

ASTRONOMY

# Planet Trio

## Jupiter, Mars and Saturn Now Close Together in the Western Evening Skies, Giving Opportunity to Compare

By JAMES STOKLEY

**T**HE MOTIONS of the planets have now brought Jupiter, Mars and Saturn close together, and as they shine in the western sky in the constellation of Taurus, the bull, one has a good opportunity to compare them.

Jupiter is the brightest of the trio, whose places are shown on the accompanying maps. (These depict the skies at 11:00 p.m., war time, on the first of the month; an hour earlier on the 15th and two hours earlier on the 31st.) It is just above Aldebaran, a star in Taurus which is quite bright though considerably fainter than the planet. Jupiter's magnitude is now minus 1.8 in the scale used by astronomers.

Of the three planets, Saturn is next in brilliance, with magnitude plus 0.4. Mars, between the other two, is still fainter, with plus 1.3, which is a value exceeded by nine stars now in the sky. Yet, as recently as last October, Mars surpassed even Jupiter in brilliance. Then, however, it was very close to the earth, only 38,100,000 miles distant. Now it has receded to 147,000,000 miles—and is still going to greater distances!

### Shine By Reflection

Planets shine by reflected light of the sun, while stars are far-away suns, shining with their own glow. Of these now in the evening sky, the most brilliant is Sirius, in the southwest, sometimes called the dog-star, which is a little fainter than Jupiter. It marks the constellation of Canis Major, the great dog. Above it is the lesser dog, Canis Minor, with the star Procyon.

To the right of Sirius is Rigel, in Orion, the great warrior. Above this are the three stars in a row that mark Orion's belt, and still higher is Betelgeuse. Taurus, with ruddy Aldebaran, is farther to the right, almost directly west.

High in the western sky are the twins, Gemini, one of whose stars, Pollux, is, like the others mentioned by name, of the first magnitude. And to the right of Taurus, in the northwest, is Auriga, the charioteer, with brilliant Capella.

Three more first magnitude stars can be seen farther east. High in the south-

east is Leo, the lion. A hook-shaped group marks the head of the lion, and this is called the "sickle." The bottom star of these is Regulus. Below Leo is Virgo, the virgin, and the lowest star, near the horizon, is Spica. It seems fainter than it should be, on account of the low position, causing greater absorption of its light in passing through our atmosphere. And to the left of Virgo is Boötes, the bear-driver, with Arcturus its brightest orb.

In the early morning sky this month the other two naked eye planets may be seen. Rising some two hours ahead of the sun, and of brightness considerably greater even than Jupiter, is Venus, which a few months ago was on the opposite side of the sun and visible in the evening. Much harder to find is Mercury. About March 7 it will be low in the southeast just before sunrise, for then it will be at its greatest distance to the west of the sun.

Two eclipses feature the celestial program for March, but one of them, an eclipse of the sun on March 16, will be completely ignored by astronomers. At its best, this will only be a partial, with less than two-thirds of the sun's diameter covered by the moon. Even this will only be seen at the South Pole, in Antarctica and in the southernmost parts of the Indian and the Pacific Oceans. Probably it will not amount to enough to take the minds of the crews of warships cruising in these troubled waters off their tasks.

But the other eclipse, which is total,

and of the moon, is much more interesting, since it will be seen, to some extent at least, over all the United States and most of Canada. It is the first total eclipse of the moon that we have had for several years visible during convenient evening hours.

This comes on Monday, March 2, and here is the schedule of what will happen, with times given in eastern war time (take one hour earlier for CWT, two hours earlier for MWT), and three hours earlier for PWT):

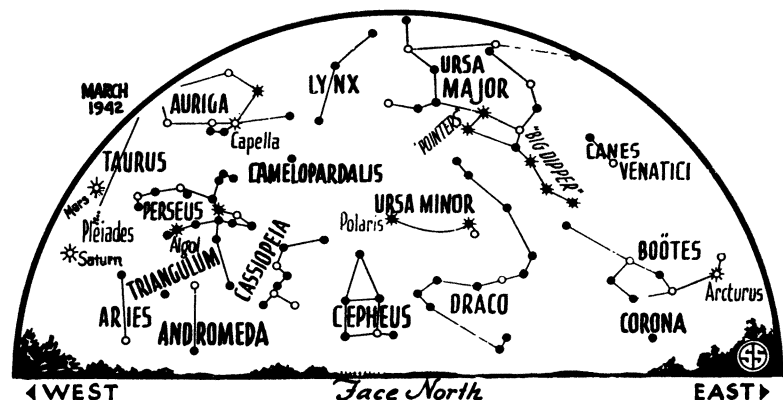
At 6:31 p.m. the moon starts to enter the shadow of the earth, the edge of which will gradually creep across the lunar face. Since the earth is a sphere, the edge of this shadow is curved.

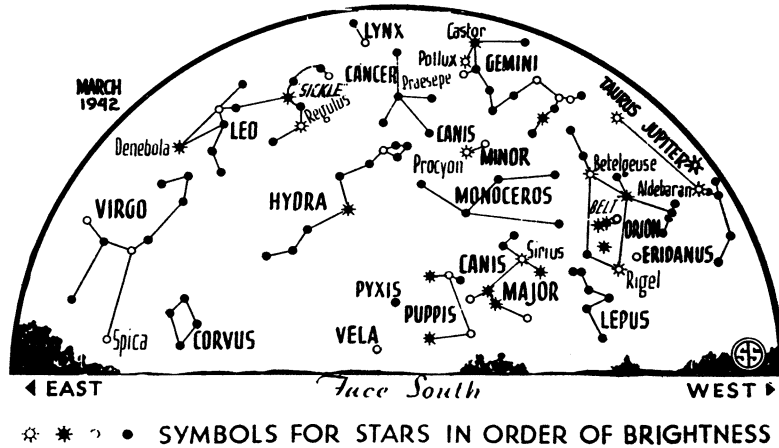
At 7:33 p.m., the moon has completely entered the shadow, and the total eclipse begins. The moon does not, however, completely disappear from view, but continues visible with a dull, coppery color. This is caused by light which the earth's atmosphere bends around into the shadow, reddening it as it goes through.

Middle of the eclipse, with the moon most fully immersed in the shadow, comes at 8:22 p.m.

At 9:10 p.m., the moon starts to emerge from the shadow, and the shadow's edge can again be seen creeping across the disk. This marks the end of the total phase.

By 10:12 p.m. the moon has completely withdrawn from the shadow, and the visible part of the eclipse is over. Until 11:15, however, it remains in the outer part of the earth's shadow, the penumbra. During this period a person on the moon would see the earth partly covering the sun. However enough light





reaches the lunar surface that its brightness is not greatly reduced.

In Washington, the moon rises on the second at 6:55 p.m., which is after the moon has started into the shadow, but before totality. In the Rocky Mountains, and along the Pacific Coast, the moon rises after the total phase is over, but the final partial stages will be visible. In San Francisco, for instance, moonrise is at 7:04 p.m., PWT, while the moon does not completely withdraw from the shadow until 7:12 p.m., PWT. In Alaska and northwestern Canada, moonrise comes after this, and there will be no view of the eclipse.

**Celestial Time Table for March**

Monday, March 2, 8:20 p.m., Full moon; total lunar eclipse. Thursday, March 5, 12:00 p.m., Algol at minimum. Saturday, March 7, 8:00 p.m., Mercury farthest west of sun.

Sunday, March 8, 7:00 a.m., Moon nearest; distance, 229,700 miles; 8:49 p.m., Algol at minimum. Monday, March 9, 3:00 a.m., Venus at greatest brilliancy; 6:00 p.m., Moon in last quarter. Wednesday, March 11, 5:38 p.m., Algol at minimum. Friday, March 13, 11:22 a.m., Moon passes Venus. Saturday, March 14, 6:15 p.m., Moon passes Mercury. Monday, March 16, 7:50 p.m., New moon, partial eclipse of sun. Thursday, March 19, 2:00 p.m., Neptune nearest, distance 2,217,000,000 miles. Saturday, March 21, 2:11 a.m., sun crosses equator, spring commences; 11:28 a.m., Moon passes Saturn. Sunday, March 22, 4:26 p.m., Moon passes Mars; (Ab't 11 p.m.) Moon occults Aldebaran. Monday, March 23, 4:29 a.m., Moon passes Jupiter; 6:00 a.m., Moon farthest, distance 251,400 miles. Tuesday, March 24, 8:01 p.m., Moon in first quarter. Thursday, March 26, 1:45 a.m., Algol at minimum. Saturday, March 28, 10:34 p.m., Algol at minimum. Tuesday, March 31, 7:23 p.m., Algol at minimum.

Eastern War Time throughout. Subtract one hour for CWT, two hours for MWT, and three for PWT.

*Science News Letter, February 28, 1942*

eclipsed the smaller. The ring was found to be composed of glowing bases of hydrogen, magnesium, calcium, and iron.

"Observations are difficult on account of the faintness of the stars," Mr. Joy stated, "but it seems probable that by taking photographic exposures properly timed both the distribution of the chemical elements as well as the light intensity in the ring may be determined."

What was supposed to be an old "new" star or nova that had been abandoned for lack of interest by astronomers for nearly twenty years, has turned out to be actually a variable star of a type previously unknown. The discovery was also revealed by Mr. Joy in his report to the Astronomical Society of the Pacific.

Mr. Joy said that the star was put on the program of the 100-inch reflector because in the past it had shown sudden changes in brightness which indicated it might prove to be a recurring nova. But when the telescope was pointed at the object two so-called red dwarf stars were found there instead. Later Dr. A. van Maanen, also of the Mount Wilson Observatory, secured photographs which confirmed the identification. What was still more surprising was the detection of bright clouds of hydrogen and calcium gas in the atmospheres of stars of such low temperature.

"Further observations will be needed to determine whether the observed variations in light pertain to both stars of the pair," Mr. Joy stated. "These observations indicate that certain small low-temperature stars show changes in brightness not fully recognized before."

*Science News Letter, February 28, 1942*

ASTRONOMY

# Strange Ringed Star Found Resembling Gigantic Saturn

## Intensely Hot Star Is Surrounded by Luminous Ring Four Times the Diameter of Our Sun; One of Twins

DISCOVERY of an intensely hot star surrounded by a luminous ring of gas four times the diameter of our sun was announced by A. H. Joy of the Mount Wilson Observatory from results obtained with the 100-inch reflector.

Viewed from a distance of a billion miles, the star would resemble the planet Saturn as seen through a small telescope. The ring is revolving around the star at a speed of 800,000 miles per hour,

completing a revolution every 14 hours.

The star is one member of the double star system RW Tauri. The other member is about twice as large with a surface temperature of 11,000 degrees Fahrenheit, or nearly the same as our sun. The large star revolves around its ringed companion once in 66 hours. Evidence for the existence of the ring was obtained from a study of the light variations of the system when the larger star

Our prehistoric American forefathers used window seats and built-in furniture much as modern architects do.

One hundred pounds of iron will weigh 143 pounds when it has completely rusted, due to its having taken up oxygen from the air.

## ● RADIO

Saturday, March 7, 1:30 p.m., EWT

On "Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Major Sam Seeley, of the Procurement and Assignment Service, will tell how the nation's supply of physicians, dentists, and veterinarians will be allocated.

Tuesday, March 3, 7:30 p.m., EWT

Science Clubs of America programs over WRUL, Boston, on 6.04 and 11.73 megacycles.

One in a series of regular periods over this short wave station to serve science clubs, particularly in high schools, throughout the Americas. Have your science group listen in at this time.