ASTRONOMY

Mercury Appears Briefly

This planet, which is nearest the sun, will be seen at dusk around May 10. A brighter planet, Venus, will become visible the middle of the month.

By JAMES STOKLEY

➤ OF ALL the nine major planets, Mercury is nearest the sun and for that reason is usually lost in its glare. Twice every 116 days, however, it reaches "elongation" when it is farthest east or farthest west of the sun. In the former case it sets a little while after sunset, and in the latter it rises a short time before sunrise. Every elongation is not equally effective in bringing the planet into view, but when one to the east occurs in the springtime, we generally have the best chance of seeing it.

Such an event occurs in May with Mercury reaching its greatest eastern elongation on May 10. On that date, as seen from most of the United States, it sets approximately an hour and three quarters after the sun. This is about the same as the length of the evening twilight, so by the time the sky is dark the planet is gone from sight. For a period of perhaps a week, around the 10th, one may be able to see it, low in the sky, a little north of the west point of the horizon, as a brilliant star in the gathering dusk.

Venus Becomes Visible

After the middle of May, when Mercury has gone out of sight again, another planet even brighter should begin to be visible in about the same position. This is Venus, the second planet, counting outward from the sun, with which it was in line on April 16. Now it, too, is east of that body, and will continue drawing away from it until Nov. 20 when it will reach its greatest elongation. At the beginning of May, Venus sets only a quarter of an hour after the sun, but by the 31st this is increased to about an hour. Venus is so brilliant, of astronomical magnitude minus 3.4 at this time, that one should then be able to see it low in the west soon after sundown.

Neither Venus nor Mercury are shown on the accompanying maps, because both planets are out of the sky at the times for which they are drawn, namely, 11:00 p.m., your local variety of daylight saving time on May 1, and an hour earlier in the middle of the month. One planet does appear on them, however, and that is Saturn, in the constellation of Leo, the lion, close to the bright star Regulus. Incidentally, Saturn has recently been moving westerly in the sky, approaching Regulus. On May 1 it is stationary for a time and then resumes its direct, or easterly motion after coming almost directly north of Regulus.

The occasional retrograde, or westerly, movement of the outer planets like Saturn is due to the fact that their apparent movement in the sky is made up of a combination of their own motion and that of the earth, from which our observations are made. When, on an express train, you pass a slower freight on the next track, the freight seems to be going backwards, even though it is really going the same way as the express. As the faster moving earth passes Saturn, it likewise seems to go backwards.

Brightest star seen on May evenings is Vega, in Lyra, the lyre, which shines in the northeast. Second is Capella, in Auriga, the charioteer, to the northwest, and third Arcturus in Bootes, the bear-driver, high in the south. Below this constellation is Virgo, the virgin, with bright Spica. Regulus, in Leo, has already been mentioned because of the proximity of Saturn. To the west is Canis Minor, the lesser dog, with Procyon, and to the right of this group are the twins, Gemini, with first magnitude Pollux.

Just appearing above the southeastern horizon is Scorpius, the scorpion, with Antares. This is also of the first magnitude although it is so low that it looks much fainter. Later in the night it rises higher in the south and is much more brilliant. Toward the end of the month the brilliant planet, Jupiter, in the constellation of Capricornus, the sea-goat, also rises about midnight.

The planet Mercury, which appears briefly in May, is not only nearest to the sun; it is also smallest (except the tiny asteroids), swiftest in its motion and it receives the most light and heat from the sun. Its distance from the sun is 36,000,000 miles, on the average, but it varies all the way from 28,600,000 to 43,400,000. It can approach as close to the earth as some 50,000,000 miles (when it is practically in line with the sun and not visible), while it may be as far as 136,000,000 miles when it is on the opposite side of the sun. It takes 88 days for one revolution around the sun. In diameter, it is 3,100 miles and because it is so small, the force of gravity there is much less than on earth. A person who weighs 200 pounds here would only weigh 58 pounds on Mercury.

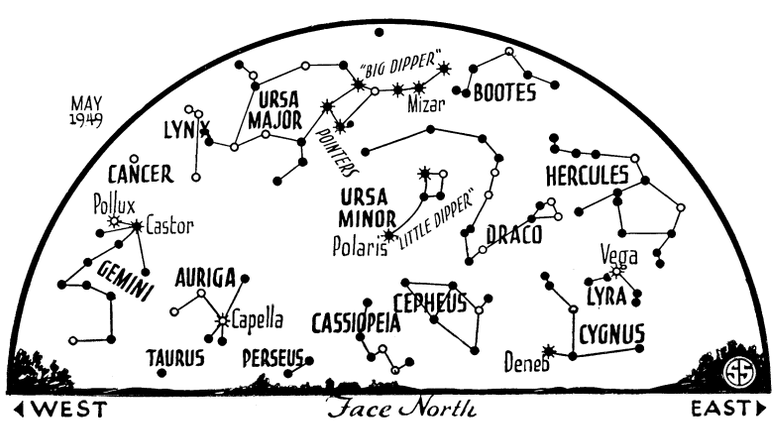
No Detectable Atmosphere

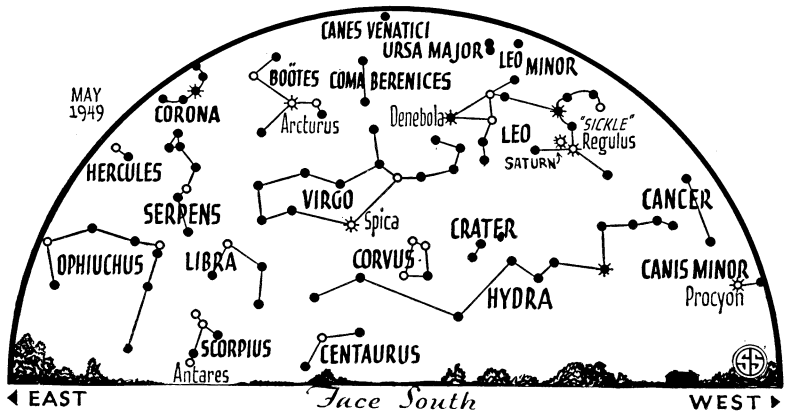
However, it would be a most uncomfortable place to be. First of all, it has no atmosphere that can be detected, and it seems to have a rough surface something like that of the moon. Just as the moon always keeps the same hemisphere towards the earth, so it seems also that Mercury keeps the same face toward the sun. That half, therefore, is very hot, actually about 770 degrees Fahrenheit, which is above the melting point of lead. The dark side is very cold, probably not far above the absolute zero (minus 460 degrees Fahrenheit) at which all heat is absent.

However, there are irregularities in the motion of Mercury, similar to those which occur with the moon, by which there is a little more than half of the surface on which the sun may shine. In between the large area where the sun never sets, and another where it never rises, there is a narrow zone in which the sun sometimes rises a little above the horizon, then drops behind it again. Without the ameliorating presence of an atmosphere, the temperature changes here would be enormous. It seems, therefore, as if Mercury is a most unsuitable place for any kind of life.

Time Table for May

May	EDST	
1	2:00 p. m.	Saturn stationary, resumes eastward motion





☼ ✱ ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

4	early a. m.	Meteors visible from constellation of Aquarius
5	5:33 p. m.	Moon in first quarter
6	4:20 p. m.	Moon passes Saturn
10	11:00 a. m.	Moon nearest, distance 224,900 miles
	4:00 p. m.	Mercury farthest east of sun
12	8:51 a. m.	Full moon
17	10:14 a. m.	Moon passes Jupiter
19	3:22 p. m.	Moon in last quarter
22	10:00 a. m.	Moon farthest distance 251,600 miles
27	6:24 p. m.	New moon
28	1:48 p. m.	Moon passes Mercury
	5:37 p. m.	Moon passes Venus

Subtract one hour for CDT, two hours for MDT, and three for PDT.

Science News Letter, April 23, 1949

AERONAUTICS

Speed for Air Supremacy

➤ PROGRESS in aerodynamics research during the past year has been more rapid perhaps than in any other year since the Wright Brothers' first powered flight, the annual report, just issued, of the National Advisory Committee for Aeronautics states. Superior speed is essential to supremacy in the air, it declares.

Aerodynamics is concerned with aviation problems of aircraft design to achieve speed, stability and safety in flight. Speed is the most valuable single characteristic of aircraft, particularly military, Dr. Jerome C. Hunsaker, chairman of the committee, states in his letter of submittal to Congress. One immediate objective is to solve, as quickly as possible, the most pressing problems attendant to high-speed flight.

The research of the National Advisory Committee for Aeronautics, a government agency known as NACA for short, is directed toward the over-all objective of acquiring new scientific knowledge essential to assure American leadership in aeronautics. The committee, with its several laboratories and hundreds of aircraft scientists, directs its research to the needs of military, commercial and private aviation to obtain the scientific information to permit flight at increasing speeds to be accomplished in a safer and more economical manner.

As a consequence of the similarity of the basic objectives of both military and civil aviation, to carry greater loads faster, farther, and more economically, scientific research conducted with the objective of improving military aircraft is applicable to civil aviation. In general the research results are first applied to military aircraft and, after further practical experience and development, to civil aircraft.

Much work has been done during the year by NACA in the design and testing of various types of wings for airplanes. The wings of aircraft designed to fly at near the speed of sound are, in general, characterized by thin airfoil sections. Of the wing plan forms suitable for flight at moderate supersonic speed, triangular wings, such as used on the new so-called Delta-wing plane, combine the structural efficiency with the dynamic efficiency of a highly sweptback leading edge.

Science News Letter, April 23, 1949

PHYSICS

Attain Absolute Stillness In New Echo-Proof Chamber

➤ ABSOLUTE stillness, a condition few have ever encountered, is achieved in a new silent chamber revealed at the U. S. Army Signal Corps base in Fort Monmouth, N. J. This no-echo chamber was designed and constructed for the testing of delicate instruments.

Absolute quietness is a condition that few persons can expose themselves to for 30 minutes without pronounced discomfort, the engineers who built the chamber discovered. Therefore, provisions were made so that the instruments inside can be read from the outside. The engineers also learned that the presence of anyone inside the structure inpaired the complete efficiency of tests.

The chamber is to be used primarily to determine operational accuracies of microphones, head-sets, loud-speakers and other items requiring minute examination. It is known scientifically as an anechoic chamber. The term means "no-echo". An ordinary sound-proof room was not enough because any variation, such as the reflection of sound from walls, introduced a false reading on the indicators. Glass fiber plays an important part in the construction because it is one of the best sound-absorbent materials available.

The value of an accurate means of knowing how much noise is made by all kinds of machinery used by the Army, and effective methods of eliminating the noise, can not be underestimated. The noise made by a hand generator operating a piece of equipment in the field, for instance, would reveal the presence of the operator to the enemy, even if he could not be seen. He would be quickly eliminated and that piece of apparatus put out of action. The Signal Corps objective is to produce apparatus which gives off so little noise that they defy detection.

Science News Letter, April 23, 1949