

ASTRONOMY

Jupiter Now Shines in East

Winter constellations visible in the southeast. Great Square of Pegasus, visible in south, is good guide from which to find other star groups.

By JAMES STOKLEY

► AS IF to take the place of Venus, the brilliant planet that shone in the western sky until a month ago and has now become a morning star, Jupiter has come into view.

Jupiter's position is shown on the accompanying maps, which depict the appearance of the skies about 10:00 p.m., your own kind of standard time, at the beginning of December, 9:00 p.m., at the middle of the month and 8:00 p.m. as it comes to a close.

Jupiter, in the constellation of Cancer, the crab, just below Gemini, the twins, is of magnitude minus 2.1 on the astronomer's brightness scale.

This is not as bright as Venus but, with that one exception, it is brighter than any other nighttime star or planet. It rises about three hours after sunset, and remains visible the rest of the night.

Mars is still with us, to the southwest, in Aquarius, the water-carrier, and sets about 10:30 p.m. It has faded greatly from its brilliance last summer, but still equals a bright first magnitude star. Of magnitude 0.7, it is less than a seventh as bright as Jupiter.

Visible now in the southeast is that array of constellations that make the winter evening skies so brilliant.

Orion Is Familiar

Most familiar of these groups is Orion, the warrior, easily recognized by the three stars in a row that form his belt. Above and to the left is Betelgeuse, in one shoulder, while to the right is Rigel, in one of his legs.

Just below Orion is Canis Major, the great dog, with Sirius, the dog-star. To the left we see the other dog, Canis Minor, with the star called Procyon.

Above Orion is Taurus, the bull, with first-magnitude Aldebaran, the brightest star, marking the animal's eye. Moving to the left from Taurus, we come to Auriga, the charioteer, with the bright Capella.

Below this are the twins, Gemini, with Castor and Pollux, the latter of the first magnitude. And just below these, as mentioned above, is Cancer, the crab (not shown on the maps), in which Jupiter shines so brightly.

Two other first magnitude stars—Deneb, in Cygnus, the swan, and Vega, in Lyra, the lyre—are seen low in the northwest.

Because they are so low, they are considerably dimmed from their brightness a

few months ago, when they shone high overhead.

As mentioned above, Venus has become a morning star, shining in the east in the constellation of Libra, the scales, before sunrise. On Dec. 21, it reaches greatest brilliance, with magnitude minus 4.4, about three and a third times as bright as Jupiter.

Near Venus, also in Libra, is Saturn, which is about the same brightness as Mars.

On Dec. 22, at 4:25 a.m., EST, the sun is farthest south. This is called the winter solstice, since it marks the beginning of winter in the Northern Hemisphere. In southern countries, however, it is the summer solstice, for summer starts at that time south of the equator.

Although it contains no stars of the first magnitude, the constellation of Pegasus, the winged horse, now visible in the southwest and west, is a good one to know.

Great Square of Pegasus

In this group are four stars in a square and, therefore, it is known as the "Great Square of Pegasus," even though the upper most one (for the square now rests on one corner) is Alpheratz, in the neighboring group of Andromeda.

She was an ancient princess, according to the mythological story, who was chained to a rock and left there to be devoured by a great sea monster. The monster is seen to the south, as the constellation of Cetus, also called the whale.

However, she was rescued by the hero, Perseus, depicted in the constellation that stands directly overhead, and in which is a famous variable star, called Algol.

This decreases considerably in brightness every 2 days 21 hours, as an invisible and darker companion comes in front of the brighter star and partially eclipses it.

The Great Square makes a good guide from which to find other groups. A line downward from the two stars on the western side leads to Aquarius, the water-carrier, while one extended to the east from the two southernmost stars brings you to Aries, the ram, which is just above the head of Cetus.

This part of the sky, many thousands of years ago, was the location of the vernal equinox, the place where the sun stands at the beginning of spring.

At present, this place is in the constellation of Pisces, the fishes, which stands between Aries and Aquarius, just south of the square.

Equinoctial Point Moves

Because of a slow movement in the sky, called "precession of the equinoxes," the equinoctial point moves completely around the sky in about 26,000 years.

The month of December brings an eclipse of the sun on Christmas Day, but one that is nearly as far away from the United States as it could be. This is an "annular" eclipse, i.e., one that occurs when the relative distances of the sun and moon are such that the lunar disc does not completely hide that of the sun.

Instead, from places where the eclipse is seen at its height, one will see the dark disc of the moon surrounded by a ring of the sun.

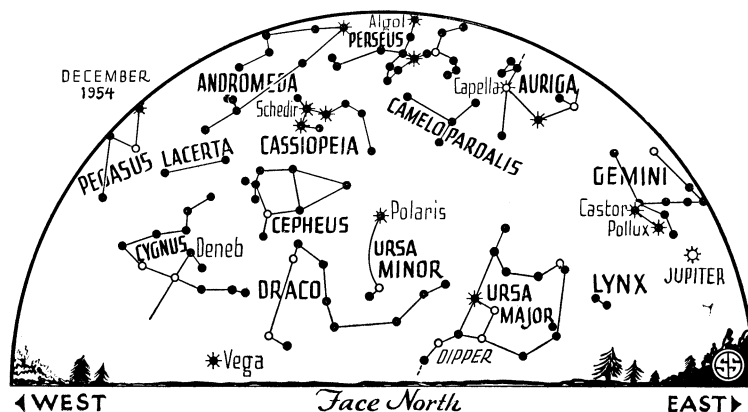
It is from the Latin name for ring, "annulus," that this kind of eclipse gets its name of annular.

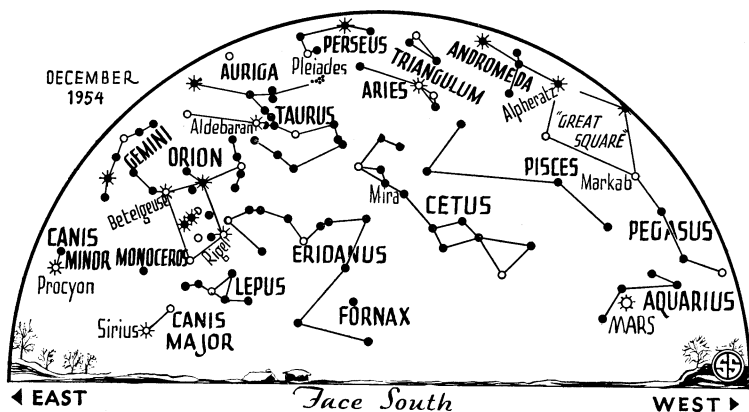
The path along which it will be seen crosses the South Atlantic Ocean, South Africa, the Indian Ocean, and ends near the island of Timor, north of Australia. Over a larger region, including Australia and part of Antarctica, there will be a partial eclipse.

Celestial Time Table for December

Dec. EST

- 2 11:20 a.m. Moon passes Mars.
- 3 4:56 a.m. Moon in first quarter.





* * * • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

- 8 9:00 p.m. Moon nearest, distance 222,700 miles.
- 9 7:56 p.m. Full moon.
- 10 3:57 a.m. Algol at minimum brightness.
- 12 early a.m. Meteors visible radiating from Gemini.
- 4:44 p.m. Moon passes Jupiter.
- 15 9:35 p.m. Algol at minimum.
- 16 9:21 p.m. Moon in last quarter.
- 18 6:24 p.m. Algol at minimum.
- 21 4:00 a.m. Moon farthest, distance 252,200 miles.
- 4:00 a.m. Venus at greatest brilliancy.
- 10:30 a.m. Moon passes Saturn.
- 2:46 p.m. Moon passes Venus.
- 22 4:25 a.m. Sun farthest south, winter begins in Northern Hemisphere.
- 25 2:33 a.m. New moon; annular eclipse of sun visible in vicinity of Indian Ocean.
- 31 6:40 a.m. Moon passes Mars.

Subtract one hour for CST, two hours for MST, and three for PST.
 Science News Letter, November 27, 1954

CHEMISTRY

Pattern for Insecticide Found in Plant Study

BY TAKING apart the insect-destroying principle extracted from the pyrethrum plant, British scientists may be able to make still stronger insecticides.

Understanding the chemical differences that make one substance made from pyrethrum highly poisonous to insects while another harms them much less may point the way to better insecticides, states Dr. L. Crombie of the Imperial College of Science and Technology, London. He describes, in *Nature* (Oct. 30), his work with pyrethrum, a plant known to medicine since the time of Dioscorides.

In addition to pellitorine, the previously known extract not strongly poisonous, Dr. Crombie has obtained a new substance, anacyclin, from which he has produced an insect poison.

Knowing the chemical structure of these pyrethrum products, he believes their differences show the direction in which they can be modified to make artificially insect killers more potent than the original plant.

Science News Letter, November 27, 1954

PUBLIC HEALTH

Carbon Monoxide May Be Cause of Many Accidents

LEAKAGE OF carbon monoxide from engines may be the reason for many accidents caused by drowsy, inattentive drivers, the California Highway Patrol has found.

The deadly gas was present, in concentrations described as above the safety limit, in 30 of 1,007 cars inspected.

Carbon monoxide is produced by the partial combustion of gasoline in the engine and can cause drowsiness, dizziness and headaches when present in small amounts.

Opening windows seems to be no safeguard against carbon monoxide in cars. The report notes that the gas may be drawn into the cars by the suction of air.

Science News Letter, November 27, 1954

Where do Ideas come from?

How are ideas created? What role does the unconscious play? Are ideas best developed through word-reasoning, mathematical-reasoning, or visualization? Why has Poincaré's "forgetting-hypothesis" proved such a powerful method for illuminating new ideas? How did Helmholtz' "rest-hypothesis" help him? For just \$1.25 (a saving of 50% over the regular edition) you can own the book that answers these and many similar questions. This non-technical 156-page study—written by one of the fore-

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