

One Good Target

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

August

Some Neglected Treasures
in Sagitta, Vulpecula, Delphinus, and Equuleus

Tucked away SE of Cygnus (The Swan), NE of Aquila (The Eagle), and west of Pegasus (The Flying Horse), a group of tiny constellations – Vulpecula (The Fox), Sagitta (The Arrow), Delphinus (The Dolphin), and Equuleus (The Little Horse) – huddle together as if they were seeking protection from the bigger creatures around them. Most amateur observers have seen a handful of famous targets in this part of the sky, but the list is a short one: the Dumbbell Nebula (M27) and The Coat Hanger asterism in Vulpecula, globular cluster M71 in Sagitta, and the gorgeous double star Gamma Delphini are as far into these constellations as most of us ever dig. Those are all definitely worthwhile targets, and all of them have been covered previously in OGT: M27, The Coat Hanger, and M71 in September 2019, and Gamma Del in October of the same year. This month, we dig deeper, because there are other sights you should see while you're visiting this neighborhood.

Let's start at **Albireo** (Beta [β] Cygni), the prettiest double in the sky, then scan one 5° field south to the wide binocular pair **Alpha (α) + 8 Vulpeculae**, a mag 4.6 deep yellow-orange star with a mag 5.9 yellow-orange optical companion 7 arcminutes to the NNE. From there, scan farther south a couple more finder (or binocular) fields, past the Coat Hanger cluster (Cr 399), until you reach the distinctive pair of mag 4.4 stars marking the tail feathers of Sagitta (The Arrow). In the same 5° field with them, you'll find a wonderful double pair consisting of **Epsilon (ϵ) Sagittae** and **HN84** (from the catalog of then-newly-identified double stars compiled by William Herschel in 1821 to supplement his earlier catalogs, published from 1782-84). The two pairs are separated by 31 arcminutes, and will fit nicely within a 1° low power eyepiece field. The brighter pair is ϵ Sge, a yellow-orange mag 5.8 primary with a blue-gray mag 8.4 companion 88 arcseconds away. Use low power (40-50x is good) so they're not too far from one another. The second pair in the field, HN84, has similar colors but a tighter separation: it combines an orange mag 6.4 primary with a blue mag 9.5 companion 28 arcseconds away. Epsilon is oriented roughly E-W while HN84 is oriented NW-SE, which somehow adds to the double pair's attractiveness and considerable charm.

Now scan 5° farther along the shaft of the Sagitta arrow to put the constellation's two brightest stars, Delta (δ) and Gamma (γ) Sge, in the finderscope. Our next target, **Zeta (ζ) Sagittae**, is just NE of Delta. It combines a yellowish (some say greenish) mag 5.0 star with a bluish mag 9.0 companion 8 arcseconds away. It splits nicely around 80-100x. A little farther NE you'll find **Σ I 48**, from the first appendix to F.G.W. Struve's double star catalog. It's an almost-balanced pair of white stars, mag 7.1 and 7.3, separated by 42 arcseconds. It splits easily at low power (30x is plenty).

Scan farther along the arrow to put Gamma near the SW edge of the finderscope, and our next two targets will be in the field. **X Sagittae** is a carbon star located just 40 arcminutes north of Eta (η) Sge, the star at the tip of the arrow. X Sge ranges from mag 7.9 to 8.4 over a 196 day period. It's not as deep red as some carbon stars, but there's a mag 7.2 deep orange supergiant 30 arcminutes NW of X, and putting both stars in the same low-power field can give you a nice view (and a challenge to figure out which one is the carbon star). Then look a little farther east to **Theta (θ) Sagittae**, a white + yellow pair, mags 6.6 and 8.9, separated by 12 arcseconds. F.G.W. Struve cataloged it as a double (Σ 2637) and included a third star, a mag 7.5 red-orange giant 92 arcseconds away from the primary. The third star is not gravitationally bound to the primary pair, it's not near either of them, and there are several closer stars around and between it and the primary, so I have to wonder why Struve included it as part of this group. Panning one more 5° field to the east brings us into Delphinus, where we'll find the **Blue Flash Nebula (NGC 6905)**. It's a mag 11.9 planetary nebula spanning 46 arcseconds. You'll need a 5" or larger scope and high power (150-200x) to see its disk – less than that, it will look like a star.

Most amateurs have visited the star marking The Dolphin's nose, **Gamma (γ) Delphini**, a justly celebrated "lemon and lime" double consisting of a mag 4.4 primary and a mag 5.0 companion separated by 9 arcseconds – but far fewer have looked just 14 arcminutes SSW to see **Struve (Σ) 2725**, a fainter and tighter pair whose mag 7.6 and 8.2 component stars, both yellow-orange and separated by 6 arcseconds, echo the yellowish tints of Gamma Del. Double star guru James Mullaney calls it Gamma's "ghost double." Seeing these two pairs simultaneously in the same field is a sublime pleasure (80-100x works well).

Our next target sits at the opposite end of the diamond-shaped body of The Dolphin – the diamond is known as *Job's Coffin*, for reasons nobody seems to understand. The corner opposite Gamma is marked by two stars, mag 3.6 Beta (β) and mag 4.6 Zeta (ζ) Del. The star we're looking for is a triple, **Struve (Σ) 2703**, comprising a perfectly-matched mag 8.4 pair separated by 25 arcseconds and a third component that nearly matches at mag 8.8, 78 arcseconds from the primary star. The trio form a delicate, delightful, and distinctly yellow scalene triangle, smack between Beta and Zeta in a low power view (try 40-50x).

Our final target in Delphinus is **Struve (Σ) 2690**, located right next to mag 4.0 Epsilon (ϵ) Del, the star marking the tip of The Dolphin's tail. This is an elegant, nearly balanced pair of white stars, mags 7.1 and 7.4, separated by 18 arcseconds. 50x should be enough to split it. It's actually a four-star system, since both components are extremely tight 0.3 arcsecond pairs.

Moving from Delphinus into Equuleus, we enter territory that's unknown to many (maybe even most) amateur observers. It's surprisingly easy to find: just follow a line east from bright mag +0.8 Altair (Alpha [α] Aquilae), and midway between Epsilon (ϵ) Del at the bottom of The Dolphin's tail and mag 2.4 Enif (Epsilon [ϵ] Pegasi), you'll run into the distinctive pair of stars that form the top of the distorted trapezoid shape of Equuleus. The one closer to Altair is mag 4.7 **Gamma (γ) Equulei** – it forms a 6 arcminute binocular pair with mag 5.9 star **6 Equ**. Near the bottom of the figure we find **Epsilon (ϵ) Equulei**, a mag 5.3 yellow primary with a mag 7.1 blue companion 11 arcseconds away. It splits around 75x. The top star closer to Enif is **Delta (δ) Equulei**, a wide yellow + blue pair combining a mag 4.5 primary with a companion 76 arcseconds away. The secondary is listed as mag 10.1, but it seems at least a full magnitude brighter than that. The primary is a quarter-arcsecond pair of stars separated by the distance from the Sun to Jupiter, conjuring images of sunset on Tatooine. It's a pleasant thought, and a good place to end our evening among the tiny constellations.

August targets - 5* fields - N at top - stars to mag 5.5

LYRA

⊕ M56

Albireo α

VULPECULA

Coathanger

SAGITTA

AQUILA

Altair

CYGNUS

M27

$\Sigma 148$ +

ζ

HN84 ++ ϵ

M71 ⊕

θ

6905 +

$\Sigma 2725$

$\Sigma 2703$

γ

$\Sigma 2690$ +

DELPHINUS

EQUULEUS

α

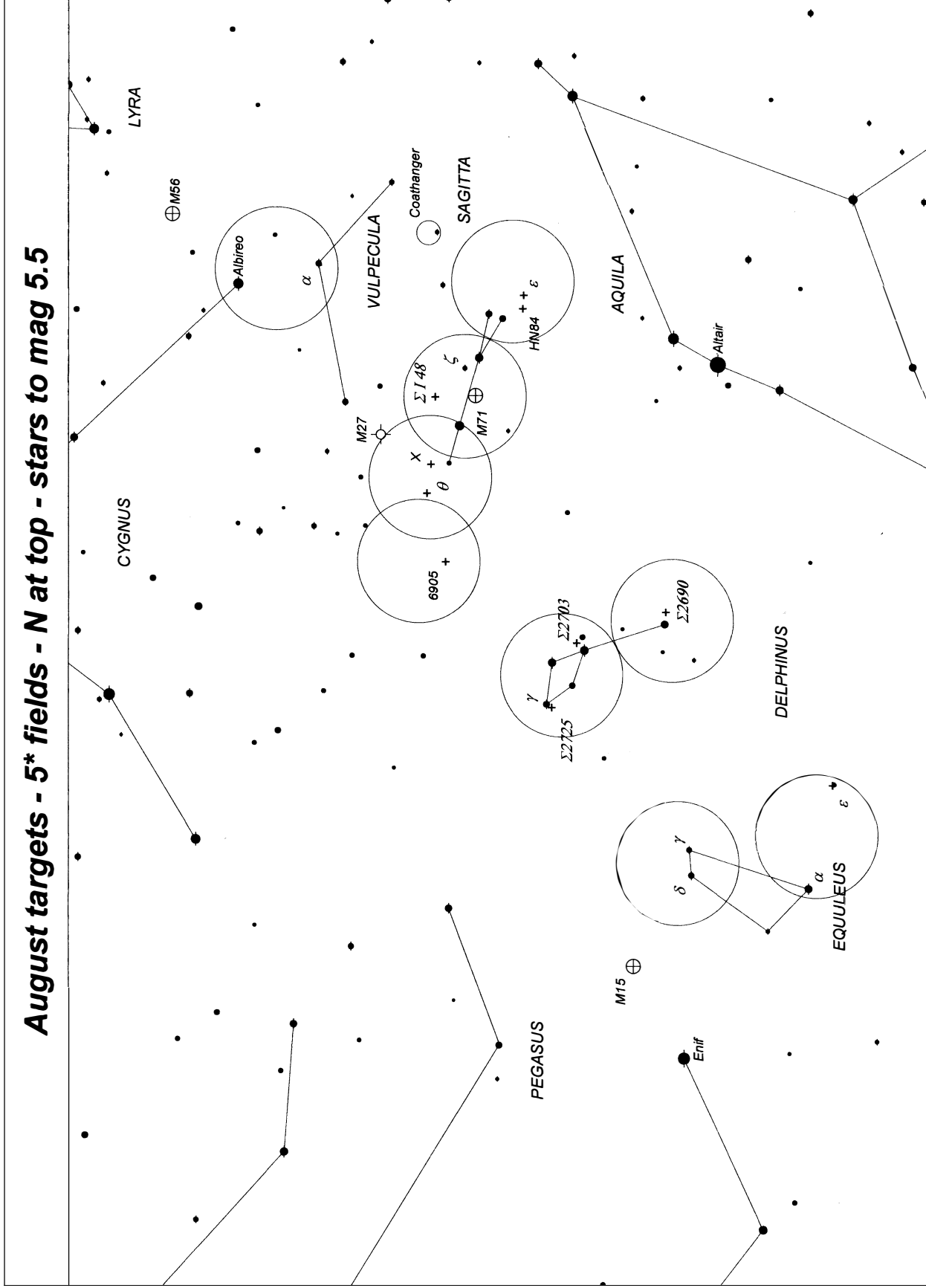
δ

γ

PEGASUS

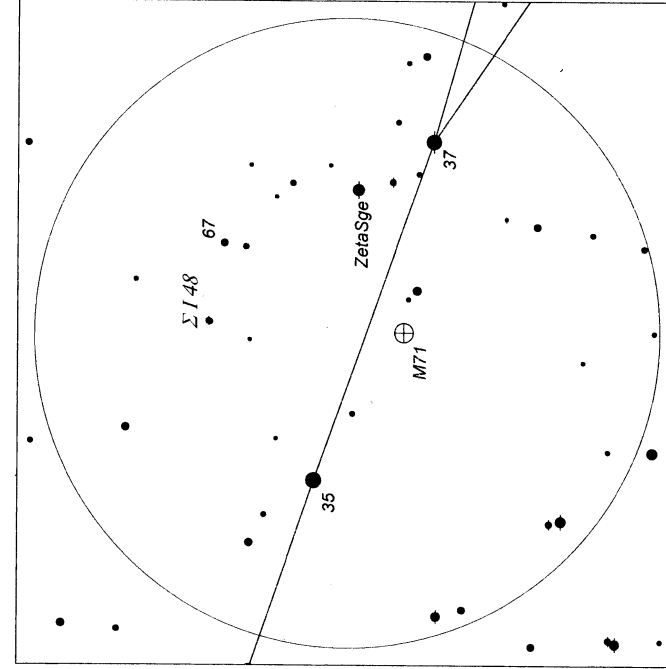
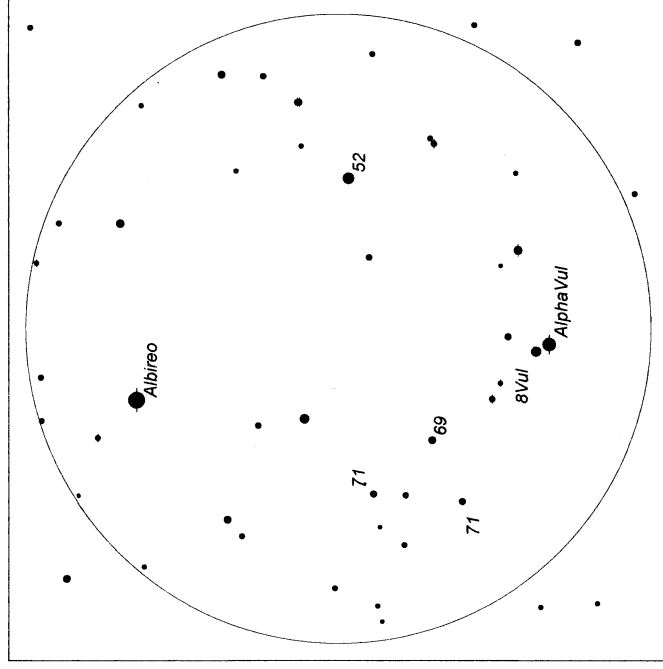
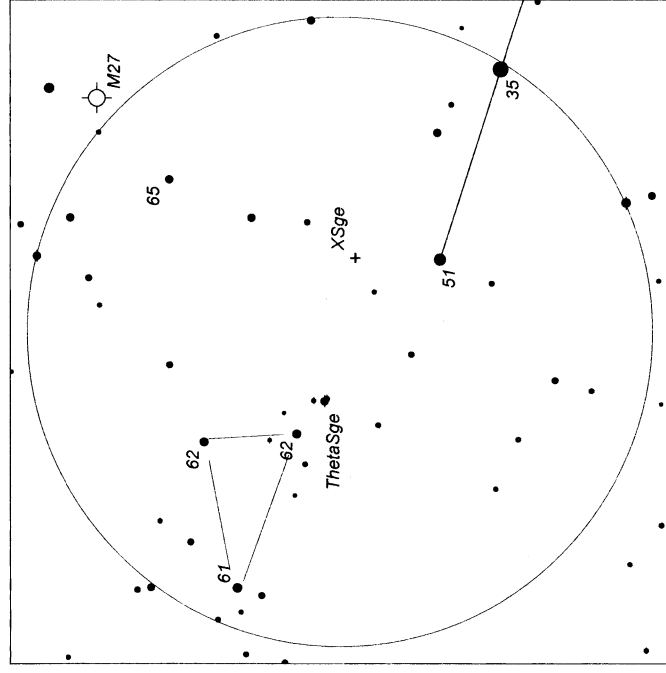
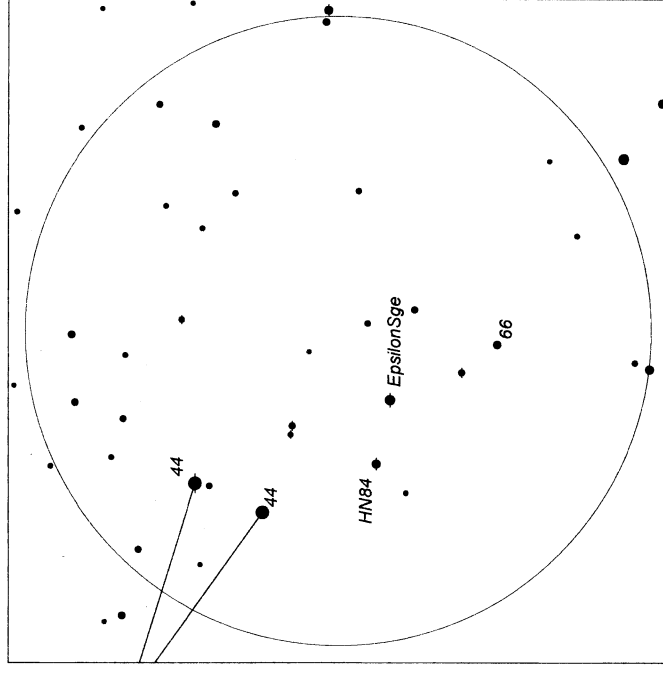
M15 ⊕

Enif



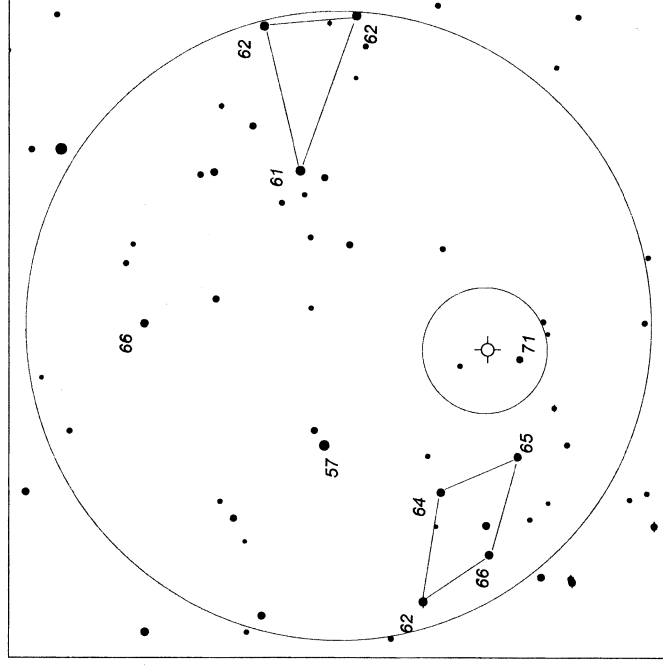
August targets:

- 5° fields
- N at top
- stars to mag 8
- selected mags shown
- decimals omitted



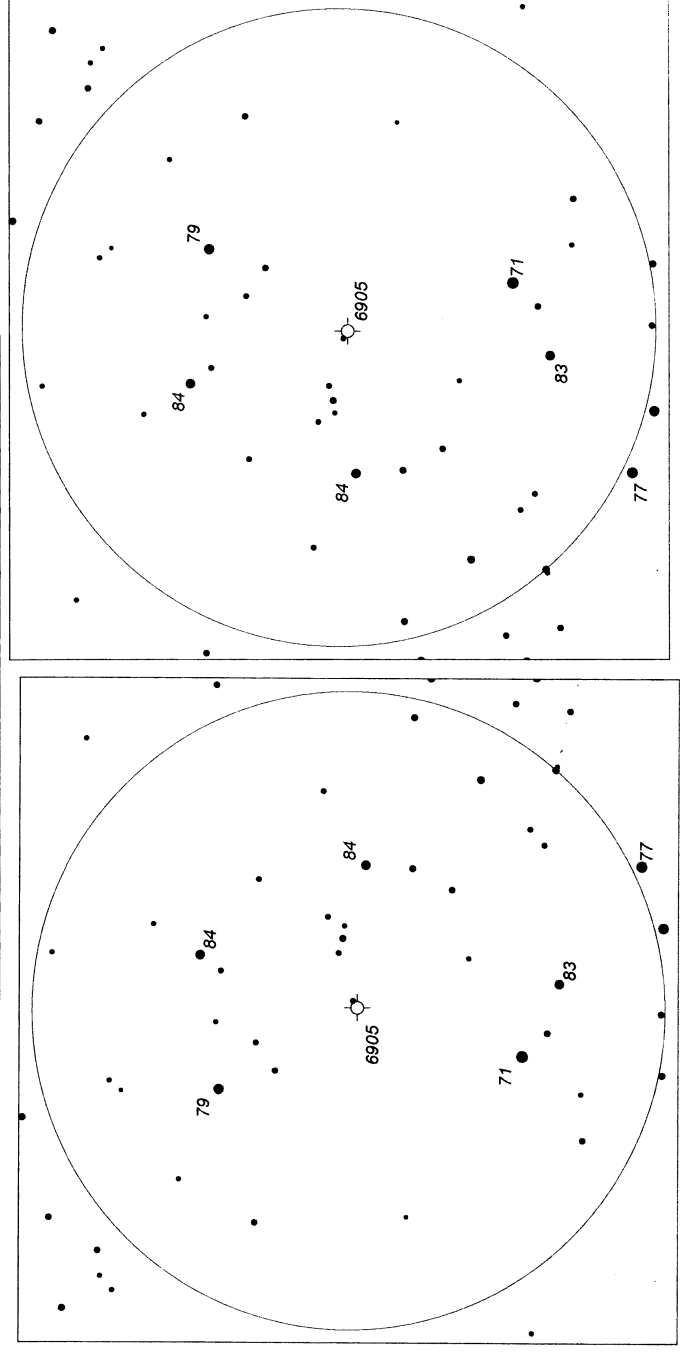
**Top: NGC 6905
(finder view)**

- 5° field
- N at top
- stars to mag 8
- selected mags shown
- decimals omitted

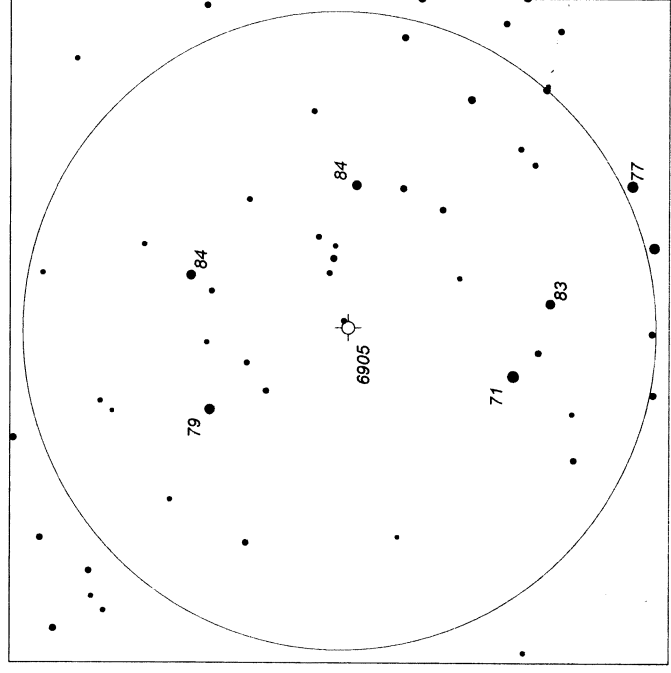


**Bottom: NGC 6905
(eyepiece view)**

- 1° field
- N at top
- stars to mag 11
- selected mags shown
- decimals omitted



**Erect image (left)
Mirror reversed (right)**



August targets:

- 5° fields
- N at top
- stars to mag 8
- selected mags shown
- decimals omitted

