



Nova

From time to time, once in a decade or once in a century, a dimly shining or invisible star flares with brilliant light; it may become brighter than any of the fixed stars, or any of the planets in the sky; it may be seen not only in the nocturnal sky, but in some cases in full daylight; it burns for weeks or months, then loses its brilliance, and finally becomes once more a hardly visible star. Such a blazing star is called a nova.⁽¹⁾ The *stella nova* seen in 1572 in the days of Tycho de Brahe belonged actually to the supernova category. De Brahe observed that the nova did not belong to the solar system but was one of the fixed stars. It was brighter than Jupiter and Venus and was seen at midday—for months it remained visible to the naked eye. Another supernova was observed by Johannes Kepler in 1604. An earlier such event, recorded in the Chinese annals for the year 1054, gave rise to the Crab Nebula. Other observations indicate that a supernova also occurred in 1006.

Isaac Newton suggested a collision between two stars as the cause of the formation of a nova. The prevalent view is that a nova results from the interaction of two stars in a binary system when the two members disrupt one another on close approach. In such a case filaments of the disrupted star are torn out of its body and hurled in great spurts, to be absorbed by the companion star. The sudden transfer of matter is thought to set off the star's cataclysmic explosion.⁽²⁾

With the development of spectroscopy in the nineteenth century it was found by the displacement of the spectral lines that the gases of a nova move rapidly toward the observer, as also in all other directions; the star's atmosphere expands with a velocity reaching at times over three thousand kilometers per second.⁽³⁾

While the star's outer gases are hurled into space, much of the inner core remains.

References

1. [It is thought that as many as twenty novae occur in our galaxy each year, but only rarely does one become so prominent as to approach even a third magnitude brightness. A supernova in the part of our galaxy observable from the Earth may occur once in several hundred years: Kepler's nova (1604) was the last such event.]
2. [In the case of small novae the increase in brightness is about hundredfold. See J. S. Gallagher *et al.*, *Astrophysical Letters* Aug. 15, 1976.]
3. [More commonly the velocities range from 1,300 to 2,500 km/sec.]

