

## ASTRONOMY

# Mars Still Visible in May

Mars, still visible on May evenings, is about as bright as Regulus in the constellation Leo, both of which are located in the southwest portion of the skies.

By JAMES STOKLEY

► THE PLANET MARS joins with nine bright stars that shine in the evening skies of May.

Three of these stars, as well as Mars, are visible high in the south. Their positions are shown on the accompanying maps, which depict the sky as it looks about 11:00 p.m., your own kind of daylight saving time, at the first of May; 10:00 p.m. at the middle of the month and 9:00 p.m. at the end.

Toward the southwest is the constellation of Leo, the lion, with the first magnitude star called Regulus. This, and five stars above in a hook-shaped formation, form a group called the sickle. However, as the lion was pictured on the old star maps, the blade of the sickle, which curves upwards and then down, toward the southwestern horizon, marked the animal's head.

## Mars Close to Regulus

Mars is now in this same part of the sky, and about the same brightness as Regulus. On the astronomical brightness scale, Mars is magnitude 1.2, and Regulus 1.3. They are easy to distinguish, however, as the planet shines with a steady reddish light, unlike the twinkling glow of the star.

All month Mars will draw closer and closer to Regulus and on the last night of May will pass about a degree to the north of it. (A degree in the sky is about twice the diameter of the moon.)

About as high as Leo, toward the southeast, is Bootes, the herdsman, with Arcturus, about 2.5 times as bright as Regulus. Below is Virgo, the virgin, in which stands Spica, a star only slightly brighter than Regulus.

The constellation of Bootes extends over into the map of the northern half of the sky and there it comes near the end of the handle of the big dipper, which is part of Ursa Major, the great bear. The dipper is now seen inverted; at the bowl's left are the two stars called the pointers. Their line, followed downward, brings you to the north star, Polaris.

Under the great bear are several bright stars that were conspicuous in the south on winter evenings, but are now about to disappear for a while. In Gemini, the twins, is Pollux, along with his fainter brother, Castor. Farther right is Auriga, the charioteer, with Capella, and to the left of the twins is Procyon, in Canis Minor, the little dog.

Low in the northeast stands Vega, in Lyra, the lyre. Under it is Cygnus, the swan, with Deneb, a first magnitude star that is dimmed because it is now very low in the sky and so is shown as second magnitude.

During summer evenings these will be much more prominent. In August, for U. S. observers, Vega is directly overhead, brighter than any other star that you can see.

As for the other naked-eye planets, Saturn rises in the east about 2:30 a.m. (your own kind of daylight saving time), just as Mars is setting in the west. Jupiter rises about two hours before the sun. Venus appears low in the east about an hour before the sun rises. You can see it as a very brilliant "morning star" even as the dawn is breaking. Mercury is not visible this month. It comes between earth and sun on May 17.

Many astronomers all over the world are now pointing their telescopes toward Lyra, photographing a faint object that, on the first of May, is in the position marked by a small "x," just above the letter "s" in Cygnus. Because it is so close, the object's motion through the sky is very fast and its position will change rapidly. However, it will take an astronomical telescope to see this object, which is the tiny planet Betulia, probably no more than 25 miles in diameter.

Thousands of such minor planets are known, but on May 21 Betulia will come within 14,600,000 miles of the earth. Astronomically speaking, this is very close.

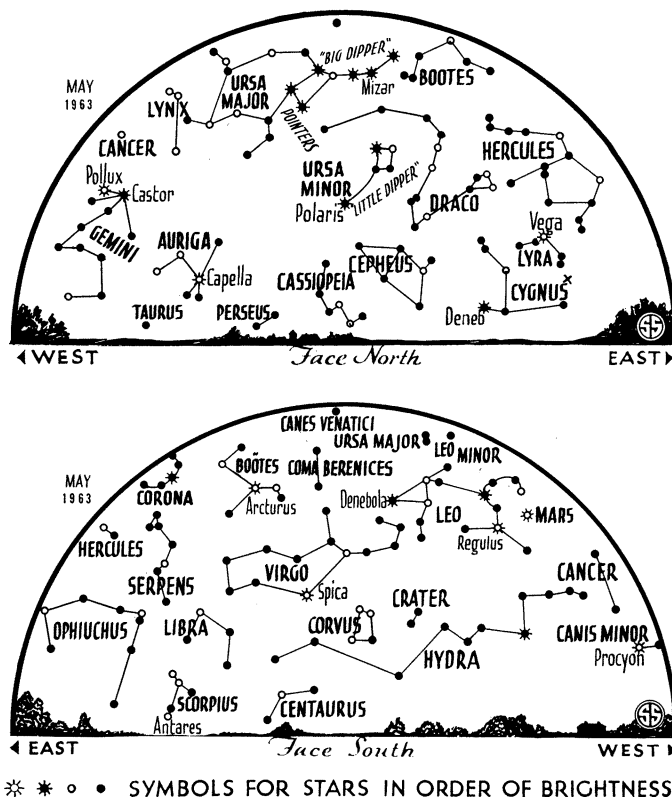
Actually there are at least four other

minor planets that have come even closer in recent years. Amor, discovered in 1932, can approach within 10 million miles, while Apollo, also found in 1932, can make a 6.5-million mile approach. Adonis was found in 1936; it can come within about 1.5 million miles. The record seems to be held by Hermes, which Walter Reinmuth discovered from the Heidelberg Observatory in Germany in 1937. Only about a mile in diameter, it passed within about 500,000 miles—about twice the distance of the moon at its farthest.

## Betulia Approaches Earth

But we had no advance warning that these visitors were coming. They were not discovered until they were already close. The approach of Betulia on May 21 will break the record for a predicted close approach. The closest before this was in 1931 when Eros came within 16,200,000 miles. At that time 44 observatories in many parts of the world observed it carefully and charted its path. The purpose was to find more accurately the length of the astronomical unit, which is the mean distance of the earth from the sun (about 93 million miles).

The relative distances of the planets from each other and from the sun can be determined precisely from the laws of planetary movement. That is, you can draw a map of the solar system in which the proportions are accurate, but this is not very useful unless you have a scale of miles. But if you



determine one of the distances in miles, then you can make the scale.

The 1931 program, arranged by the International Astronomical Union, was designed to find one such distance—that of Eros. Coming so near, this was possible. After 10 years of work in analyzing these observations, the late Sir Harold Spencer Jones, who was Astronomer Royal of England, announced that the astronomical unit was 93,003,000 miles. This was a little longer than astronomers had previously supposed it to be.

But other methods of determining the unit's length have given a value somewhat different. And so have radar methods. These involve bouncing radio waves off Mars and Venus, and accurately timing the echo's return to earth. Some of the differences are as much as 100,000 miles, and astronomers do not know the reason for such a discrepancy. Perhaps new work, based on observations of Betulia, may give a clue.

Betulia, incidentally, was discovered on May 22, 1950, and is named after the wife of Dr. Samuel Herrick, astronomer at the University of California at Los Angeles. He is a long-time specialist in observing minor planets. With the aid of a colleague, Mrs. M. P. Francis, he calculated the time table for its visit this year and has urged that it be observed.

### Celestial Time Table for May

MAY EDT

5	9:00 a.m.	Neptune nearest earth, distance 2,723,000,000 miles
6	midnight	Moon farthest, distance 252,500 miles
8	1:24 p.m.	Full moon
16	5:00 a.m.	Moon passes Saturn
	9:37 a.m.	Moon in last quarter
17	11:00 p.m.	Mercury between earth and sun
19	noon	Moon passes Jupiter
21	1:00 a.m.	Moon passes Venus
22	midnight	New moon
29	4:00 a.m.	Moon passes Mars
30	12:56 a.m.	Moon in first quarter

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

• Science News Letter, 83:266 April 27, 1963

### GEOPHYSICS

## Moon Seen as Source Of Glass-Like Tektites

► DEBRIS splashed out of the moon is the source of tektites, strange glassy objects found in scattered regions around the world, two scientists reported in Washington, D. C.

They believe that some of the debris thrown out by impact of meteors on the lunar surface goes into orbit around the earth and eventually ends up on earth as tektites. The National Aeronautics and Space Administration scientists said their theory is based on observation of a meteor shower and study of the breakup of artificial satellites.

Details of this theory on the lunar origin of tektites is reported in Science, 139:1288, 1963, by Drs. John A. O'Keefe and Barbara E. Shute. This would mean that the moon is very much like the earth in its chemistry.

• Science News Letter, 83:267 April 27, 1963

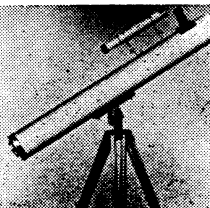
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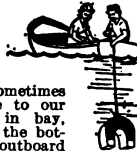
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