Mythical Monoceros - Unicorn of the Skies

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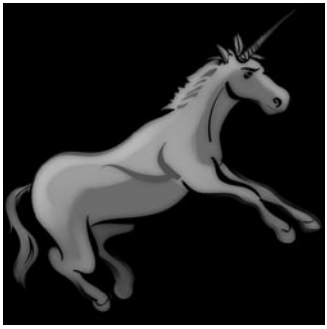


Image source: Stellarium.org

On the north-eastern edge of the well-known Orion constellation the Monoceros unicorn gallops on in the direction of Gemini the Twins. The constellation lacks stars brighter than magnitude 4, but is blessed with beautiful nebulae and star clusters. Various myths surround the reflection of the image, one of which is the misinterpretation of what we know today as the rhinoceros.

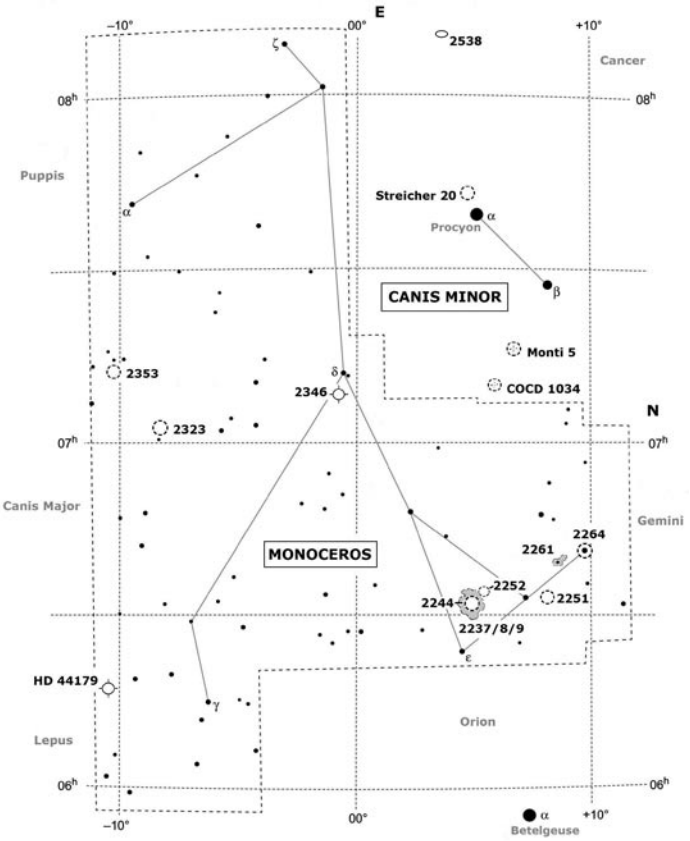
Sometimes Monoceros loses out as far as interest is concerned to its famous neighbours. Nonetheless, Monoceros is not insignificant, housing, as it does, few exceptional and interesting, frequently described objects.

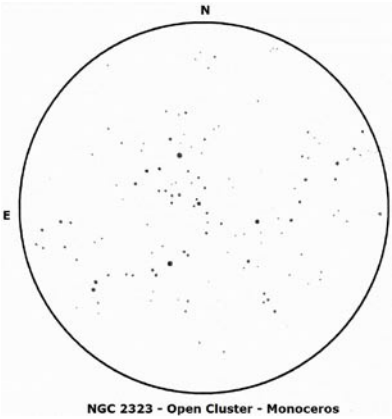
Only a few arc minutes north of the boundary with Canis Major, approximately 3 000 light-years away, hangs the star cluster **NGC 2353** in the southern part of an area of soft nebulosity. What a lovely cluster of approximately two dozen varied-magnitude stars in a slightly elongated north-east to south-west elongated oval. A dark lane appears to divide the group into two parts: the northern section, with slightly brighter stars arranged in an arrow-like shape that brings to mind the typical traffic arrow indicating which way to go. Several fainter stars comprise the southern part; accompany a magnitude 5.9 shiny white colour star. A pair of magnitude 10 stars indicating the heart of the group.

However, the star cluster conceals a slight hitch. The star field is quite busy and the controversy involves the now listed NGC 2353 (H V111-34), discovered by William Herschel. William's son, John Herschel, never found NGC 2353 (H V111-34), which he most certainly would have in the same star field sweep. However, he did document NGC 2351 (h437), with a one degree error from his father William. There is strong evidence that the two objects NGC 2353 and NGC 2351 as described are one and the same.

One of Monoceros' famous objects is the open cluster **NGC 2323**, perhaps better known as Messier 50, which can be found easily with only the aid of binoculars. Located 3.5 degrees west of the

above-mentioned NGC 2353, it is a large, bright cluster which could easily contain 80 stars or more (see sketch and photo). The grouping, in an elongated north-west to south-east direction, might resemble, perhaps, a bird in flight – or a housefly, to use the words of Sue French! The middle part is quite compressed, with several chains and stars in pairs that represent the indicated look. Two prominent strings spread out to the





M50; the better known name for NGC 2323 or the Heart Cluster. Photo: D Liebneberg.

south-east and north-west, creating the impression of a bird's wings.

In the far west of the constellation the hind leg of the horse figure may be seen as represented by the star beta Monocerotis, also called Herschel's Wonder Star. What a lovely trio of blue-white suns in a tight, slender formation which leaves an impression to remember. The three stars, classed with a spectrum of B2, vary in magnitude: 4.7, 5.2 and 6.1 respectively.

An object widely discussed among amateurs is the **Red Rectangle Nebula**, about 4 degrees south and in a triangle with beta and gamma Monocerotis. The nebula adjoining the star HD 44179 is situated just one degree north of the boundary with Canis Major. The Red Rectangle ranks right up as one of the most difficult objects ever to discern – barely 30" north-east of the indicated star. What is fascinating is all the nicknames given to many of the objects in the starry skies that leaves one with thoughts of nostalgia and amazement, but oh dear, to try and discern that object as a faint little rectangle is nearly impossible. The Red Rectangle Nebula, so called because of its red color and unique rectangular shape, is a proto planetary nebula just known as only HD 44179. The nebula was discovered in 1973 during a rocket flight associated with the AFCRL Infrared Sky Survey called Hi Star. The binary system at the center of the nebula was first discovered by Robert Grant Aitken in 1915 (Wikipedia).

Perhaps the best known object and most certainly a very beautiful object is situated two degrees east of epsilon Monocerotis in the far western field of the constellation. **NGC 2237/8/9** in combination with others is known as the Rosette Nebula. It is a large, low surface brightness nebula covered with faint star dust, unfortunately be appreciated to its full only with slightly larger power than binoculars. This lovely ring of segmented areas is assigned with different NGC numbers, but it is advisable to use a nebular filter to bring out the various parts in full. The brightest part of the nebula is situated mostly in the northern part. The eastern inner wall of the nebula is much wider and fainter, with the cluster **NGC 2252** situated on its edge slightly north-east. This grouping is one of those rare types which in starlight tell a story without words. The irregular shape can be described as a fish-hook decoration in a north-south direction with the hook on the northern edge. But the crown of this beautiful, hazy rosette is the star cluster **NGC 2244**, which is enveloped within the superfine nebulosity. The tight grouping contains perhaps a few dozen very hot O-type stars of various magnitudes. The object as a whole is about 90 light-years distant and more than 25 light-years across. It is an outstanding, rich area in combination with flimsy pieces of nebulosity, faint stars dotted in and around

to make this one of the most special objects to have been discovered. The name Rosette had achieved currency only in the early 1950s, but was fairly well known by 1955.

A further 3.5 degree north-east is **NGC 2251**, another story-quality cluster not to be missed. If you ever see a star formation resembling an eye, complete with eyelashes, and then this would be it! A knot of brighter stars represents the focus eye, occupying the spot inside a half-moon eyeball shape looking north-east. Star points flick out towards the north-west, just like a nice and curly eyelash. Small open clusters are a joy to observe and most of the time a starry story can be seen in their numerous shapes.

Another degree further north-east is the well-known and very special variable star R Monocerotis accompanies a fan-shaped nebula. Known as Hubble's Variable Nebula, or **NGC 2261**, it displays a reflecting comet-like nebula with R Monocerotis at the southern tip. Although faint and not so easy to discern, the western side of the nebula seems slightly brighter. It was named after the young Edwin Hubble in 1916, which discovered that the nebulosity around the young hot star R Monocerotis varied in brightness and shape. It is a classic reflection nebula with powerful stellar winds that produce the comet-like nebula we see today. Hubble's Variable Nebula was the first object photographed by the 200-inch Hale Telescope at Mt Palomar in 1949. I am totally convinced that a number of "backyard amateurs" excitedly believed they had discovered a new comet, only to be disappointed when they found out what it really was.

Less than 2 degrees from the boundary with Gemini, is another splendid object in an outstanding field of view nicknamed the Christmas Tree Cluster. To find it, locate 15-Monocerotis in the far northern part of the constellation and you'll be right in the midst of the triangle-shaped Christmas Tree Cluster, known as **NGC 2264**. This bright, large cluster, which spans more or less half a degree in a north-south direction, is easily seen through binoculars. Careful observation through a telescope, however, reveals about 20 stars embedded in flimsy nebulosity, which tapers down with brighter stars to the south, ending with the famous Cone Nebula, an obscure dust cloud which is extremely difficult to see. Higher magnification reveals a mist of Christmas decorations shining like glittering faint stars covering the tree in frosted nebulosity. NGC 2264 is more or less 20 light-years in diameter and approximately 3 000 light-years away.

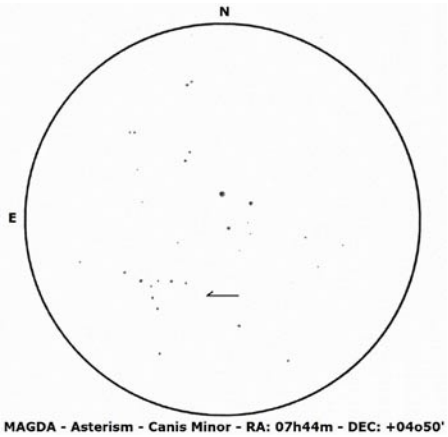
The magnitude 4 delta Monocerotis can perhaps be seen as the rounding of the horse's back in the overall shape of the constellation. The planetary nebula **NGC 2346** is only 40' west from the

star. The object is not that difficult to observe, despite being somewhat small in size. Averted vision causes a blinking effect, which is a good way to glimpse detail like the central star and the light-grey colour of the nebula. Higher magnification will reveal a hazy edge with a more obvious confirmation of the planetary nebula as a whole.

Seeing that the constellation Canis Minor is just further north-east and next door to Monoceros as seen against the star field, a few objects can be added to the mix.

Although Canis Minor is the smaller of Orion the Hunter's two dogs it boasts the brilliant beacon star Procyon, more or less in the middle area of the constellation and the eye of the dog figure. Its name means "Before the Dog", because it rises shortly before the Dog Star, Sirius, in the constellation Canis Major. The star alpha Canis Minoris (Procyon) is seen without any difficulty as the bright yellow-coloured magnitude 0.4 star. There is also a companion star, Procyon B, a magnitude 12.9 white dwarf first seen in 1896 with the 36-inch refractor at Lick Observatory. It had a separation of 5.2" and position angle of 26. Procyon B is about 10 magnitudes fainter than the primary, which makes it almost impossible to spot in the blinding glare of the primary star Procyon.

Barely a degree east from this famous star I found an asterism now known as



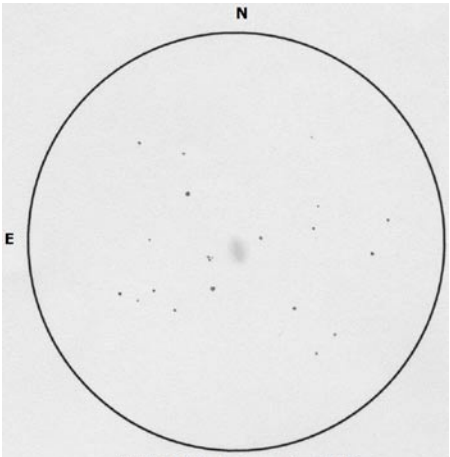
MAGDA - Asterism - Canis Minor - RA: 07h44m - DEC: +04o50'

Streicher 20, comprising a handful of magnitude 10 stars in a well-formed flat Y shape (see sketch). The open end of the letter Y faces north-east together with three prominently brighter stars that form a wide triangle in the same field of view.

On the western edge of this small constellation the so-called "Triple Trapezium" cluster can be found, and each of these three stars had two companion stars as well. Kharchenko, Piskunov and Roeser place most of the stars within the radius of their open cluster, **COCD 1034** = ASCC 34 = [KPR2005] 34 and list the position of the magnitude 8 star HD 54779 as the cluster's centre (Webb Society journal 144). The small faint triple trapezium is situated 6' towards the south-east of star HD 54779 relative towards the middle area of the cluster. However I found a relatively bright six pack, also known as **Monti 5** two degrees east of KPR 2005 1023 that

seems to copy this trapezium quite well which is very strange and a rare coincidence. Monti 5 is a tight asterism of five stars quite bright and outstanding with the magnitude 8 star HD 56667 on the south-west corner. It is well worth the effort to search out this grouping.

To discuss several objects in an article is the norm, but they are not all favourably and easily observed. Galaxies are known to be rather faint most of the time. One such in Canis Minor is the galaxy **NGC 2538**, situated in the far eastern part of the constellation on the boundary with Hydra constellation. The object shows itself only in truly dark skies as a soft washed-out glow slightly elongated in north-east to south-west direction with a faint triple star just east (see sketch).



NGC 2538 - Galaxy - Canis Minor

Make the good little puppy dog your friend, dress warmly and get on the back of the starry Unicorn, stop on your way and drink from the ponds of delights it has to offer. ☆

Object	Type	RA (J2000.0)	Dec	Mag.	Size
Red Rectangle HD 44179	Reflecting Nebula	06^h19^m8	-10°38	9	30”
NGC 2237/8/9	Emission Nebula	06 32 3	+05 03	4.8	80’
NGC 2244	Open Cluster	06 32 3	+04 51	4.8	24’
NGC 2251	Open Cluster	06 34 7	+08 23	7.3	10’
NGC 2252	Open Cluster	06 35 0	+05 23	7.7	20’
NGC 2261	Reflecting Neb	06 39 2	+08 44	3.5	3’x2.5’
NGC 2264	Emission Nebula/ Open Cluster	06 41 1	+09 53	3.9	30’
NGC 2323	Open Cluster	07 03 2	-08 20	5.9	16’
NGC 2346	Planetary Nebula	07 09 2	-00 48	11.6	55”
COCD 1034	Multiple Star group	07 10 5	+06 04	8	36’
NGC 2353	Open Cluster	07 14 6	-10 18	7.1	18’
Monti 5	Asterism	07 18 4	+06 18	8.5	3.3’
Streicher 20	Asterism	07 43 7	+04 50	9	
NGC 2538	Galaxy	08 11 4	+03 37	12.2	1.6’x1.2’