



COMPARE this photograph of the night sky taken in Peru some time ago with the Harvard Observatory photograph on the front cover of this week's **SCIENCE NEWS LETTER**. Both show the same region of the sky. The two bright stars appearing on each photograph are the same. But where the Nova Puppis now blazes forth there was nothing when this photograph was taken.

ASTRONOMY

May Be Supernova

Longest exposure photographs taken with largest telescopes show no star where Nova Puppis now shines. This means an increase in brightness of 6,000,000 times.

See Front Cover

➤ HARVARD astronomers searching their longest exposure photographs taken through their largest telescopes are unable to find any star that existed in past years where Nova Puppis flashed forth in the sky.

This means that the star increased in brilliance at least 6,000,000 times, a rise of 17 magnitudes at least, because the star must have been fainter than the 18th magnitude that can be detected by stellar photography.

Miss Constance D. Boyd and Dr. Fred L. Whipple made preliminary measures of plates going to the 16th magnitude, and found no star present where the nova is located. And even on three-hour exposure plates taken with the Bruce 24-inch camera at Harvard's southern station at Bloemfontein, South Africa, which goes nearly to the 18th magnitude, they fail to find a trace of the star.

The great increase in brilliance almost puts the star in the ranks of the supernovae, which are usually observed only in the far spiral nebulae. These are galaxies like our own Milky Way, but they are very numerous. Consequently, supernovae are fairly frequent, but only about every 300 or 500 years does one appear in a galaxy. However, further studies of magnitude changes and spectrum must be made before the character of this latest nova can be ascertained.

Meanwhile, Nova Puppis is fading rapidly, nearly a magnitude every 24 hours. It reached its peak on November 12. It is now approaching disappearance from naked-eye view.

Amateur astronomers, particularly members of the American Association of Variable Star Observers, are being urged to watch it regularly, to see if it suddenly increases its light again. Fluctuations may be expected.

Spectra of the nova are being taken at

all of the large observatories. Such spectra show the rapid changes which are taking place in the condition of the star following its maximum light. There is indication that a shell of gas may be expanding around the star at a speed of possibly 1,000 kilometers per second. The star's distance also seems to be very great, probably on the order of several thousand light years. This is more or less confirmed by the extreme faintness before its outburst.

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ASTRONOMY

Demon Star May Be Quadruplets, Not Triplets

➤ AMATEUR ASTRONOMERS and constellation students all know the star Algol, in the constellation of Perseus, as one which regularly undergoes a change in its light. At intervals of $2\frac{3}{4}$ days, it loses about a magnitude in its brightness, taking five hours to reach minimum brightness and five hours to come back to normal brightness.

Ever since Goodricke, a youth of 19, deaf and dumb, proposed in 1783, that the Demon Star (El Ghouel to the Arabs) was double, and that the light fluctuations resulted from eclipses of one star by the other, Algol has been carefully watched by astronomers. There is no doubt that Goodricke was right, and since his day astronomers have decided there is a third star—Algol C—which is invisible with present telescopes, but makes its presence known by its gravitational effect on the other two stars.

Now, Dr. Zdenek Kopal, of Harvard Observatory, proposes that there may be a fourth component of the system, and that Algol, one star to the eye and the telescope, is really quadruplets. He bases his proposal on slight irregularities in the times of Algol's minimum brightnesses, and evidence that the principal stars are in rapid rotation, but not on axes which are perpendicular to the plane in which they revolve—this is contrary to the usual expectation.

If a fourth Algol does exist—Algol D, if you wish—Dr. Kopal ventures that it will be no ordinary star, but of the class called subdwarf, of which only a few examples are known. These are stars of high mass and low luminosity, but not as dense and faint as the "white dwarfs" of which the companion of Sirius is the best example.

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Of 160,000 licensed American physicians, only about 4½% are *women*.