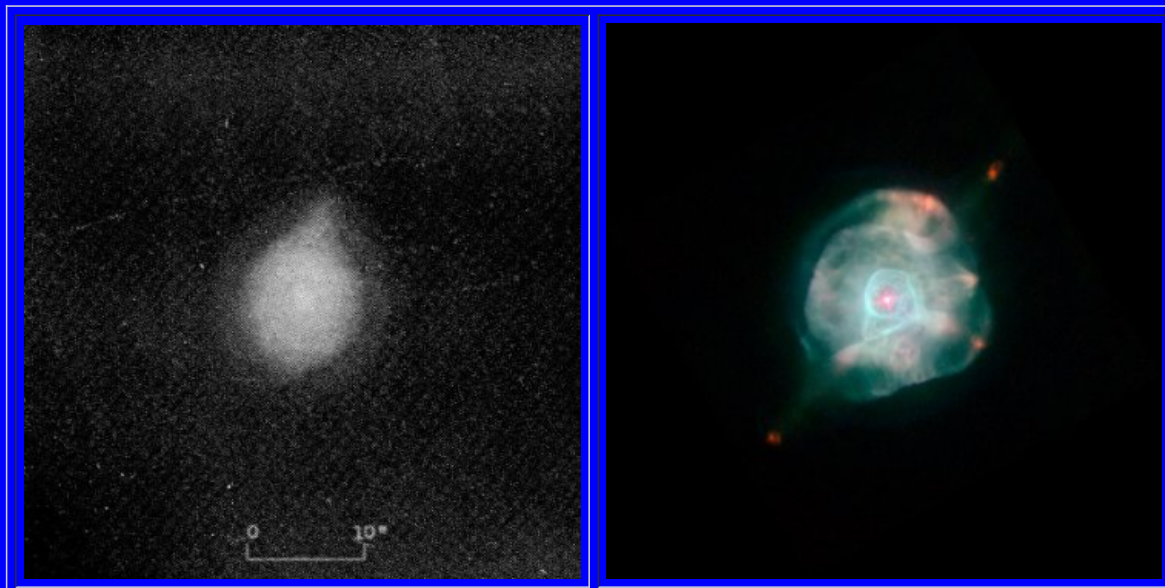


IC 4593

In Hercules

From Jim Kaler's STARS; Return to Planetary Nebulae



"Central star...surrounded by a disk of bright matter...fading out a little toward the edges...bright wing at north...and a smaller and fainter projection opposite this." So says Curtis in describing his composite drawing of IC 4593 on the left. From the Hubble image on the right, he very much GOT it right. The bulge at the northern (top) end is clearly seen on the Hubble image, and is related to a bipolar jet of the sort that makes the prominent ansae in NGC 7009, the red color coming from low-excitation ionized nitrogen. In IC 4593, however, there is evidence for an additional shocked flow to the lower right. Within this very low excitation, and surely youthful, planetary nebula is an interior shell that is probably the result of the interaction between the nebula and a fast (1600 kilometer per second) hot wind from the central star; similar structures are seen in NGC 6543 and IC 418.

IC 4593 lies in far southern Hercules five degrees southeast of Gamma Serpentis (in the western section of Serpens, Serpens Caput). Distance determinations range from 3000 to 10,000 light years. The only individual actual measures are at the lower end, the best estimate 3400 light years, the shorter distance consistent with a smaller diameter of 0.2 light years (from an angular diameter of 13 seconds of arc) and youth. The 11th magnitude (11.3) central star is still heating with a current relatively low temperature of 35,000 Kelvin (measures range from 28,000 K to 42,000 K), far too low to doubly ionize the helium. The luminosity lies in the low thousands. Youth is also implied by a typically- low expansion velocity of 12 kilometers per second. Helium and nitrogen abundances are normal, if not low.

IC 4593 is distinctive in being surrounded by a giant halo similar to that seen around NGC 6543. More than three times the size of the inner nebula, at the adopted distance it gives the whole structure a diameter of 0.7 light years.

Left: Image and quote by H. D. Curtis from Publications of the Lick Observatory, Volume 13, Part III, 1918. Right: NASA, ESA, and the Hubble Heritage Team (STScI/AURA).