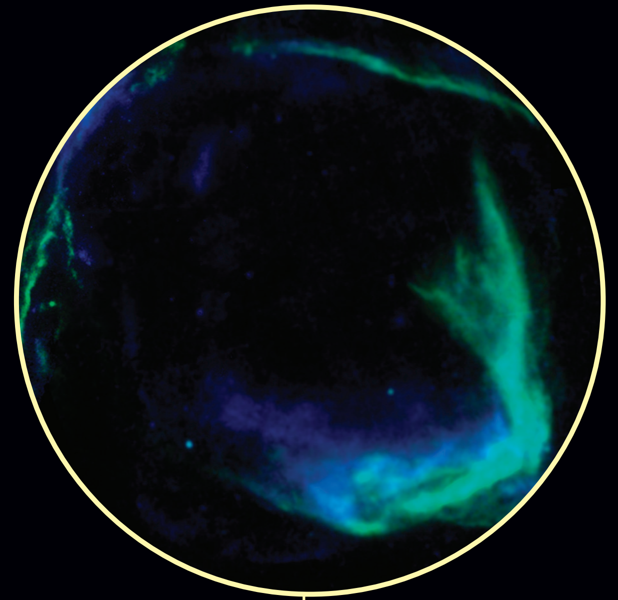
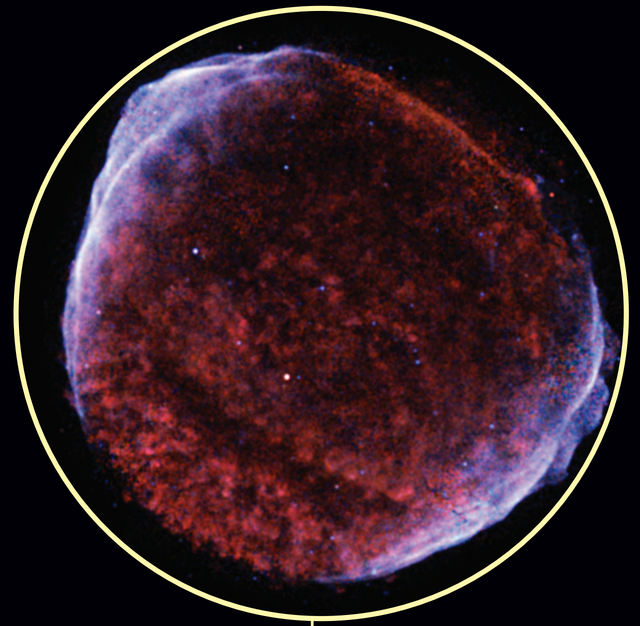
Blasts from the Past!
HISTORIC SUPERNOVAS

* LIGHT YEAR: the distance that light, moving at a constant speed of 300,000 km/s, travels in one year. One light year is just under 10 trillion kilometers.

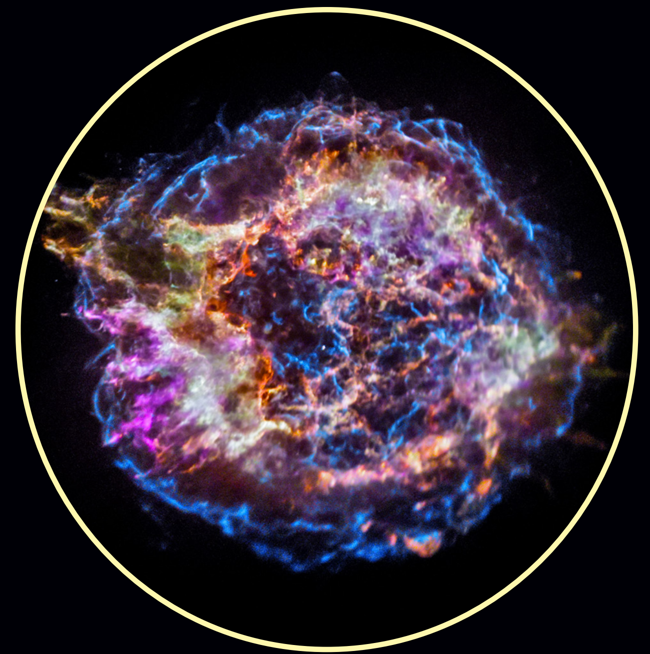


A.D.185
RCW 86
Historical Observers: Chinese
Likelihood of Identification: Possible
Distance Estimate: 8,200 light years
Type: Core collapse of massive star



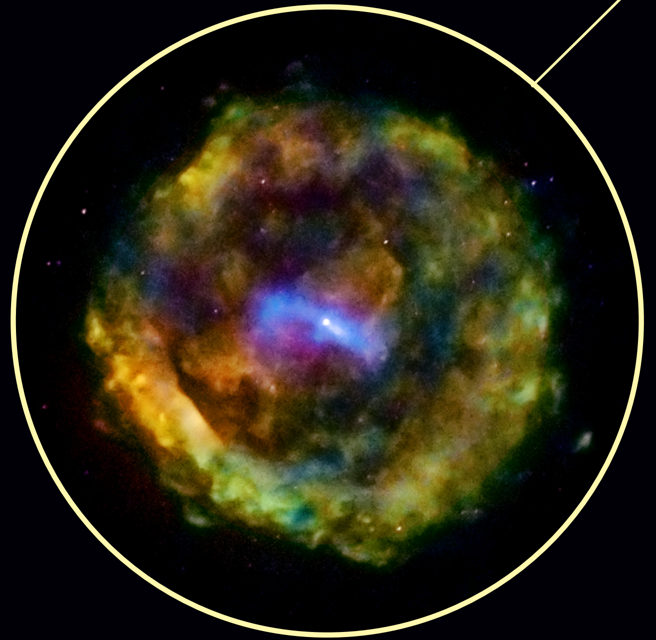
A.D. 1006
SN 1006
Historical Observers: Chinese, Japanese, Arabic, European
Likelihood of Identification: Definite
Distance Estimate: 7,000 light years
Type: Thermonuclear explosion of white dwarf

A.D. 1181
Pa30
Historical Observers: Chinese, Japanese
Likelihood of Identification: Possible
Distance Estimate: 7,500 light years
Type: Thermonuclear explosion of white dwarf

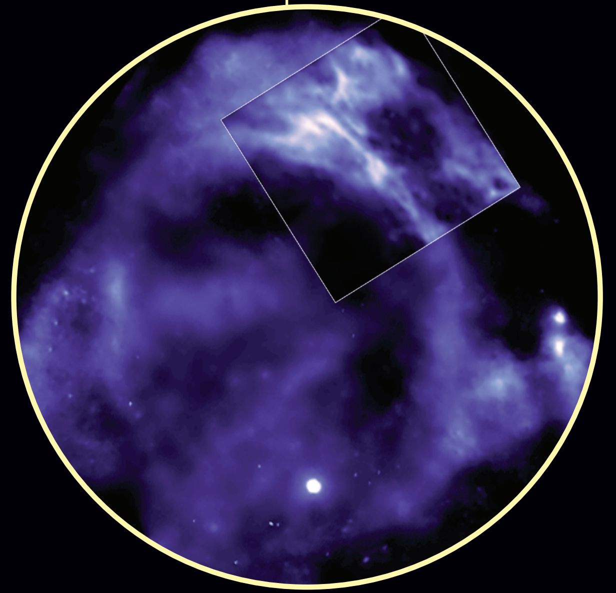


A.D. 1680
Cassiopeia A
Historical Observers: European
Likelihood of Identification: Unlikely
Distance Estimate: 10,000 light years
Type: Core collapse of massive star

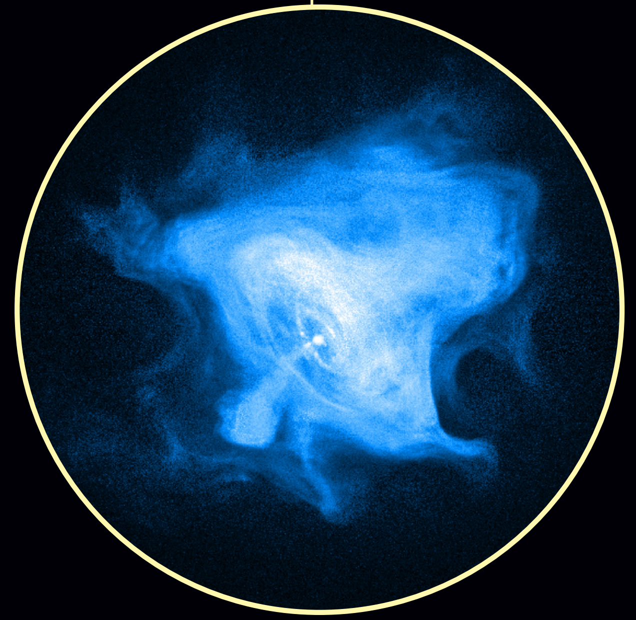
A.D. 386
G11.2.-0.3
Historical Observers: Chinese
Likelihood of Identification: Probable
Distance Estimate: 16,000 light years
Type: Core collapse of massive star



A.D. 393
G347.3-0.5
Historical Observers: Chinese
Likelihood of Identification: Possible
Distance Estimate: 3,000 light years
Type: Core collapse of massive star

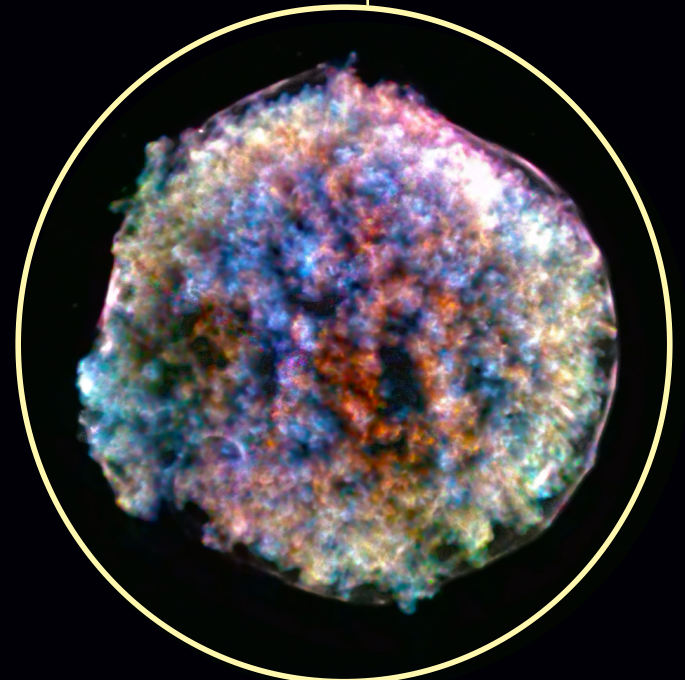


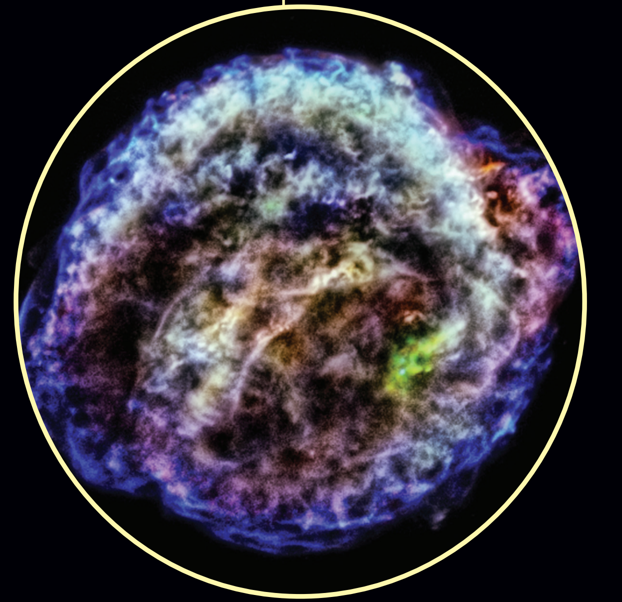
A.D. 1054



Crab Nebula
Historical Observers: Chinese, Japanese, Arabic, Native American
Likelihood of Identification: Definite
Distance Estimate: 6,000 light years
Type: Core collapse of massive star

A.D. 1572
Tycho's SNR
Historical Observers: European, Chinese, Korean
Likelihood of Identification: Definite
Distance Estimate: 7,500 light years
Type: Thermonuclear explosion of white dwarf





A.D. 1604
Kepler's SNR
Historical Observers: European, Chinese, Korean
Likelihood of Identification: Definite
Distance Estimate: 13,000 light years
Type: Thermonuclear explosion of white dwarf?

National Aeronautics and Space Administration

Every 50 years or so, a star in our Galaxy blows itself apart in a supernova explosion and produces a spectacular light show.

Supernovas are rare events in our Milky Way galaxy, and they are best studied by combining historical observations with astronomical information from today. This cosmic forensic work involves interdisciplinary research by historians and astronomers, providing valuable clues about supernovas in our Galaxy in the recent past.

Historical observations were made using visible light, but today the material from the destroyed star can be studied across the full electromagnetic spectrum, including X-ray light. Because material is heated to millions of degrees, the remnants of supernova explosions glow brightly in X-rays for thousands of years. Images from NASA's Chandra X-ray Observatory and other telescopes show the remnants of historic supernovas that occurred in our Galaxy.

Although telescopes had yet to be invented, Tycho Brahe, a Danish astronomer, used an array of instruments to make accurate measurements of the position of the "new star" in 1572. For 18 months, the brightness of the star declined steadily until it became invisible. The explosion of the star forever shattered the widely accepted doctrine of the incorruptibility of the stars, and set the stage for the work of Kepler, Galileo, Newton and others.

Other relatively secure identifications include supernovas observed in 1006 and 1054 A.D. Supernova 1006 was the brightest supernova ever seen on Earth, outshining Venus. It was visible to the unaided eye for several years. There is also strong evidence to show that the supernova of 1054 A.D. was the explosion that produced the Crab Nebula. In 1680 a star was reportedly seen by one person —but never seen again—near the position at which the Cassiopeia A (Cas A) remnant was detected in the 20th century. It might have been the explosion that produced Cas A, but this identification is controversial.

Why go to all of this trouble? Supernovas are extremely important for understanding the history of the Universe and the origin of the elements that are necessary for life. The explosions associated with massive stars and particular white dwarfs add to the mix of heavy elements that are vital to formation of rocky planets and the emergence of life. By understanding supernovas, we help to understand ourselves.

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