

One Good Target

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

February

A Trio of Open Clusters in Northern Puppis

(including a hidden planetary nebula)

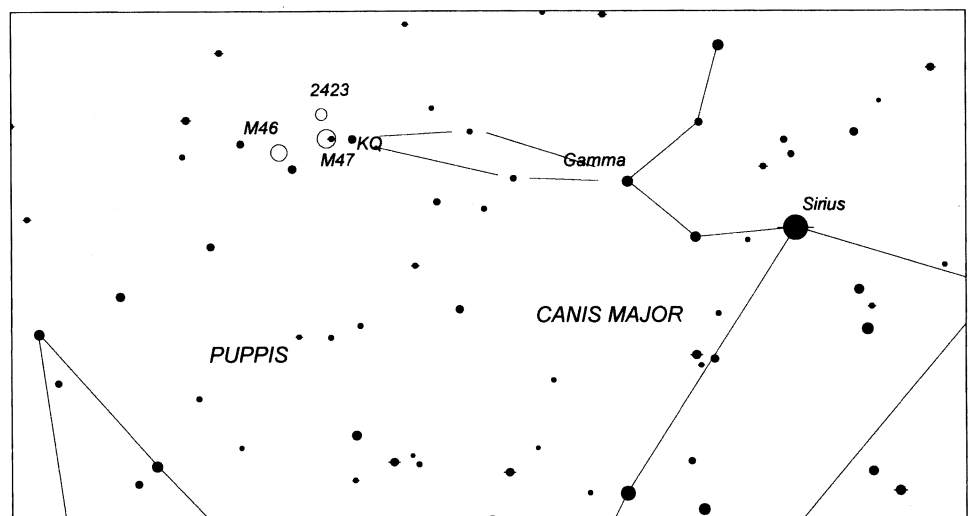
with side trips to a couple easy doubles and supergiants

Although Puppis is usually considered a southern constellation, the area we'll visit this month is no farther south than the bottom of Virgo, and more northerly than the pattern stars of both Scorpius and Sagittarius – so put aside your fear of the mysterious southern sky, and come discover some of the treasures waiting for you just a few degrees the other side of the celestial equator.

Our principal targets are a pair of Messier open clusters, **M46 and M47**, located right next to each other near the head of Canis Major. Follow a line from Beta CMa (the dog's front paw) through Sirius and not quite one step farther to our starting point, mag 4.1 Gamma Canis Majoris. From a dark site, you might be able to reach the clusters by following a narrow naked-eye diamond of mag 5½ stars extending east from Gamma and ending at **KQ Pup**, an orange star whose brightness varies from mag 4.8 to 5.2; but if your site isn't that dark (or the diamond isn't that prominent), you can get to the same place by following a couple triangles in your binoculars or finderscope, as shown in the 5° view below – or just scan from Sirius to Gamma and continue for another two steps in the same direction. KQ Pup is an impressive star, a red supergiant whose radius is 570 times that of the Sun, so its three-dimensional volume (570^3) is a definitely-impressive 185 million times that of our little star.

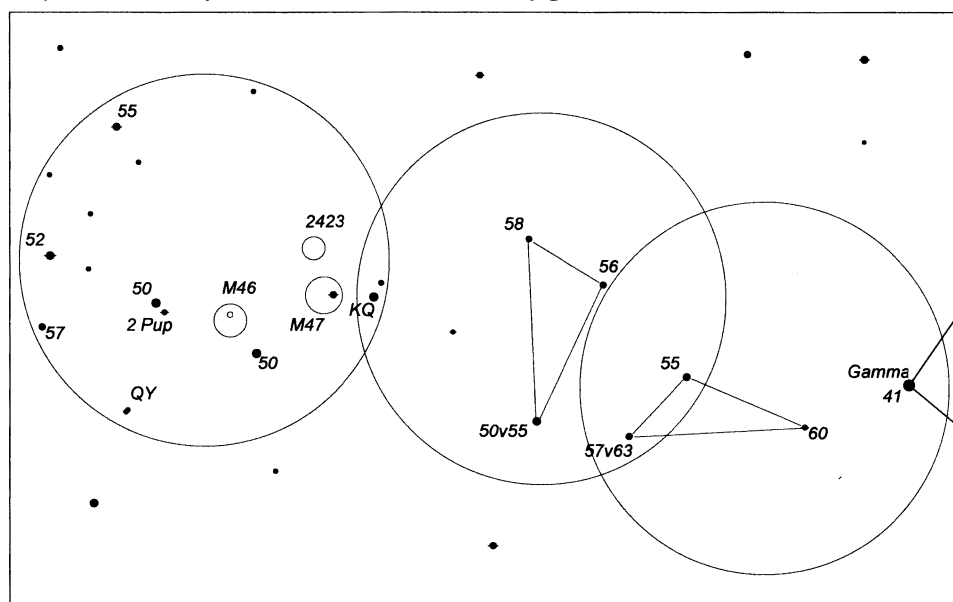
No matter how you get there, once you find KQ Pup, you're right next to M47, easily seen in a finder or binoculars, with M46 just a degree farther east, adjacent to an orange mag 5.0 star. Before going any farther, take a moment to appreciate the differences between these two clusters when seen in the same field. M47 has

February's targets:
North at top,
stars shown to mag 6



many bright members – at least 18 are brighter than mag 9. At a distance of 1,600 light years, it is fairly close to us and quite bright, with an integrated magnitude 4.4 that makes it visible to the naked eye under dark rural skies. It shows us a bold and spangly look, with several well-separated mag 6-7 members tempting (or challenging) us to see an image in their arrangement across the field. M46 is different. More distant at 5,400 light years, it is elegant and understated, with no members brighter than mag 9 but over 100 ranging from mag 9-13 and a few hundred fainter ones, glowing at an integrated magnitude 6.1. Its tiny stars form a distinct and obvious group, but none of them step up to shout “look at me!” the way the bright stars of M47 seem to do – in fact, in finders and most binoculars, you’ll see only the stars’ combined misty glow, not individual members.

Finder/bino view (5° fields):
North at top,
stars shown to mag 6.5,
selected magnitudes noted,
decimals omitted



Examining the two clusters individually under higher power yields more rewards – but no need to overdo it, 40-50x is plenty. In a recent issue of *Sky & Telescope*, binocular maven Matt Wedel compared M47’s bright stars to a display of fireworks, and they are certainly the “stars” of the cluster, including a remarkable ten-component multiple ($\Sigma 1121$) that forms a tight box-like group near center. Even small scopes show several resolved blue-white members, as well as many that just tease the edge of visibility, half-emerged out of the surrounding haze. Increasing numbers of stars are revealed in larger apertures. For a more challenging view, look a half-degree north of M47 and try to spot a mag 6.7 cluster, **NGC 2423**, much fainter than M47 and hard to separate from the rich surrounding starfield. At best, it will appear in binoculars as a patch of haze 20 arcminutes across, and in small scopes as a haze punctuated by several pinpoint stars.

M46, on the other hand, is an almost ethereally beautiful object: it reminded Burnham of “a celestial meadow strewn with fireflies.” The distinctly round cluster begins to resolve in 6” scopes, but you’ll need averted vision to see discrete stars in small scopes. The highlight, however, is **planetary nebula NGC 2438** – not a member of the cluster, but a foreground object only half as far away: located near the north edge of the round haze marking the cluster, its non-stellar character can often be seen as a tiny filled-in smoke ring even without a filter in 4” or larger scopes – but if you’re having trouble finding it, a narrow-band or O-III filter can make it pop out.

While you’re in the neighborhood, pan less than 1° east from M46 to find **2 Puppis**, a blue-white pair consisting of a mag 5.6 primary and a mag 6.9 secondary a comfortable 17 arcseconds away. Then pan 1.4° SSE from there to find an optical pair of orange stars, widely separated by just over 2 arcminutes. One is a mag 6.4 orange giant; the other, **QY Pup**, is a variable star whose brightness ranges from mag 6.2 to 6.7. Like KQ Pup, QY is a supergiant – more than 136 million Suns would fit inside it. It’s a pointed comment on our place in the universe, and a fitting thought on which to end tonight’s explorations.

Rick Gering / February 2025