

ASTRONOMY

February Evening Skies

Eclipse of Sun, Return of Planets, Conjunctions And Display of Bright Stars Feature Celestial Show

By JAMES STOKLEY

IN RECENT months the evening sky has been devoid of planets, but February brings two bright planets along with its unusually magnificent display of stars. During coming months they will become more and more conspicuous and will be joined by their brethren of the solar system.

Jupiter and Mars are the planets now visible. They appear rather low in the east and their brilliance makes them easy to locate. Jupiter is the brighter and the lower of the pair. Mars is distinctly reddish in color and just now it is approaching closer to us than it has been for several years. At the beginning of the month it is 71,884,000 miles away while on February 28 it will be at the neighborly distance of 62,828,000 miles. The following few days it will approach about a hundred thousand miles closer and will be at its nearest position, for this season, on March 3 when it will be only 62,717,000 miles from the earth.

Because of this comparatively close approach of Mars, always an object of interest, a number of great telescopes are now trained on it nightly, making photographs and permitting the observers at the other ends of these instruments to see and record the minute and fleeting details which even the sensitive photographic plate cannot retain. Chief of these observatories is the one at Flagstaff, Arizona, founded by the late Percival Lowell, leading authority on Mars. As a result of these studies it is fully to be expected that a little more light will be shed on such puzzles as the strange markings on the planet called "canals."

The other planetary decoration of the February evening sky is considerably farther from us, even though it is brighter. At the middle of the month Jupiter is 416,156,000 miles distant. But it is so large, 86,728 miles in diameter as compared with 4,216 miles for Mars and 7,918 for the earth, that it picks up considerably more of the sun's light to reflect to us. Jupiter, like

Mars, the earth and all other planets, shines by reflected sunlight, not by its own glow.

Late hours will be required if you wish to see any of the other naked eye planets this month. At no time will Mercury, nearest of all the planets to the sun, be visible, but Venus, the next in order, can be seen low in the southeast just before sunrise, far brighter than any other star or planet in the vicinity. Near by will be seen Saturn, much fainter, though a very bright object. At the beginning of the month Venus will be to the west of Saturn, but after the fourteenth, it will be to the east. At 4:00 p. m., Eastern Standard Time, on February 14, the two will be closest. Then Venus will pass its more distant brother and they will be approximately a third the apparent diameter of the moon apart.

Planetary Conjunction

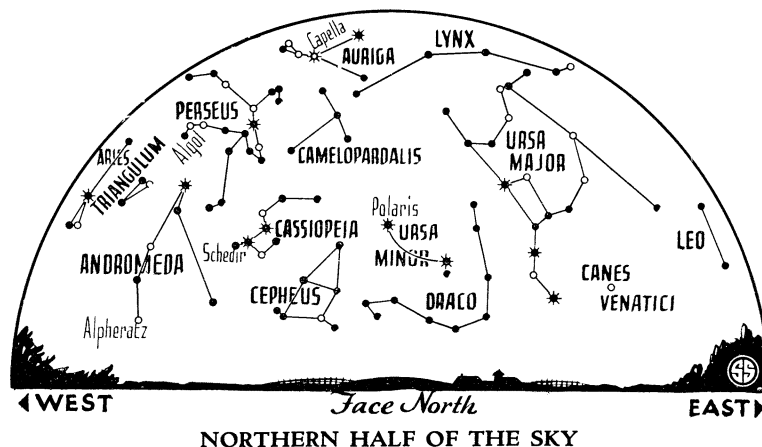
Unfortunately this closest approach, called the "conjunction," occurs during daylight hours in the United States, and in the eastern part of the country it happens even after the planets themselves have set. But just before sunrise on February 14 and 15 the two planets will be seen in the morning twilight, forming a beautiful pair. On the twenty-third is a conjunction of the moon with Venus under somewhat similar conditions and then the moon will be

but a little more than its own diameter south of the planet. A more easily observable conjunction will happen on the twelfth when the moon, a few days past full, will pass near Mars. But this approach will not be particularly close.

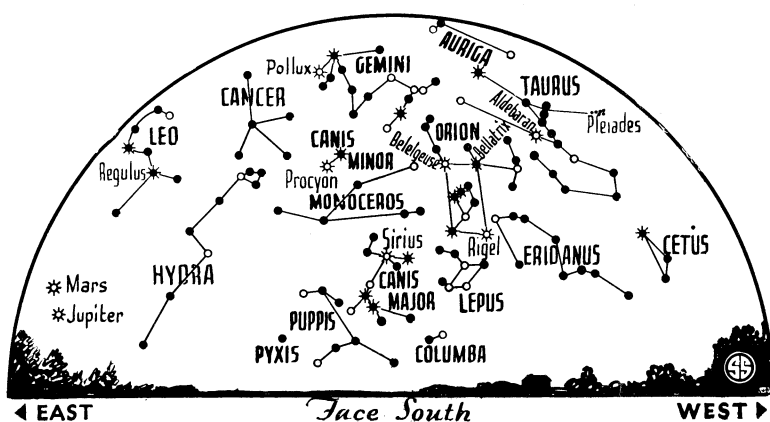
The year's first eclipse will come February 24, but will not be seen from any part of North America. It is an annular eclipse of the sun. As it will appear from points along a path passing Chile, Argentina, the south Atlantic Ocean, Central Africa, Belgian Congo, the Sudan, Ethiopia and Arabia, the moon will come directly in front of the sun. But at that time the moon will be far enough away so that its apparent diameter will not be quite as large as that of the sun and, even when it is right in front of that body, a ring of sunlight will still be visible. On account of the brightness of this ring, or "annulus," none of the phenomena attendant upon a total eclipse like that seen in New England last summer will be visible. Such an annular eclipse is of slight scientific value.

The moon will be new on February 24, for only at this phase can a solar eclipse occur. First quarter will come on the second, full moon on the tenth and last quarter on the seventeenth. This means that the first two weeks of the month will have moonlit evenings.

During February there is a magnificent display of first magnitude stars. Six of them mark the corners of a rough hexagon with a seventh at the center. Directly south about nine o'clock is Sirius, the dog star, in the constellation



* * ° • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS



Face South
MARS AND JUPITER
The more distant body is the brighter.

of Canis Major, brightest of all the stars in the sky. Passing toward the west you come next to Rigel in Orion. Above and farther west is Aldebaran in the bull, Taurus, conspicuous for its ruddy color. Now go upward until almost directly overhead you see Capella marking the group of Auriga, the charioteer. Looking downward to the southeast you next reach Pollux, the brighter of the twins, Gemini. Below it you see the lesser dog star, Procyon, in Canis Minor and thus complete the hexagon. The one in the middle of this ring of stars is Betelgeuse, the upper of the first magnitude stars in Orion. Between it and Rigel is a row of three stars that forms the warrior's belt. Near Betelgeuse is another bright star, though not quite of the first magnitude, namely, Bellatrix, which is also in Orion. Still an eighth first magnitude star is to be seen, however. This is Regulus in Leo, almost directly east. Regulus marks the end of the handle of the sickle, a group almost as familiar as the great dipper.

Meteors Did Not Shower

This is the part of the sky that was anxiously watched by astronomers a few months ago when it was hoped that a brilliant shower of meteors would emerge from it. The sickle curves upward from Regulus and the center of the blade is the radiant, the point from which the so-called Leonid meteors seem to emerge. On the night of November 15, 1932, when this constellation did not rise until about midnight, a few meteors, or shooting stars, were seen to radiate from it. Nothing like the famous showers of the past

when the whole sky was covered with these flashing lines of light, hundreds at a time, was seen.

Possibly November, 1933, may bring such a shower, and again it may not, for meteors are notoriously uncertain bodies. A few can be seen during February radiating chiefly from the constellation of Auriga, which is marked by the star Capella. The greatest display occurs about February 10, but this is a far less conspicuous shower than the Leonids, or the Perseids, which appear in August. And with the moon full the same night the meteor shower is expected to be at a maximum, few of the shooting stars should be visible.

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METEOROLOGY-RADIO

Thunderstorms Located By Radio and Oscillograph

THE POSITIONS of all the large thunderstorms which occur over Europe and the North Atlantic can now be determined by radio apparatus in the British Isles, independently of weather reports. This was announced by R. A. Watson Watt, superintendent of the Radio Research Station of the British Department of Scientific and Industrial Research.

Atmospherics produced by the thunderstorms are so exactly analyzed by cathode ray oscillographs that with two radio stations working in cooperation it is possible to calculate trigonometrically the positions of the storms to within

BOTANY

Plants More Active Than Corals in Making Islands

THE "little coral workers" celebrated in the old-time moralistic nursery verses have been getting more credit than they deserve as builders of islands. So it would appear, at least, from data offered by Dr. Marshall A. Howe, assistant director of the New York Botanical Garden.

Plants, not coral animals, do the lion's share of the work in building up so-called coral islands and atolls, Dr. Howe indicated. He cited one detailed study made on a South Sea island, where two kinds of lime-secreting seaweed occupied first and second places, respectively, as limestone builders, with third place going to a group of one-celled animals known as the foraminifera, and the corals coming in fourth. He backed this up with similar observation elsewhere, including a semi-enforced study of the richness of lime-secreting bottom vegetation made by himself once when becalmed for two days out of sight of land, in a small boat on the Bahama Banks.

Dr. Howe did not deny the claims of the coral animals to a considerable part in reef and island formation. But in the formation of many, if not most, of the so-called coral reefs or islands, lime-secreting plants—the algae—have contributed more than have the corals.

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about a hundred miles. The two stations used are the Radio Research Station, near London, and the Leuchars Aerodrome station, in Fifeshire, Scotland. These stations are about four hundred miles apart, and they enable thunderstorms to be located within a radius of 3,000 miles. Sometimes hundreds of storms are detected within a minute.

Mr. Watson Watt stated that this system has so far been used by Britain alone of the European countries, but that the American Navy is experimenting with it.

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