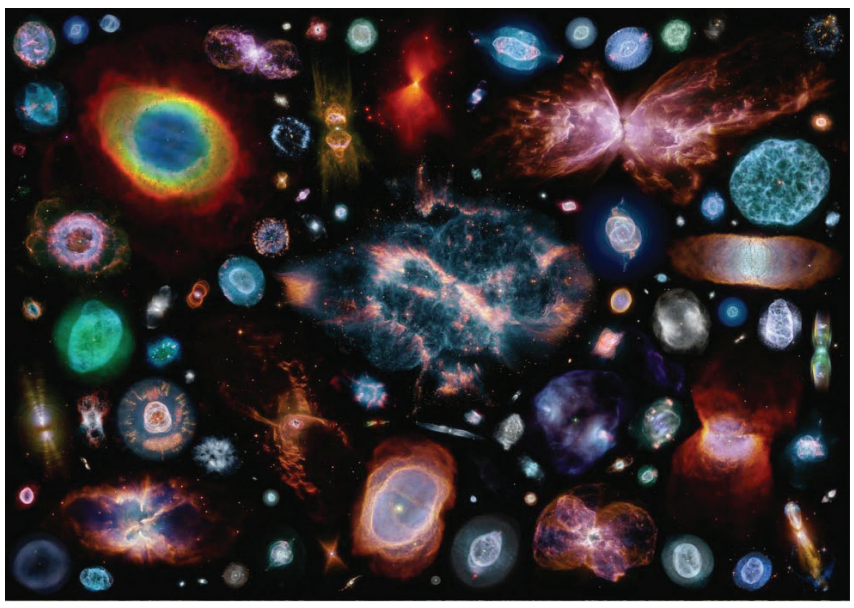
WHAT'S UP?

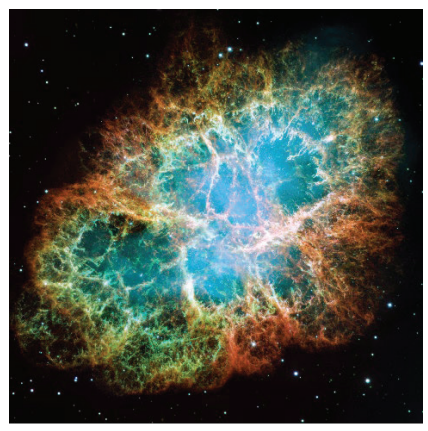
Hi. Let's look at another one category of Milky Way objects – *planetary nebulas*. Remember that *nebula*, is Latin for *cloud*. Last time, we said that nature of these fuzzy patches of light were not known until the technologies of the past century were available for us to use and that for lack of any better understanding of the fuzzy patches, they were called nebulas. We went on to see that *diffuse nebulas* are just that – fuzzy patches. They have random, not-always-well-defined shapes. Planetary nebulas are, yes, fuzzy patches in the sky, but they have shapes that set them apart from diffuse nebula. These have rounded shapes and, not having any more detail, astronomers saw the roundish shapes as being similar to planets so they were dubbed "planetary nebulas". Planetaries (as they are called) are shells of gas that has been thrown off by a medium-sized star as it transitions into a later stage of its life cycle. Such a star becomes what is known as a *white dwarf* star. The energy from the white dwarf ionizes the expelled gas and causes it to emit light. So, if you recall the last article on nebulas, you might realize that planetaries are a type of emission nebula. Through the eyepiece of a telescope, planetary nebulas can be quite striking. Their compact, round shapes, are quite distinct from the stars that are in the same field of view. At times, it is possible to see the bright, white-hot star at the center. The best known planetary is probably the *Ring Nebula*.

The Ring Nebula, M57



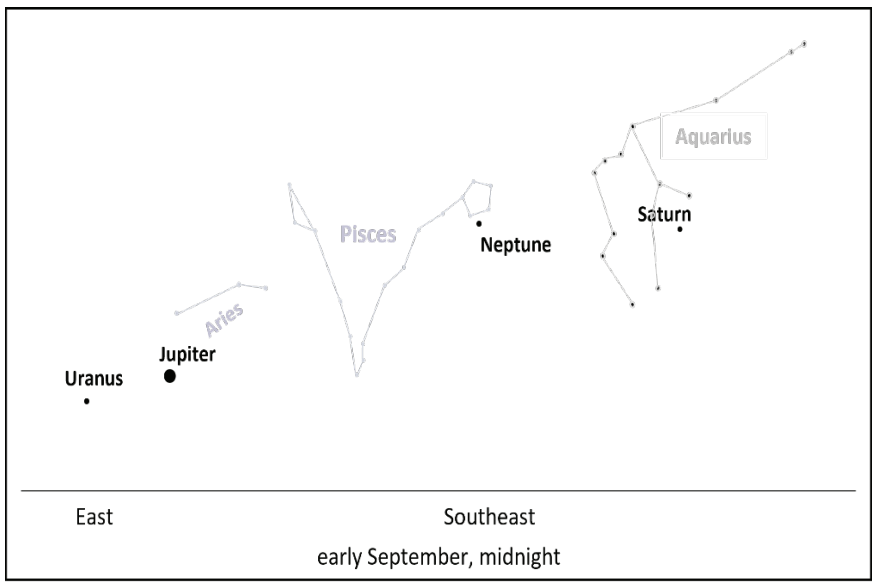
100 Planetary Nebulas

Also known as *Messier 57* or just *M57*, this object can be found among the stars of the constellation *Lyra, the Lyre*. On these summer nights, M57, 2300 lightyears away, is high above us, almost directly overhead, about 6 degrees south of *Vega*, the brightest star in our summer sky. A colorful collage of planetaries shows 100 of them and their apparent sizes relative to one another. The colors in the picture, the violet-through-red that our eyes can detect, are a combination of those true colors and colors assigned to wavelengths that our eyes can't detect, like infrared and ultraviolet. Astronomers use this technique (called false-color) to assist in analyzing the information available in non-visible light.



The Crab Nebula, M1

Another category of nebulas is a *supernova remnant*. As the name implies, these are clouds of gas that result when a star explodes. The *Crab Nebula*, or M1, is perhaps the best-known example. It is the remnant of a star that became a supernova in 1054 C.E. The event was recorded by Chinese astronomers and was called by them a "guest star" or "pinyin". The gases of M1 glow due to the energy emitted by its central star, a pulsing neutron star or *pulsar*. At magnitude 8.4, M1 can be seen with binoculars. Look for it in the constellation *Taurus, the Bull*, near the tip of the southern horn of the bull. Taurus rises around 1:00 a.m. now, so to view it in the evening, you'll have to wait until December.



Planet Roundup: By 9:00 p.m., Saturn is about 20 degrees above the southeastern horizon. With a magnitude of 0.4, it is one of the brighter 'stars' in the area, but not so bright that it easily stands out. Neptune is half as high up as Saturn at this hour and in between Saturn and the eastern horizon. Jupiter is in our sky by 11:00 p.m. and Uranus rises about a half-hour after that. All four of these planets will be with us in our night skies through the fall and most of the winter months. The 3rd Quarter Moon is on the 6th, the New Moon is on the 14th, 1Q Moon is on the 22nd and the next Full Moon (the Harvest Moon) occurs on September 29th. The Harvest Moon is the name given to the Full Moon that occurs closest to the Autumnal Equinox. This year, the equinox occurs in the early morning hours of September 23rd. We'll talk more on that the next time.

You can reach me at astroblog@comcast.net with any questions and comments. This is *What's Up?* installment #75(!).

Image credits – M57: ASA, ESA, and the Hubble Heritage (STScI/AURA)-ESA/Hubble Collaboration; 100 Planetaries: *ESA / Judy Schmidt*; M1: NASA, ESA, J. Hester and A. Loll (Arizona State University)

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