

Uranometria 2000.0's Planetary Nebulae Database

1,144 planetary nebulae are plotted, shown as open circles with four protruding lines, in four sizes representing the following categories: those having diameters greater than 30", 30" to 10", 10" to 5" and less than 5". On the close-up charts two additional symbols are used: greater than 60" and 60" to 30".

Planetary nebulae are shells of gas thrown off by stars having approximately the Sun's mass, that are nearing the end of their evolutionary cycle following the red-giant stage. The shell gradually expands, until after perhaps 100,000 years it becomes undetectably thin and all that remains is the central star. Some of the earliest such objects discovered (e.g., NGC 3242 on Chart 151, and NGC 6210 on Chart 68) were found by William Herschel, who noted the resemblance of their well-defined disks to those of planets, and gave them the name "planetary nebulae", but of course they have nothing to do with planets.

The brightest planetaries have a substantial disk, typically 30 arcseconds across, but the majority listed here are stellar (or nearly so) and can be identified at the eyepiece only with a nebula filter or direct-vision prism. Chart 164 lists over 100 such objects, hardly any of which are larger than a few arcseconds in diameter. A few of the oldest and nearest examples are so distended as to be practically invisible against the background sky. Between these two extremes are planetaries that come in about as many shapes as there are objects, including the aptly-named Ring Nebula on Chart 49 and the complex southern object NGC 5189 on Chart 208.

Invisible light, planetary nebulae shine predominantly at the two wavelengths emitted by doubly-ionized oxygen, denoted by the symbol [OIII]. Typically, 90% of the visually-detectable light comes from the [OIII] lines at 5007Å and 4959Å in the blue-green part of the spectrum. As a result, when an [OIII] filter is placed between the eye and the eyepiece, stars are dimmed by as much as three magnitudes (the night-sky light even more), while light from a planetary passes through virtually unchanged. By rapidly passing an [OIII] filter between the eye and eyepiece and out again while examining the field, a planetary will usually appear to "blink" as the stars are dimmed, and the nebula maintains its brightness. There are a few planetaries that have weak [OIII] emission (a bright example is PN G64.7+5.0, Campbell's Hydrogen Star, on Chart 48), and these are best viewed either directly or with an H β filter, which passes the line that is brightest in these cases.