Illustrated Report of Night Sky Observations from Casa Pau, La Galera

Introduction

I am an amateur astronomer with a special interest in faint “deep sky objects” such as star clusters, nebulae and galaxies. My experience includes viewing all 110 deep sky objects in the famous Messier catalogue. I used an 8 inch Newtonian reflecting telescope on a manual mount to view the faintest and most elusive nebulae and galaxies from the countryside south of Manchester.

My family and I stayed at the Casa Pau residence near the village of La Galera, 6 miles from the small town of Amposta in north east Spain for almost 2 weeks spanning the end of July and the beginning of August 2014.

La Galera lies 8 miles inland in a long, wide, sparsely populated valley with the small town of Amposta hidden by a low range of hills. The nearest large towns are Castellon de la Plana in the south west and Tarragona in the north east, both about 60 miles away. A mountain range rises a few miles to the west. I was eager to observe the night sky at Casa Pau with its low level of light pollution.

The beginning of our holiday coincided with a new moon giving a perfect opportunity, weather permitting, of observing the fainter features of the night sky: deep sky objects and the Milky Way – the great swathe of distant stars in our own galaxy – which is at its most prominent in the summer months as it spans the night sky from the south to the north passing overhead.

I was also looking forward to the complete views of the conspicuous summer constellations of Sagittarius and Scorpius that would be afforded by a more southerly location (Casa Pau is 13.5 degrees further south than Manchester).

My only viewing instrument during the holiday was a pair of Helios Naturesport Plus 10x50 Wide Angle binoculars. All observations recorded in this report were made through these binoculars unless stated as being naked eye.

Observing was from the field to the right of Casa Pau (which is part of the grounds) which was least affected by the tripping of security lights. Views south, west and east were unaffected by lighting.

Overview

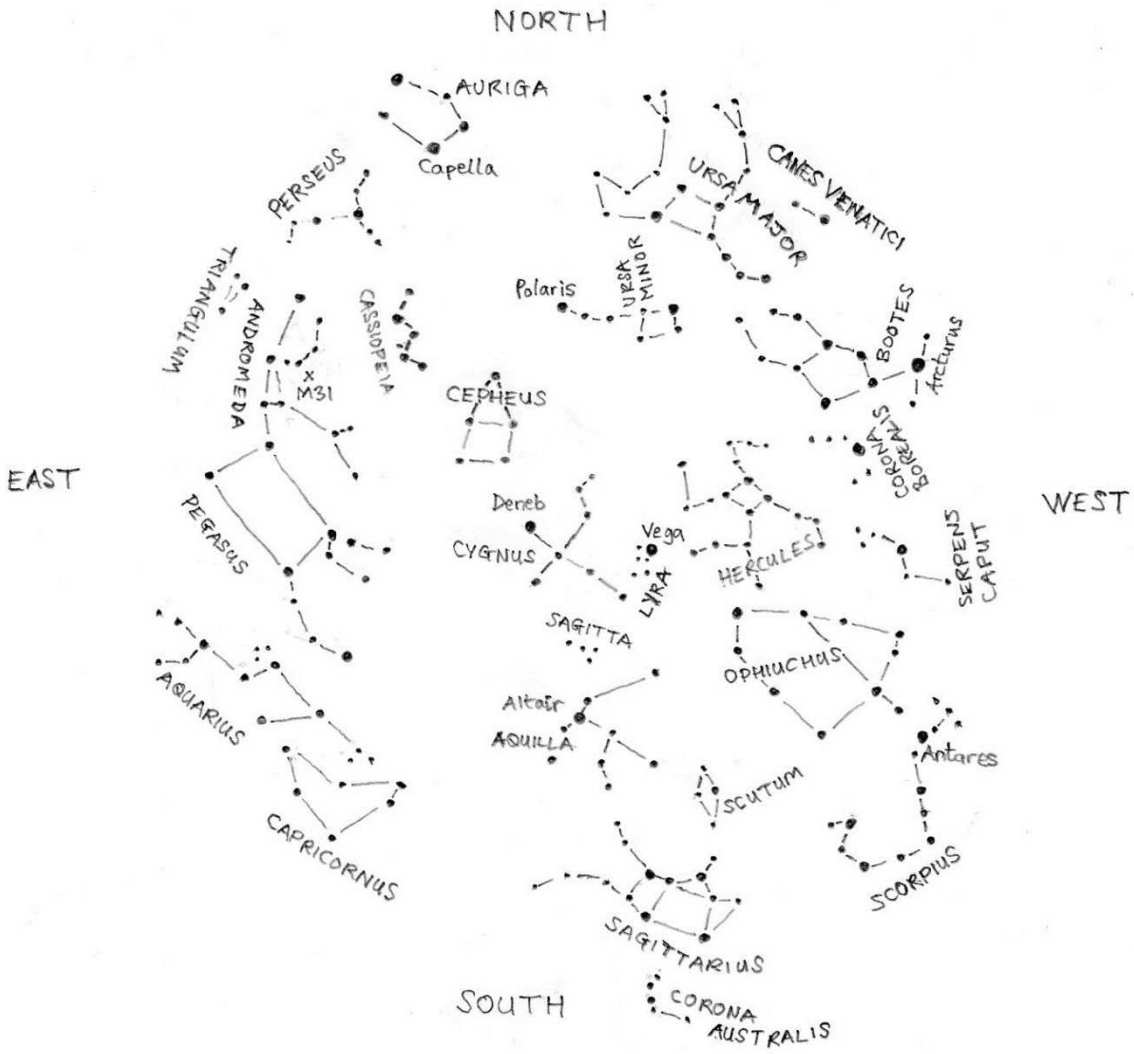
This report starts with a sketched map of the night sky depicting all the constellations that were visible during my viewing sessions.

The next three sections contain details of the observations I made, and attempted to make, on the nights of Monday 28th July, Tuesday 29th July and Thursday 31st July. These sections include sketches showing the approximate location of each deep sky object I searched for, relative to the most conveniently placed constellation.

A summary of the highlights of my viewing sessions is presented. The report finishes with a table giving details of all deep sky objects I observed at Casa Pau.

Map of the Night Sky

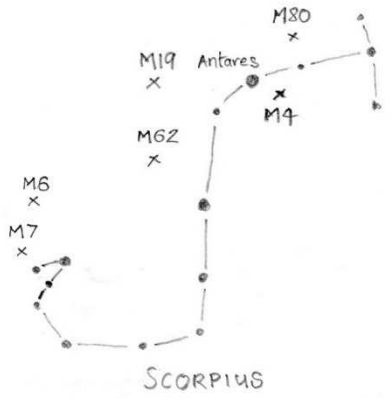
The following sketched map of the night sky shows the constellations that were most prominent during the periods in which I made my observations. The sketch includes all constellations referred to in the report. The orientation of the constellations is correct for midnight on the 31st July. For 10:30pm, when darkness had just fallen, the view should be rotated about 20 degrees clockwise. For 2:30pm, when my latest viewing session finished, the view should be rotated about 40 degrees anticlockwise. At first sight, west and east appear to be the wrong way round. This is because, being a map of the sky it showed be viewed by looking upwards, rather than downwards as per a conventional map of the land.



Night of Monday 28th July

Despite feeling tired at the end of the first day of our holiday I couldn't resist venturing outside at 10:30pm to see the night sky. I was greeted by clear dark heavens with the brightest Milky Way I had seen for years, spanning the sky. The velvety night was studded with a myriad of stars and in the south, the summer constellations of Sagittarius and Scorpius were sitting prominently well above the horizon.

I trained my binoculars near the head of Scorpius and soon found the faint globular star cluster M80. A few degrees to the south I found the bigger and brighter globular star cluster M4. Both of these star clusters thwarted my efforts back home even when using my 8 inch telescope. I then looked a few degrees west and saw another faint globular star cluster M19. Next was my biggest challenge of the night, the globular star cluster M62, being particularly elusive due to its southerly latitude of -30 degrees and its remoteness from bright star patterns. After several attempts I succeeded in observing its very faint smudge. My final goals in Scorpius were the open star clusters M6 and M7. Despite their southerly latitude (M7 is the lowest Messier object at -35 degrees) these large bright objects were easy to find and were a very rewarding sight.



Night of Tuesday 29th July

A very clear daytime sky held great promise for the night. In fact the night sky surpassed my expectations with a stupendous Milky Way glowing down from right across the heavens. Initially when I stepped outdoors and looked south towards Sagittarius my heart dropped as it seemed as though clouds had risen above the horizon. I was taken aback when I realised that I was looking at a particularly dense portion of the Milky Way.

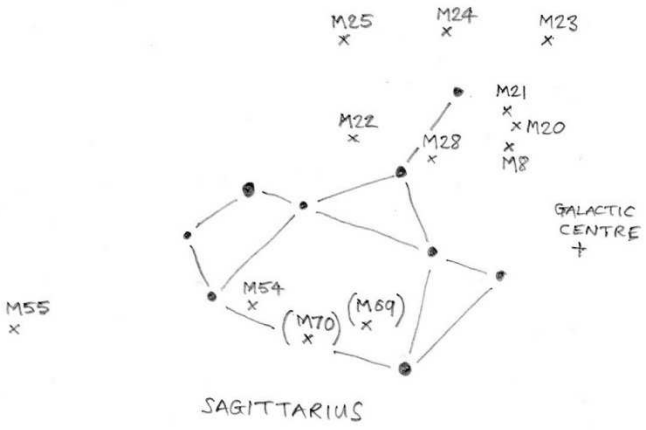
Scorpius was easily visible in its entirety with the naked eye with its long tail falling towards the horizon before straightening at latitude of -40 degrees (almost halfway to the South Celestial Pole) and then curling back up. The large, spectacular open star cluster M7 that I had seen the previous night in binoculars was a naked eye object.

My goals were the many star clusters and nebulae in Sagittarius plus similar objects in as many other constellations as I could manage before succumbing to the need for sleep.

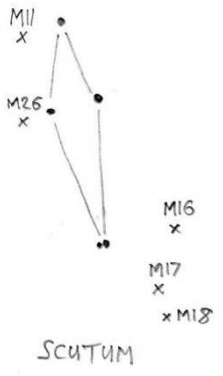
My first success was the faint globular star cluster M54 near the base of the handle of the prominent "teapot" star pattern in Sagittarius. M54 is another object that I have never succeeded in seeing

back home even with a telescope, due to its proximity to the horizon. My efforts to make out the fainter nearby globular star clusters of M69 and M70 went unrewarded. I had seen these objects the previous year in Switzerland but only when using more powerful 15 x 70 binoculars. The large faint globular star cluster M55 was relatively easy to find despite being some distance from the "teapot" and appeared as a large, faint, fuzzy disc.

I then headed for the skies above the "teapot" that are rich with clusters and nebulae. I had a clear view of the large open star cluster M25. A few degrees to the east lay the large, bright star cloud M24. Both of these objects were visible with the naked eye. Another few degrees to the east I found the open star cluster M23. About 5 degrees south the Lagoon Nebular and Cluster, M8, which looks like the steam rising from the "teapot" was just a naked eye object. A few degrees north the Trifid Nebular and Cluster, M20, and the open star cluster M21, were bright objects in binoculars. I then headed down to just above the lid of the "teapot" to see the large disc of the globular star cluster M22 and the smaller, fainter globular star cluster M28 nearby.

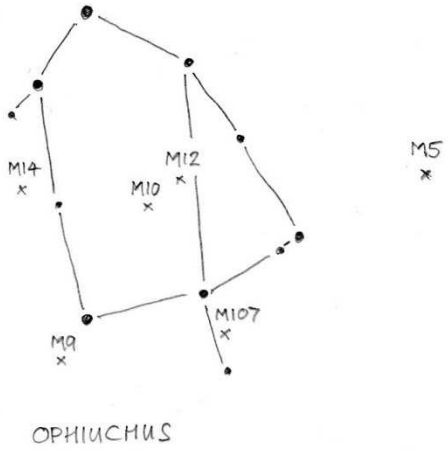


Two more bright nebulae awaited me at the foot of the constellation Scutum that lies about 10 degrees north of Sagittarius: the Eagle Nebula and cluster, M16, and the Omega Nebula and cluster, M17. The nearby open cluster M18 was clearly visible. Half way up Scutum on its western side the faint open cluster M26 was visible as small, dim patch. A few degrees north, the Wild Duck Cluster M11 showed up brightly.

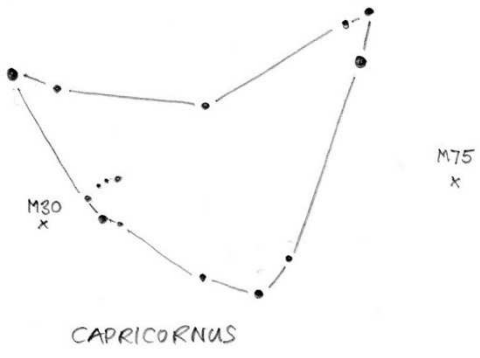


Lying beneath Sagittarius is the small and relatively obscure constellation of Corona Australis. I used binoculars to locate its main stars for the first time.

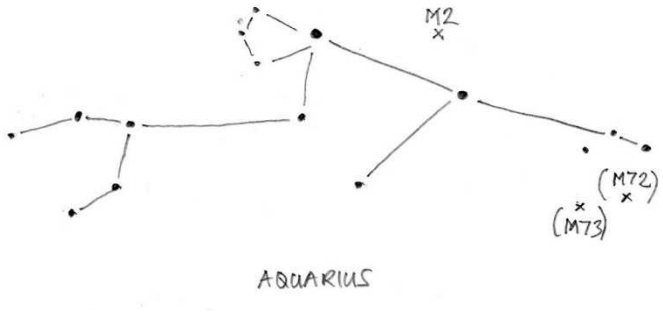
I turned my attention next to the extensive constellation of Ophiuchus, which was surprisingly high in the sky. It took a while to locate the relatively faint globular star cluster M14 in the west of the constellation as a result of following wrong star patterns a few times. The large and bright globular star cluster M5 to the east of Ophiuchus was a rewarding sight. The sibling globular star clusters M10 and M12 were easy to find in the centre of the constellation. The two remaining globular star clusters presented more of a challenge due to their faintness and southerly positions – in fact I have only ever seen these with a telescope from Manchester. Undeterred, I tracked down M9 quite quickly. M107 was a more difficult proposition but I believe it revealed itself.



Due west and also surprisingly high in the sky lay the constellation Capricornus. Just to its west the relatively faint globular star cluster M30 was clearly visible. To the east of the constellation is M75, a very faint globular cluster, which I had seen for the first time from Manchester not long before, using a telescope. I navigated my binoculars to the immediate vicinity of M75 and I could make out a faint haze – I was excited, but unsure, about this possible sighting. Subsequent viewing of M75 from Manchester using a telescope revealed a star in the close vicinity of M75, and though this star was dim, it was still more conspicuous than M75. The mystery was solved – I had almost mistaken a faint star for M75 at Casa Pau.

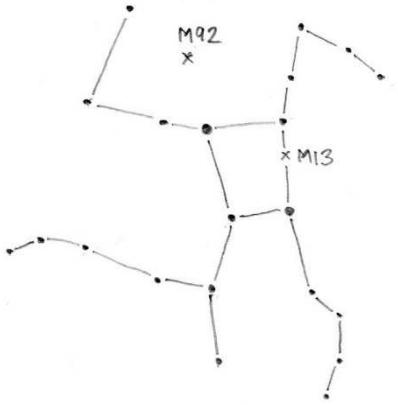


The constellation of Aquarius lay above Capricornus and its main globular star cluster M2 was easily visible. I studied carefully the precise locations of the small, faint clusters M72 and M73 at the south east end of the constellation and, buoyed by the clarity of the sky, I fancied I could see them. I realised though, that due to their dimness, viewing with 10 x 50 binoculars was just not feasible.



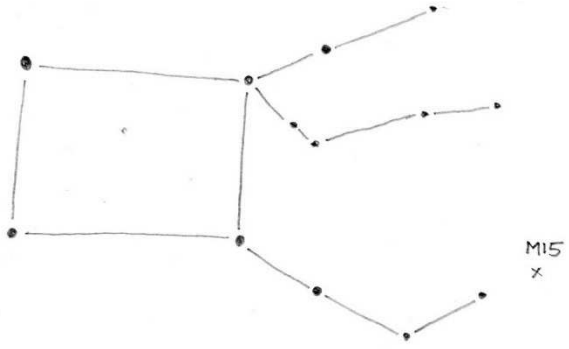
AQUARIUS

Higher in the sky to the east was the familiar constellation of Hercules and its two bright globular clusters, M92 and M13, the latter being one of the most spectacular globular clusters in the sky. These objects were most rewarding viewing.



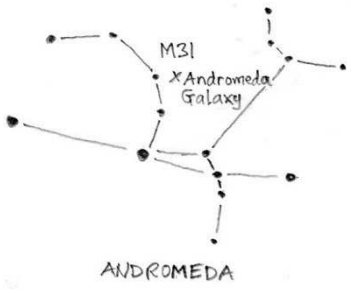
HERCULES

To the west lay the constellation of Pegasus with its great square. The compact but bright globular cluster M15 showed up brightly to its south east.

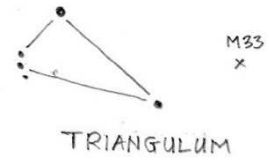


PEGASUS

Heading northwest from the great square lay the Andromeda Galaxy, M31, one of our neighbouring spiral galaxies, and the largest in our local group of galaxies. This was a marvellous extended object in binoculars and was just about a naked eye object.



Below Andromeda and only about 15 degrees above the horizon in the north east lay the constellation of Triangulum containing our other neighbouring spiral galaxy M33. It was a surprise to find this low lying object visible in binoculars, appearing as a faint glow.



At 2:20pm, after 4 hours "star gazing", I was ready for bed!

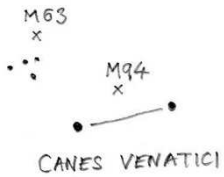
Night of Thursday 31st July

Clear skies during the day transformed into another clear, dark night sky with another striking Milky Way, though not quite as breathtaking as a couple of nights ago.

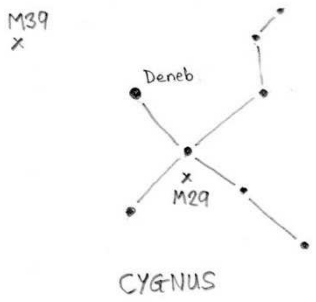
I wanted to make the most of the fine views of those two marvellous summer constellations Sagittarius and Scorpius while I could. After taking in their splendour with the naked eye I repeated my previous observations of each of their Messier objects. I spent a few minutes practising navigating to M62 in Scorpius as this had given me some trouble previously.

Despite spending so long examining the heavens a couple of days ago there were still plenty more deep sky objects to view.

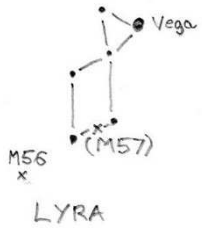
Sitting under Ursa Major in the north west lay the small constellation of Canes Venatici containing two faint Messier galaxies. I was very surprised to be able to see both objects, Sunflower Galaxy M63 and the spiral galaxy M94 without too much effort.



I then headed for the prominent elongated cross of Cygnus high in the sky which lay in the path of the Milky Way. I had a fine view of the open cluster M39 lying close to the centre of the cross. About 10 degrees west passed the bright star Deneb was the rather coarse open cluster M29.



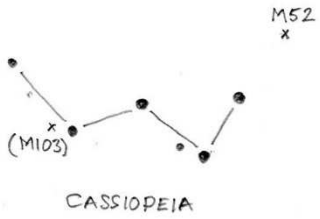
About 40 degrees east was the brightest star in the sky, Vega, in the constellation of Lyra. I scrutinised the location where I knew the Ring Nebula, M57, lay but, at magnitude of 8.8 it was too faint to be seen. About 5 degrees west, heading towards the colourful double star Albeiro in Cygnus I focussed on the location of the globular star cluster M56. This time I could just make out a small faint smudge.



To the south east lay the great constellation of Ophiuchus that I had previously examined. Again I wished to capitalise on this marvellous viewing opportunity so I re-visited all the deep sky objects I had previously seen.

I then headed west to the bright star Altair in the constellation Aquila then a few degrees north to the small arrow shaped constellation of Sagitta. M71 is a faint globular star cluster near the centre of the constellation which appeared as a small, faint fuzz. Another few degrees north, the Dumbbell Nebula, M27, in the constellation of Vulpeca, appeared as a distinct smudge.

Further west and heading to the horizon was the distinctive W-shaped constellation of Cassiopeia. About 6 degrees further along its “right hand side” lay the spectacle of M52, an open star cluster. Just to the left of the star at the left hand side base of the constellation is a small, unremarkable open star cluster M103 that I forgot to look at!



To finish off I revisited the faint globular star cluster M30, in Capricornus, relatively high in the north east sky.

Summary

The clarity and splendour of the night sky at Casa Pau exceeded my expectations.

Star clusters stood out and glowed in my binoculars as I had not seen them before from England.

I was taken aback by the ability of my binoculars to pick out faint objects that back home could only been seen through a telescope; the two galaxies in Canes Venatici, M63 and M94, and the faint globular clusters in Ophiuchus, M9 and M107, were particularly good catches.

The sky was impressively clear even close to the horizon as was born out by the fact that I could make out the soft glow of our neighbouring galaxy M33 in Triangulum despite being at an altitude of only 15 degrees.

For a couple of nights the sky was particularly clear and dark yielding an absolutely glorious view of the Milky Way that could be seen sweeping the sky from horizon to horizon. The Milky Way was positively glowing overhead and surprisingly dense and bright in the south above the constellation of Sagittarius.

The sight of Scorpius with its long tail sweeping down towards the horizon, almost halfway to the South Celestial Pole, then curling back up and finishing by the naked eye star cluster of M7 was an image to remember.

Table of Messier objects viewed

The following table lists all 42 Messier objects that I viewed from Casa Pau. They are grouped by the constellation from which it was easiest to navigate, which was usually, but not always, the constellation containing the object. The type of each object is given along with the object's magnitude which is a measure of brightness – the smaller the magnitude, the brighter the object.

Constellation	Object	Type	Magnitude
Scorpius	M4	Globular Star Cluster	5.9
	M80	Globular Star Cluster	7.3
	M19	Globular Star Cluster	6.7
	M62	Globular Star Cluster	6.7
	M6	Open Star Cluster	4.5 variable
	M7	Open Star Cluster	3.3
Sagittarius	M54	Globular Star Cluster	7.6
	M55	Globular Star Cluster	6.4
	M25	Open Star Cluster	4.6
	M24	Star Cloud	N/A
	M23	Open Star Cluster	5.5
	M8	Nebula and Open Star Cluster	3.6
	M20	Nebula and Open Star Cluster	N/A
	M21	Open Star Cluster	5.9
	M22	Globular Star Cluster	5.1
	M28	Globular Star Cluster	6.8
Scutum	M11	Open Star Cluster	5.8
	M26	Open Star Cluster	8.0
	M16	Nebula and Open Star Cluster	6.0
	M17	Nebula and Open Star Cluster	6.0
	M18	Open Star Cluster	6.9
Ophiuchus	M14	Globular Star Cluster	7.6
	M5	Globular Star Cluster	5.7
	M10	Globular Star Cluster	6.6
	M12	Globular Star Cluster	6.8
	M9	Globular Star Cluster	7.6
	M107	Globular Star Cluster	8.1
Capricornus	M30	Globular Star Cluster	7.3
Aquarius	M2	Globular Star Cluster	6.4
Hercules	M13	Globular Star Cluster	5.7
	M92	Globular Star Cluster	6.4
Pegasus	M15	Globular Star Cluster	6.0
Andromeda	M31	Galaxy	4.4
Triangulum	M33	Galaxy	6.3
Canes Venatici	M63	Galaxy	8.6
	M94	Galaxy	8.2
Cygnus	M29	Open Star Cluster	6.6
	M39	Open Star Cluster	4.6
Lyra	M56	Globular Star Cluster	8.3
Sagitta	M71	Globular Star Cluster	8.3
Vulpeca	M27	Nebula	7.3
Cassiopeia	M52	Open Star Cluster	6.9