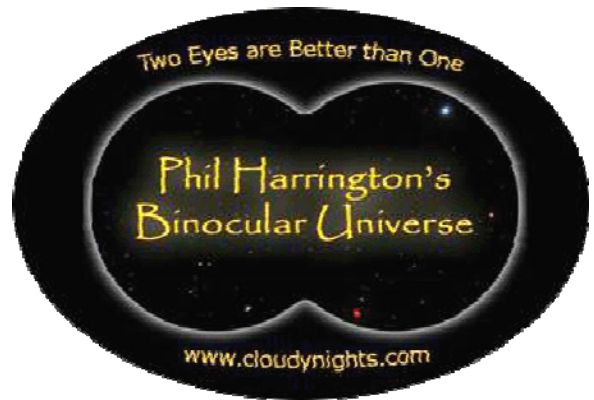


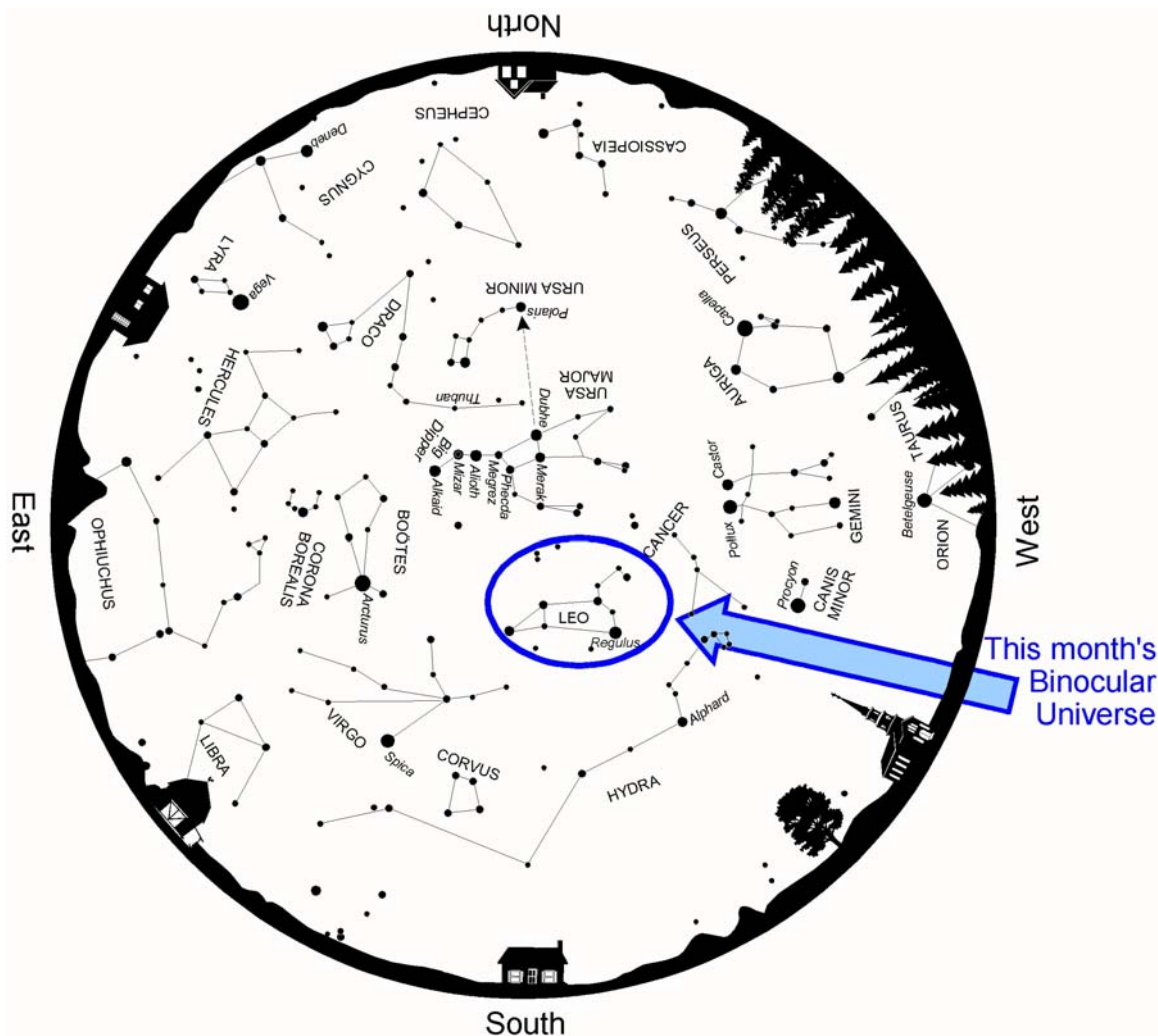
# Binocular Universe: The Lion's Den

April 2012

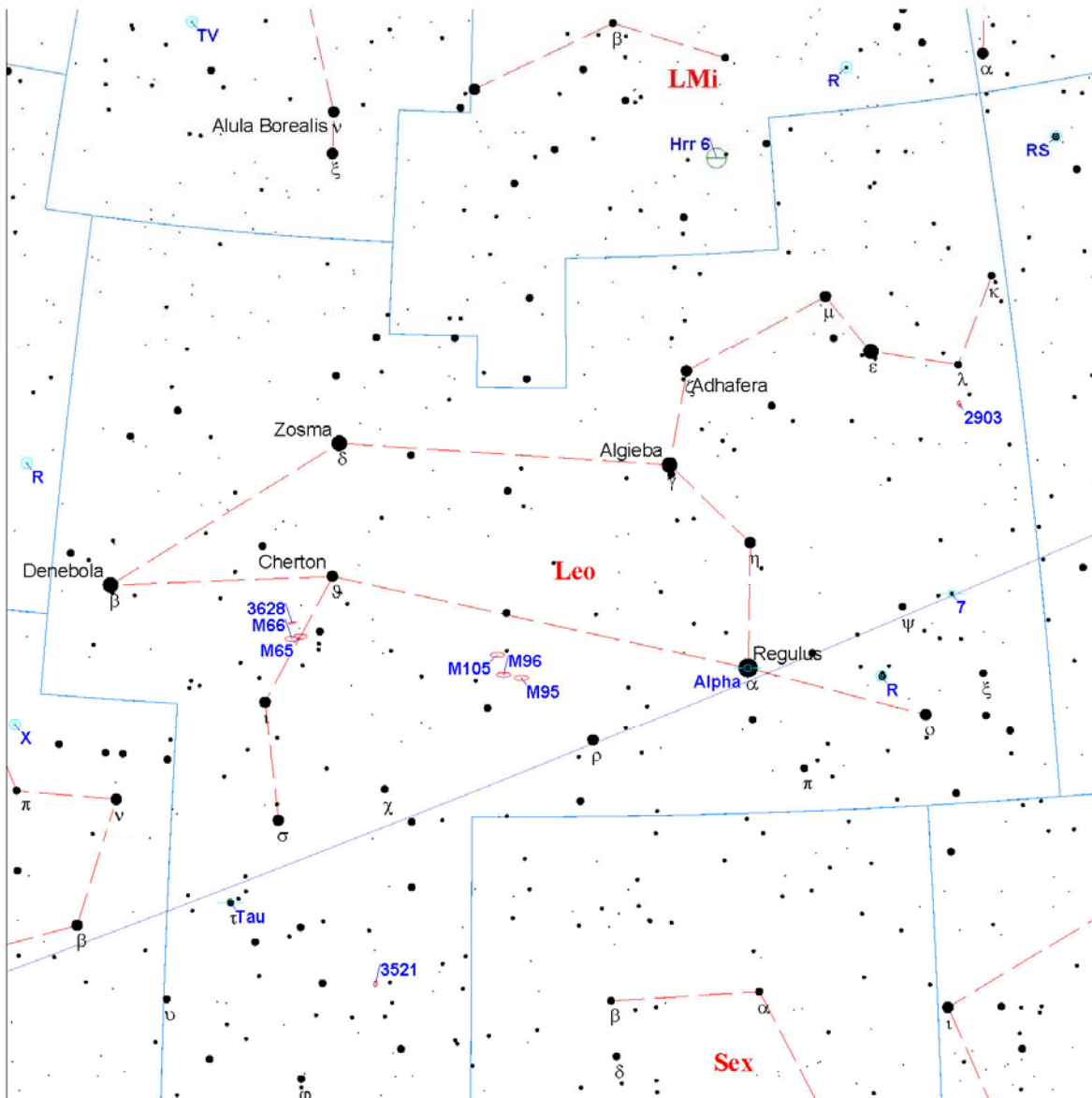
Phil Harrington



**L**eo the Lion stands proudly among the spring constellations this month. While most constellations bear little resemblance to their namesakes, Leo's standout Sickle asterism, rectangular body, and tail star, are easily imagined as a seated lion eyeing Cancer the Crab.



Above: Spring star map adapted from the author's book, [Star Watch](#).



**Touring the Universe Through Binoculars Atlas**  
**RA: 10h 39m, Dec: 16d 25m, FOV: 39d, Mag: 7.5**

- |             |                    |           |            |
|-------------|--------------------|-----------|------------|
| ● ≤ 1.1     | ○ Galaxy           | ♿ Mercury | ♇ Pluto    |
| ● 1.1 - 2.1 | ○ Open Cluster     | ♋ Venus   | ☀ Sun      |
| ● 2.1 - 3.2 | ⊕ Globular Cluster | ♊ Mars    | ☾ Moon     |
| ● 3.2 - 4.3 | □ Diffuse Nebula   | ♉ Jupiter | ♁ Asteroid |
| ● 4.3 - 5.4 | □ Planetary Nebula | ♈ Saturn  | ☄ Comet    |
| ● 5.4 - 6.4 | ⊙ Variable Star    | ♇ Uranus  | ⊛ Unknown  |
| ● > 6.4     | ⊙ Double Star      | ♆ Neptune |            |

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

The constellation's origin traces back some 5,000 years to ancient Mesopotamia. Back then, the earth's precession aligned Leo with the sun on the summer solstice. It was this alignment that initially led to the area being denoted as royalty. To the ancient Persians, this area was *Ser* or *Shir*, while the Turks called it *Artan*. The Syrians referred to this as *Aryo*, while to the Hebrews, it was *Arye*. All translate as "lion."

**Regulus** marks the handle end of the Sickle asterism. Copernicus is credited with dubbing this star "Regulus", meaning "Little King" in Latin, although he was not the first to refer to it as kingly. Many ancient cultures, including the Arabians, Babylonians, and the Akkadians of Mesopotamia, also viewed it as celestial royalty.

Regulus is a quadruple-star system. The bright star we see is a blue-white, spectral type B7 main sequence star, orbited by is an unseen white dwarf companion. Through our binoculars, however, we can see the system's third member, an 8th-magnitude point nearly 3' of arc from the brilliant primary sun. This star is itself a binary system, but its companion is restricted to large telescopes. There seems little doubt that these comprise a true multiple system, as all four stars share the same proper motion.

Trace the sickle with your binoculars to Epsilon Leonis at the "tip." Just 4 degrees to its southwest lies **NGC 2903**, a large, relatively faint spiral. Binoculars display it as a nebulous 5'x3' patch highlighted by a brighter central core. Long exposure photographs better than double the galaxy's extent, as well as reveal the jumbled texture of its spiral arms.

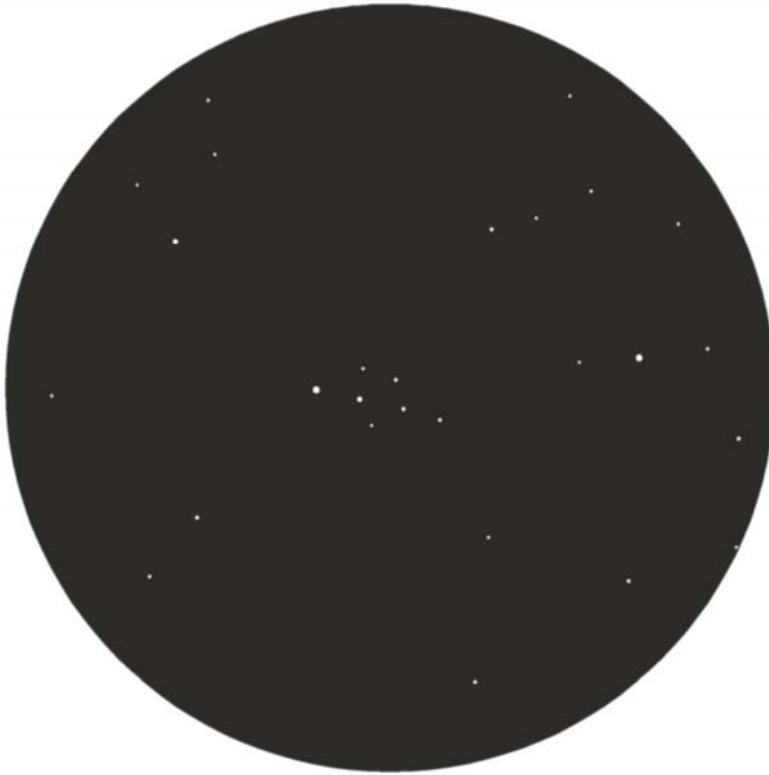
**R Leonis** is a classic variable star for binocular observers. Its location is easily pinpointed about 6 degrees due west of Regulus and just to the south of 19 Leonis. Over the course of 312 days, this long period variable is seen to fluctuate between about 5th and 10th magnitudes. Right now, R Leo is on a downward slide, having reached peak brightness in late January. But thanks to its bright range and strong reddish glow, R Leo is sure to become one of your seasonal favorites.

**Upcoming Maxima\* of  
R Leonis**

- November 30, 2012
- October 8, 2013
- August 16, 2014
- June 24, 2015

\*dates are approximate

Before continuing within Leo, let's jump the border momentarily into Leo Minor. Although there is not much to see here by eye or binocular, we do have one port-of-call that makes a fun diversion. Back in 1988, Ohio amateur Dan Hudak wrote a letter that appeared in that summer's issue of Deep Sky magazine describing an asterism that looked like a celestial **sailboat**. Through binoculars, the sailboat seems to have capsized, as its mast points toward the south. The ship's bow is marked by 7th-magnitude 22 Leo Minoris, the group's brightest star. Eight additional stars complete the picture. You'll find Hudak's sailboat plotted on the chart here as **Hrr 6**, it's entry in the Touring the Universe through Binoculars asterism list.



*Left: Dan Hudak's Sailboat asterism in Leo Minor, as sketched through the author's 16x70 binoculars.*

*North is up.*

Next, we have the Leo Trio, comprised of the galaxies **M95**, **M96**, and **M105** and forming a triangle in the central portion of Leo. All three, along with several fainter surrounding galaxies, are believed to be about 29 million light years from the Milky Way.

Of the three, M96 is the brightest. Classified as an Sb spiral, M96 is seen as a slightly oval glow brightening toward the center. M95, a barred spiral, is smaller and about half a magnitude fainter. When we view M95, however, we are seeing only its brighter central core; the surrounding spiral arms are too faint for detection through binoculars.

Scanning just three-quarters of a degree to the north of M95 and M96 brings M105 into view. Maybe. This is a toughie. Even in my 16x70 giant binoculars, it shows little more than a faint oval disk devoid of any central nucleus.

A second galactic threesome lies to the south of the Lion's triangular hindquarters. Studies indicate that **M65**, **M66**, and **NGC 3628** are all about 32 million light years away and appear to belong to the same Leo Galaxy Group as the M95 gang.

M66 is the easiest of these three to pick out. A highly inclined Sb spiral, its wide elliptical disk and brighter oval center can be clearly made out in 10x50s. Although slightly fainter, M65 is nearly identical in both visual appearance and form.

Both M65 and M66 were discovered in 1780 by Pierre Méchain. It is ironic to note that seven years earlier, on November 1, 1773, a comet discovered by Charles

Messier himself passed right between these two galaxies, but he missed seeing them at the time. Some have suggested that Messier's failure might have been due to his comet's brightness.

Neither Messier nor Méchain spotted a third galaxy to the pair's north. NGC 3628 is larger and fainter than both M65 and M66. Photographs show it to be an edge-on spiral highlighted by a thin lane of obscuring nebulosity. Unless viewed under really superb conditions, spotting this galaxy will be restricted to giant binoculars.

There are many more springtime treats within Leo's boundaries. Here is a list of those plotted on the chart above.

Object	Con	Type	R.A.	Dec	Mag	Size/Sep/ Period	Notes
			(2000)				
RS	Cnc	Vr	9 10.6	+30 58	6.2-7.7p	120 days	Semi-Regular
R	Com	Vr	12 4	+18 49	7.1-14.6	362.8 days	Long Period Variable
2903	Leo	Gx	9 32.2	+21 30	9.0	13'x7'	*TUB page 164-165* Sb+
7	Leo	**	9 35.9	+14 23	6.2,10.0	41"	80°(1946);7448
R	Leo	Vr	9 47.6	+11 26	4.4-11.3	312.4 days	*TUB page 165* Long Period Variable
Alpha	Leo	**	10 8.4	+11 58	1.4,7.7	177"	*TUB page 165* 307°(1924);7654;Regulus
M95	Leo	Gx	10 44	+11 42	9.7	7'x5'	*TUB page 165* SBb NGC 3351
M96	Leo	Gx	10 46.8	+11 49	9.2	7'x5'	*TUB page 165* Sbp NGC 3368
M105	Leo	Gx	10 47.8	+12 35	9.3	5'x4'	*TUB page 165* E1 NGC 3379
3521	Leo	Gx	11 5.8	-0 2	8.9	10'x5'	Sb+
M65	Leo	Gx	11 18.9	+13 5	9.3	10'x3'	*TUB page 165-166* Sb NGC 3623
M66	Leo	Gx	11 20.2	+12 59	9.0	9'x4'	*TUB page 165-166* Sb+ NGC 3627
3628	Leo	Gx	11 20.3	+13 36	9.5	15'x4'	*TUB page 165-166* Sb
Tau	Leo	**	11 27.9	+2 51	5.1,8.0	91.1"	176°(1932)
R	LMi	Vr	9 45.6	+34 31	6.3-13.2	371.93 days	*TUB page 167* Long Period Variable
Hrr 6	LMi	OC	10 10	+31 30		45'	*TUB page 167* Sailboat asterism
TV	UMa	Vr	11 45.6	+35 54	8.3-9.2p	50.4 days	Semi-Regular
X	Vir	Vr	12 1.9	+9 4	7.3-11.2		Unknown type

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](mailto:phil@philharrington.net) .

Until next month, remember that two eyes are better than one.



About the Author:

Phil Harrington is the author of [Touring the Universe through Binoculars](#) and 8 other astronomy books. Learn about them all on his web site, [www.philharrington.net](http://www.philharrington.net) .

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