

Beginner's Star-Hops for September

By Art Russell

This month's star-hops take us directly overhead and into "**Dobson's Hole.**" "**Dobson's Hole,**" or more properly, the zenith, is that area of the sky in which it is most difficult to maneuver alt-azimuth, or dobsonian style, telescopes. This month "**Dobson's Hole**" frames the area of the constellation *Cygnus* and the nearby constellations of *Lyra*, *Vulpecula*, and *Sagitta*. Here, we'll star-hop to two of the northern hemisphere's finest planetary nebula, **M57**, the "**Ring Nebula,**" and **M27**, the "**Dumbbell Nebula.**" We'll also take in several double stars, *Albireo*, and *Epsilon Lyrae*; two open clusters, **M29** and **M39**; and two globular clusters, **M56** and **M71**, as well. That gives us a pretty full agenda, so let's head outside under dark skies and get started!

Star-Hop #1; M29, NGC 6913. Directly overhead this month is the constellation *Cygnus*, the "**Swan,**" also known as the "**Northern Cross.**" As we look directly overhead we'll find the zenith about 2 degrees, or about the width of two fingers held at arms length against the sky, away from *Eta* (η) *Cygni*, the middle star in the neck of the "**Swan,**" which itself points to the southwest. Moving back to the northeast in *Cygnus* to its central star, *Gamma* (γ) *Cygni*, our first star-hop this evening is to the open cluster **M29**. This open cluster is a little less than 2 degrees to the south-southeast of *Gamma* (γ) *Cygni*, and is really best seen in binoculars as it sometimes becomes almost indistinguishable from neighboring background stars in larger telescopes. Take your time to look over the field and properly identify **M29**. This is important as *Cygnus* is astride the northern Summer **Milky Way** with its myriad stars and seemingly countless clusters. In binoculars, **M29** is very easily seen as a very small open cluster with perhaps 6 stars visible in averted vision. Its remaining stars were not visible in direct vision, but rather appeared as an embedded nebula. In a moderate sized

telescope at low power, the cluster was unimpressive with no concentration of stars. Moreover, there may appear to be a distinct "H" pattern present.

Star-Hop #2; M39, NGC 7092. Locating **M39**, takes a bit of work on our part. First locate the stars *Delta* (δ) *Cygni*, and *Deneb*, *Alpha* (α) *Cygni*, and then extend an imaginary line between them. Extend this line past *Deneb* for a distance a little less than that between *Delta* (δ) *Cygni*, and *Deneb*, and you arrive at the much less brighter 4th magnitude star, *Rho* (ρ) *Cygni*. As an aid, the distance between *Deneb* and *Rho* (ρ) *Cygni* is about 9 degrees or a little less than that spanned by your fist. From *Rho* (ρ) *Cygni*, **M39** is located a little more than 2 1/2 degrees to the north-northwest. Although **M39** is the brightest open cluster in the area, you'll find that it may a bit disappointing through the telescope where it appears as a poor cluster with only a few stars, most of which seem to be of the same apparent magnitude.

Star-Hop #3; Albireo, Beta (β) Cygni. The next star-hop is so simple that its really more of a star identification. *Albireo* marks the foot of the "**Northern Cross**" formed by the stars *Deneb*, *Gamma* (γ) *Cygni*, *Delta* (δ) *Cygni*, *Epsilon* (ϵ) *Cygni*, and *Albireo*. It is also known as the "**Hen's Beak**" and marks the southern end of the constellation *Cygnus*. However, more importantly, *Albireo* is also one of the most beautiful double stars for small telescope users. Take a look. Can you see its beautiful blue and yellow-gold component stars? A high power set of binoculars may split this star, but try to use a telescope at low to moderate power if you have it available. Also importantly, don't forget *Albireo's* location. We'll use it as the jumping off point for our following star-hops.

Star-Hop #4; Epsilon (ϵ) Lyrae, the

“Double-Double.” Our next star-hop starts at *Albireo* and takes us to the constellation *Lyra*, the “**Lyre**,” or harp. Locating *Lyra* from *Albireo* is relatively easy because its most prominent star *Vega*, *Alpha*(α) *Lyrae*, is the second brightest star in the northern skies. From *Albireo*, *Vega* is 15 degrees, or the distance spanned by your hand’s first and last fingers, along an imaginary line to the northwest. Once there, you can’t help notice *Vega*. Once you’ve located *Vega*, you’re just a short hop away from **Epsilon** (ϵ) **Lyrae**, one of the most famous double stars in the sky, as well as being one of the finest. In fact **Epsilon** (ϵ) **Lyrae** is not a double star at all. Rather, it is a quadruple star. **Epsilon** (ϵ) **Lyrae** is a little more than 1 1/2 degrees (a little more than the width of your forefinger) northeast of *Vega*. Alternatively, **Epsilon** (ϵ) **Lyrae** also forms the northern most apex of an equilateral triangle consisting not only of itself, but *Vega* and the star *Zeta* (ζ) *Lyrae* as well. Take your time here. You don’t need a telescope to “split” or resolve the separate components of the “**Double-Double**;” a set of binoculars will do the job nicely. Once you arrive, you’ll be rewarded with one of the most interesting double stars in the sky.

Star-Hop #5; M57, NGC 6720, the “Ring Nebula.” Once you’ve found *Vega*, you are also very close to the planetary nebula, **M57**. From *Vega*, within



M57 at 572X

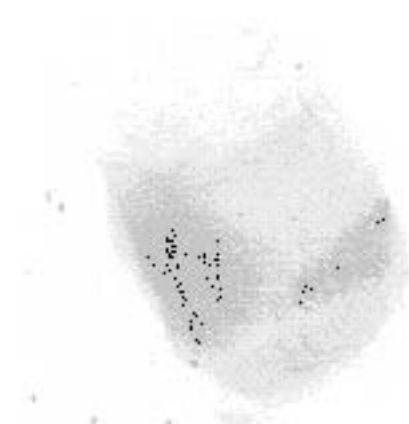
the constellation *Lyra*, head southeast toward the two northern “pointing stars” for **M57**, *Zeta* (ζ) *Lyrae* and *Delta* (δ) *Lyrae*. From *Zeta* (ζ) *Lyrae*,

head south-southeast to the two southern “pointing stars” for **M57**, *Beta* (β) *Lyrae* and *Gamma* (γ) *Lyrae*. **M57** is located almost exactly between *Beta* (β) *Lyrae* and *Gamma* (γ) *Lyrae*. **M57** is not a good object for viewing with normal sized binoculars because of its relatively small size and the fact that normal binoculars will not provide enough magnification. However, large astronomical binoculars (11X80 and larger) under dark skies and ideal conditions may show **M57** as a pale, soft appearing disk, whose edges gradually fade into the background sky. **M57** maintains its disk like appearance in a telescope and takes on an annular, or ring like, appearance under higher powers. Take time to find **M57**. You’ll be well rewarded. Moreover, since its position is so well known and well marked in the sky, finding **M57** is often one of the first objects a beginner seeks when learning how to use a telescope.

Star-hop #6, M56, NGC 6779. Located along the same imaginary we used when locating *Vega* from *Albireo*, the globular cluster **M56** is located about 3 degrees, or 1/5 the total distance, from *Albireo* to *Vega*. In binoculars, **M56** is easily found and appears as a disk shaped soft edged glow which brightens toward its center. Since this cluster is so easy to find, don’t miss it enroute to *Vega*!

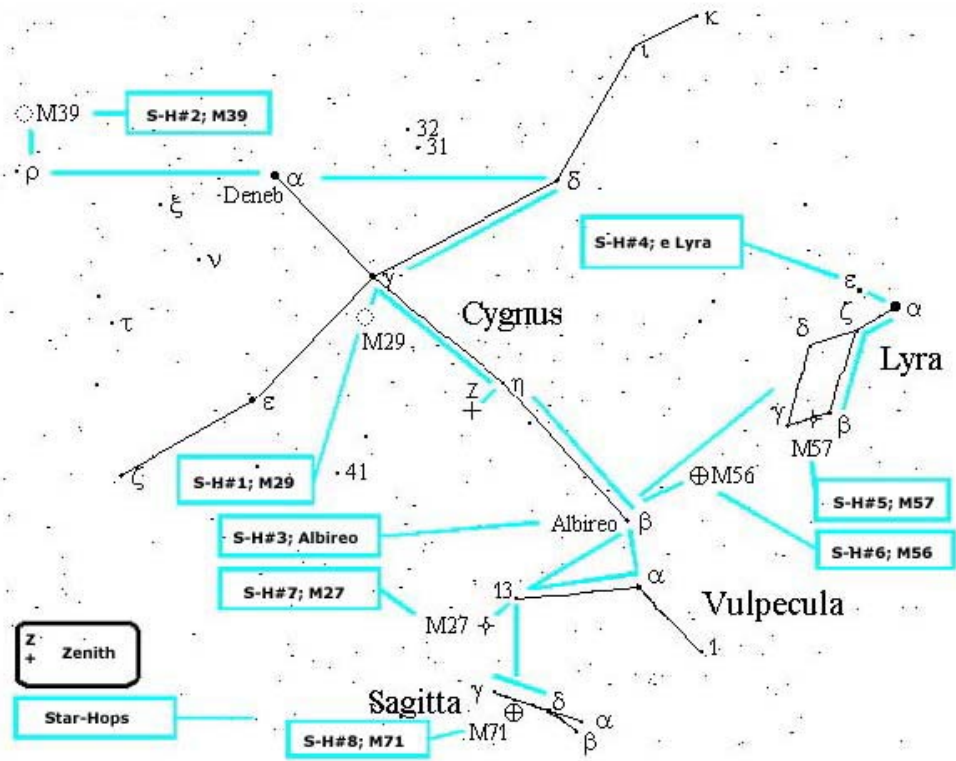
Star-Hop #7, M27, NGC 6852, the “Dumbbell Nebula.” The star hop to the planetary nebula, **M27**, in the 4th magnitude constellation *Vulpecula*, is a natural continuation of a star-hop from *Albireo* to *Vega*, except in the opposite direction. In fact, it uses the same imaginary line, with *Vega* and *Albireo* as pointer stars! Using this imaginary line, **M27** is located only about 8 degrees, or a bit less than the distance spanned by your fist, away from *Albireo*, except, in this case, to the south-east. Alternatively, you can also locate **M27** by first locating *Vulpecula* and then proceeding to **M27**. Starting at *Albireo*, *Alpha* (α) *Vulpeculae* is only a little more

than 3 degrees to the south-southwest. From there, hop over to *13 Vulpeculae* which is a little more than 5 degrees, or three fingers width, to the east-southeast. From *13 Vulpeculae*, **M27** is only about 2 degrees to the southeast. **M27** is visible in binoculars as a soft, roughly square glowing cloud. However, using a telescope quickly tells you that this is a spectacular object. In fact, **M27** is the second largest and brightest of all planetary nebula. At high power, **M27** takes on a distinctly oblate or foot ball shape with the area of greatest brightness confined to a rectangular area near its core and areas of lesser brightness extending along either end of its longitudinal axis.



M27 at 572X

Star-Hop #8, M71, NGC 6838. Our last star-hop for the evening takes us to the relatively small constellation Sagitta and its moderately bright globular cluster, **M71**. There are several ways to locate **M71**. From the constellation Vulpecula, start at the star 13 Vulpeculae. **M71** is about 5 degrees directly south on a line from 13 Vulpeculae. Alternatively, starting in the constellation Sagitta proper, **M71** is located about midway and south of the line between Gamma (γ) Sagittae and Delta (δ) Sagittae. In a moderate power telescope **M71** is clearly seen with the possibility of dark lanes within the globular cluster. Can you find them?



15 September at 10 PM