

ASTRONOMY

# See Winter Constellations

December brings beginning of winter in the Northern Hemisphere and also the year's fourth and last eclipse, a partial one of the sun visible over nearly all of Asia.

By JAMES STOKLEY

► DECEMBER brings the beginning of winter in the Northern Hemisphere, and of summer in the Southern Hemisphere.

This event occurs on the afternoon of Friday, Dec. 21, at the winter solstice, the time that the sun, having been moving southward since the beginning of summer last June 21, reaches the end of its journey. After that it will be moving northward once more, but not for a month or two will our weather begin to warm again.

The appearance of the evening sky also reflects the beginning of winter, for the constellations characteristic of that season have begun to appear.

These are on view mainly in the east and southeast, and the most conspicuous is Orion, the warrior, a group easily recog-

nized because of the three stars in a row that form his belt. A little higher, to the left, is Betelgeuse, in one shoulder, while Rigel, to the right, is in one of his legs.

All these stars, and others, are shown on the accompanying maps, which give the appearance of the skies at about 10:00 p.m., your own kind of standard time, at the first of December; 9:00 p.m. at the middle of the month and 8:00 p.m. at the close.

Above Orion is Taurus, the bull, with brilliant Aldebaran, which is red in color. And below is Canis Major, the great dog, with Sirius, the dog star. A little higher, and farther to the left, is the lesser dog, Canis Minor, with the star called Procyon.

Above this group we find Gemini, the twins, with Castor and Pollux.

### Sirius is Brightest Star

Sirius, of minus 1.5 magnitude on the scale of brightness used by the astronomer, is the brightest star to be seen in the nighttime sky. It is even more brilliant than the only planet now seen throughout the evenings, which is Mars, over in the southwest in Pisces, the fishes.

Of zero magnitude, Mars is still brighter than most of the stars, although it is fading rapidly as it recedes from the close approach it made last September. In the south about the time the sun is setting, Mars itself sets about midnight.

Another bright star of the December evenings is Capella, in Auriga, the charioteer, high in the northeast, above the twins. And in the northwest, nearer the horizon, Cygnus, the swan, is seen, marked by the star Deneb.

Below, and a little to the right, is Vega, in Lyra, the lyre, a brilliant star now dimmed by reason of its low altitude.

The day before Christmas, Mercury reaches its position farthest east of the sun, and is visible low in the southwest just after sunset, disappearing before it becomes entirely dark.

About midnight another planet, Jupiter, of about the same magnitude as Sirius, rises in the east, and remains on view in the southeast during the rest of the night.

Low in the southeast, just before the sun rises, Venus can be seen.

December 2 brings the year's fourth and last eclipse, although it occurs during nighttime hours here, and is not visible in any part of North or South America. On the night of Nov. 17-18, at the time of full moon, our satellite entered the shadow of the earth, producing a total eclipse of the moon, which was visible in the United States.

Two weeks later, as the moon has moved halfway in its orbit around the earth, it is in the new phase, and this time it comes partly between us and the sun. However, even at best, it is a partial eclipse, for at no place on earth will the moon completely hide the sun.

### Eclipse 80% at Greatest

The greatest eclipse will occur in southwestern Asia, where a little more than 80% of the solar diameter will be covered by the moon's dark disc.

Some part of the solar eclipse will be visible over nearly all of Asia, except the southeastern and northeastern portions, as well as Egypt and most of Europe, where it will happen early in the morning, about the time the sun is rising.

Nearly overhead these evenings stands the constellation of Perseus, the champion. This is the mythological hero who was armed with the head of the Medusa, which was so horrible that it turned to stone anyone who gazed at it.

Thus aided, he killed the sea monster, Cetus, represented by Cetus, the whale, visible to the south, just as it was about to

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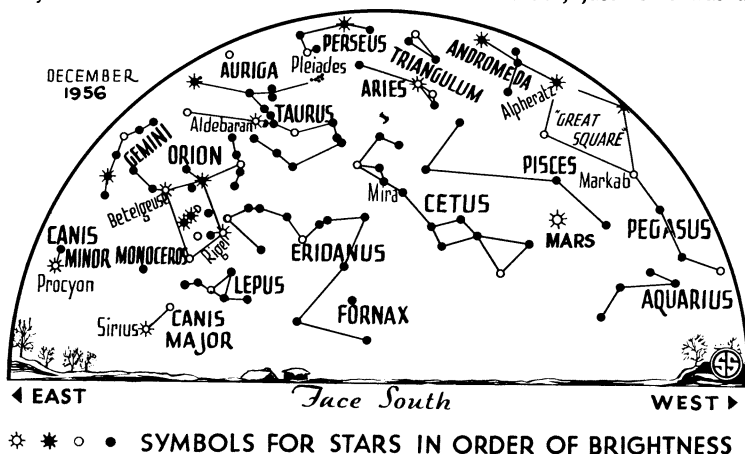
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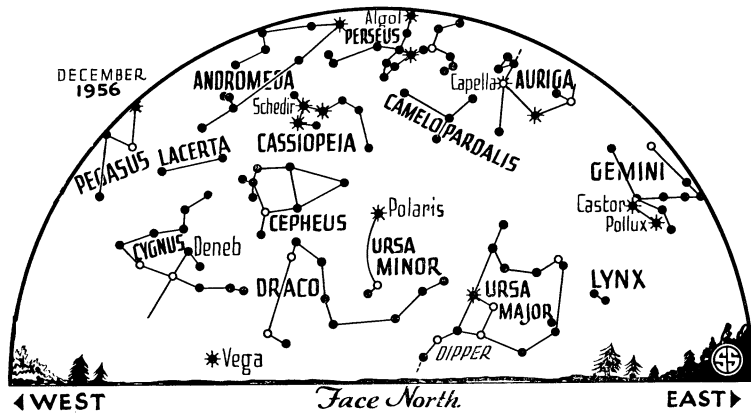
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devour Andromeda, the princess, whose constellation is to the west of Perseus.

In Perseus is the star called Algol, which is an eclipsing variable. Ordinarily of the second magnitude, every 2 days 21 hours it fades to about two-thirds of its ordinary brightness, taking five hours to dim and five hours to return to normal.

An Italian astronomer named Montanari discovered that Algol changed in brightness, as early as 1670, but it remained for an Englishman named Goodricke, in 1872, to find that the variations were regular, and to explain them.

Actually Algol is not one but two separate bodies, one much brighter than the other. They revolve around each other in 2 days, 20 hours and 49 minutes.

During each circuit the dark one comes in front of the bright one and partly eclipses it, just as the moon will eclipse the sun on Dec. 2. However, since the brighter orb is not completely covered, the eclipse is partial, and that is why the diminution is only a third.

About 200 eclipsing binary stars are now known, while a number of others are suspected to be of the same class.

**Celestial Time Table for December**

Dec.	EST	
1	5:47 p.m.	Algol at minimum.
2	3:12 a.m.	New moon, partial eclipse of sun visible in Asia and Europe.
7	11:00 a.m.	Moon farthest, distance 251,800 miles.
10	6:51 a.m.	Moon in first quarter.
11	2:41 p.m.	Moon passes Mars.
12	early a.m.	Meteors visible radiating from constellation of Gemini.
16	1:52 a.m.	Algol at minimum.
17	2:06 p.m.	Full moon.
18	10:41 p.m.	Algol at minimum.
19	8:00 a.m.	Moon nearest, distance 224,500 miles.
21	4:00 p.m.	Sun farthest south, winter commences in Northern Hemisphere.
24	7:00 p.m.	Mercury farthest east of sun, visible after sunset low in west about this date.
29	2:17 p.m.	Moon passes Venus.
31	9:13 p.m.	New Moon.

Science News Letter, November 24, 1956

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