

## ASTRONOMY

# Jupiter Now on View

Planet will be easy to identify because it will shine in northeast far more brightly than any star. Brightest star is Vega.

By JAMES STOKLEY

► JUPITER HAS now returned to the evening sky, although at the beginning of November it will not appear until late, rising a little after ten. But by the end of the month it will be visible about two hours earlier. When it appears there will be little doubt of its identity, since it will be shining in the northeast far more brightly than any other star or planet.

The accompanying maps give the appearance of the heavens at about 10:00 p.m., your own kind of standard time, on Nov. 1; 9:00 p.m. on the 15th and 8:00 p.m. on the 30th. Thus, they do not quite show Jupiter, which is in the constellation of Cancer, the crab, just below Gemini, the twins, which is shown low in the northeast.

They do, however, show another planet in Capricornus, the sea-goat. This is Mars, which has faded considerably from its brilliance of the past summer when it was much closer. It is still the equal of a first-magnitude star, with magnitude 0.3 on the astronomical scale at the middle of November. On the same scale Jupiter's magnitude has to be given with a negative number—minus 1.9—and this represents a brightness more than seven and a half times as great.

## Bright Star Vega Visible

Of the stars seen on a November evening, the brightest is Vega, in Lyra, the lyre, in the northwest. This is a little brighter than Mars. Next is Capella, in Auriga, the charioteer, which is just above Gemini.

A little south of the eastern point of the horizon a group often considered the finest of all the constellations has now appeared. This is Orion, the warrior, in which there are two first-magnitude stars. One is Rigel, to the right, the other is Betelgeuse, and between them are three fainter stars, forming Orion's belt. As he appears at present, he is on his back, since Betelgeuse marks a shoulder, while Rigel is in one leg. Above him is Taurus, the bull, with Aldebaran, a star quite red in color.

Directly above Vega is part of Cygnus, the swan. The most characteristic part of this group, however, is a little to the left. This is the "northern cross," now standing nearly vertically in the western sky, with the star Deneb at the top. Lower, and a little farther left, we find Altair, in Aquila, the eagle.

Still another star of the first magnitude, somewhat dimmed because it is rather low and its light has to pass through a considerable thickness of atmosphere, is Fomalhaut,

in Piscis Austrinus, the southern fish. This is in the south, below one end of Aquarius.

There are five planets that can be seen with the naked eye and two, Jupiter and Mars, are in the evening sky. A third, Mercury, will be at its greatest distance west of the sun on Nov. 14, and for a few days around this date will be visible in the constellation of Libra, the scales, low in the southeast just before sunrise. The other two naked eye planets, Venus and Saturn, are in the same direction as the sun during November and hence cannot be seen. In December, however, both will be visible in the morning sky, before sunrise.

## Perseus Seen in the East

Directly above Auriga, in the east, is the constellation of Perseus, which represents the great hero of mythology who killed the Medusa, that creature with the snaky locks who was so horrible to look upon that anyone who did so turned to stone. Actually, he took advantage of a technicality, for instead of looking directly at her, he looked at her reflection in his highly-polished shield, according to the old legend.

Another of his feats was to rescue the beautiful Princess Andromeda, who was chained to a rock where she was about to be devoured by a sea monster. The young lady is in the sky, represented by the constellation of Andromeda, directly overhead. Her mother, the queen Cassiopeia, is below her to the north, formed of stars now making a letter M. Below and to the left of the M is Cepheus, the king. The monster of the story is also now visible in the sky. This is the constellation of Cetus, the whale, in the south. And to the southwest of Andromeda is Pegasus, the winged horse, which was involved in another venture of Perseus. Three stars in Pegasus, to-

gether with Alpheratz, in Andromeda, form a large and characteristic square, called the "great square of Pegasus." This is a good group to know. From it, as a guide, one can find his way to many other constellations.

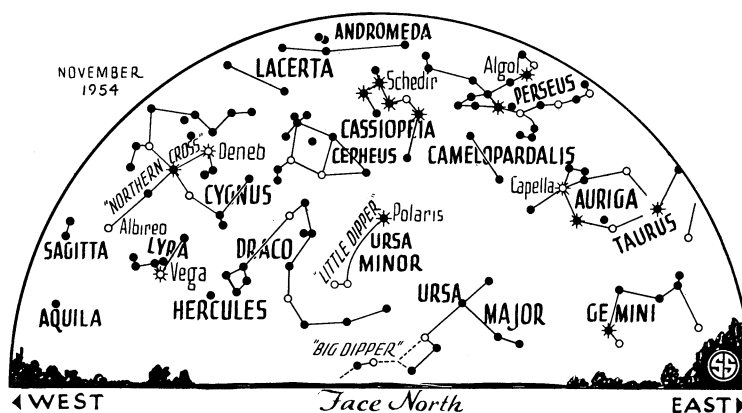
Perseus has another feature of interest in the star Algol. On old star maps this was represented as the eye of the Medusa, whose head Perseus is holding. Its name is derived from the Arabic, "al ghul," which means "the demon," so it is sometimes called the "demon star." If you watch it from night to night you will see why it was so called.

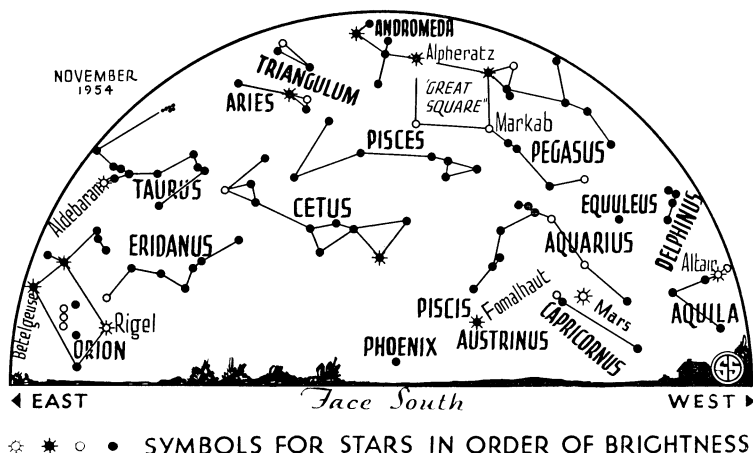
Ordinarily it is of the second magnitude, 2.3, and appreciably brighter than the two stars in the line below represented (on our maps) by the open circles. The one to the left (just below the letter P in Perseus) is of magnitude 3.1 and the other (under the second E) of magnitude 3.0. But if you look at Algol on Nov. 2 (eclipse day) at 9:20 p.m. EST (change to corresponding time in other time belts) you will find that it is fainter than these two.

The star has long been studied by astronomers, and its variations in light plotted. For about 2 days 11 hours, it remains close to its usual brightness. Then it starts to fade, and requires about five hours to reach minimum, magnitude 3.5, about a third of what it was before. In the next five hours it returns to normal. The time of minimum occurs every 2 days 20 hours 49 minutes, so on Nov. 5, at 6:09 p.m., EST, it will be there again.

## Eclipsing Binary Found

It was in 1782 that an English amateur astronomer, a young deaf mute named Goodricke, first realized that these diminutions in the light of Algol occurred with such regularity. He suggested that there were actually two stars, one bright, the other much darker, which revolved around each other, and that they were in such a position that every few days (i.e., every 2 days 20 hours 49 minutes) the dark com-





panion came in front of the bright one, causing a partial eclipse that dimmed its light. At first it was supposed that the companion had no light at all. As more accurate measurements were made it was found that half-way between the principal dimmings, there was another, very much smaller. This occurs when the bright star eclipses the fainter one, and shows that the latter is not completely dark.

From a careful analysis of the changes that occur in Algol, astronomers have learned a surprisingly large amount of information about it. The bright star is believed to be about 2,660,000 miles in diameter, about three times that of the sun, and to have a surface temperature of about 12,000 degrees, a little hotter than the sun.

**Dark Star Relatively Cool**

The darker star is about 6,500,000 miles from the bright one and a little larger—about 3,000,000 miles in diameter—but with a surface temperature of only 3,000 degrees. Despite its larger size, its mass is a little less than that of the sun, while that of the bright star is about 4.3 times as massive as the sun. And there is a third star, farther away, which revolves around the close pair every 1.75 years, but does not take part in the eclipse!

The variations of Algol, typical of a group of several hundred "eclipsing binary" stars, are interesting to watch, since it can be detected with the naked eye. That is why, when Algol is visible in the evening, the times of its minimum brightness that occur in evening hours are included in the "Celestial Time Table" at the end of each of these articles.

**Celestial Time Table for November**

|      |           |                                       |
|------|-----------|---------------------------------------|
| Nov. | EST       |                                       |
| 2    | 9:20 p.m. | Algol at minimum.                     |
| 3    | 2:28 p.m. | Moon passes Mars.                     |
|      | 3:55 p.m. | Moon in first quarter.                |
| 4    | 8:00 p.m. | Saturn behind sun.                    |
| 5    | 6:09 p.m. | Algol at minimum.                     |
| 10   | 8:00 a.m. | Moon nearest, distance 221,500 miles. |
|      | 9:29 a.m. | Full moon.                            |
| 14   | 7:00 p.m. | Mercury farthest west of sun.         |

|    |            |   |
|----|------------|---|
| 15 | 2:00 a.m.  | Venus between sun and earth.  |
|    | 8:50 a.m.  | Moon passes Jupiter.  |
| 16 | early a.m. | Meteors visible apparently radiating from constellation of Leo, the lion. |
| 17 | 4:32 a.m.  | Moon in last quarter.   |
| 22 | 11:02 p.m. | Algol at minimum.   |
| 23 | 7:00 p.m.  | Moon farthest, distance 252,600 miles.                                    |
| 25 | 7:30 a.m.  | New moon.   |
|    | 7:51 p.m.  | Algol at minimum.   |
| 28 | 4:40 p.m.  | Algol at minimum.   |

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, October 30, 1954

**ETHNOLOGY**

**Odd Diet, Ancient Rites Customs of African Tribe**

➤ DRINKING OF cow's blood and banana beer and practice of the ancient rites of circumcision still exist among a little-known East African tribe.

Dr. Walter Goldschmidt, a University of California at Los Angeles anthropologist, has just returned to the United States after studying the tribe under a Fulbright Grant.

With his wife and eight-year-old son, he lived for six months in a native mud-and-thatch hut among the Sebei tribe of Uganda. The 35,000-member tribe inhabits the northern slopes of 14,000-foot Mount Elgon, an extinct volcano.

Circumcision is a test of fortitude which both sexes must undergo before they are eligible for marriage. A youth or maid who shows any sign of fear is marked for life. A girl who cries may never become the first wife of any man. She may be a second wife in the polygamous tribe.

The Sebei live chiefly on corn and bananas. Bananas are cooked green and taste something like boiled potatoes. Native beer is made from the fruit, and the Sebei drink it from earthen pots through six-foot straws.

Some cattle are raised, and milk is an important part of the diet. Fresh cow blood, once a popular beverage, is still relished by tribal oldsters. Beef is available only when a cow is slaughtered for some ceremony or because it is crippled or old.

Science News Letter, October 30, 1954

**SPEAK ANOTHER LANGUAGE**



**Free Sample Record**

**A full, two-sided, 10" 78 R.P.M., Vinyl plastic record.**

No other spoken language course on records is designed with this outstanding advantage: Pauses that give you time to repeat the phrases and sentences you have just heard.

These pauses permit you to repeat and learn . . . automatically and easily . . . by "Guided Imitation" . . . the precision method of the Armed Forces. A HOLT course gives you almost twice as much material as any other recorded language course!

You practice enjoyably and conveniently with a native speaker from the moment you begin, and practice makes you authentically fluent.

**The Pause with a Purpose**

... Exclusive with

**HOLT SPOKEN LANGUAGE COURSES!**

**SEND COUPON TODAY!**

**HENRY HOLT & CO.**

Dept. ZT2, 383 Madison Ave., New York 17, N.Y.

Please send me the Holt sample record demonstrating actual conversations in (check record you wish to receive) . . .  French  Spanish

I am enclosing 25c to cover cost of handling and mailing. No further obligation.

Name.....

Address.....

City.....Zone....State.....