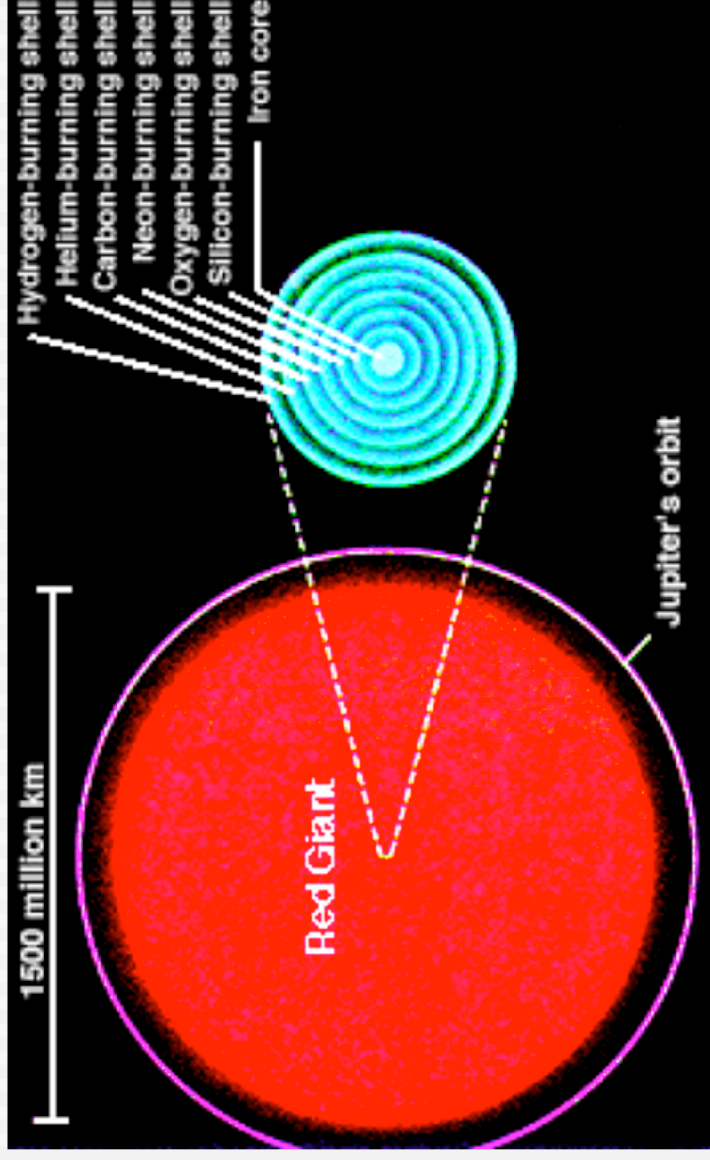


TYPE I SUPERNOVAE

- white dwarf in binary system
- may pull matter from companion
 - depending on how deposited
 - might not ignite to produce a nova
 - get more and more massive
- after about 100,000 of years
 - pass point where degeneracy can support star
 - fatal collapse in < 1 second
 - all degenerate matter explodes

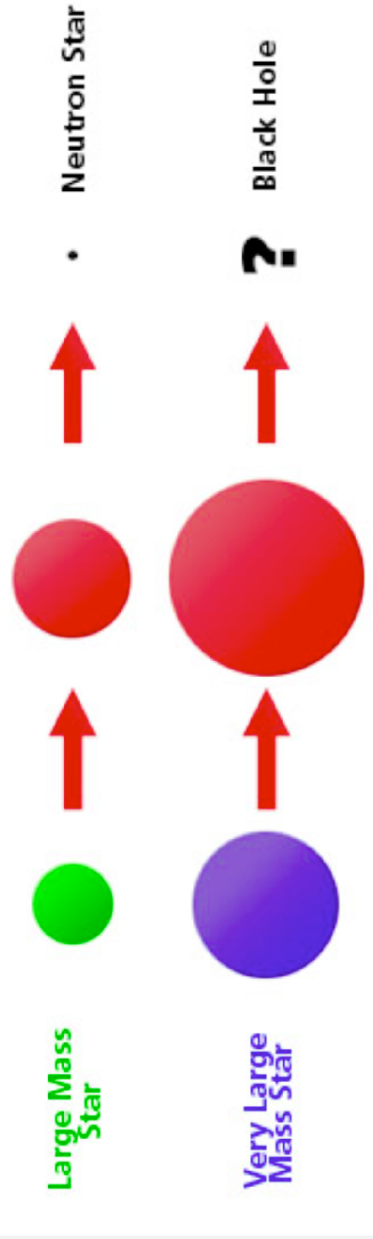
VERY MASSIVE STARS

- if more massive, keep going
 - burn Carbon, then Neon, then Oxygen, then Sulfur
 - shorter and shorter intervals
 - Silicon burning to Iron in about 1 day



TYPE II SUPERNOVAE

- BIG PROBLEM: cannot release energy by burning iron
 - just get hotter and hotter
 - in < 1 second core crashes in on itself
- detonate a lot of unburnt fuel
 - blow away outer layers
 - can outshine a galaxy
 - elements heavier than iron produced



THE GUEST STAR - SUPERNOVA 1054

- Chinese observed previously unknown star
 - July 4, 1054
 - peak magnitude about -5
 - brighter than all stars and planets
 - apparently visible in daytime
 - visible for almost 2 years
- 'Crab Nebula' found in same location
- various related types
 - irregular recurrence, if any
 - novae
 - smaller variations
 - some types repeat fairly regularly



The Crab Nebula in X-rays

