Binocular Universe:

Tales of the Unicorn

February 2010

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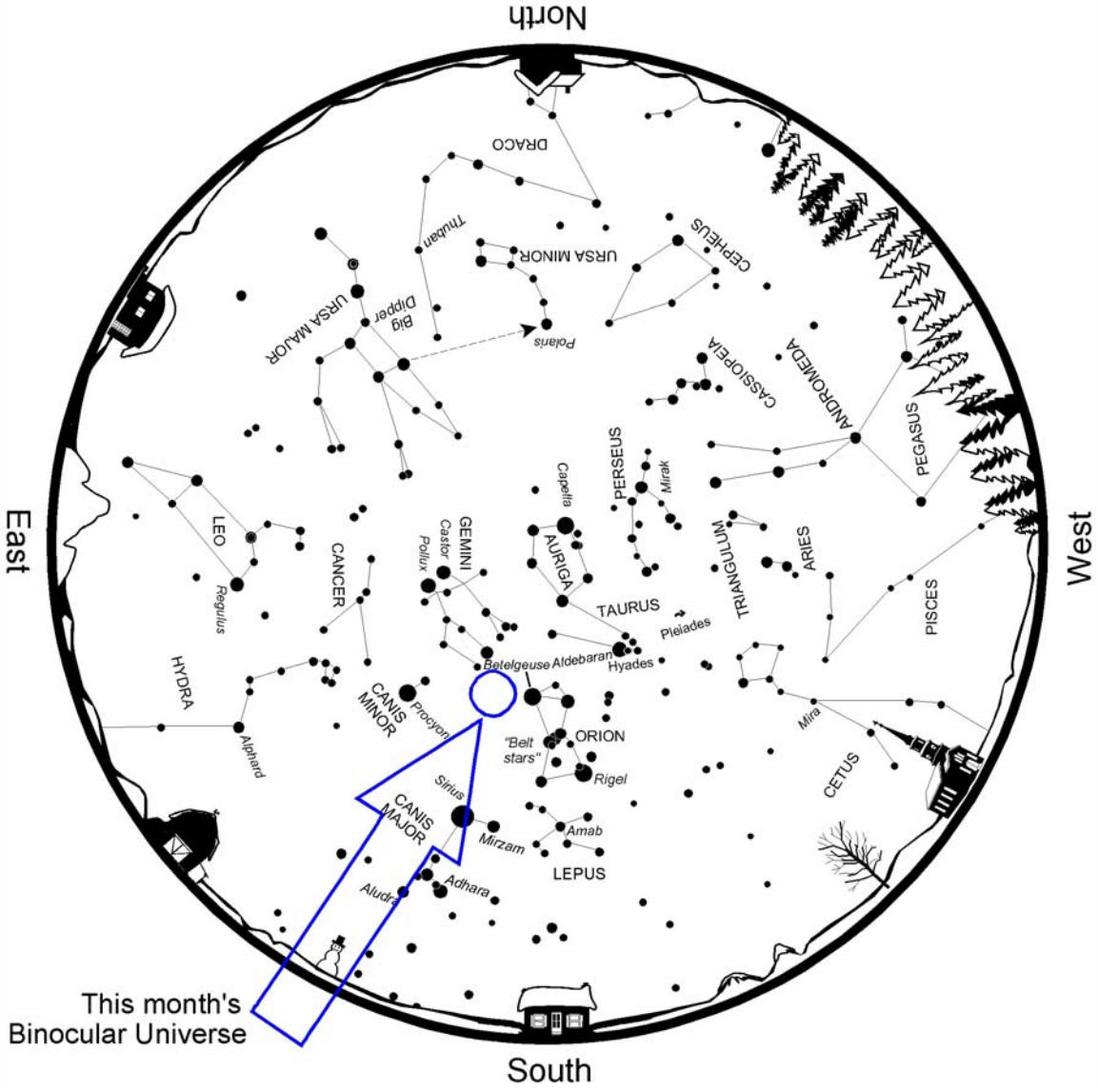
This month, we call on the northwestern corner of the constellation Monoceros, the Unicorn. This seemingly empty region, bordered by brilliant Betelgeuse to the west and Procyon to the east, may not hold much to attract the eye, but things really begin to pop through binoculars.



Winter star map from Star Watch

Let's kick off our visit with the open star cluster **NGC 2244**, one of the brightest non-Messier clusters in the sky. Aim your binoculars about a third of the way from Betelgeuse to Procyon and you'll see half a dozen 6th- and 7th-magnitude cluster stars set in a tiny rectangular pattern. In all, 40 stars spanning 24 arc-minutes make up NGC 2244, with the brightest being the 6th-magnitude yellowish star 12 Monocerotis. The cluster collectively lies about 4,500 light years away and spans 50 light years.

If you're lucky enough to be viewing from a dark site, you may notice a faint haze surrounding NGC 2244. That's the dim glow of the Rosette Nebula, a huge wreath-shaped cloud engulfing the star cluster. Many deep-sky catalogs list the Rosette as **NGC 2237**, but John Dreyer actually assigned it four separate entries in his New General Catalog: NGC 2237, 2238, 2239, and 2246. These refer to the four brightest portions of this huge cloud.

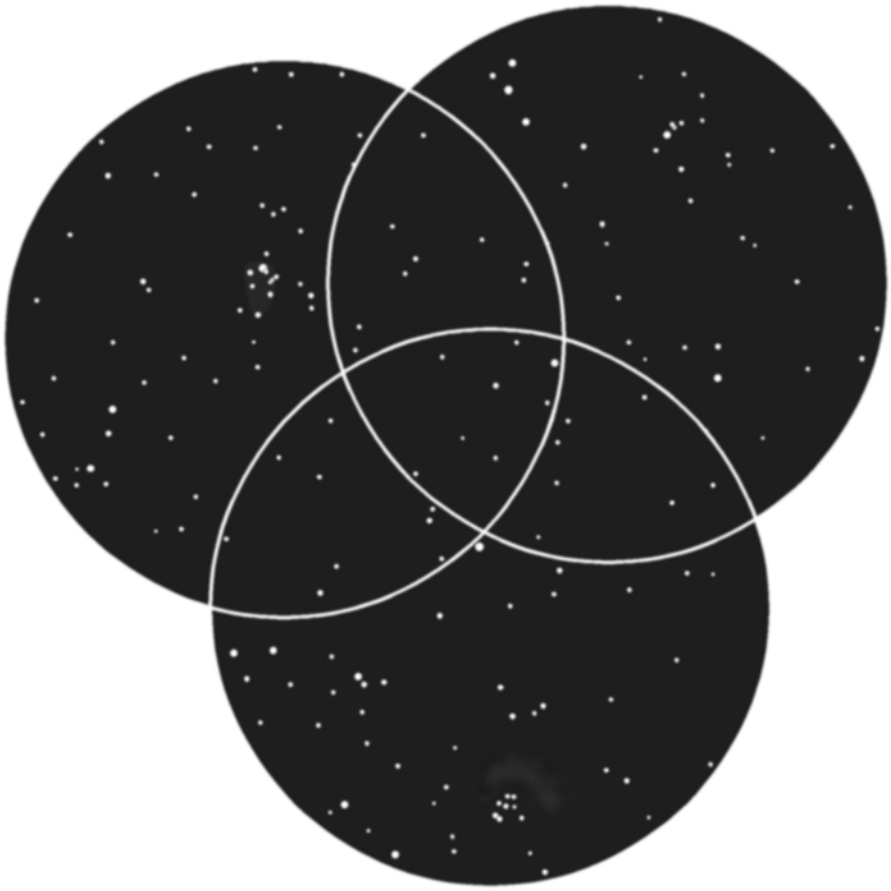
The Rosette measures more than a degree in diameter and is a real challenge to spot through most binoculars. I've been able to glimpse the northwestern segment faintly through 10x50 binoculars, but my best view came on one especially clear winter night a few years ago through my 16x70s. The nebula looked like a ghostly, broken ring completely surrounding the cluster.

NGC 2244 is a very young open cluster, with its stars probably no more than four million years old. All were formed from material in the surrounding Rosette Nebula, which is believed to contain enough mass to produce the equivalent of 11,000 solar-mass stars! This makes it one of the most massive diffuse nebulae known. The energy from the cluster's young stars is ionizing the surrounding hydrogen gas clouds, causing them to glow the distinctive red color seen in photos. Streams of hot particles have opened a hole in the nebula's center to give it the wreath-like appearance.

As you can see on the finder chart here, there are several members of the Collinder catalog of open clusters scattered around the Rosette. The most obvious is Collinder 106 (Cr 106), although it is not at all obvious through binoculars. Still, searching for them can still be fun to try. How many can you identify?

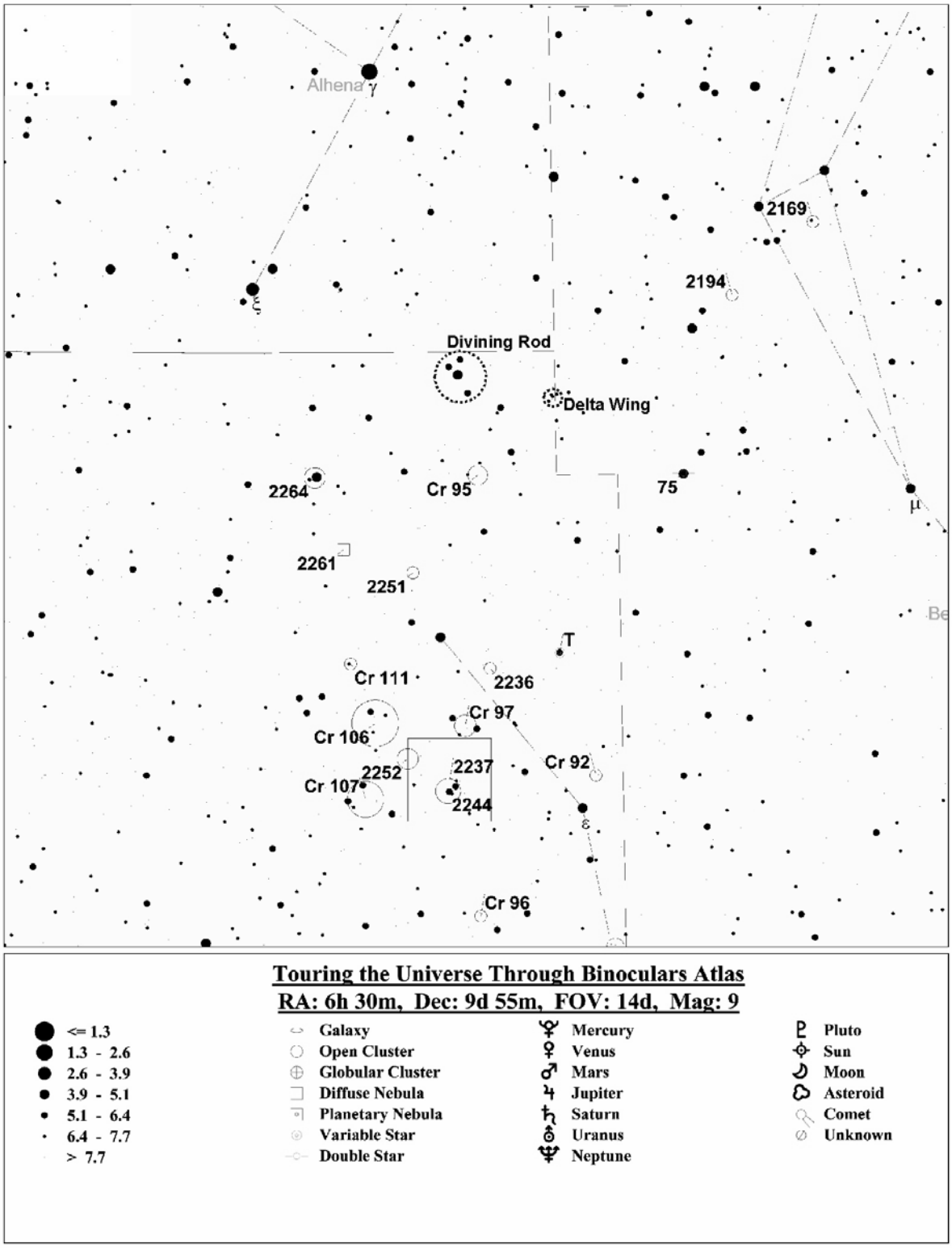
The Rosette complex is just a small part of a larger region of nebulosity wafting across the region. Another tuft of interstellar cloudiness lies 5½° north of NGC 2244 and surrounds 5th-magnitude 15 Monocerotis. That star marks the trunk of the Christmas Tree Cluster, **NGC 2264**.

NGC 2264 is also one of the brightest non-Messier open clusters in the winter sky. In fact, it's bright enough that even 6x30 binoculars will show it as a bright patch immersed in the gentle clouds of the winter Milky Way that flow through the region.



NGC 2244 is seen to the lower right and NGC 2264 to the upper left in this montage sketch by the author through 10x50 binoculars. The "Divining Rod" and "Delta Wing" are shown in the upper right.

But what makes NGC 2264 so interesting to study is not how bright its stars appear, but rather, the overall pattern they seem to create. My 16x70s show the cluster's brightest dozen stars in a wedge-shaped pattern. By playing a sort of celestial connect-the-dots with the cluster's stars, some imagine the stars forming an arrowhead, while others picture the sail from a ship. To me, however, the best description came from the 20th-century amateur astronomer and deep-sky observer Leland Copeland, who said the cluster's stars reminded him of lights on a Christmas tree. That visual image stuck, and so today, we know NGC 2264 as the Christmas Tree Cluster. The ten brightest stars form the tree's main profile. The cluster's brightest star, 15 Monocerotis, marks the tree's trunk while the remaining nine are lights on imaginary branches.



Finder chart for this month's Binocular Universe from TUBA,
www.philharrington.net/tuba.htm

Although you might know it from just looking, there is a huge complex of emission, reflection, and dark nebulosity surrounding NGC 2264. Known as Sharpless 2-273, this nebula covers nearly 4 square degrees of sky and is centered about 1½° west of 15 Mon. Included in that mix is the Cone Nebula, a notoriously difficult object through even the largest backyard scopes under the best conditions, lies just to the south of the cluster.

While scanning around the region last winter with my 10x50 binoculars, I bumped into an eye-catching little asterism of four 5th- and 6th-magnitude stars centered at Right Ascension 06h 31.6m, Declination +11° 30.5', some 3° northwest of the Christmas Tree. Checking some references, including Archinal's and Hynes's Star Clusters (Willmann-Bell), I could find no mention of this Y-shaped pattern of apparently unrelated suns. Still, its shape, reminiscent of an old-fashioned **Divining Rod** used to find underground water, was obvious.

Another uncharted asterism is in the same field of view, just 1½° to the west at RA 06h 26.5m, Dec. +11° 11.7'. Once again, a check of sources shows no mention of this as a star cluster, or even a previously noted pattern. In my 10x50 and 12x50 binoculars, it looks like a **Delta-Wing Jet** shrouded in fog. Rechecking the area with my 16x70s helped to clear away the mist and reveal some fainter points of starlight.

Not including the two asterisms mentioned above, here are objects within this month's binocular universe:

Object	Con	Type	R.A. (2000)	Dec	Mag	Size/Sep/ Period	Notes
Cr 91	Mon	OC	6 21.7	+2 22	6.4p	17'	*TUB page 178*
Cr 92	Mon	OC	6 22.9	+5 7	8.6p	11'	
T	Mon	Vr	6 25.2	+7 5	5.6-6.6	27.021 days	Cepheid
2236	Mon	OC	6 29.7	+6 50	8.5	7'	
Cr 96	Mon	OC	6 30.3	+2 52	7.3	8'	*TUB page 178*
Cr 95	Mon	OC	6 30.5	+9 56		19'	
Cr 97	Mon	OC	6 31.3	+5 55	5.4	21'	*TUB page 178* Includes variable star AX M
2237	Mon	DN	6 32.3	+5 3		80'x60'	*TUB page 179-180* Rosette Nebula
2244	Mon	OC	6 32.4	+4 52	4.8	24'	*TUB page 179-180* Rosette Nebula cluster
2251	Mon	OC	6 34.7	+8 22	7.3	10'	
2252	Mon	OC	6 35	+5 23	8.op	20'	
Cr 106	Mon	OC	6 37.1	+5 57	4.6p	45'	*TUB page 180*
Cr 107	Mon	OC	6 37.7	+4 44	5.1	35'	*TUB page 180*
Cr 111	Mon	OC	6 38.7	+6 54	7.0p	3'	
2261	Mon	DN	6 39.2	+8 44	10.0	2'	*TUB page 180* Hubble's Variable Nebula
2264	Mon	OC	6 41.1	+9 53	3.9	20'	*TUB page 180* Christmas Tree cluster
2169	Ori	OC	6 8.4	+13 57	5.9	7'	*TUB page 194*
2194	Ori	OC	6 13.8	+12 48	8.5	10'	
75	Ori	**	6 17.1	+9 57	5.4,8.5	117"	159°;4890

Have a question, a comment, or a suggestion for future columns? I'd love to hear it. Drop me a line at phil@philharrington.net.

Next month, spring is in the air -- almost. Until we meet again under the stars, remember that two eyes are better than one.

About the Author:

Phil Harrington is the author of Touring the Universe through Binoculars. Visit his web site at www.philharrington.net