Binocular Universe: Subaru

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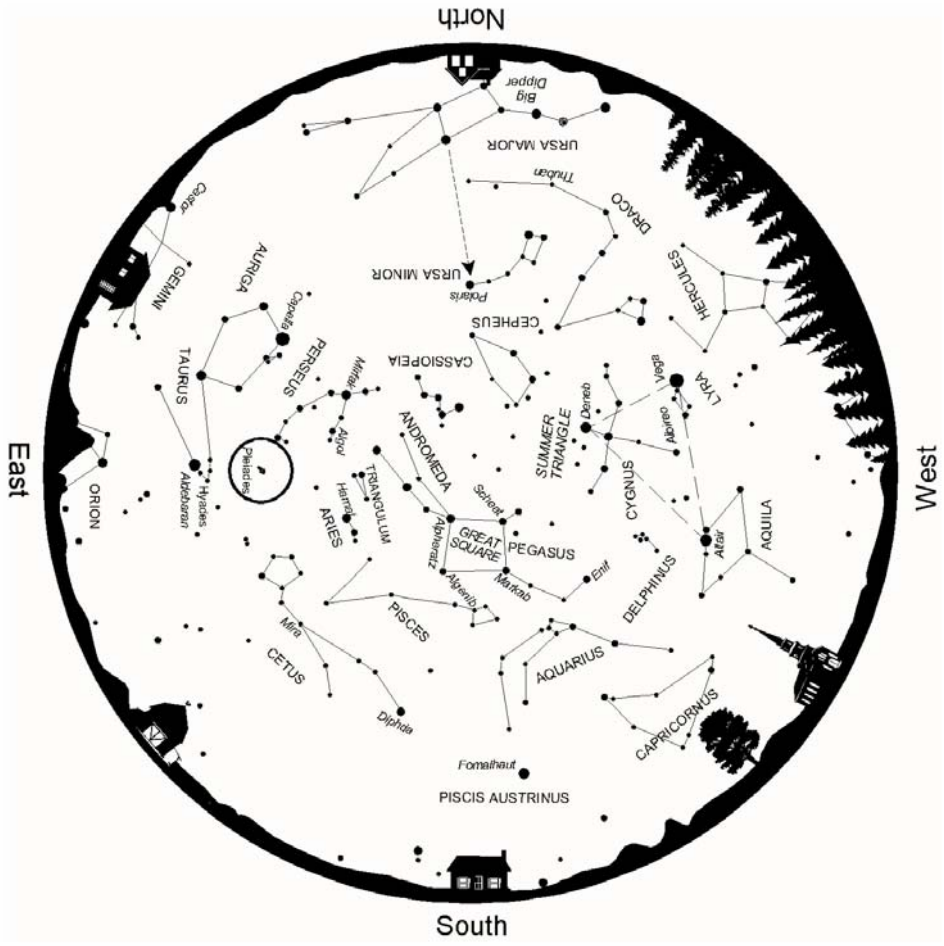
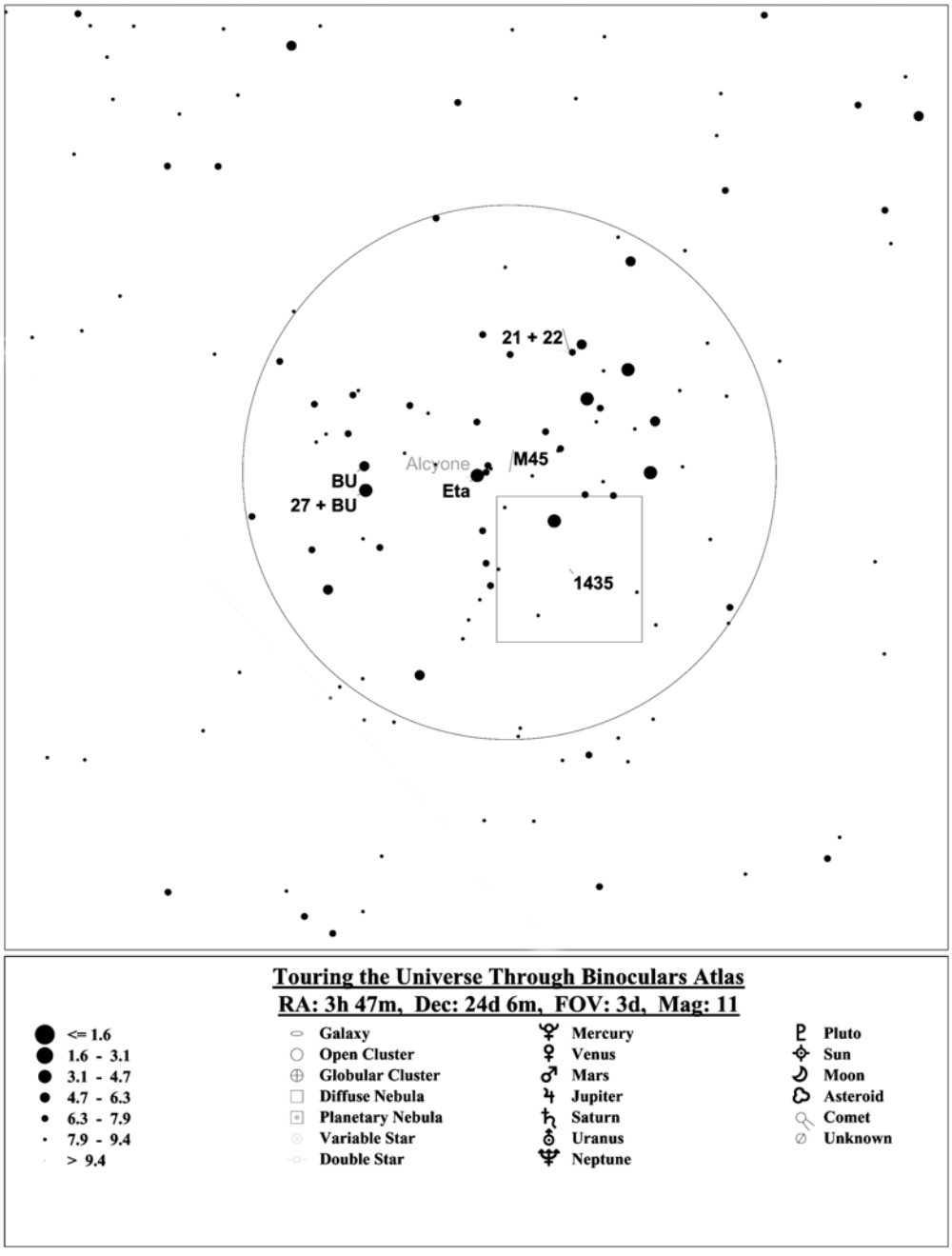
Japanese stargazers call them Subaru. You may know them better as the Seven Sisters. But call them what you will, the open star cluster known officially as the Pleiades rides high in the eastern sky as night falls this month. Even casual stargazers can spot them easily as a fuzzy patch of light due west of Taurus's V-shaped head. Through light-polluted skies, only a soft glow is visible, but from darker skies, they resolve into a collection of faint naked-eye stars. Most observers can count six set in a tiny dipper pattern, but under the best conditions, many people can count seven or more.



But it's the view of the Pleiades through our binoculars that proves most captivating. Is there any star cluster more spectacular through binoculars? If so, I haven't seen it. One look at them through 7x or 10x binoculars and you will feel like you've broken into the vault of that great jewelry store in the sky! There before our eyes are dozens of stellar sapphires blazing against a velvety-black background that shimmers with iridescence. Speckles of diamond dust, formed by fainter cluster stars, surround them.



Finder chart from TUBA, www.philharrington.net/tuba.htm

Several striking binary and multiple stars highlight the Pleiades. The stars Atlas, shining at magnitude 3.7, and Pleione, which varies in brightness from magnitude 4.8 to 5.7, form a wide pair that marks the eastern-pointing "handle" of the Pleiades' "bowl." They are labeled as "27 + BU" on the chart above.

Asterope (21+22) is a wide pair of stars, while Alcyone (Eta), the brightest Pleiad, is a quadruple star system.

Due to their wide span covering four Full-Moon diameters, the Pleiades demand low power and a wide field to be seen at their best. Ten- to 16-power binoculars are ideal, but even a pair of the cheapest 7x35s will cause a population explosion in the family of the Seven Sisters by revealing dozens upon dozens of fainter stellar siblings.

If you have an exceptionally clear evening, look closely and you just might glimpse soft gossamer wisps surrounding some of the brighter cluster stars. These gentle clouds belong to a large cloud of interstellar dust that just happens to be passing through the Pleiades at this point in time.

Visually spotting the reflection nebulae that surround the Pleiades takes determination; clean, well collimated optics; and a top-notch night. The slightest interference, whether from the Moon, light pollution, or a passing cloud, will likely render them invisible.

The brightest portion of the Pleiades nebulosity is identified as NGC 1435 and is found around Merope, the southeastern star in the Pleiades' bowl. Under ideal conditions, this cloud can be seen through 70-mm binoculars as a fan-shaped wisp of very dim light extending southward from the star. The shape and direction of NGC 1435 are dead giveaways. Haze and ill-mannered optics can cause nebulous glows to appear around stars. Unless you specifically see the glow around Merope fanning away to the star's south, much as a comet's tail extends away from its coma, then you are likely seeing something much more local and insidious in origin. To make sure you're seeing the real thing, check the nearby Hyades cluster, where there is no trace of nebulosity.

For years, it was naturally assumed that these clouds were the leftover remains of the nebula that begat the cluster. Recent studies, however, prove that they are actually two independent phenomena that just happen to be passing through the same area of space at this time. Looks can certainly be deceiving!

The Pleiades have thrived in the cosmos for about 100 million years. Modern measurements show that some 500 stars spread out across two degrees belong to the cluster, with the vast majority of them too faint and scattered to be visible in amateur telescopes. Astronomers expect the stars' mutual gravitational forces will hold the cluster together for another 250 million years or so, after which the stars will slowly disband.

Object	Con	Type	R.A. (2000)	Dec	Mag	Size/Sep/ Period	Notes
21 + 22	Tau	**	3 46.1	+24 32	5.6,6.4	168"	*TUB page 236*
1435	Tau	DN	3 46.1	+23 47		30'x30'	*TUB page 237*
M45	Tau	OC	3 47	+24 7	1.2	110'	*TUB page 236*
Eta	Tau	**	3 47.5	+24 6	3,8,8,8	see below	*TUB page 236*
27 + BU	Tau	**	3 49.2	+24 3	3.7,5.0	300"	*TUB page 236*
BU	Tau	Vr	3 49.2	+24 8	4.8-5.5		*TUB page 236*

Be sure to post your observations and sketches in this article's discussion thread or drop me a line at phil@philharrington.net. And 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. Visit his web site at www.philharrington.net