



eye, but if one has a telescope, equipped with an eyepiece that permits observation of the sun, the little planet will be seen to come in front of the mighty sun during the Armistice Day afternoon. As the sun sets in the United States, the planet will still be in front of it.

Just as the moon can hide the sun, so it can pass before a star or planet, and this is called an occultation. Two rather rare occultations of planets happen this year, but they are not visible throughout the United States. On June 30 Saturn will be occulted in the early morning hours, visible only in southwestern states. On the afternoon of July 31 there will be a similar occultation of Venus, which will then be so bright it can be seen even in the daylight, especially with the aid of binoculars. This will be visible in western United States and Canada.

Most conspicuous of the objects to be seen in the January evening skies are the planets to the west, which are now beginning to line up for a most remarkable display which they will present at the end of February. The accompanying maps show them, as well as the stars that are seen at present. At ten o'clock on Jan. 1, nine o'clock on Jan. 15 and at eight on Jan. 31, the skies present this aspect. Mars is moving so rapidly that it is indicated for its place both on the first and thirty-first, while Saturn and Jupiter are in the position for the fifteenth. As they move so slowly, their position does not change noticeably during the month. In addition to these three, Venus is visible in the west for a while after sunset, but it goes down before the times of the maps.

Venus is the most brilliant of the planets and is so bright as it shines in the west that no one can possibly mistake it. Jupiter is next in brilliance. Mars

and Saturn are considerably fainter, though still as bright as a star of the first magnitude. Mars passes Jupiter on Jan. 7, and at that time the two, shining so close together, will be a striking sight. During the month the moon, in a crescent phase, joins the picture. On Jan. 12 it passes Venus, on the 15th Jupiter, on the 16th Mars and on the 17th Saturn.

Turning now to the stars, we find that they, unlike the planets, appear the same as always at this time of year. High in the south shines Orion, the warrior, recognizable from the three "belt" stars. Betelgeuse, above, marks one of his shoulders; Rigel, below, one of his feet. Below and to the left is Sirius, brightest star in the night-time sky, which is even more brilliant than Jupiter, though not as bright as Venus.

Higher, and farther east, is Procyon, in Canis Minor, the lesser dog. Still higher is Pollux, which, with Castor, forms Gemini, the twins. Nearly overhead we see Capella, in Auriga, the charioteer. In the south, above and to the right of Orion, is Aldebaran, in Taurus, the bull.

Two other stars of the first magnitude are also visible. Coming up in the east, we see Regulus, in Leo, the lion. Low in the northwest, about to disappear from the evening skies for a while, is Deneb, in Cygnus, the swan.

**Celestial Time Table for January**

**Monday, Jan. 1,** 11:56 p. m., Moon at last quarter. **Tuesday, Jan. 2,** 1:00 a. m., Earth nearest sun; distance 91,343,000 miles. **Sunday, Jan. 7,** 10:00 a. m., Mars passes Jupiter. **Tuesday, Jan. 9,** 8:53 a. m., New moon. **Wednesday, Jan. 10,** 6:34 a. m., Algal at minimum brightness. **Friday, Jan. 12,** 8:23 a. m., Moon passes Venus. **Saturday, Jan. 13,** 3:23 a. m., Algal at minimum. **Sunday, Jan. 14,** 7:00 a. m., Moon farthest; distance 251,900 miles. **Monday, Jan. 15,** 5:02 p. m., Moon passes Jupiter. **Tuesday, Jan. 16,** 12:13 a. m., Algal at minimum; 2:07 a. m., Moon passes Mars. **Wednesday, Jan. 17,** 11:48 a. m., Moon passes Saturn;

1:21 p. m., Moon at first quarter. **Thursday, Jan. 18,** 9:02 p. m., Algal at minimum. **Sunday, Jan. 21,** 5:51 p. m., Algal at minimum. **Wednesday, Jan. 24,** 6:22 p. m., Full moon. **Friday, Jan. 26,** 6:00 a. m., Moon nearest; distance 223,900 miles. **Wednesday, Jan. 31,** 9:47 a. m., Moon at last quarter.

Eastern Standard Time throughout.

*Science News Letter, January 6, 1940*

ASTRONOMY

**"Super-Shell" Stars Have Speeding Envelope**

"SUPER-SHELL" stars, a class of celestial objects long observed but hitherto neglected by astronomers, were described by Dr. Ernest Cherrington of Ohio Wesleyan University to the American Association for the Advancement of Science. Their distinguishing character is an outer gaseous envelope or atmospheric shell that speeds away from the star itself with explosive velocities up to 70 kilometers (43.5) miles a second.

Spectrum photographs of these stars, technically known as the B and Be types, have been almost in the class of nuisances to astronomers, because some of their lines are fuzzy rather than clear and sharp. These faint and fuzzy lines proved, upon analysis, to be indicators of the existence and recession speeds of the stars' "super shells."

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ASTRONOMY

**Christmas Eve Nova Discovered at Harvard**

A NOVA, or "new" star, similar to what the Star of Bethlehem may have been, was discovered on Christmas Eve by Dr. F. L. Whipple of the Harvard College Observatory. It was then of tenth photographic magnitude, and thus invisible to the naked eye. Evidence indicates that it flashed to its maximum brightness some time last summer, but for some reason it then eluded the watchfulness of astronomers. It is located in the minor constellation Monoceros, the Unicorn, near the southern horizon.

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**RADIO**

W. H. Cameron, of the National Safety Council will tell how you can help reduce accidents as guest scientist on "Adventures in Science" with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System, Thursday, January 11, 4:15 p.m., EST, 3:15 CST, 2:15 MST, 1:15 PST. Listen in on your local station. Listen in each Thursday.