon always keeps the same face turned towards the earth, so does Mercury always keep one hemisphere directed toward the sun. With the sun so close and always shining, the temperature of this part of the planet is about 650 degrees Fahrenheit, hot enough for lead to melt. On the opposite face, which never receives any sunshine, it must be extremely cold. In between these regions there is a narrow zone in which the sun occasionally rises a short distance above the horizon, then drops behind it again. Though the average temperature here would have a more reasonable figure, it would still be subjected to great extremes, and hardly a comfortable place to be.

Eclipse of Moon

Another item on the astronomical program for April is a total eclipse of the moon, but it will not be visible from any part of North America. From Europe, Asia, Africa and Australia the beginning will be seen, while the end, which will not be seen from Australia, will in addition be observed from the east coast of South America. Any disappointment that we may feel is ameliorated by the fact that the year will bring another total lunar eclipse on Sept. 26. Then, as in the case of the two lunar eclipses of 1949, practically all of North America will be able to see it.

Time Table for April

April EST	
1	6:37 p. m. Moon passes Mars
2	3:49 p. m. Full moon (total eclipse visible from Europe, Asia and Africa)
3	3:00 p. m. Moon nearest distance 222,900 miles
5	6:00 a. m. Venus passes Jupiter
6	4:00 a. m. Neptune nearest, but still invisible to naked eye, distance 2,721,000,000 miles
9	6:42 a. m. Moon in last quarter
11	4:00 a. m. Venus farthest west of sun
12	7:46 a. m. Moon passes Jupiter
	7:59 p. m. Moon passes Venus
17	3:25 a. m. New moon
18	2:00 p. m. Moon farthest, distance 252,500 miles
21	early a. m. Meteor shower visible, radiating from constellation of Lyra
22	9:00 p. m. Mercury farthest east of sun, visible around this date in west just after sunset
25	5:40 a. m. Moon in first quarter
28	1:42 a. m. Moon passes Saturn
	5:55 p. m. Moon passes Mars

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

Science News Letter, March 25, 1950

NUCLEAR PHYSICS-GEOLGY

Age of Uranium Deposits Clue to Their Location

➤ HOW old are U. S. uranium deposits? Government experts reported that the age of radioactive ores may be a key to how they are formed, and more important, where to look for them.

U. S. Geological Survey analysts L. R. Stieff, M. N. Girhard and T. W. Stern in reporting preliminary tests on Colorado carnotite, a source of uranium, have given widely divergent answers: anywhere from 30,000,000 to 600,000,000 years.

The real answer is believed to be under 100,000,000 years, they said. But something has happened to the deposits as the earth's crust formed. Hence different laboratory tests have given different results.

The real age of such deposits may throw light on the origin of radioactive elements and guide prospectors in more systematic exploration.

Science News Letter, March 25, 1950

MEDICINE

Human Pregnancy Detected Earlier by New Test

➤ A SPEEDY test for detecting pregnancy at an early date and which also helps predict whether the pregnancy will be normal or end in spontaneous abortion is reported in the first issue of a new scientific journal, FERTILITY AND STERILITY (Jan.).

The test was devised by Dr. Edmond J. Farris of the Wistar Institute, Philadelphia. It is done with rats. Results of the test are known within 24 hours. The test detects pregnancy as early as the 31st day of the menstrual cycle, whereas the 43rd day is the earliest for other tests. This means the patient and her physician can know whether she is pregnant about two weeks earlier than by other tests.

Redness of the ovaries of the immature white rat 24 hours after a few drops of the woman's urine has been injected under the rat's skin tells whether she is pregnant. The degree of redness is important. A strong color indicates a normal pregnancy. A weak color reaction suggests that the woman will lose the baby by spontaneous abortion.

Certain nonpregnancy conditions, such as ovulation and the menopause, will also produce the red color reaction. But in these conditions the reddening of the rat's ovaries is at its maximum within two hours, whereas pregnancy does not produce its greatest reddening for 15 to 24 hours later.

Science News Letter, March 25, 1950

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