Binocular Universe: The 13th Sign

August 2012

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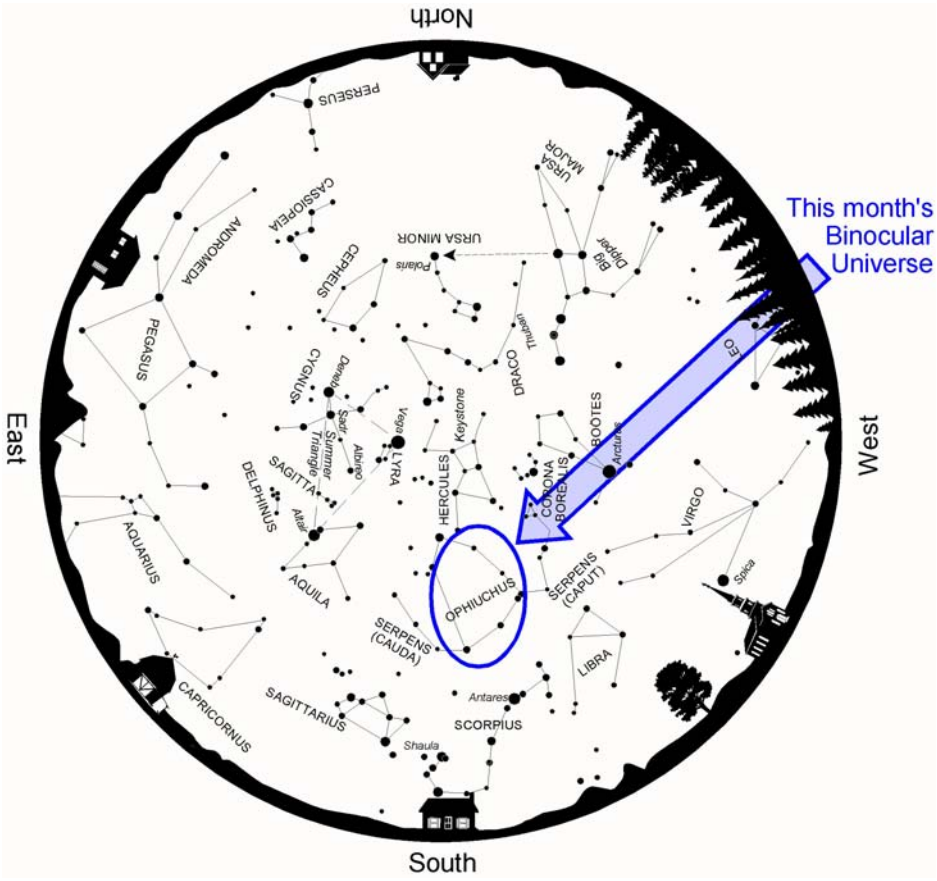
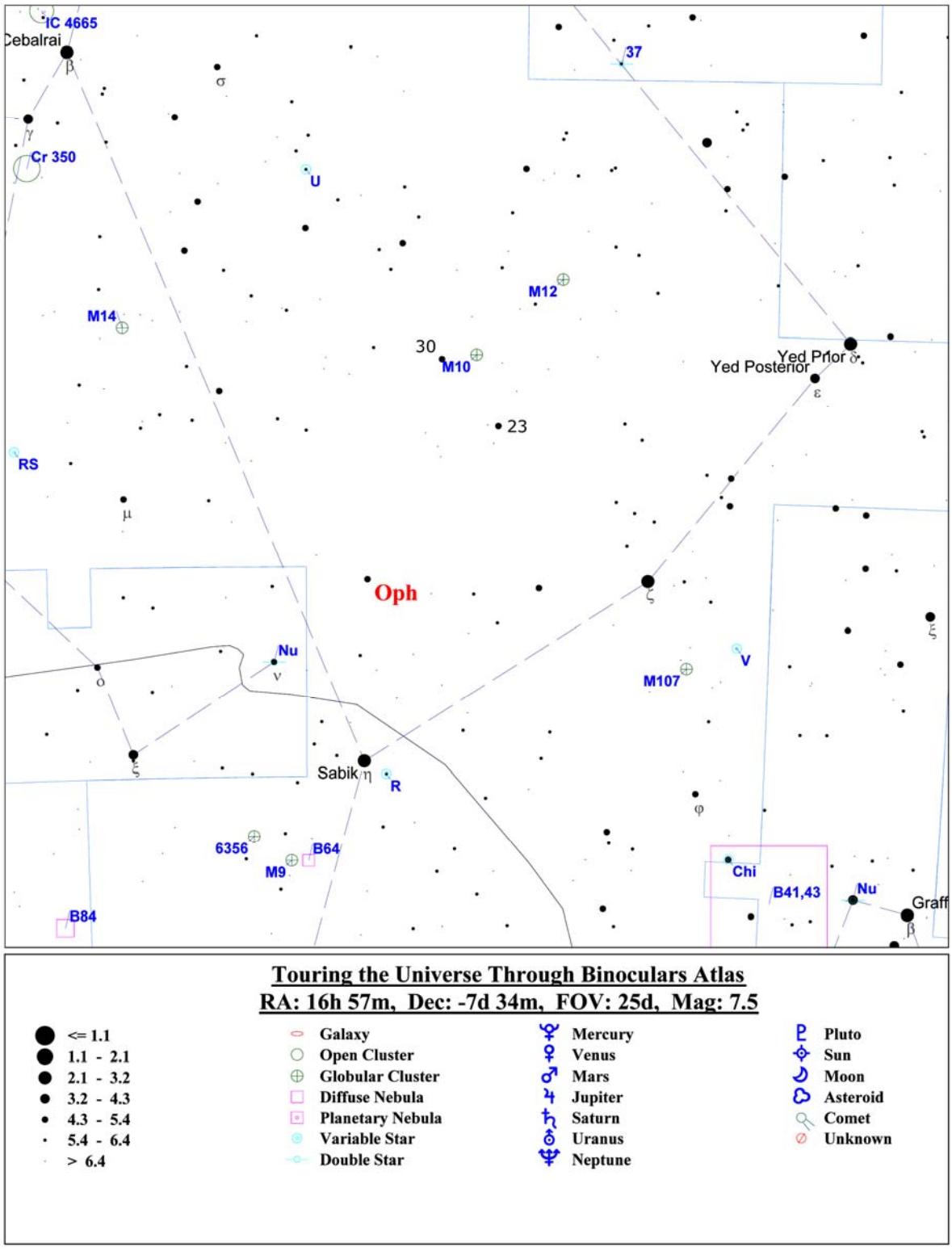
Even though its girth dwarfs many more famous constellations, Ophiuchus the Serpent-Bearer is usually not a headline grabber. Except about a year-and-a-half ago, when on a slow news day, reports across the country heralded it as the 13th sign of the zodiac. Most folk had never heard this news, but we astronomers have long been aware that the traditional dates of each of the 12 "signs" of the zodiac are off by days, even weeks in some cases. That's because Earth's 26,000-year precessional wobble has caused things to shift, in some cases quite noticeably, since astrology was first conceived. Further, precession has caused a 13th constellation, Ophiuchus, to play host to the Sun from December 1 to December 18. So, if your birthday is in that span, you're an Ophiuchan!



Above: Summer star map adapted from the author's book, Star Watch.



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

While your average citizen may not know much about Ophiuchus, deep-sky observers are aware that this huge constellation, named for the mythological doctor and healer Asclepius, holds 20 NGC globular clusters within its borders, more than any other single constellation in the sky. This month, we are going to nab the five that also belong to the Messier catalog.

We begin with a pair of beauties smack-dab in the middle of the good doctor's hexagonal frame. **M10** and **M12** easily fit into the same field of view and create a different sort of "double cluster" through our binoculars. Charles Messier was on a roll when he discovered M10 on May 29, 1764. He had just found M9 the night before, and was about to add M12 the following evening. (He also added M11 to his list at this time, although it had been previously discovered.)

With most binoculars, M10 looks like a relatively dim patch of grayish light set in a nice star field. To find it, first find the stars that outline the southern boundary of Ophiuchus's figure. The western end is marked by two stars -- Yed Prior (Delta Ophiuchi) and Yed Posterior (Epsilon Ophiuchi) -- while the eastern end is bounded by Sabik (Eta Ophiuchi). The constellation's perimeter kinks a little to the south, to the star Zeta Ophiuchi. The line turns onto a diamond if you imagine a second line from the two Yeds to Sabik by way of the faint star 23 Ophiuchi. M10 lies 2 degrees north of 23 Oph and 1 degree west of another faint star, 30 Ophiuchi.

Left: M10 (left) and M12 as portrayed through the author's 10x50 binoculars. North is up.

M12 should also be visible in the same field of view. Study them both for similarities and differences. You might find that M12 appears just a bit smaller than M10, but otherwise, they are twins. In reality, M12, at 17,600 light years, is a little farther away from us than M10, which is believed to lie at 13,400 light years. Although it appears slightly smaller than M10, in reality M12 is a little larger in diameter.

Return now to Zeta Ophiuchi, and with your binoculars, look for a tiny right triangle of faint suns just to the south. See it? Good, because the southward pointing side of the triangle is aimed directly at our next globular cluster, **M107**. M107 can be spotted with some effort through 7x and 10x binoculars as a faint, round glow. Even though it is one of the sky's loosest globulars, there is no hope of resolving any of its dim suns through binoculars. Indeed, spotting any individual stars will probably require a 10-inch aperture.

Like other late entries in the Messier catalog, M107 was discovered after Messier's final catalog was published. In 1947, astronomer Helen Hogg suggested that it should be added to the list, along with M105 and M106, since their discovery overlapped the catalog's publication.

Next, let's stop by **M9**. Aim toward Sabik through your binoculars and then look for the star Xi Ophiuchi. Xi should also be visible faintly to the unaided eye from darker suburban and rural yards. Just east of the halfway point between Sabik and Xi lies a right triangle of dim stars, with M9 along the hypotenuse. Coming in at 8th magnitude, this globular is small, but reasonably easy to sight as a small, bright sphere sporting a brighter core.

Lastly, we have **M14**, the easternmost of the Ophiuchus globulars visible in binoculars. Planted in an empty area of eastern Ophiuchus, many amateurs seem to pass over M14 in favor of more easily found targets. What a shame, since M14 is a bright object that stands out well even under the veil of light pollution. Of course, locating it can be another matter owing to its position far from any handy starhopping candidates. I find it by aiming about halfway between Sabik and Cebalrai (Beta Ophiuchi) at the upper left (northeast) shoulder of Ophiuchus. Drop about one field to the south, to a faint parallelogram of stars. M14 is a little farther to the north of the halfway point, near a close-set pair of 7th- and 9th-magnitude field stars.

Like Messier's telescope, binoculars reveal M14 as a nebulous smudge without stars. As with so many other globular clusters, M14 was first resolved into separate points of light by William Herschel. The brightest of M14's stars are no greater than 15th magnitude.

Here are some other targets to try your luck with inside this month's Binocular Universe.

Object	Con	Type	R.A. (2000)	Dec	Mag	Size/Sep/ Period	Notes
37	Her	**	16 40.6	+4 13	5.8,7.0	70"	230°(1932);10149
V	Oph	Vr	16 26.7	-12 26	7.3-11.6	297.99 days	Long Period Variable
Chi	Oph	Vr	16 27	-18 27	4.2-5.0		Irregular Gamma Cas type
M107	Oph	GC	16 32.5	-13 3	8.1	10'	*TUB page 187* NGC 6171
M12	Oph	GC	16 47.2	-1 57	6.6	15'	*TUB page 187* NGC 6218
M10	Oph	GC	16 57.1	-4 6	6.6	15'	*TUB page 187* NGC 6254
R	Oph	Vr	17 7.8	-16 6	7.0-13.8	302.57 days	Long Period Variable
U	Oph	Vr	17 16.5	+1 13	5.9-6.6	1.677 days	Eclipsing Binary
B64	Oph	Dk	17 17.2	-18 32		20'	*TUB page 188*
M9	Oph	GC	17 19.2	-18 31	7.9	9'	*TUB page 188* NGC 6333
6356	Oph	GC	17 23.6	-17 49	8.4	7'	
M14	Oph	GC	17 37.6	-3 15	7.6	12'	*TUB page 189* NGC 6402
IC 4665	Oph	OC	17 46.3	+5 43	4.2	41'	*TUB page 189*
Cr 350	Oph	OC	17 48.1	+1 18	6.1p	45'	*TUB page 189*
RS	Oph	Vr	17 50.2	-6 43	5.3-12.3p		Recurrent nova (1967)
B84	Sgr	Dk	17 46.5	-20 11		30'x15'	1.6° NE 58 Oph
Nu	Sco	**	16 12	-19 28	4.3,6.4	41"	337°(1955);9951
B41,43	Sco	Dk	16 22	-19 40		200'x80'	
Nu	Ser	**	17 20.8	-12 51	4.3,8.3	46"	28°(1959);10481

That's it for now. Until we meet here again next month, remember our motto: when it comes to stargazing, two eyes are better than one!

About the Author:

Phil Harrington is the author of Cosmic Challenge and 8 other astronomy books. Learn about them all on his web site, www.philharrington.net.