

## ASTRONOMY

# Mars Enters Evening Sky

The red planet is now brightening as it approaches its very close visit of Sept. 7, when it will come within 35,120,000 miles of the earth, its closest brush since 1924.

By JAMES STOKLEY

► WITH THE COMING of July, the planet Mars enters the evening sky, getting ready for the close approach it will make later in the summer, when it will be nearer than at any time since 1924.

At the beginning of July, Mars rises in the southeast about 11 p.m., your own variety of standard time, but day after day it comes up earlier. By the end of July, it will rise about two hours after the sun has set.

Mars does not show on the accompanying maps, which depict the sky as it looks about 10:00 p.m., your own kind of standard time, at the start of July; 9:00 p.m. at the middle and 8:00 p.m. at the month's close. (Add one hour for daylight saving time.)

However, Mars is in the constellation of Aquarius, the water carrier, part of which is shown, low in the southeast to the left of Capricornus. Its brightness, on the astronomer's magnitude scale, is minus 1.3 at the middle of July, which is brighter than any other planet or star in that part of the sky.

## Mars Easy to Spot

This, with its ruddy color, makes Mars easy to identify.

Two other planets are shown on our maps. One is Jupiter, similar to Mars in brightness, low in the west in Leo, the lion. Earlier in the evening Jupiter can be seen higher, in the southwest, close to the star Regulus (which is below the horizon at the times for which the maps are drawn).

Toward the south, in Libra, the scales, we find Saturn, about a sixth as bright as Jupiter.

Of the summer evening stars, the brightest is Vega, in Lyra, the lyre, which is high in the east. With magnitude 0.1, it is about half again as bright as Saturn, but about a quarter as bright as Mars or Jupiter.

Another bright star is Arcturus, in Bootes, the bear-driver, seen high in the southwest. Below this group stands Virgo, the virgin, with Spica. To the left is Libra, in which Saturn now stands, and to the left of that we come to the scorpion, Scorpius, with the star called Antares, which means the rival of Mars, given because of its red color.

The two other first-magnitude stars shown on our maps are both toward the east. One is Altair, in Aquila, the eagle, and the other is Deneb, in Cygnus, the swan, a little higher and farther north.

The planet Venus, which so brilliant in the western evening sky during the spring, has now shifted to the morning sky, and is equally brilliant in the east before sunrise. Mercury, the fifth planet that reaches naked-eye visibility, will not be visible during July.

As Mars draws in for the close approach it will make to the earth in September, astronomers all over the world, and particularly in the Southern Hemisphere, are training their telescopes on it.

Since it last came as close on Aug. 22, 1924, many new techniques have been developed, bigger telescopes have been built, and high-speed photographic films, both for color and black and white, which give fine-grain images capable of great enlargement, have been made available.

## Solution of Puzzles

Thus, it is hoped, this year's observations may go far to aid in a solution of the puzzles that Mars has presented.

At the beginning of 1956, Mars was far away, on the opposite side of the sun, at a distance of nearly 200,000,000 miles. But all year it has been moving closer.

On July 1, it is 57,880,000 miles away from the earth, but at the end of the month, this will be reduced to 43,548,000 miles. The closest approach will come on Sept. 7, when Mars will be 35,120,000 miles away. In 1924, it came even nearer, but not in this century will those conditions be equalled.

The mean distance of Mars from the sun is 141,690,000 miles, about one and a half times that of the earth (93,000,000 miles). The "year" of Mars, the time it takes to encircle the sun, is equal to one of our years and ten and a half months.

Every 780 days (nearly two years and

two months) the earth catches up to Mars and passes it. Therefore, if each of the orbits were perfectly circular, every 780 days earth and Mars would be separated by only 48,690,000 miles (the difference between the distances of the two planets from the sun).

However, neither of the orbits is circular. Both are pulled out into ellipses. In January the earth is about 3,000,000 miles nearer the sun than in July, while the orbit of Mars is even more eccentric. Its distance from the sun varies by more than 26,000,000 miles.

## Opposition Distances Vary

When we pass Mars that planet is said to be in "opposition" i. e., it is directly opposite the sun in the sky. If this occurs when Mars is at its greatest distance from the sun, as it did in February, 1948, the nearest the two bodies approach is about 63,000,000 miles.

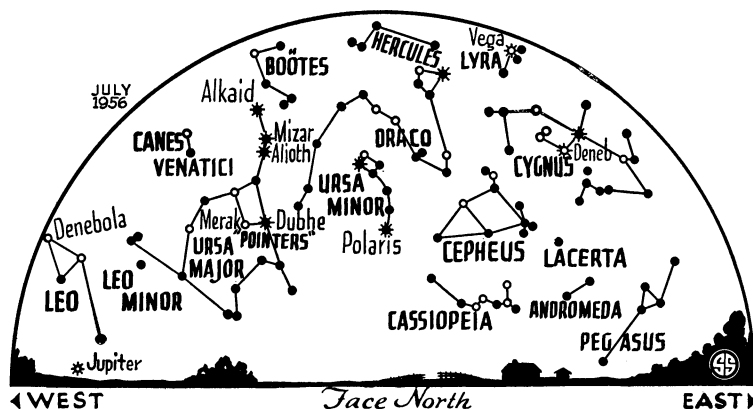
About Aug. 28, however, the earth passes the place in Mars' orbit where it comes closest the sun, and if Mars happens to be there at that time the two planets are only 34,500,000 miles apart. Such a condition was nearly realized in 1924, when the opposition occurred Aug. 22.

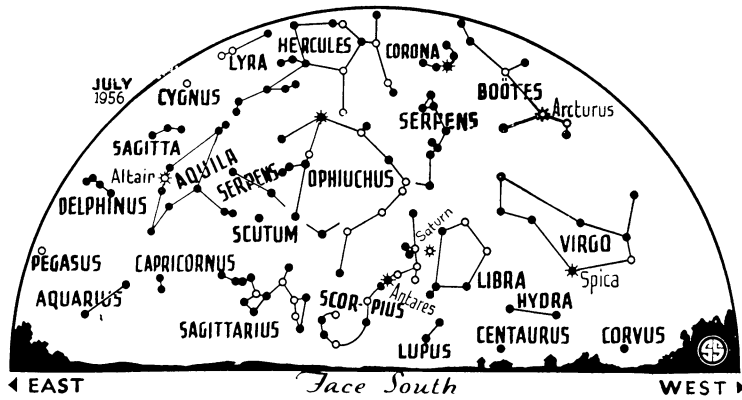
The next favorable opposition came on July 23, 1939, when Mars was 36,171,000 miles away.

When Mars does make a close approach, it is always far south in the sky, which means it is low for astronomers in the Northern Hemisphere where most of the big observatories are located.

However, in recent years several big telescopes have been erected in the Southern Hemisphere.

The newest is a 74-inch reflector officially opened at the Australian Commonwealth Observatory on Mt. Stromlo, near the capital city of Canberra, last November. One slightly larger, of 76 inches diameter, is located at the Radcliff Observatory of Oxford University, in Pretoria, South Africa.





☆ \* ○ ● SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

Of the world's telescopes now in operation, there are only three exceeding these in size.

In addition, there are several large refracting, or lens-type, telescopes in the Southern Hemisphere, which may be used on Mars this summer. The largest of these, one with a 27-inch lens, belongs to the University of Michigan and is located at Bloemfontein, South Africa.

In 1954, as Mars approached within 39,800,000 miles on July 2, this fine instrument was employed by Dr. Earl C. Slipher of the Lowell Observatory at Flagstaff, Ariz., which has long specialized on Mars. These observations were supported by the National Geographic Society, and they provided a sort of practice run for 1956, as well as being of great value in themselves.

Since the unusually favorable opposition of Mars is doubtless the most important astronomical event of 1956, the next two star maps will be devoted to that planet,

and some of the things that make it interesting to scientists.

**Celestial Time Table for July**

July	EST	
1	3:40 a.m.	Moon in last quarter.
4	8:00 p.m.	Earth farthest from sun, distance 94,455,000 miles.
6	12:12 p.m.	Moon passes Venus.
7	11:37 p.m.	New moon.
8	6:00 a.m.	Moon nearest, distance 222,100 miles.
11	2:26 a.m.	Moon passes Jupiter.
14	3:46 p.m.	Moon in first quarter.
17	9:45 a.m.	Moon passes Saturn.
22	6:00 a.m.	Moon farthest, distance 252,500 miles.
	4:29 p.m.	Full moon.
27	9:28 a.m.	Moon passes Mars.
30	2:31 p.m.	Moon in last quarter.

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

Science News Letter, June 23, 1956

MEDICINE

**Diabetics Normal in I.Q. and Personality**

► **DIABETIC PATIENTS** are normal in intelligence and personality, Drs. A. J. Kubany, T. S. Danowski and C. Moses of the University of Pittsburgh School of Medicine, Pittsburgh, reported at the American Diabetes Association meeting in Chicago.

Previously, there have been conflicting reports on this. Diabetics have been said to have less than average intelligence or to be particularly brilliant intellectually. Some authorities have reported more behavior problems and personality disorders in diabetics, while others have said they found the opposite true.

To learn more about these matters, the Pittsburgh scientists gave a standard personality test and a standard intelligence test to 40 diabetics in the late adolescent and early adult age range. They all had developed diabetes before the age of 16.

The mean intelligence of the group on the Stanford-Binet test was 103. National norms for this are 90 to 110.

On the Minnesota Multiphasic Personality Inventory, the young diabetics showed some abnormalities when compared to the general adult population. When compared to normal young people of the same age, however, these differences disappeared.

The abnormalities that a number of scientists have noted and generalized to all diabetics may, the Pittsburgh doctors suggest, be the reaction after diabetes starts to the person's finding he has diabetes and to the doctor and the regimen of tests, regular visits, diet and so on he prescribes.

Science News Letter, June 23, 1956

GEOPHYSICS

**Earth Satellites May Circle for Ten Years**

► **THE EARTH SATELLITES** to be launched during the International Geophysical Year that starts July 1, 1957, may circle the globe for as long as ten years, Dr. Fred L. Whipple, director of the Smithsonian Astrophysical Observatory, Cambridge, Mass., has reported.

However, the artificial moonlet could burn out as it spiraled toward the earth about a month after it was shot toward space, Dr. Whipple said. Observations of the satellite will lead to an accurate determination of the upper atmospheric density to an altitude of some 300 miles. If the density is as low as a million-millionth of the sea level value, Dr. Whipple predicted, the satellite's lifetime would be limited to less than a year.

Observations of the satellites will also help to indicate the earth's shape to an accuracy of 30 feet, Dr. Whipple reported. He spoke at a dedicatory symposium for the University of Pennsylvania's Flower and Cook Observatory near Paoli, Pa.

Science News Letter, June 23, 1956

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