

ASTRONOMY

Mars Approaching Earth

The ruddy planet, earth's neighbor in the sky, is making its closest approach to earth in 13 years on July 2. Astronomers are training their telescopes on this planet.

By JAMES STOKLEY

► SHINING BRILLIANTLY on July evenings in the southern sky is the red planet Mars, now making its closest approach in 13 years. On July 2 it will be only 39,740,000 miles away. This may not seem very near, but it is almost next door, astronomically speaking!

Its brightness is minus 2.2 on the astronomer's scale, which is greater than any other star or planet now visible except one. The exception is Venus, visible in the western sky for more than two hours after sunset.

With magnitude minus 3.5, about three and a third times as bright as Mars, there is no doubt about the identity of Venus, since it is the first to be seen as dusk is falling.

The accompanying maps show the appearance of the July evening skies, about 10:00 p.m., your own variety of standard time, at the beginning of July; 9:00 p.m. the middle of the month and 8:00 p.m. at the end. (Add one hour for daylight time.)

Thus it will be seen that Mars is in the constellation of Sagittarius, the archer. On the right is Scorpius, the scorpion.

In the latter group shines the star Antares, whose name means "rival of Mars," given on account of its red color. The two bodies now appear so near together that it is easy to compare them, although Mars is about 25 times as bright at present.

The planet, of course, shines by sunlight that it reflects, while the star is a distant sun, shining by its own light.

A little farther to the west, in Virgo, the virgin, a third planet can now be seen. This is Saturn, about half again as bright as the star Spica, seen to the right, which is about the same as Antares in brilliance.

The most prominent star now visible in the evening is Vega, in Lyra, the lyre, which shines high in the east. It is about twice as bright as Antares or Spica, due in part to the fact that it is so much higher and shows off to better advantage.

Two others of the first magnitude can be seen beneath Vega. The one to the southeast is Altair, in Aquila, the eagle. To the left of Altair is Deneb, in Cygnus, the swan.

Aid in Locating Bootes

Second only to Vega in brightness among the July evening stars is Arcturus, in Bootes, the bear-driver, a constellation seen in the southwest above Virgo.

Another good way to locate Arcturus is

to look to the northwest for the familiar great dipper, in Ursa Major, the great bear. The two stars that are in the lower part of the dipper, called Dubhe and Merak, marking the outer part of the bowl, are the well-known pointers, and a line from these, to the right, brings you to Polaris, the pole star. But now look above, at the stars that form the dipper's handle, and follow their curve southward. This brings you first to Arcturus, then to Spica.

In addition to the three planets already mentioned, Mercury will appear briefly as a morning star, low in the east just before sunrise, about July 26, when it will be farthest west of the sun.

In July, Jupiter is too close to the sun to be seen easily, although by August it too will be a morning "star."

Mars Orbit Not Circular

If the orbit of Mars, and also that of the earth, around the sun were truly circular, the approach of the two planets would be a very simple matter. The mean distance of earth from the sun is 93,000,000 miles, that of Mars is 141,500,000 miles.

With circular paths, they would always be closest when in the same direction from the sun, the distance being 48,500,000 miles, the difference between 141,500,000 and 93,000,000.

When on opposite sides of the sun, Mars and the earth would be farthest, separated by 234,500,000 miles, the sum of their individual distances from the sun.

The orbit of earth is nearly circular. On July 3 we are in "aphelion" or farthest from the sun, at a distance of 94,500,000 miles, which is 3,152,000 miles more than we were last Jan. 2. The orbit of Mars is considerably more lopsided, for that planet varies

about 26,000,000 miles in distance from the sun.

At the closest approach of these two orbits they are only 34,500,000 miles apart. Every year, about Aug. 28, the earth reaches the part of its path nearest that of Mars, but it very rarely happens that Mars is there at the same time.

It was in 1924, and then Mars was less than 35,000,000 miles away, closer than it will be for centuries. The year 1939 brought the next close visit, with a distance of 36,171,000 miles. The present approach is very close, but in September, 1956, it will be still better, with 35,400,000 miles, almost as good as 1924.

Observed by Many Astronomers

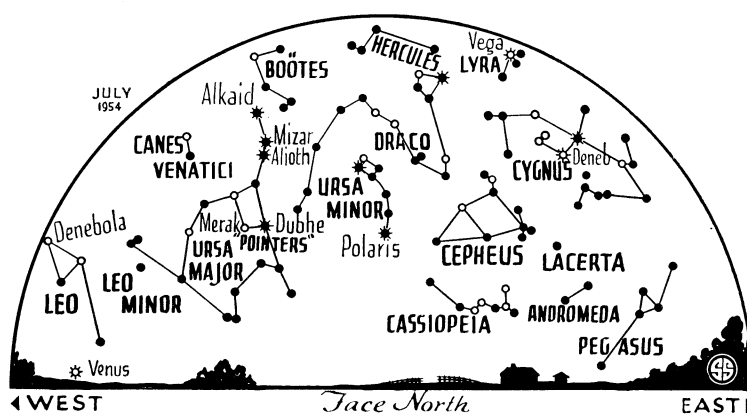
At observatories all over the world astronomers are now busily studying Mars, in an attempt to solve some of the problems presented by this orb. The 200-inch Hale telescope at Mt. Palomar, the largest in the world, was not in operation when Mars last was close in 1939.

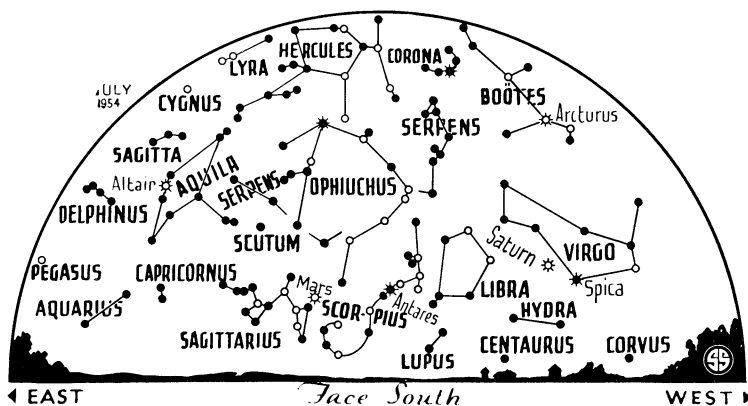
While mainly used for observations of far more distant objects, some of its precious time is being devoted to Mars, along with many smaller instruments.

It so happens that whenever Mars makes a close approach to earth, it is well to the south. For northern observers, it is therefore low in the sky, but from southerly countries it is high overhead. Thus observatories south of the equator have an advantage, and special observations are being made from South America, Australia and South Africa.

Dr. E. C. Slipher of Lowell Observatory, Flagstaff, Ariz., one of the leading authorities on Mars, has gone to the Lamont-Hussey Observatory of the University of Michigan, located at Bloemfontein, South Africa, to make observations that, it is hoped, will give a more accurate determination of the size of Mars.

As a result of all this work, by the end of the year we should know considerably





♁ * ○ ● SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

more about Mars than we did before. Perhaps we will know what exactly are the mysterious markings called "canals." Perhaps we will learn more about the constitution of its atmosphere, and can assess more accurately the possibility of some sort of life on that planet.

From this year's work, it should be possible to plan an even more comprehensive program for 1956, when the red planet makes its closest approach since 1924. Truly, the next few years should be memorable ones in Martian study.

On the evening of July 15 there will be a partial eclipse of the moon, but it will be over before the moon rises in the middle and western parts of the country. Even along the Atlantic seaboard, the moon will already be eclipsed when it rises.

The moon will only partly enter the shadow of the earth; at the height of the eclipse, which occurs at 7:20 p.m., EST, about 41% of the lunar diameter will be covered by the shadow, enough to make the moon look distinctly queer. At 7:31 p.m., the moon will be out of the shadow and the eclipse will be over.

Celestial Time Table for July

July	EST	
2	3:00 a.m.	Mars nearest earth, distance 39,740,000 miles.
3	9:53 a.m.	Moon passes Venus.
	3:00 p.m.	Earth farthest from sun, distance 94,500,000 miles.
6	midnight	Mercury between earth and sun.
7	8:33 p.m.	Moon in first quarter.
9	3:00 a.m.	Moon farthest, distance 251,000 miles.
	12:51 p.m.	Moon passes Saturn.
13	7:18 p.m.	Moon passes Mars.
15	7:29 p.m.	Full moon, partial eclipse of moon.
22	7:14 p.m.	Moon in last quarter.
23	2:00 p.m.	Moon nearest, distance 229,600 miles.
26	10:00 p.m.	Mercury farthest west of sun, visible around this time in eastern sky just before sunrise.
28	early a.m.	Meteors visible radiating from constellation of Aquarius, the water carrier.
29	5:20 p.m.	New moon.

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

Science News Letter, June 26, 1954

PSYCHIATRY

Neurotics Say "I" Most Frequently

➤ **NEUROTIC PATIENTS** are "I" persons, it appears from how often they use the pronoun, "I," in speech.

This and use of pronouns generally more often than nouns are distinctive features of their language habit patterns, Drs. Maria Lorenz and Stanley Cobb of Boston reported at the meeting of the American Neurological Association in Atlantic City, N. J.

The manic patients use the fewest adjectives, reflecting lack of subjective qualification.

The obsessive-compulsives are the most liberal users of adverbs, showing emphasis on quantity and degree.

The paranoid schizophrenic stands out least sharply in terms of characteristic language traits.

Science News Letter, June 26, 1954

MEDICINE

Relieve Some Pain For Cancer Patients

➤ **CANCER PATIENTS** and perhaps others with such severe pain that large doses of narcotics do not relieve it can be helped by a new drug called chlorpromazine.

The drug steps up the pain-relieving power of narcotics so that a large dose that was ineffective alone gives relief of pain. In some cases pain relief can be had from a smaller dose of the narcotic.

Results showing this are announced in the *Journal of the American Medical Association* (June 12) by Drs. Max S. Sadove, Myron J. Levin, Raymond F. Rose, Lester Schwartz and Frederick W. Witt of the Veterans Administration Hospital at Hines, Ill., and the University of Illinois College of Medicine, Chicago.

Chlorpromazine offers the extra advantage of helping to stop the nausea and vomiting that are frequent in advanced cancer.

The drug seems to alter the patient's reaction to pain, probably accounting for some of its effect in helping them get relief from previously ineffective doses of narcotics.

"We observed that patients, some of whom stated that the degree of their pain was not appreciably altered, were more relaxed and had a more cheerful outlook," the doctors report.

Drowsiness is the chief side effect of the drug. To a less extent, it may cause dryness of the mouth, heartburn and mild low blood pressure.

With continued use of the drug, patients need progressively increasing amounts for a constant effect. Whether this was because their pain was getting worse or because they were developing tolerance to the drug is not known.

In large enough amounts, chlorpromazine produced unconsciousness. It therefore should not be used, the doctors warn, in unconscious states caused by barbiturates, opiates, alcohol and other drugs that depress the central nervous system.

Chlorpromazine is a phenothiazine compound. Its ability to prolong and intensify the action of narcotics and anesthetics was first reported by French scientists. Recently Canadian and U. S. physicians have reported that it has a remarkable quieting effect on very disturbed mental patients, and even helped some improve enough to leave the hospital.

This developed from reports of its sedative action when used as an anti-nausea and anti-vomiting drug. French scientists have also used it to reduce the amount of narcotics, sleep-inducing drugs and anesthetics required for surgical operations.

The drug was originally developed by Rhone-Poulenc Laboratories in France. It is marketed as Thorazine by Smith, Kline & French Laboratories, Philadelphia.

Science News Letter, June 26, 1954

Oceans cover 71% of the earth's surface.

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