

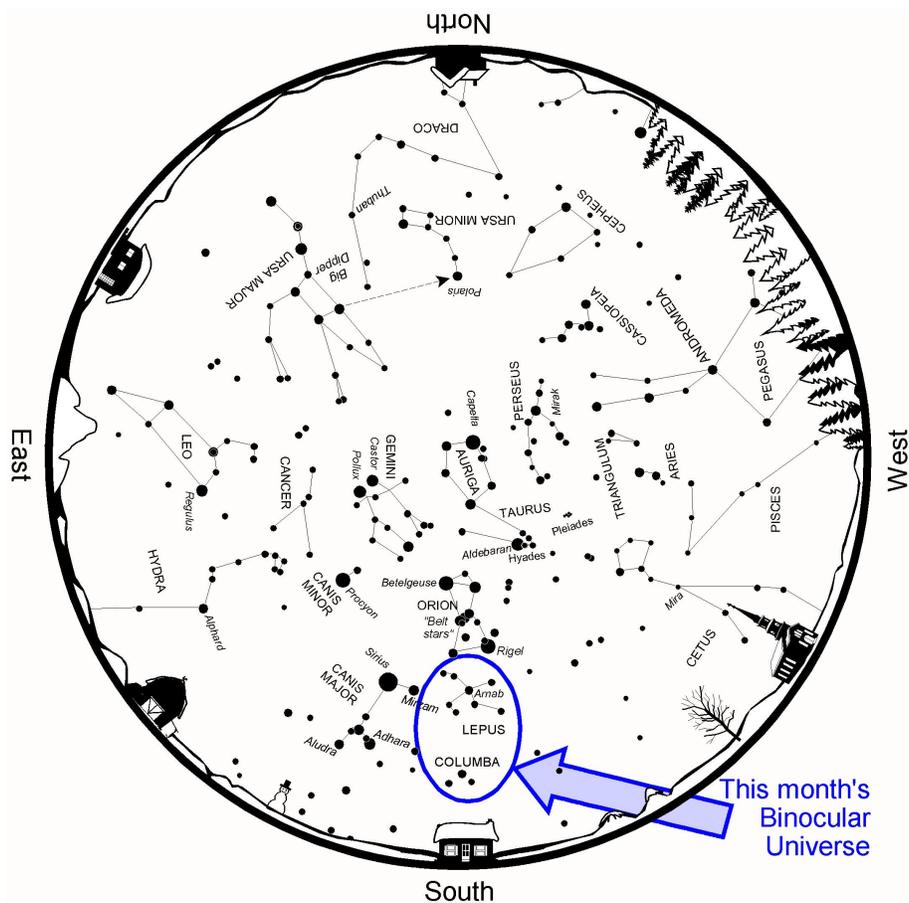
Binocular Universe: The Hare and the Dove

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The brilliant stars that make up Orion, Taurus, Gemini, Canis Major, and Auriga dominate the winter sky, but there are many less showy constellations that nevertheless contain some fine binocular targets that often go unnoticed. This month, we are going to pay a visit to two of those constellations, both found south of the mighty Hunter.



Above: Winter star map from [Star Watch](#) by Phil Harrington.

Let's start with Lepus, the Hare. While the Hare does not play a specific role in any particular myth, its location so close to Orion's large dog, Canis Major, suggests it is taunting the dog into action. The Greek poet Aratus wrote that Canis Major is "close behind he rises and as he sets he eyes the setting hare."

The four brightest stars in Lepus form a trapezoid immediately south of Orion. But with the brightest, Arneb (Alpha Leporis), only shining at magnitude 2.6, the Hare holds little to grab naked-eye attention. For those willing to delve a little deeper with binoculars, however, Lepus holds some fine deep-sky "carrots" that are worth fleshing out.

First, we pay a call on **Gamma (γ) Leporis**, the southernmost star in the Lepus trapezoid. Gamma is a superb double star awash in vivid color. Separated by a wide 97" of arc, they constitute one of the finest binary stars in the entire binocular sky. The system's 3rd magnitude primary sun is a striking yellow orb while the 6th magnitude secondary star appears as an orangish point of light. Interestingly, some visual astronomers refer to the companion's color as pale green, but that is merely a byproduct of the human eye's color receptors, not the star itself. In reality, the yellowish primary star is spectral type F, making it a little hotter than our type G Sun, while the companion is spectral type K, meaning it is a little cooler. Estimates place at least 870 Astronomical Units between the stars, resulting in an excruciating long orbital period of some 18,000 years. Together, they reside a little more than 29 light years from Earth.

Next, we have another colorful character, the classic long-period variable star **R Leporis**. Across a 432-day cycle, R pulses between magnitudes 5.5 and 11.7. When it's near peak performance, R puts on a real show through binoculars radiating a magnificent red hue. This appearance, first noted in 1845 by the English astronomer J.R. Hind, led to the star's better known nickname **Hind's Crimson Star**. Hind described it "blood-drop on the black background of the sky."

Spectral analysis indicates that R Leporis is a rare carbon star. Carbon stars are low temperature red giants engulfed in atmospheres that are unusually rich in carbon compounds. Other noted carbon stars visible in binoculars include V Hydrae and S Cephei.

Lastly, we find **M79**, Messier's only winter globular cluster. Pierre Méchain was first to spot this 8th-magnitude object in October 1845. He recorded it as simply a nebulous object, which certainly describes its appearance through binoculars. M79 may be most easily found by drawing an imaginary line from Alpha Leporis to Beta Leporis and continuing it an equal distance to the latter's south. Look for a soft, circular glow. Resolving any of its myriad stars is out of the question for binoculars. They lie in the realm of moderately large telescopes.

Continuing southward, we find **Columba**, the Dove, a faint southern constellation wedged between the far more brilliant regions of Canis Major and Puppis. Its origin dates back to the 17th century, when it was first depicted on Bayer's 1603 star charts as a dove near the mighty ship Argo Navis. While the monstrous constellation Argo has since been sliced into separate constellations, little Columba remains untouched.

NGC 1851 is the only non-stellar deep sky object within Columba that is bright enough to crack the binocular barrier. Finding it can be a bear from mid-northern latitudes, since it lies so far south of the celestial equator. At declination -40 degrees, it culminates no more than 10 degrees above my Long Island horizon. Add to the fact that there are no bright stars anywhere in its immediate vicinity, and NGC 1851 can prove very challenging. Be prepared to search for awhile. Once spotted, however, this 7th-magnitude globular cluster

will look like a small, circular patch of fuzzy light. In fact, given a good vantage point, it easily outclasses M79. It would undoubtedly have been in the Messier catalog were it not so far south. But as it was, NGC 1851 went undiscovered until James Dunlop bumped into it on May 29, 1826. Recent studies suggest that it's a runaway from the Canis Major Dwarf galaxy, which was only discovered in 2003.

As you can see from the listing below, there are plenty of binocular targets awaiting you in this month's Binocular Universe. Be sure to take the time and brave the cold to enjoy all that this season has to offer.

Object	Con	Type	R.A.	Dec	Mag	Size/Sep/ Period	Notes
			(2000)				
R	Cae	Vr	4 40.5	-38 14	6.7-13.7	390.95 days	*TUB page 98
1851	Col	GC	5 14.1	-40 3	7.3	11'	*TUB page 127* X-ray source
T	Col	Vr	5 19.3	-33 42	6.6-12.7	225.84 days	Long Period Variable
h 3849	Col	**	6 19.8	-39 29	6.7,8.3	40"	53° (1950)
h 3857	Col	**	6 24	-36 42	5.7,6.9	64"	72° (1960)
W	Eri	Vr	4 11.5	-25 8	7.5-14.5	376.63 days	Long Period Variable
h 3628	Eri	**	4 12.5	-36 9	7.1,8.0	50"	50° (1933)
RZ	Eri	Vr	4 43.8	-10 41	7.8-8.7	39.282 days	Eclipsing Binary
Burnham314	Lep	**	4 59	-16 23	5.9,8.2	53"	34° (1914);3588
R	Lep	Vr	4 59.6	-14 48	5.5-11.7	432.13 days	*TUB page 168* Long Period Variable; RED!
T	Lep	Vr	5 4.8	-21 54	7.4-13.5	368.13 days	Long Period Variable
RX	Lep	Vr	5 11.4	-11 51	5.0-7.0		Irregular
S 476	Lep	**	5 19.3	-18 31	6.2,6.4	39"	18° (1952);3910
M79	Lep	GC	5 24.5	-24 33	8.4	3'	*TUB page 168* NGC 1904
h 3780	Lep	**	5 39.3	-17 51	6,9,8,8	89",76",129"	136°,7°,299° (1916)4254
2017	Lep	OC	5 39.4	-17 51			*TUB page 168*
Gamma	Lep	**	5 44.5	-22 27	3.7,6.3	96"	*TUB page 168* 350° (1957);4334
S	Lep	Vr	6 5.8	-24 12	7.1-8.9p	90 days	Semi-Regular

And until we meet again next month, remember that, when stargazing, two eyes are better than one!



About the Author:

Phil Harrington has written 9 books for amateur astronomers. Be sure to visit his web site at www.philharrington.net for more information.

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