

One Good Target

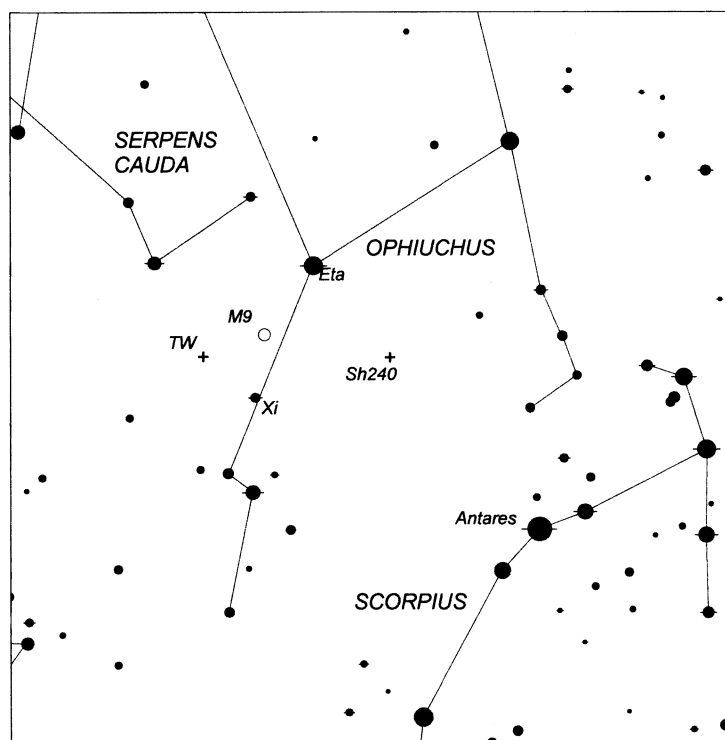
With Some Other Sights Worth Seeing
While You're in the Neighborhood

July

A Globular Cluster in Southern Ophiuchus (M9)

with side trips to a deep red carbon star
and a trio of close doubles

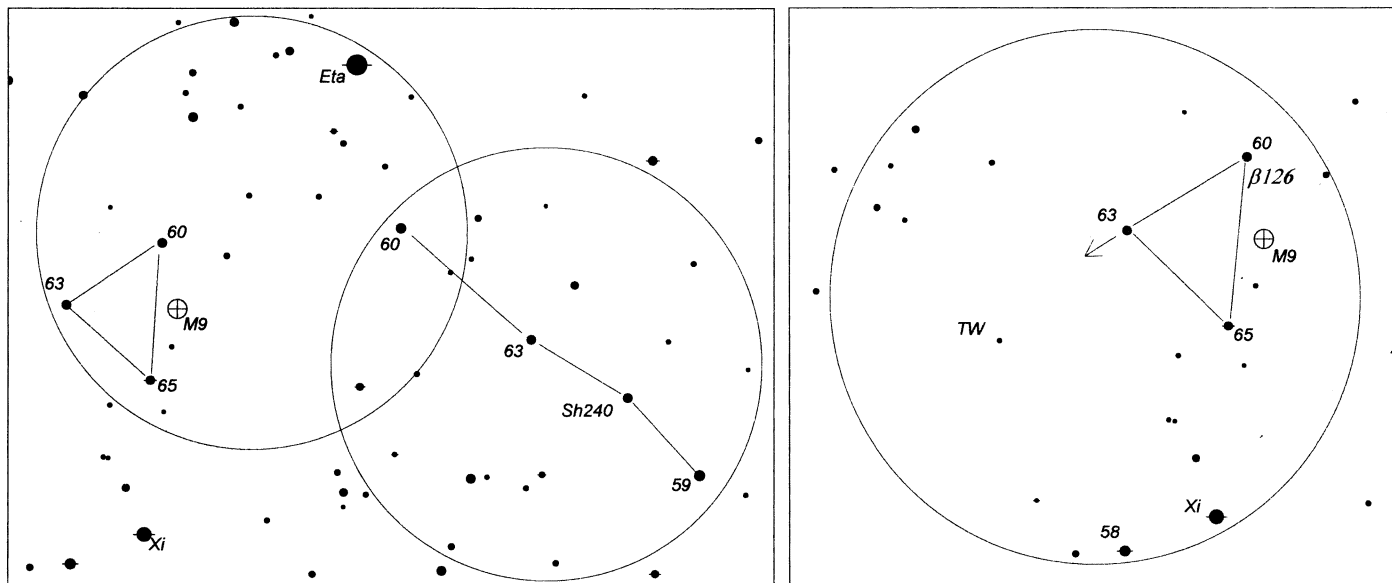
When amateur astronomers think of globular clusters in Ophiuchus, the first ones that come to mind are always M10 and M12 (which we visited here in June 2022). But this constellation is home to at least 24 globular clusters (second only to Sagittarius), seven of which are Messier objects, and tonight's principal target is one of those: **M9**, glowing at an integrated magnitude of 8.4 (or, some say, 7.9) spread across its 4 arcminute diameter. Like most globulars, it's full of stars – estimates go as high as a million of them, and Hubble images show 250,000 in its inner region alone. It's loose for a globular, but still a crowded place, with its stars crammed into a ball only 90 light years in diameter, resulting in a stellar density 95 times as high as the density of stars in our part of the galaxy. It's one of the closest globulars to the Milky Way's core, lying only 5,500 LY from the galactic center and 25,800 LY from the Sun. At that distance, its brightest stars shine at a faint mag 13.5.



This month's targets – showing stars to mag 5.5

M9 lies within a 5° binocular or finderscope field SE of mag 2.4 Eta (η) Ophiuchi, next to a roughly-equilateral triangle of mag 6 stars. A mag 7.8 star sits less than a half-degree south of the cluster. M9 is visible in binoculars and most finderscopes as a small, round, evenly-lit glow. Small scopes (up to 4") show a bright, relatively concentrated central section surrounded by a faint oval haze, but they do not resolve individual member stars. The cluster appears grainy in 6" scopes, and the edges begin to resolve at high power (200x or so). The edges resolve nicely in 10" scopes, and 12" scopes resolve it completely. A small dark nebula, **B64**, begins just a few arcminutes SW of the cluster. It's 20 arcmin long from SW to NE and has a distinctive shape: two lobes forming a bent line, like a boomerang with its open side pointing north. It's also pretty dark – class 6 on the Lynds scale, where 6 is the darkest – but it's much easier to see on long-exposure photos than in real life.

While you're in the neighborhood, go back to the finder field that led you to M9 and follow a trail of mag 6 stars SW in search of our next target, double star **Sh240**, which was first listed in a double star catalog prepared jointly by James South and John Herschel in 1824. It comprises a mag 6.3 yellow primary 5 arcseconds away from a mag 8.3 secondary that some observers see as slightly green in color. Try using 125x to 150x to split the pair. Then swing your scope east to find **Xi (ξ) Ophiuchi**, a yellow-white mag 4.4 star with an orange mag 8.9 companion 4 arcseconds to the NE. The 4.5 magnitude difference between the two stars means that the primary will appear more than 60 times as bright as the secondary, so you'll have to look close to spot it. The pair should split around 150x. It's a relatively close neighbor of the Sun, located only 57 light years away.



5° finderscope views, showing stars to mag 8: North at top, selected magnitudes noted, decimals omitted

Before packing up for the night, take one more trip to the finder field that led you to M9, and locate that mag 6 triangle once again – but this time, take a closer look at the mag 6.0 star at the north point of the triangle: if you bump up the magnification to 150x-200x, you'll find that it's a close pairing of a white mag 6.3 primary with a pale blue mag 7.6 secondary just 2.4 arcseconds to the west (a much fainter mag 11.2 star 11.5 arcseconds SE of the primary is also part of the system). The pair's formal name, **β126**, identifies it as the 126th double star cataloged by prolific double star discoverer S.W. Burnham over several decades beginning in 1873.

After unlocking the secrets of β126, use the mag 6 triangle one more time: it points the way to our final target, a carbon star known as **TW Ophiuchi**. This star's magnitude ranges from 7.0 to 9.0, so it should be visible in finders as small as 30mm, even at its faintest. Like all carbon stars, TW Oph is doubly red: first because its temperature was reduced when it exhausted its hydrogen fuel and started burning helium, and second because the carbon produced by the star's helium fusion precipitates out as fine soot as it makes its way to the star's outer regions, where the already-red light leaving the star becomes even redder as the soot particles scatter its remaining blue components. The (literally) elemental processes that produce the deep red color we perceive in these stars provide a fertile field for contemplation, and bring us to a fitting place to wrap up our evening exploring the southern reaches of Ophiuchus.

Rick Gering / July 2025