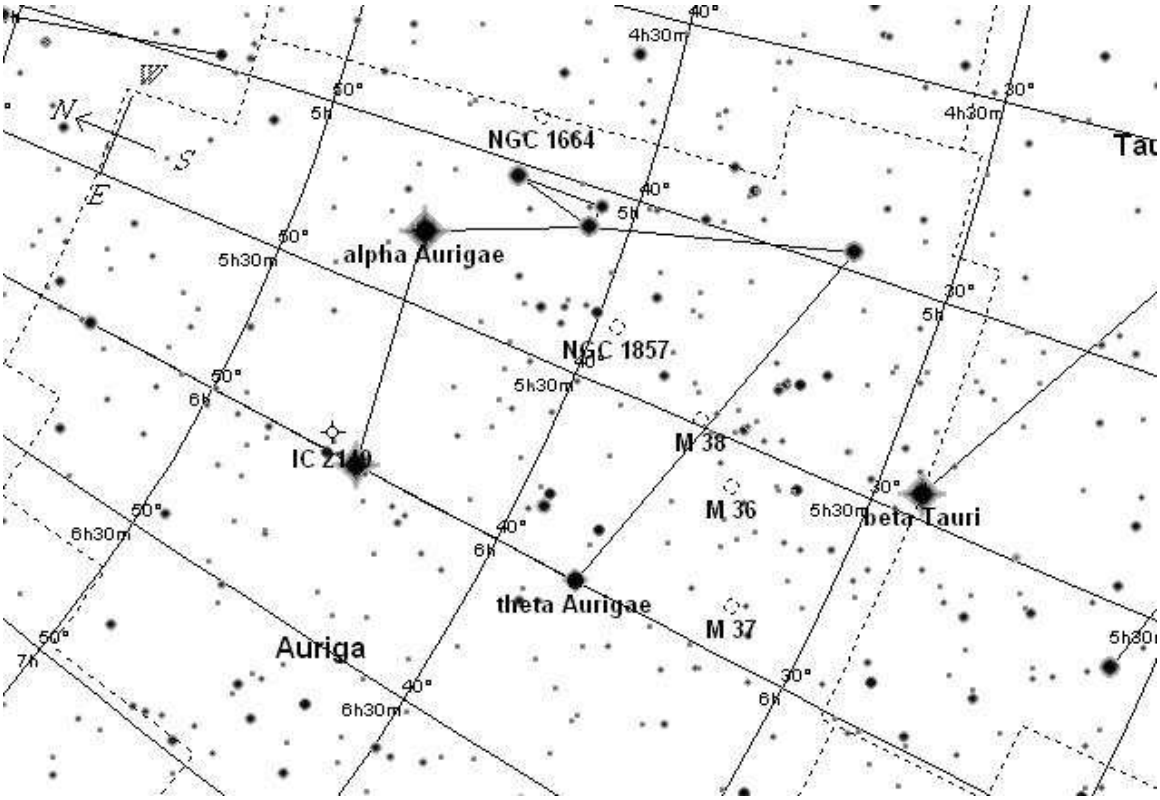
# Small Wonders: Auriga

*A Monthly Guide to the Night Sky*

*by Tom Trusock*

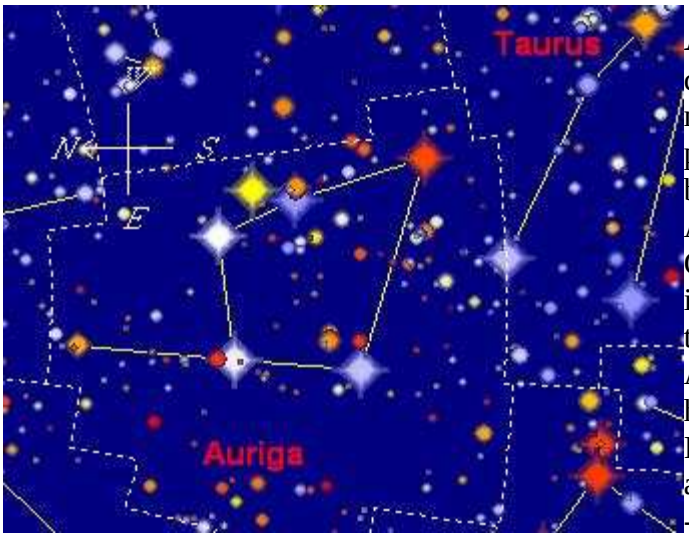



**Widefield Chart**

| | Name | Type | Size | Mag | RA | DEC |
|---|---|---|---|---|---|---|
| **Target List** | alpha Aurigae | Star | | 0.1 | 05h 17m 04.6s | +46° 00' 19" |
| | NGC 1857 | Open Cluster | 10.0' | 7.0 | 05h 20m 27.2s | +39° 20' 33" |
| | NGC 1907 | Open Cluster | 5.0' | 8.2 | 05h 28m 25.4s | +35° 19' 54" |
| | NGC 1664 | Open Cluster | 18.0' | 7.6 | 04h 51m 27.7s | +43° 41' 14" |
| | M 38 | Open Cluster | 15.0' | 6.4 | 05h 29m 03.4s | +35° 51' 40" |
| | M 36 | Open Cluster | 10.0' | 6.0 | 05h 36m 38.5s | +34° 08' 46" |
| | M 37 | Open Cluster | 15.0' | 5.6 | 05h 52m 38.8s | +32° 33' 22" |
| **Challenge Object** | **Name** | **Type** | **Size** | **Mag** | **RA** | **DEC** |
| | IC 2149 | Planetary Nebula | 34" | 10.6 | 05h 56m 47.4s | +46° 06' 28" |

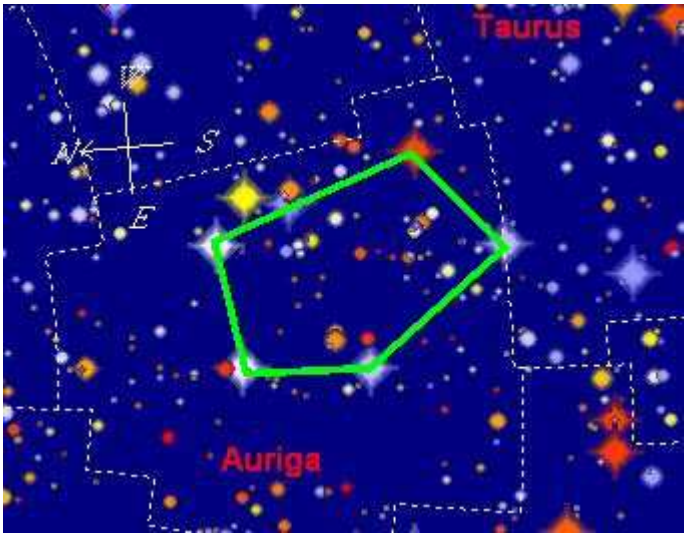
*A SkyMap Pro Target List for these objects is available.*

*Note: All DSS images are approximately 1 deg square with the exception of IC2149 which is 10 min square.*




Auriga - (aw-REE-ga) - A bright constellation located in the winter milky way, the charioteer was probably first placed in the night sky by the ancient babylonians. According to the Night Sky Users Guide (Kepple and Sanner) Aurigas is identified with "...Erichthonius, the fourth of the early kings of Athens whose lameness inspired him to invent the chariot." Interestingly enough, the technology alone is represented in the night sky - there isn't now, nor does there ever appear to have ever been any sign of a charioteer. As something of a modern day techno-dweeb, I must admit that I find this a bit comforting.

Auriga is often referred to as a pentagon shaped constellation, as folks liberally borrow Beta Tau (Elnath) to create the asterism shown. While this is not technically proper as Beta Tau belongs to Taurus, and yet there's no denying this is an obvious asterism and it is quite useful when locating Auriga's three messiers. Despite knowing better, I often think of this pentagon shaped asterism as the constellation as well.




The brightest star in Auriga is Capella (Alpha Aur). Capella lies a mere 42 light years distant and shines at a bright .08 magnitude. It is the sixth brightest star in the night sky - outshown only by Sirius, Canopus, Rigil Kentarus, Arcturus and Vega (in that order). Capella was known to be binary, but was only identifiable as such by spectroscopy (5 milliarc seconds!) until 1995, when it was imaged in optical wavelengths for the baptism of the optical interferometer COAST (Cambridge Optical Aperture Synthesis Telescope).

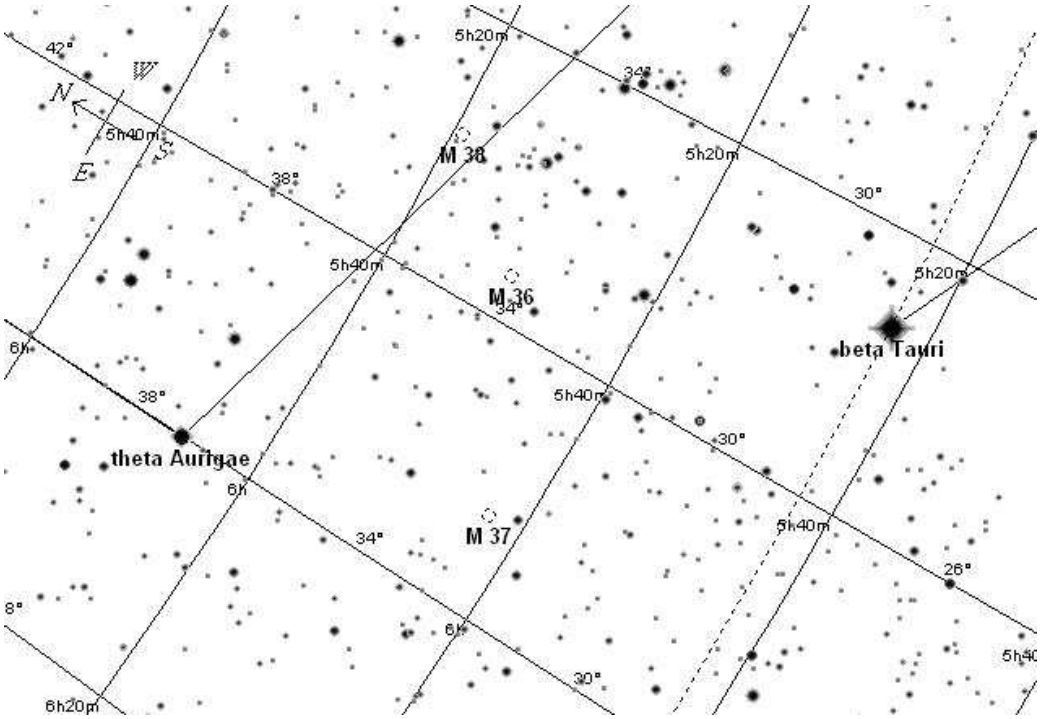
While splitting Capella is a little out of reach, the small scope owner need not fear a lack of targets in Auriga. Lying in the winter Milky Way, this constellation is a playground naturally rich in open clusters, plays host to three spectacular Messiers - M36, M37 and M38 and far more besides.

To find the three messiers in Auriga, it may help to envision the "incorrect" Auriga

asterism shown. Referencing the widefield chart, draw a line between Beta Tau and Theta Aur, then bisect that line, and the three Messiers will nearly lie on the perpendicular bisector. Since they are nearly aligned east to west, they are extremely easy to find with a small scope and alt/az mount. Simply pop in your lowest power eyepiece and scan up and down from the first one you find. If you can show a large enough true field of view, you will easily be able to see multiple Messier clusters in the same field. All three Messiers are fairly easy binocular targets.

I tend to think of these clusters as old friends that bear revisiting year after year.

## M36, M37, M38, NGC 1907



## M37

M37 Image Courtesy John Crilly

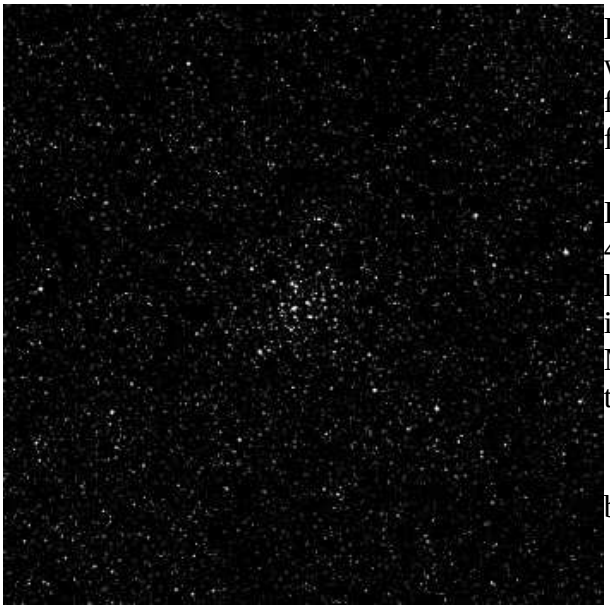
We'll start with M37, the easternmost of the three.

Personally, in a small scope, I find M37 the most spectacular of the clusters in Auriga. In fact, I have to say this is one of my favorite open clusters in the sky - period. Visually in my 4" scope, I find "...Big stringly chains of stars everywhere, with one star in the center clearly standing out. If I concentrated long enough, I could turn it into a longhorn steer's head."

The triangular shape evident in John Crilly's photo is quite evident visually, and M37's structure is like fine sand gathered closely together. In my minds eye, there is a something of a passing resemblance to M11 - not so much in shape, but rather in the sheer number of discrete stars crammed in a very small open space. In some ways, I find rich clusters like M37 to surpass even the finest globulars.

From a dark site, M37 is visible naked eye, easily visible in binoculars, and spectacular in nearly any size telescope.

## M36



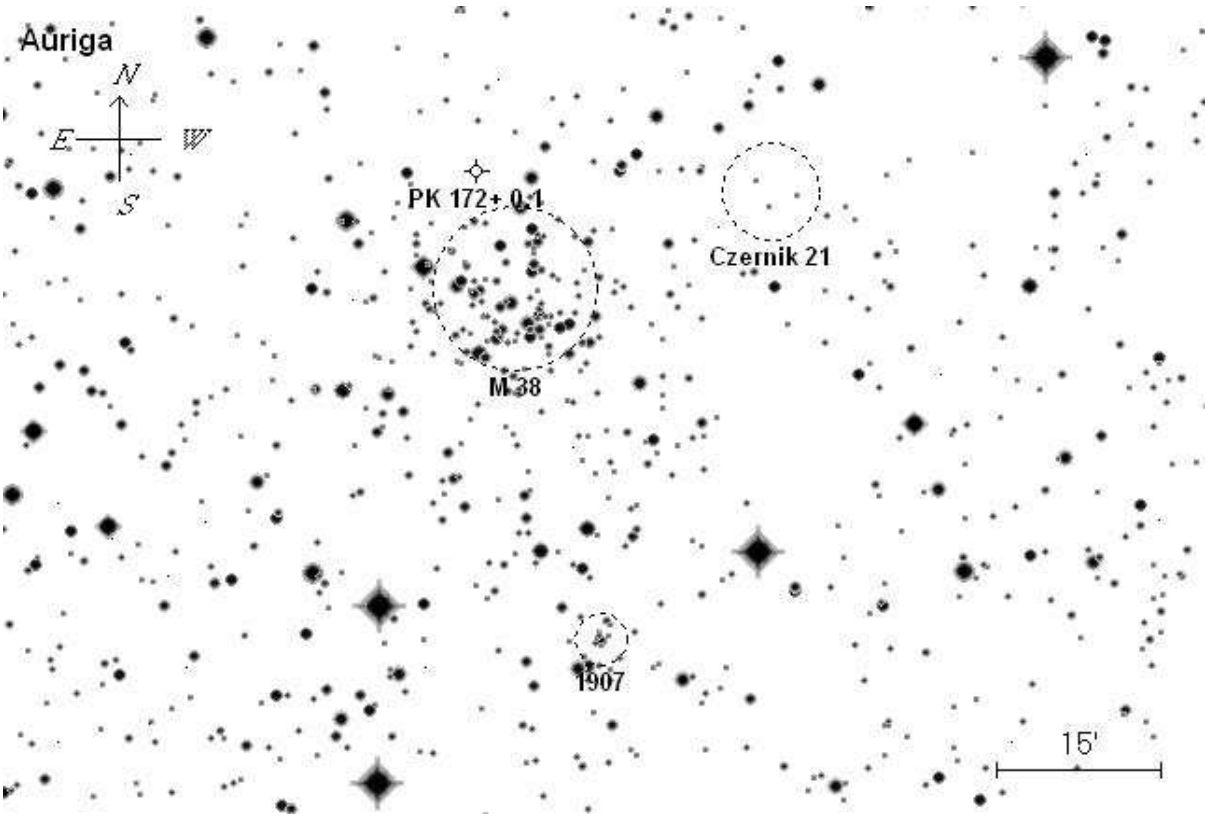
Less than three and a half degrees to the west of M37, (and in the same low power field of view of many rich field scopes), we find M36.

Discovered in 1749 by Le Gentil, it's around 4100 light years away and around 12-14 light years in diameter. Another large impressive cluster, it's far more coarse than M37, but still an outstanding target for small telescopes.

I find my best views in a 102mm scope to be at 22 and 44 power.

At 22x, M36 lies in the same field of view with M38 - which sits about 2.2 degrees to the WNW.

Like it's neighbors, from a dark site M36 will be an easy catch in binoculars.




## M38 and NGC 1907

Viewed through a small telescope, I find M38 is another of my favorite clusters. While it's not as rich as M36 (located several degrees to the ESE) I find it to be richer than it's closest Messier companion - M37. I typically find I like low powers and wide fields to frame open clusters - it's most attractive when compared to the blackness of the surrounding space - or in this case, the scattered stars of the winter Milky Way.

As you can see in the above chart, M38 has several other objects located nearby, however only a couple are really suitable for small scope owners..

PK 172+ 01 (Abell 9) is listed as a *probable* planetary nebula. At magnitude 18.9 (visual) it's more than likely out of the visual reach of most amateur telescopes. Imagers

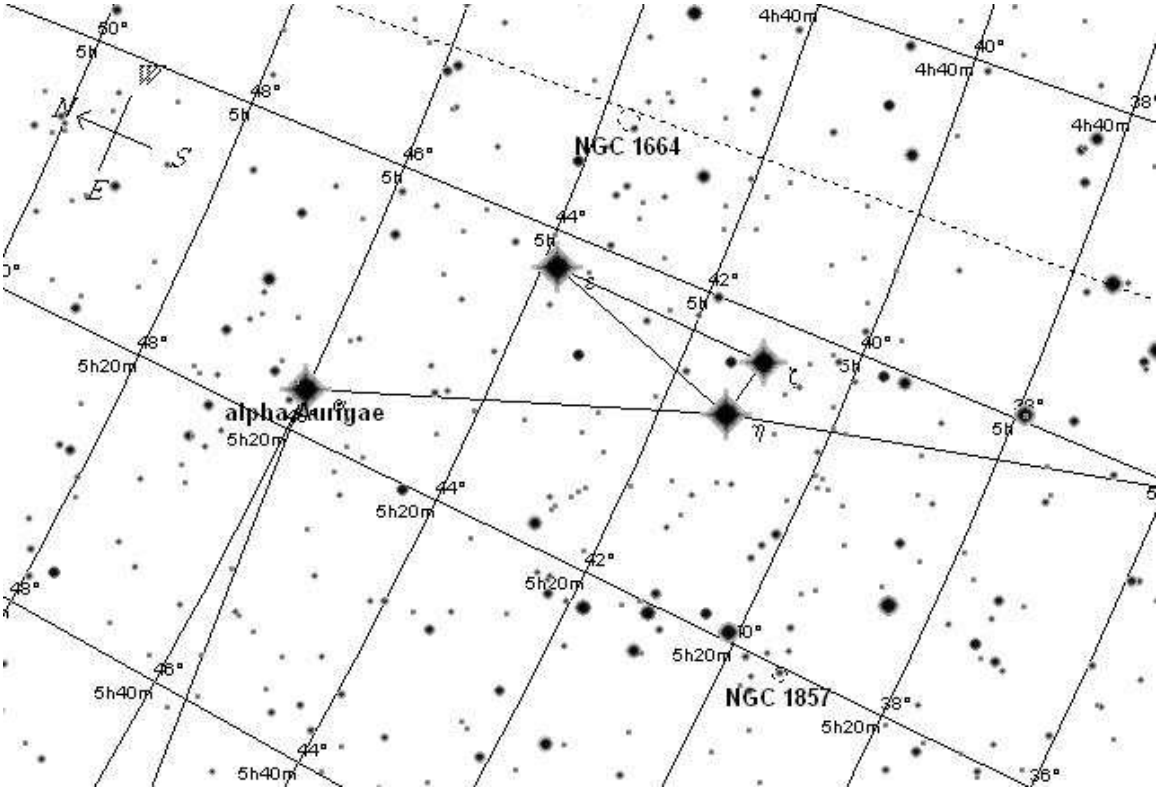
might be interested in giving this one a shot though - if you do, I'd love to see the results.

Another nearby object is the open cluster Czernik 21. At 9 minutes wide, it's been described as "Faint" in large telescopes (18+ inches) so again, it's probably not a good target for us this evening.

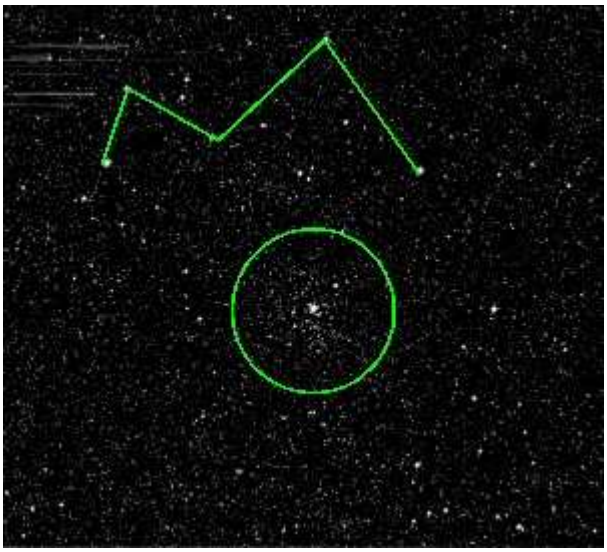
A direct contrast to these two however, is NGC 1907. At 44x, in my 102mm refractor, I find NGC 1907 to be an obviously triangular waft of light about 1/2 degree to the south of M38. I've seen some resolution to 1907 in my 15" scope, but my notes show no record of it in smaller apertures. Once located you've located this remote concentration of stars, try using higher powers and see if you can determine the smallest aperture that begins to show discrete stars in NGC 1907.

Image Courtesy John E. Krawczyk, Jr.

## NGC 1664 and NGC 1857




## NGC 1857



On the western side of Auriga, we find a triangular asterism composed of Epsilon, Eta and Zeta that's sometimes been referred to as "The Kids". While it's easily visible to the naked eye from a decent site, urban dwellers may wish to scan southwest from Capella with a set of binoculars to find it. This is a marker for our last two open clusters on the tour.

Some three degrees southeast of "The Kids" we find NGC 1857.

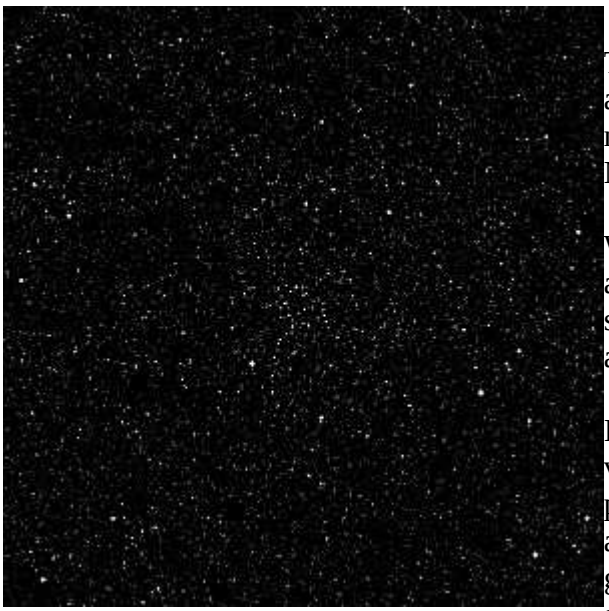
My notes say that I find it to be a good target for a small scope. However, I also note that I find it looks better with slightly more aperture. Try using higher powers and see if the increased magnification helps to bring out more resolution of the cluster. I found it looked best in my 102mm scope at 44x, and took on a fairly obvious propeller shape.

At low to moderate powers (22 - 44x) in my 102mm scope, it shares the field with an obvious asterism - less than a degree away - a mini Cassiopeia (abet somewhat lopsided). While many obvious visual asterisms can be difficult to find on photographic plates, this isn't the case here. I've highlighted it in the photo and circled 1857 for reference. It's also fairly obvious in several different software programs I examined.

This asterism lies in the general position (actually a bit further north) but looks to be larger than Czernik 20 - a supposed galactic star cluster. While the skymap pro chart does not seem to lead to any connection, one wonders if they are at all related - is this a cluster or an asterism? I'm willing to put my money on asterism, but the few stars that I have been able to located distances for are somewhat similar and I was unable to find any recorded proper motions.

In any case, this is a very pleasing set of objects for a wide field scope. Use low to moderate powers that will yield at least a 1 deg field of view.

## NGC 1664



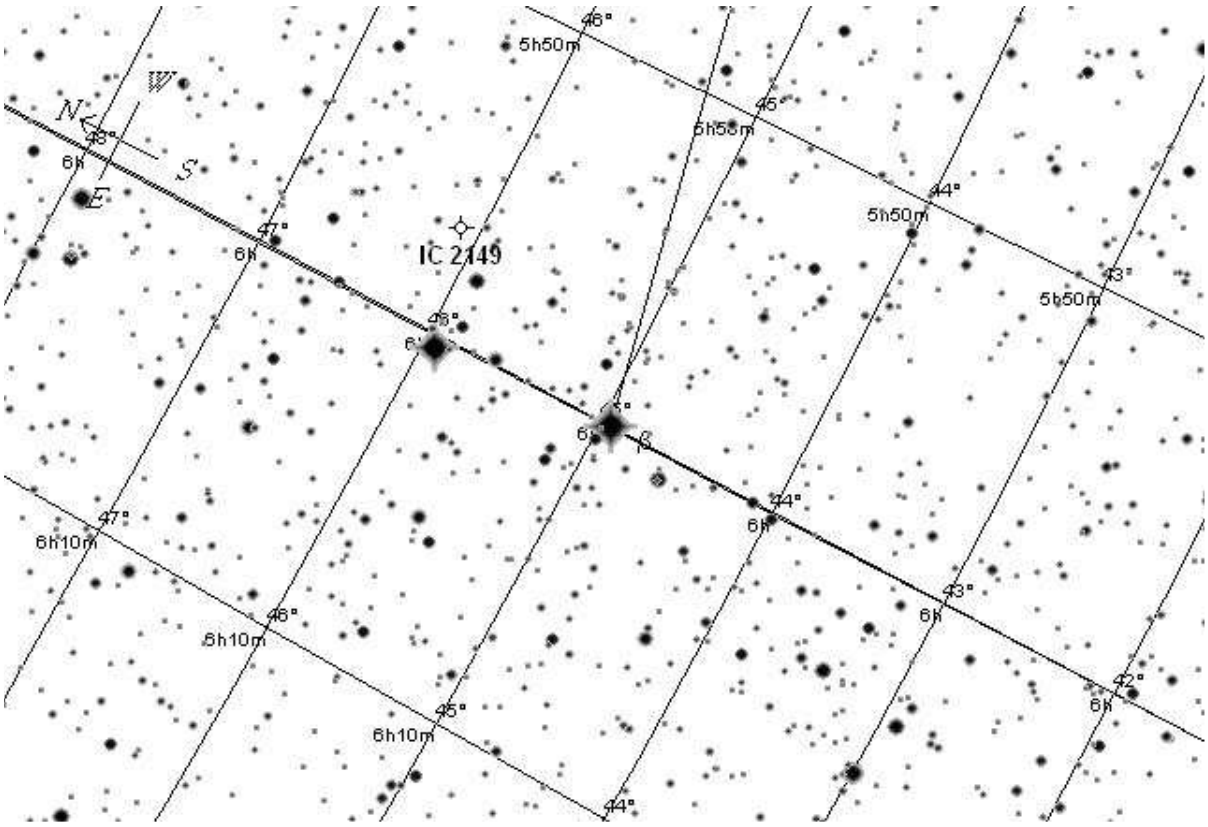
Two or three degrees NW of "The Kids" and directly west of Epsilon lies another nice open cluster for a small telescope - NGC 1664.

While nowhere near as bright or obvious as the messier objects in Auriga, this is still a fairly easy catch when scanning this area with a small scope.

In my 4" scope, the cluster seems on the verge of resolution many nights with pinpoints winking in and out of visibility, and the cluster background giving a soft glow. Higher power usually helps to bring several of the members to visibility.

My overall impression of 1664 in my small scopes is of a whirlpool or spiral system of stars. While a beautiful cluster in any size telescope, this is certainly one that benefits from aperture. If you can, compare the views through a small scope and a larger scope. What differences do you note?

## Challenge Object: IC2149




The challenge object for this month, IC2149 is a fairly bright (mag 10.6) but tiny (34") planetary nebula.

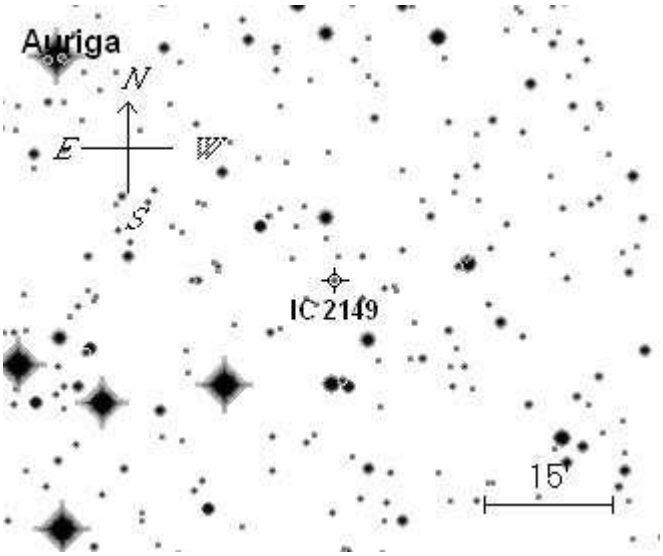
While it's easily visible in a small scope, the real challenge is finding and confirming the planetary due to it's nearly stellar appearance. At higher magnifications in larger instruments, it takes on a somewhat elongated appearance.

The central star is listed as ~mag 11.6 (visual) so it should also be a fairly easy catch in a decent sized scope.

Some users are reported the appearance of extensions on the edges.

Use high magnifications, the DSS photo and eyepiece finder charts to confirm your catch. If you have an OIII or UHC filter, you might try a process known as "blinking" in

order to help you find the planetary. Since a planetary emits a higher concentration of OIII light, moving the filter in and out of the optical path can help identify it. Most all of the other objects in the FOV will dim except for the planetary. Hold the filter between your eye and the eyepiece and move it in and out. This takes some practice, and I find I don't always have success with this method. On occasion however, it has come in quite handy.




## Additional Reading:

**The AURIGA Detector - an Italian / European Project aimed at detecting gravitational waves.**
http://www.auriga.lnl.infn.it/

**The first images from an optical aperture synthesis array: mapping of Capella with COAST at two epochs**
http://www.mrao.cam.ac.uk/telescopes/coast/coast.first.html

**Ellis Myers - Constellation Chronicles hosted by the Eastbay Astronomical Society**
http://www.eastbayastro.org/index/chronicles.htm

**Eric Honeycut's - ICplanetaries.com**
http://www.icplanetaries.com/

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*I'd love to hear of your experiences under the night sky - please feel free to e-mail me or send any observing reports to: tomt@cloudynights.com*
*Please indicate if I can cite your observations in future columns.*

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