

Moon, Gemini twins form heavenly triangle

On the morning of Nov. 17, the moon forms an elongated triangle with Pollux (PAWL-lux) and Castor, the twin stars in Gemini. Each star represents a "head" of one of the twins. Pollux is to the north (right) of the moon; Castor is north of Pollux.

That morning is also when the Leonid meteor shower reaches its maximum. The Leonids are named for the constellation of Leo, which is east (left) of Gemini and looks like a giant backward question mark.

The Leonids are no more impressive than the S. Taurids were earlier last month, expect an average of 15 meteors each hour. The Leonids are notable for having been very spectacular in 1833 when thousands of meteors lit up the sky.

Such a display is not expected in 1989. There is, however, a 33-year cycle in the Leonid display. If you wait until 1999, the Leonids may put on a very impressive show.

The bright star to the east (left) of the moon on the morning of Nov. 19 is Regulus (REG-u-lus), the "heart" of Leo the lion.

Last-quarter moon is at 11:44 p.m. Nov. 19. The moon is starting the last quarter of its orbit around the Earth. On the morning of Nov. 20, the moon has passed Regulus.

The moon is in Virgo on the morning of Nov. 24. The bright star to the east (left) of the moon is Spica (SPY-cə). The position of the moon also points us to the location of a new comet, one that could be visible to the naked eye.

COMET Okazaki-Levi-Rudenko (named for all three of its discoverers) was first seen telescopically in August.

Kiyomi Okazaki photographed it Aug. 24 with a 10-inch Schmidt camera. Veteran comet hunter David Levi of Arizona spotted it visually with his 16-inch reflector telescope the following night, and Michael Ru-

denko of Massachusetts did the same with a 6-inch refractor Aug. 28.

It has been moving from the constellation Bootes (bo OH tees.) which is north of (above) Virgo, into Virgo itself. On Nov. 24 the comet will be near Spica, just above the upper cusp of the waning (fading) crescent moon. The comet will certainly be visible with binoculars, and might even be bright enough to be seen with the naked eye.

OF ALL the objects appearing in our sky, one of the most exciting to see is a comet.

The word "comet" comes from the Greek word "kometis," which means "hairy star." A comet looks like a fuzzy star.

But a display of a bright comet is rarely seen, the appearance of one usually terrified the ancient skywatchers. Most believed comets were mysterious objects; they would appear unexpectedly, then slowly fade from view. All kinds of stories were concocted to explain the reason for their appearance.

IT WASN'T until an English astronomer named Edmund Halley (HAL-ee) came along that our understanding of comets began to improve. He had noted a regular 76-year interval where historical records made mention that a bright comet had appeared.

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Halley made the very daring proposal that comets orbited the sun and predicted that this same bright comet would return in the year 1759. What made this prediction all the more remarkable was that it was made at a time when the orbits of the planets weren't fully understood.

Many laughed at Halley, but the comet did return. To honor his prediction, the comet was named in Halley's honor. But he did not live to see his prediction fulfilled. He would have been 102 years old if he had!

A COMET can appear in any part of the sky at any time of the year. Infamous Comet Kohoutek was seen in 1973 and named for the man who first spotted it when it was far from the sun.

Comet Kobayashi-Berger-Milon was seen in 1975 and named for all three of its discoverers. Comet West appeared in 1975 and put on a magnificent display in the pre-dawn sky. The recent appearance of famous Comet Halley was not expected to be exceptional, and it lived up to those expectations!

A comet is the biggest bunch of nothing to be called something there is. It's not much more than a dirty snowball; frozen dust, ice, and gas orbiting the sun.

As a comet approaches the sun, a tail begins to form and the comet becomes visible. The comet's tail is produced as the energy of the sun strikes the comet, which makes the comet heat up and vaporize. The sun blows the stream of vapor out into

space, causing the tail to always point away from the sun.

WHEN A COMET disintegrates, all its debris continues to follow the same orbit around the sun. As the Earth passes through the stream of debris, we have showers of particles falling through our atmosphere. We can predict when the Earth will enter the stream, so we know when the major meteor showers will occur.

It is very difficult to predict exactly how impressive (or unimpressive) Comet Okazaki-Levi-Rudenko will become. We are not certain that a related spectacular meteor shower will be seen.

The only certainty is that the opportunity of seeing a bright comet is very rare. Everyone should make an attempt to see this one. The moon points right to it!

THE MOON also points the way to Mars on the morning of Nov. 25. Face the southeast, approximately 45 minutes before sunrise, to see the moon. Five degrees to the east (left) of the moon is Mars, the red planet. Using binoculars, look for a star

named Alpha Librae (LEE-bray), almost directly above Mars.

Alpha Librae also has a real name as well: Zuben Elgenubi (ZOO-ben-ej-en U-bi) which means the "southern claw."

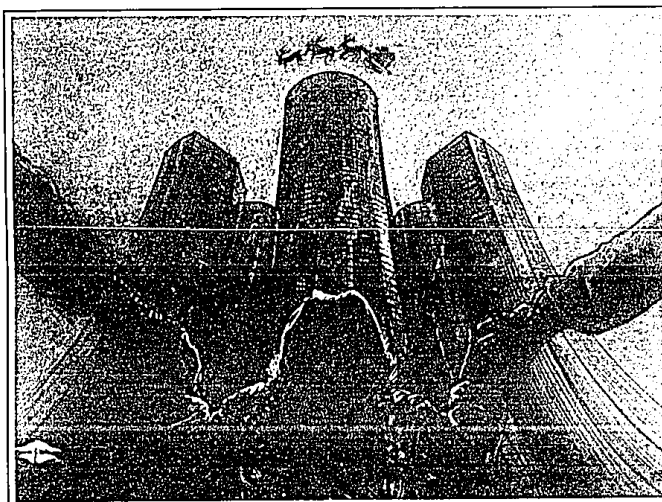
At one time, the neighboring constellation of Scorpius included this star as its southern claw. Of course there is a "northern claw" as well. Beta Librae is named Zuben Elchamali (ZOO-ben-es she MA-li).

NEW MOON is at 4:41 a.m. on Nov. 28. The moon is between the Earth and the sun, and is not visible.

Face west, one-half hour after sunset, Nov. 29. Venus is about as far south (left) of Saturn, as Saturn was south of Venus four weeks earlier. On the evening of Nov. 30, the two-day-old crescent moon is five degrees below Saturn.

An excellent aid for learning constellations and keeping up to date with the sky is the monthly "Sky Calendar." A one-year subscription is \$6. It is available from Abrams Planetarium, Michigan State University, East Lansing 48824.

Saturday November 25th Is For The Little Kid In All Of Us.



It's "A Renaissance Christmas" —
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- **Fuzzy Farm Friends** ... Throughout the afternoon, there'll be animals to cuddle from Upland Hills Farm.
- **The Children's Only Shoppe** ... A store where little budgets will find a big selection of gifts.
- **Two Family Movie Classics** ... Renaissance Theatres present *Prancer* and *Animated Bazar the Movie* at 12:00, 2:00, and 4:00 p.m. Admission price for children is \$1.00, adults \$2.00.
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