Table 3.5 (*continued*)

Class	Defining characteristic	Remarks
W Virginis stars	Old variable stars with periods 7–60 d	Also called Type II Cepheids; they are $\gtrsim 1.5$ mag fainter than Cepheids at a given period.
Dwarf novae	Short-period binary systems subject to occasional eruptions that brighten the system by $\lesssim 6$ mag in < 5 d. SS Cyg is the prototype. Quiescent G-type spectra.	Systems contain a white dwarf and a late-type star. Erruptions caused by mass being transferred on to the white dwarf.
Novae	Star whose brightness suddenly increases by $7-16$ mag	Close binary systems containing a cool red giant and a hot, less-massive companion that accretes material, which then feeds explosive nuclear burning. Novae expel gas at $\lesssim 3\,000\,\mathrm{km\,s^{-1}}$.
Supernovae	Violently exploding stars. Type I supernovae reach $M_V \sim -19$ and expel metal-rich gas at $\sim 10\,000\,\mathrm{km\,s^{-1}}$. Type II supernovae reach $M_V \sim -17$ and expel hydrogen-rich gas at $\sim 5\,000 - 20\,000\,\mathrm{km\,s^{-1}}$.	The most luminous of all stars, they are potentially important for determining the cosmic distance scale. The principal suppliers of heavy elements ($\sim 0.6\,\mathcal{M}_\odot$ of Fe per Type I supernova) and energy ($\sim 10^{42}$ J per supernova) to the interstellar medium.
Low-mass X-ray binaries	X-ray sources with hard spectra and low luminosities	Short-period systems consisting of a compact object (usually a neutron star) and a conventional low-mass star that fills its Roche lobe. The x-ray emission is powered by accretion on to the compact object of material from the conventional star.
High-mass X-ray binaries	X-ray sources with soft spectra and high luminosities	Longer-period systems consisting of a compact object (usually a neutron star) and an early-type star. The x-ray emission is powered by accretion on to the compact object of material from the star.