ASTRONOMY

Seldom-Seen Mercury in Evening Sky

About the Tenth of This Month, As the Dusk Gathers in The West, You May See Planet Even Copernicus Missed

By JAMES STOKLEY

IN the program of celestial events for 1931, April makes a pretty good showing, with an eclipse of the sun, the presence in the evening sky of seldom-seen Mercury, and the occultation by the moon of a moderately bright star.

Very inaccessible, however, is the solar eclipse, which happens on April 17-18. China, Siberia, and the North Pole is the region to which you would have to go if you wanted to see it. To the enthusiastic astronomer, a trip around the world to observe an eclipse is nothing unusual, but no astronomers will observe this one, for it is not total. At no place on the earth's suface will the sun be seen completely covered by the moon. Even when the eclipse is largest, about half the sun's surface will still be visible. Such an eclipse is of no scientific value, even though the astronomers who keep track of the motions of the various bodies, and who prepare the important almanacs that are the Bibles of the astronomer, must figure such an eclipse as closely as any other.

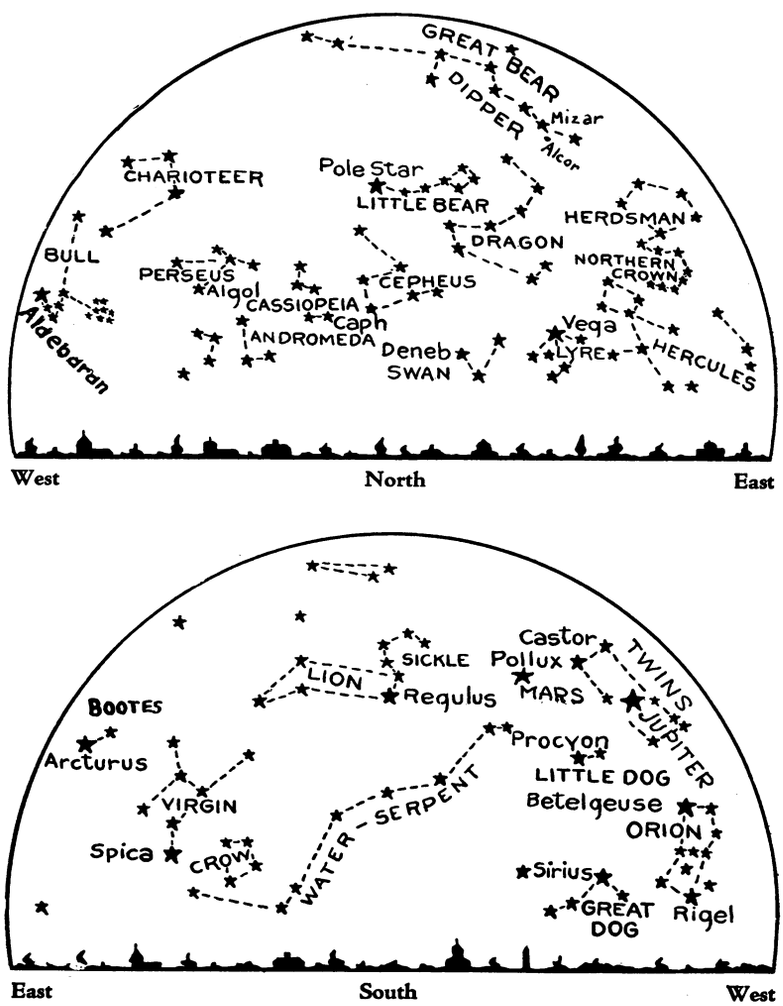
Visible All Over U. S.

The appearance of the planet Mercury in the evening sky, along with its brothers Mars and Jupiter, however, is something that can be seen in all parts of America. Because Mercury, innermost member of the solar system, is only 36,000,000 miles from the sun, on the average, as compared with 92,900,000 miles for the earth, it is always seen in the sky close to the sun. When the angle from the sun to Mercury and then to the earth is 90 degrees, the former planet is said to be in "elongation." It is referred to as either eastern or western elongation, depending on which side of the sun Mercury appears. On such occasions Mercury escapes from the sun's glare and becomes visible, either just before sunrise or just after sunset.

This is the case about April 10. Mercury is then about 19½ degrees to the east of the sun, so after sunset Mercury is still visible a short distance above the western horizon. When the greatest eastern elongation occurs in spring, as now, the planet is best seen. At sunset the ecliptic, or the line along which the sun and the planets move among the stars, is now almost vertical in the west. In October, on the contrary, the ecliptic slants down to the south. Even if Mercury is then at the same distance from the sun, it is not as high above the horizon and is not as easily seen.

Sometimes Mercury, at greatest eastern elongation, gets considerably farther from the sun than now. Its orbit is a very eccentric one, considerably distorted from a true circle. As a result its actual distance from the sun varies from 28,500,000 miles to 43,350,000 miles. Just now it is near the former figure. The least distance that can separate the sun from Mercury at the time of an elongation is only a little less than its distance on April 10, or about 18 degrees. This is approximately the same as the distance between Betelgeuse and Rigel, the upper and lower stars in the constellation of Orion, which can still be seen in the western sky during the early evening. When an elongation occurs at the time of the greatest separation between Mercury and the sun, they may be as far apart as 28 degrees, which is a little less than the distance from Betelgeuse to Sirius, the brilliant star in the southwest.

Therefore, to see Mercury, one should look to the western evening sky just



The Skies During April

after sunset, about the tenth of the month. For a few days before and after that date, it will also be visible. As the dusk gathers, you will see a brilliant point of light. That is Mercury. Then you will have seen a planet that even the great Copernicus is said never to have viewed.

Through the telescope at this time, Mercury, like Venus at a similar position, will appear as a half-moon shape. This is because it gets its light from the sun, and we only see half of the illuminated surface. Very little detail can be observed on Mercury, but experienced astronomers have observed some markings, and their study seems to indicate that the planet turns once in the same period that it travels around the sun. Thus it probably keeps the same face towards the sun, just as the moon does to the earth.

Not Healthy For Tourists

Mercury has no atmosphere, so that it would undergo great extremes in temperature. The side towards the sun would be constantly very hot, and measurements of its temperature by Dr. Nicholson and Dr. Pettit at the Mt. Wilson Observatory have indicated it to be about 350 degrees Centigrade. This is about 660 degrees Fahrenheit. Lead melts at 327 degrees Centigrade, so it would be conceivably possible to have oceans of lead on the planet.

On the side away from the sun, the temperature would be exceedingly cold, though no measurements of this region have ever been made. There, perhaps, such common gases as the oxygen and nitrogen of our atmosphere might be frozen into snow, provided those gases were present on Mercury.

In a narrow region between the continually light and continually dark areas, however, the sun would sometimes rise above the horizon and sometimes drop below again. There the average temperature would be more equable, but the extremes would be very great. On the whole, the climate of Mercury hardly commends itself to would-be inter-planetary tourists!

The planets Jupiter and Mars are conspicuous objects in the western sky. The former is high in the west, and its great brilliance and steady, yellowish light make it easy to locate. Above it are the twins, Castor and Pollux, the latter the brighter. To the left of Pollux, about two and a half times the distance between the twins, is Mars, also brilliant, though inferior to Jupiter, and shining with a red light.

Moon Eclipses Star

The occultation that is brought by the month of April occurs on the 28th, when the moon occults, or eclipses, the star beta Virginis. This star, only of the third magnitude, is only moderately bright. No star of greater brilliance is occulted during the present year, so this is the best chance the people in the United States have to see one of these interesting events during 1931. High in the south the evening of the 28th you will see the Sickle, of Leo, with the brilliant Regulus at the bottom of the handle. To the southeast, and lower in the sky, is Spica, in Virgo. About half way between Spica and Regulus is beta Virginis, the name indicating that it is the second brightest star in the constellation, Spica itself, known technically as alpha Virginis, being the most brilliant.

On the night of the 28th the moon will be in a gibbous phase, a few days past first quarter. Early in the evening, beta Virginis will be to the east. But as the moon moves eastward through the stars, it gradually approaches, and at 11.12, eastern standard time, at Washington, the moon will come in front of the star. However, the eastern edge of the moon is dark, because it is before the full phase, and so the star will seem to disappear before the moon actually reaches it. A small telescope will show the phenomenon to better advantage. The sudden disappearance of the star is most impressive, and offers conclusive proof that the moon has no atmosphere, for if it had the star would gradually be dimmed, as its light would have to pass through an increasingly thick layer of gas.

Among the constellations seen this month Leo, the lion, is probably the most conspicuous, high in the south. To the southeast is Spica, marking the group of Virgo, the virgin. High in the east is Bootes, the bear driver, marked by the brilliant star Arcturus. Low in the southwest is Sirius, the dog star, marking the Great Dog, Canis Major, and soon to disappear from the evening sky for many months. Orion is almost directly west, and Betelgeuse remains visible after Rigel, the lower star, has descended behind the horizon.

Science News Letter, April 4, 1931

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912

Of SCIENCE NEWS LETTER published weekly at Baltimore, Md., for April 1, 1931.
Washington } ss.
District of Columbia }

Before me, a Notary Public in and for the District of Columbia aforesaid, personally appeared Watson Davis, who, having been duly sworn according to law, deposes and says that he is the Editor of the SCIENCE NEWS LETTER and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Editor, Watson Davis, 21st and Constitution Ave., Washington, D. C.

2. That the owner is:
Science Service, Inc., 21st and Constitution Ave., Washington, D. C., a non-profit making institution for the popularization of science.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent. or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

Watson Davis,
Editor.

Sworn to and subscribed before me this 24th day of March, 1931.

[SEAL]

Charles L. Wade.

(My commission expires April 6, 1933.)