The first wave, or shell, of blown-off matter travels at a terrific rate of speed. The shell’s outer edge moves faster than its inner edge. Gaseous “knots” observed by Hubble may form from shock waves that occur when matter ejected during the most recent explosion collides with slow-moving material from the previous outburst. For example, material from the 1966 explosion is illustrated (above) in collision with debris from a 1944 eruption.

An “ocean” of hydrogen forms on the white dwarf’s surface. Intense pressure and heat build at the bottom of the hydrogen ocean, eventually leading to a massive explosion, which blows off the outer layers of hydrogen. Then the siphoning process begins again.