Binocular Universe: Balancing Act

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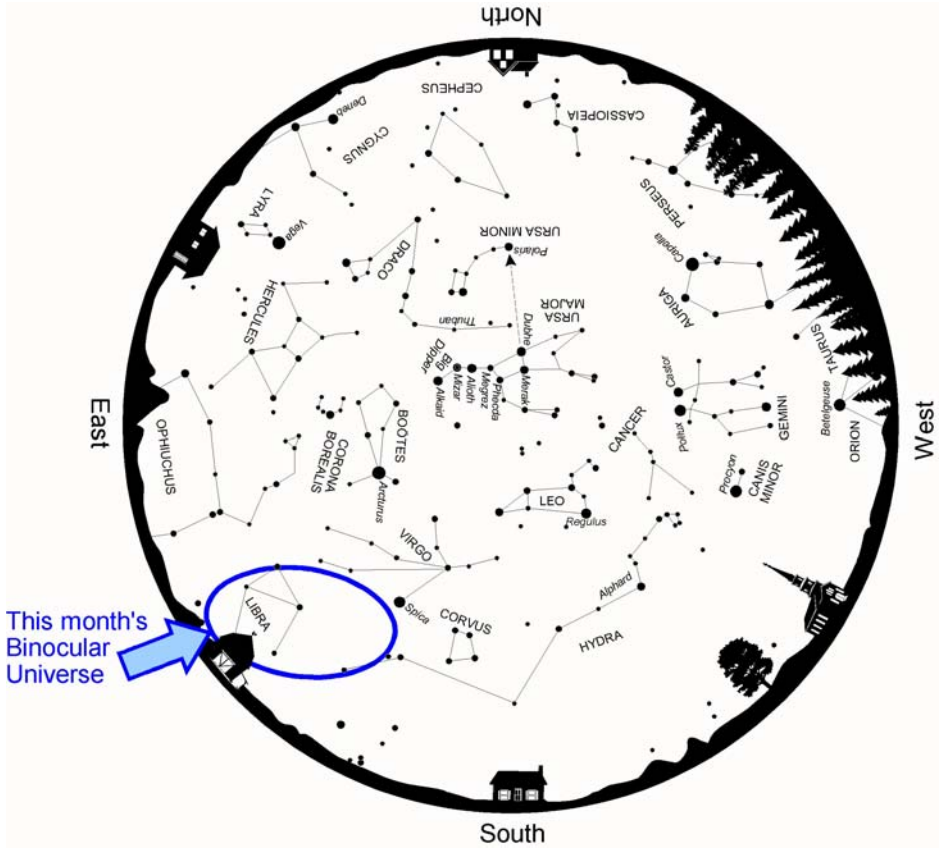
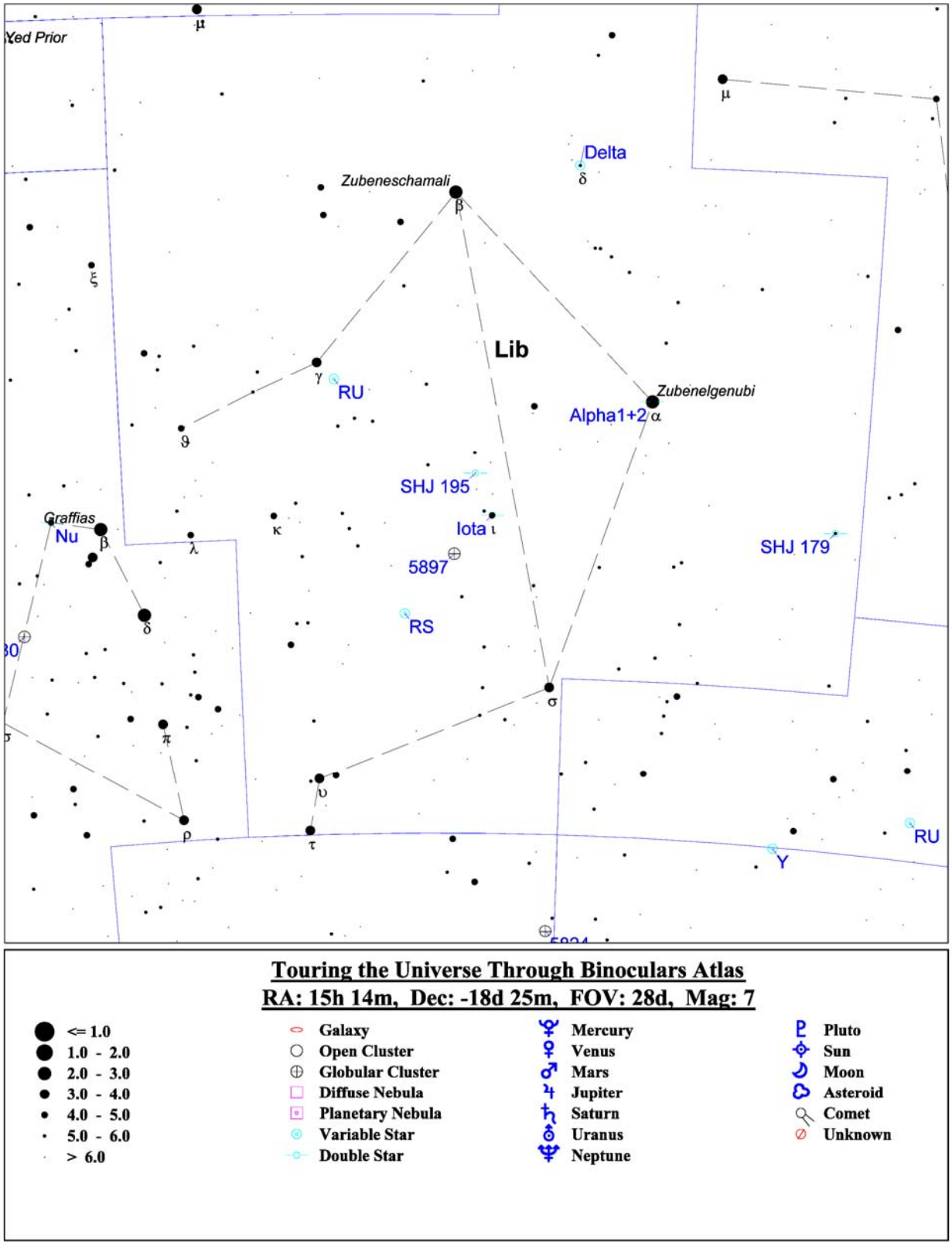
In between the bright stars Spica in Virgo and Antares in Scorpius lies a sort of celestial no-man's-land of faint suns that often go unnoticed under the veil of light pollution. Many of those dim points belong to the zodiacal constellation of Libra, the balance scales. Under moderately dark skies, we can just make out the diamond pattern of 3rd and 4th magnitude stars that form the main figure of Libra.

Libra is a relatively recent addition to the signs of the Zodiac. In his Almagest of A.D. 150, Ptolemy assigned its stars to the claws of Scorpius. This origin is still evident today by the names of Libra's two brightest stars Zubenelgenubi and Zubeneschamali, which are Arabic for "north claw" and "south claw", respectively. It wasn't until the reign of Julius Caesar that a separate identity was given to the stars of Libra.



Above: Spring star map from Star Watch by Phil Harrington.



Above: Finder chart for this month's Binocular Universe.

Chart adapted from Touring the Universe through Binoculars Atlas (TUBA), www.philharrington.net/tuba.htm

Alpha^{1+2} Librae, the aforementioned Zubenelgenubi, is a widely separated binary star that may be easily resolved with only the slightest optical aid. Alpha^{1}, also a spectroscopic binary, shines at apparent magnitude 2.8, while Alpha^{2} is magnitude 5.2. Nearly 4' of arc separate them in our sky. Studies indicate that they form a true physical pair, and that they lie about 65 light years away. If this indeed is the case, then Alpha^{1+2} Librae are about 48,000 Astronomical Units from each other.

Lying halfway between the Zubens, **Iota (ι) Librae** proves to be a challenging binary for binocular observers. The test comes not so much from the stars' closeness but because of their brightness disparity. Here, the 5th-magnitude primary is paired with an elusive 9th-magnitude companion lying a minute-of-arc to its southeast. Since their positions were first measured in 1782 by William Herschel, both stars have demonstrated a common proper motion, indicating that they form a true physical pair. In addition, Iota Librae A was detected to be a nearly equal magnitude close binary as recently as 1940. At its discovery, the 6th-magnitude "B" star was separated from the "A" star by only 0.2" of arc. Iota Librae C, as the 9th-magnitude component is now known, is also a close equal-magnitude double, with about 2" of arc between the stars.

Globular cluster **NGC 5897** is another great test for 70-mm and larger binoculars, and impossible in anything smaller. Look for its ill-defined smudge of grayish light about 1.5 degrees to the southeast of Iota Librae. An arc of three 8th-magnitude stars are just to its northwest, and serve as a nice landmark. Owing to the cluster's unusually weak concentration of stars, it appears only about half as large as the photographically recorded diameter of 13' implies.

Our text target, an asterism, lies mostly within neighboring Hydra. It comes to us from the IFAS Binocular Handbook (John Flannery, South Dublin Astronomical Society) where it is listed as **Hydra 54**. Found 4 degrees west of Sigma (ς) Librae, the pattern reminds Flannery of “a miniature version of the constellation Scorpius.” Can you see it? I can. As he notes, the stars 54 through 58 Hydrae form the body, while a small curve of faint stars ending at 59 Hydrae are the “stinger.” The stars 4 and 12 Librae mark the end of the claws.

These stars all share a footnote in astronomical history, as they were once part of a now-defunct constellation known as **Noctua, the Night Owl**. The illustration here, showing the owl, is melded from two plates in the 1822 Celestial Atlas by Alexander Jamieson. Jamieson created the Owl for his star atlas.

Those same stars had been previously described as **Turdus Solitarius**, the Solitaire Bird, by the French astronomer Pierre-Charles Le Monnier in 1776. Such were the times before the International Astronomical Union standardized the 88 constellations we know today, when an inventive author could form and publish their own constellations from the faint stars scattered between more recognized figures.

Let's hop eastward into the *real* Scorpius, where we find **Nu (ν) Scorpii**, a nice multiple star system. Through binoculars, we see that the brighter 4th-magnitude primary star is accompanied by a 6th-magnitude companion lying to the north-northwest and separated by some 41 arc-seconds. But as is often the case, there is more here than meets the eye. It turns out that Nu is at least a quintuple star. Each of the stars we resolve through binoculars is itself a close-set binary. The brighter, known an Nu A and B, is a pair a spectral type B subgiant suns separated by 1.3". Nu A is also a spectroscopic binary, with a close-set companion separated by only a third of a milli-arcsecond. The fainter system, known as Nu C and D, consists of two spectral type B main sequence dwarfs gapped by 2.4".

As long as we now find ourselves in westernmost Scorpius, we should really pay a call on the globular cluster **M80**. This is actually a return visit, since we also stopped by back in the very first Binocular Universe here on Cloudynights back in June 2009. Through my 10x50 binoculars, M80 look like just another point of light among myriad points in a densely packed star field. Only after a concentrated effort does its small, round disk reveal its true presence. Its tiny appearance is not too surprising, since M80 is one of the densest of the Messier globulars.

Here are a few other targets lying in wait within this month's Binocular Universe.

Object	Con	Type	R.A. (2000)	Dec	Mag	Size/Sep/ Period	Notes
Y	Cen	Vr	14 31	-30 6	8.9-10.0p	180 days	Semi-Regular
RU	Hya	Vr	14 11.6	-28 53	7.2-14.3	333.19 days	Long Period Variable
SHJ 179	Lib	**	14 25.5	-19 58	6.4,7.6	35"	296°(1955);9258
Alpha1+2	Lib	**	14 50.9	-16 2	2.8,5.2	231"	*TUB page 169* 314°(1913)
Delta	Lib	Vr	15 1	-8 31	4.9-5.9	2.327 days	Eclipsing Binary
Iota	Lib	**	15 12.2	-19 47	5.1,9.4	58"	*TUB page 169-170* 111°(1919);9532
SHJ 195	Lib	**	15 14.5	-18 26	7.1,8.1	47"	140°(1916)
5897	Lib	GC	15 17.4	-21 1	8.6	13'	*TUB page 170*
RS	Lib	Vr	15 24.3	-22 55	7.0-13.0	217.65 days	Long Period Variable
RU	Lib	Vr	15 33.3	-15 20	7.2-14.2	316.56 days	Long Period Variable
5824	Lup	GC	15 4	-33 4	9.0	6'	
Nu	Sco	**	16 12	-19 28	4.3,6.4	41"	337°(1955);9951
M80	Sco	GC	16 17	-22 59	7.2	9'	*TUB page 224* NGC 6093

I hope you've enjoyed this visit to an often ignored region of the late spring sky, and that you will take time this month to become better acquainted with some of the lesser known targets hanging in the balance – sorry about that! Next month, it's nearly summer and not a moment too soon for me. Till then, remember that for spring stargazing, two eyes are better than one.

About the Author:

Phil Harrington is a contributing editor to Astronomy magazine and author of 9 books on astronomy. Visit his web site at www.philharrington.net