

Objects of the Month — Clusters at the Foot of a Queen, Cassiopeia



TARGETS FOR EVERY LEVEL OF OBSERVER

Dec—2012

Finder chart

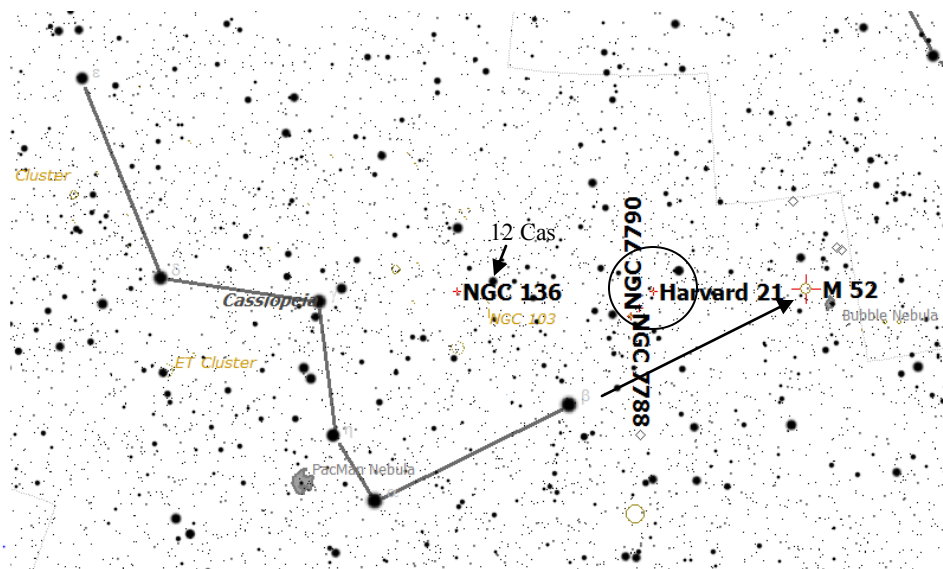
This month our focus is on Cassiopeia, the Greek mythological queen. Cassiopeia was Cepheus' queen who boasted of her own beauty to the point where she tried to dispose of her own daughter, Andromeda because her beauty rivaled that of the queen's. Cassiopeia has been immortalized by giving her a place in the heavens beside Cepheus and Andromeda.

Cassiopeia is one of the sky's most recognizable constellations. It consists of six primary stars that form the outline of a queen sitting on her throne. Today it is more common to refer to the constellation as 'The big W.'

Cassiopeia is centered in the plane of our Milky Way galaxy and so it is an extremely rich star field. Recognizing open star clusters can be a bit of a challenge in such dense star fields.

We are going to concentrate our search for clusters at the foot of the celestial queen. One of the things you will notice this month are the different catalogues that we are drawing upon, the Messier, the NGC, the Harvard and the King. I want to give a brief word about each of these catalogues.

The Messier Catalogue was compiled by the French astronomer, Charles Messier and his assistant Pierre Mechain from their observations while hunting for comets. There were originally 45 objects on the list which grew to 103 when Messier published it in the eighteenth century. The list was expanded to 110 when twentieth century astronomers discovered objects in Messier's



and Mechain's notes. This list of 110 objects is the most widely used catalogues for amateurs today. Completion of observing these objects is the mark of a serious amateur.

The NGC catalogue is officially known as the New General Catalogue of Nebula and Clusters. It was compiled by John Dreyer in 1888 and contains the objects from William and John Herschel's catalogues. There are 7,840 objects in the NGC catalogue including nebula, clusters and galaxies. The objects are number in order of right ascension, meaning in the order that they rise above the horizon. Right Ascension is described in hours, minutes and seconds. The line of zero RA passes through Cassiopeia. Next to the Messier Catalogue, the NGC catalogue is one of the most widely used by amateurs.

The Harvard catalogue is less well known. It was compiled in 1930 by Harlow

Shapely. It contains only 21 objects, all of which are open clusters. Shapely was one of Edwin Hubble's main detractors, arguing that the galaxies were actually nebula inside our own Milky Way galaxy.

The King catalogue was compiled in 1949 by Harvard professor Ivan R. King. The list contains 27 open clusters.

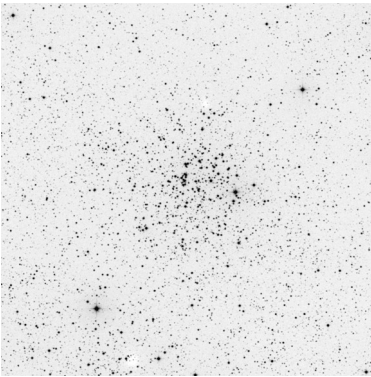
Open clusters are a class of objects that are generally easy to find and observe. They are the closest of deep sky objects and as such are also the brightest. The size of these objects can vary from a degree or more, i.e M44, down to a couple of arc minutes like King 12 in our list this month.

Clear skies;

rw

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M 52



M52 was discovered in 1774 by Charles Messier. The cluster has a relative brightness of mag 8.2 and a diameter of about 15 arc minutes.

The age of the cluster is about 35 million years, making this cluster an extremely young cluster, especially

when you consider the age of our own sun to be about 4.5 billion years.

There are 193 probable members of this cluster.

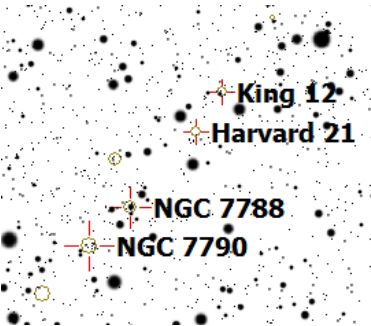
The cluster is easy to find by extending a line from Alpha through Beta Cassiopeia, about the same distance.

Here is my eyepiece impression with my 8" SCT:

Sirius Plössl 40mm, 51x

OC, 30 - 40 members, well concentrated, stars similar in brightness, one bright orange star.

NGC 7790, 7788, Harvard 21 and King 12



This set of objects is one of the reasons that makes Cassiopeia a favorite of mine. Within in an area of 60 arc minutes there are four open clusters, NGC 7790, 7788, Harvard 21 and King 12. These form a line running S-E to N-W just to the north of Beta Cas.

NGC 7790 is an open cluster with a visual brightness of 5.2 and a diameter of 5 arc minutes. It was discovered by William Herschel in 1788.

Here is my eyepiece impression with my 8" SCT:

Smart Astronomy 12.5, 163x

OC dominated by 4 brighter stars, and 10 fainter stars, mottled effect apparent with averted vision.

Just to the North-west is NGC 7788. This is somewhat fainter open cluster at 9.4 mag, but similar in size to 7790 at 4 arc minutes. It was discovered by John Herschel in 1829.

Here is my impression with my 8" SCT:

Sirius Plössl 40mm, 51x

Small OC, very few stars, 3 visible with a hint of fainter ones. 1' diameter.

Again moving to the north west we come to Harvard 21. This is a 9th mag object with a diameter of 3 arc minutes.

Here is my impression with my 8" SCT:

Sirius Plössl 40mm, 51x

OC, 4 visible stars in a knot,

not well concentrated.

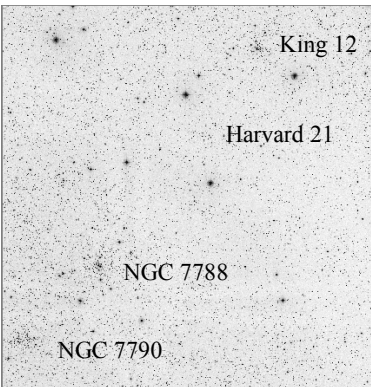
Lastly we come to King 12. This is a 10 million year old cluster with a diameter on 3 arc minutes. There is not a published brightness that I could find on this cluster, however, it was visible from a dark site in my 8 inch SCT.

Sirius Plössl 40mm, 51x

OC, 3 stars visible, several more visible with averted vision.

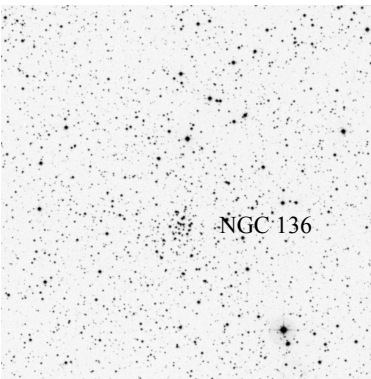
Smart Astronomy 12.5, 163x

3 brighter stars, 2 of 3 close doubles, another 6 or 8 fainter stars visible.



60 arc minutes

NGC 136



Finally we come to NGC 136, discovered by William Herschel in 1788. This is a 199 million year old cluster that measures 1.2 arc minutes across.

This cluster is a little tougher to find. Use the 5.8th mag star 12-Cas as a guide star. NGC 136 lies about 1 de-

gree to the South-west.

Here is my eyepiece impression with my 10" Dob:

Smart Astronomy 12.5, 100x

Very tiny OCL in Cass. Only 2 -3 stars visible with direct vision, averted vision reveals 2 or 3 more. A fainter cloud surrounds the cluster suggest-

ing more fainter members. Cluster is only 2 arc minutes across.