

Deep-Sky Objects - Autumn Collection

An addition to: Explore the Universe Observing Certificate Third Edition RASC

NW Chart #	Cons Object Mag. RA Dec Observing Notes	PSA Chart #	<i>Observation Notes:</i> 1) Date Time 2 Equipment) 3) Notes
7,8	<p>Sgr M24 The Sagittarius Star Cloud Mag 4.60 RA 18:16.5 Dec -18:50 Distance: 10.0 (kly)Star cloud, 95' x 35', Small Sagittarius star cloud lies a little over 7 degrees north of teapot lid. Look for dark Lanes! Wealth of stars. M24 has dark nebula (interstellar dust – often visible in the infrared (cooler radiation)). Barnard 92 – near the edge northwest – oval in shape. Ref: Celestial Sampler Floating on Cloud 24, p.112</p>	67	<ol style="list-style-type: none"> 1. 2. 3.
8	<p>Sgr M18 - RA 18 19.9, Dec -17.08 Distance: 4.9 (kly) Lies less than 1deg above the northern edge of M24. Often bypassed by showy neighbours, it is visible as a small hazy patch. Note it's much closer (1/2 the distance) as compared to M24 (10kly)</p>	67	<ol style="list-style-type: none"> 1. 2. 3
8	<p>Sgr M17 (Swan Nebula) and M16 - HII region Nebula and Open Clusters M17 Wikipedia Ref: Celestial Sampler p. 113</p>	67	<ol style="list-style-type: none"> 1. 2. 3.
8	<p>Sct M11 Wild Duck Cluster 5.80 18:51.1 -06:16 Distance: 6.0 (kly) Open cluster, 13', You can find the "wild duck" cluster, as Admiral Smyth called it, nearly three degrees west of Aquila's beak lying in one of the densest parts of the summer Milky Way: the Scutum Star Cloud.</p>	67	<ol style="list-style-type: none"> 1. 2. 3.
9 10	<p>Vul M27 Dumbbell Nebula RA 19 59 36 Dec 22 43 16 Distance 1360 ly Mag 7.5 Planetary Nebulae are shells of gas ejected by stars in the late stages of their life. When an ordinary mass star (such as our own Sun) expends all its Hydrogen fuel, internal fusion stops. This stops the outward radiation pressure, which causes the gas to begin to collapse under its own gravity. The collapse raises the internal pressure and temperature enough to start a new fusion reaction, with the Helium gas that was the by-product of the earlier Hydrogen fusion. The radiation from this fusion expands the star, which</p>	64	<ol style="list-style-type: none"> 1. 2. 3. <p>Today, we understand M27, like other 'planetary 'nebulae, as the outer layers of a progenitor red-giant star that were expelled by pulsations and strong stellar winds.</p> <p>There is a simulation of this at : www.youtube.com/watch?v=az5X5jSVInc&NR=1</p>

	<p>lowers the pressure, which stops the fusion. The gas then collapses, and fusion restarts, and so on. This on-off cycling is called Thermal Pulsing and, each time the direction of collapse or expansion reverses, an outer layer of gas is "puffed off" into space. Successive puffs build up a structured shell of gas at some distance from the star, and this gas glows in the radiation of the inner stellar core. When we look at this shell of gas from a distance, we tend to see the edges more than the near face, since at the edges we are looking through more gas; this is why we tend to see a shape with a distinct outline.</p> <p>Courtesy http://www.themcdonalds.net/richard/index.php?title=Finding_M27</p>		<p>Note the thermal pulsing in the simulation. Each time the pulsation occurs, it causes an outer layer of gas to be puffed into space. Successive puffs build up shells of gas that then glow from the radiation of the hot central star.</p> <p>To understand Planetary Nebula formation see: https://www.youtube.com/watch?v=pQ4-m1vtTmE</p>
10	<p>Lyra M57 The Ring Nebula RA 18 53 Dec 33 03 Mag 8.8 Distance: 2,300 ly Ring Nebula is a planetary nebula in the northern constellation of Lyra. Such objects are formed when a shell of ionized gas is expelled into the surrounding interstellar medium by a red giant star, which was passing through the last stage in its evolution before becoming a white dwarf.</p> <p>Find the Ring Nebula between the bottom 2 bright stars in the parallelogram which includes Vega. (Alpha Lyra)</p>	63	
10	<p>Epsilon Lyra - The Double-Double Star System Mag: 5 Double 3.5' apart, Pairs are 1/4 ly apart Double in binocs, quadruple in telescope</p>	63	<ol style="list-style-type: none"> 1. 2. 3.
10	<p>Vul Collinder Cr 399 - The Coathanger OpenCluster Distance: 0.42 kly aka Brocchi's Cluster, 60', Popularly known as The Coathanger this unmistakable collection of 10 stars lies a little over 7 degrees below Beta Cygni, the head of the swan.</p>	66	<ol style="list-style-type: none"> 1. 2. 3.
10	<p>Cyg Albereio Beta Cygnus Binary Star Distance 385 ly Orange and Blue - separation 35" Famous Double star - easy for beginners</p>	62	<ol style="list-style-type: none"> 1. 2. 3.

10	Cyg Veil Nebula - NGC 6992 6960 Supernova Remnants Near 52 Cyg Distance: 1500 ly Dia: 60ly Use an OIII filter and wide field!	62	1. 2. 3.
	CYG NGC 6826 - The Blinking Planetary Distance: ~2000 ly (*It would be on NW 10 if we penciled it in :))	62	1. 2. 3.
10	Cyg M29 - Open Cluster - near Sadr (Gamma Cygni) Distance: 6000 ly Hot OB stars (white and blue spectra) . Brightest group form) (backwards parenthesis	62	1. 2. 3.
10	Chi Cygni - Variable Star (Low-mass Red giant) Mira variable - Achieving Maximum brightness by October . NW 10 shows eta Cyg for starhop χ Cygni is much larger and cooler than the sun, so large that it is thousands of times more luminous despite the low temperature. It pulsates, with both the radius and temperature varying over approximately 409 days. The temperature varies from about 2,400 K to about 2,700 K and the radius varies from about 350 R_{\odot} to 480 R_{\odot} . These pulsations cause the luminosity of the star to vary from about 6,000 L_{\odot} to 9,000 L_{\odot} , but they cause the visual brightness to vary by over 10 magnitudes. The huge visual magnitude range is created by a shift of electromagnetic radiation from the infrared as the temperature increases, and by formation at cool temperatures of molecules that absorb visual light - courtesy wikipedia:https://en.wikipedia.org/wiki/Chi_Cygni	62	Observe relative magnitudes once you find the field. See finder charts below
6	Her M13 The Great Globular Cluster RA 17 Dec 33 Mag 5.7 Distance 21000ly 400,000 Solar Masses	52	1. 2. 3.
6	Her M92 The "Overlooked" Globular Cluster Mag 6+ (fainter and smaller in appearance) Distance 26,000ly	52	1. 2. 3.
6	Her Rasalgethi- Alp Her Double Star Rasalgethi has a fifth magnitude companion five seconds of arc away - Distance 350 ly	52	1. 2. 3.
13	And M31 Galaxy Mag 3.40 Distance: 2.5 (Mly)	3	1. 2. 3:

	Nearest major galaxy, 185' x 75', How easy or difficult this object is to observe will depend mostly on the darkness of the sky. Follow the outline of Andromeda to the second pair of stars and scan the area just to the north for an elongated fuzzy patch of light.		
19	<p>Per Alpha Persei Group Melotte 20 Mag 1.20 Distance: ~ 172 pc 557-650 ly 03:22.0 +49.00 Distance: 600 (ly) (very close!) Open cluster, 185', Also known as Melotte 20, this large, beautiful group of stars is located near Alpha Persei (proper name Mirfak) and is best seen in binoculars. Independent measurements – HR diagram (based on Blue Spectral type) and Hipparcus satellite measurements confirm. See: https://en.wikipedia.org/wiki/Alpha_Persei_Cluster https://en.wikipedia.org/wiki/Cosmic_distance_ladder</p>	2	1. 2. 3:
19	<p>Per Double Cluster NGC 869/884 Mag: 5.30 02:19.0 +57.09 Distance: 7.6 (kly) Double open cluster, 29' ea. If you scan the Milky Way between Cassiopeia and Perseus under a dark sky, these two beauties will be hard to miss. Even without binoculars, you'll probably see a misty patch that betrays the presence of one of the northern sky's grandest sights. 60, 73</p>	2	1. 2. 3:
19	Taurus Pleiades		1. 2. 3.

Note:

1. A **very** good reference for visual observing of these objects is [Celestial Sampler](#), by Sue French

2. Wikipedia articles on the Messier objects as well as the "SEDS" database are recommended

3. Chapter 18, The Stars, A Celestial Census

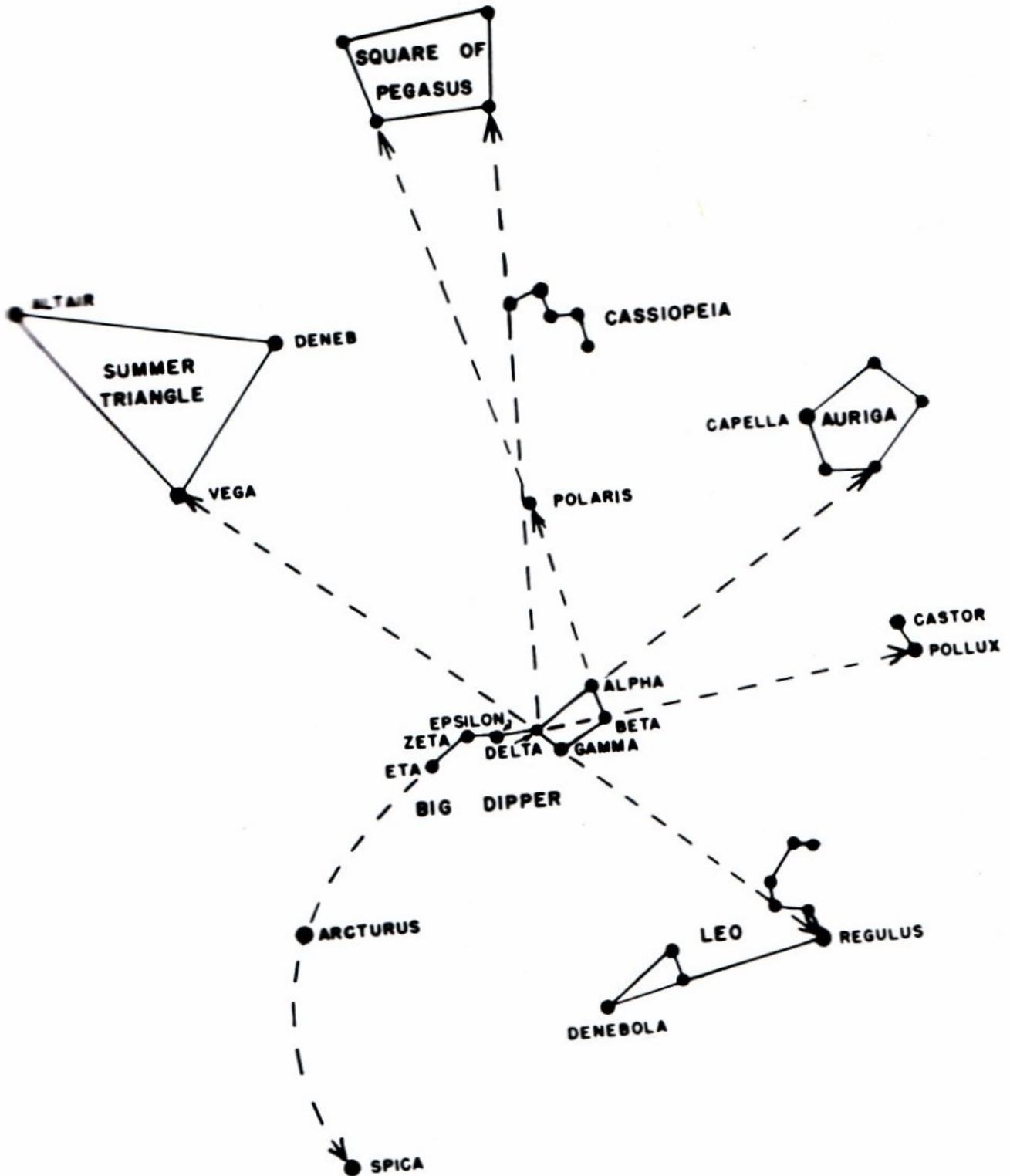
19 Celestial Distances

20 Between the Stars – Interstellar Gas and Dust in Space

in Astronomy -LR.pdf – see Openstax [OpenStax Astronomy](#)

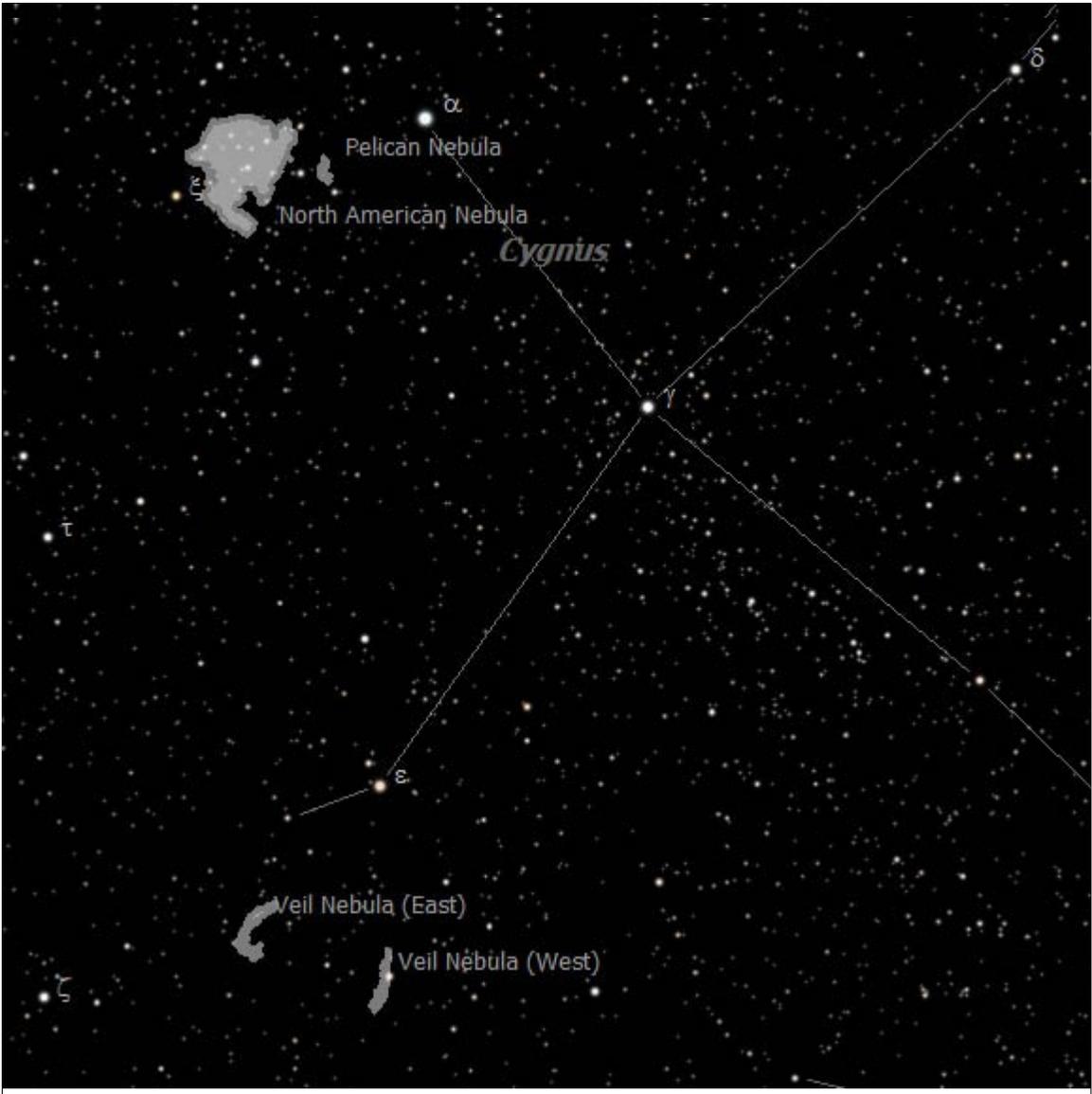
For understanding Milky Way objects see also [H II region](#)

[Reflection Nebulae](#)



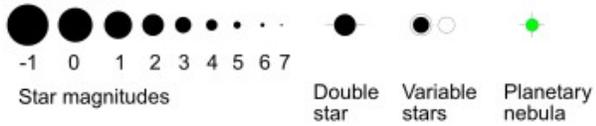
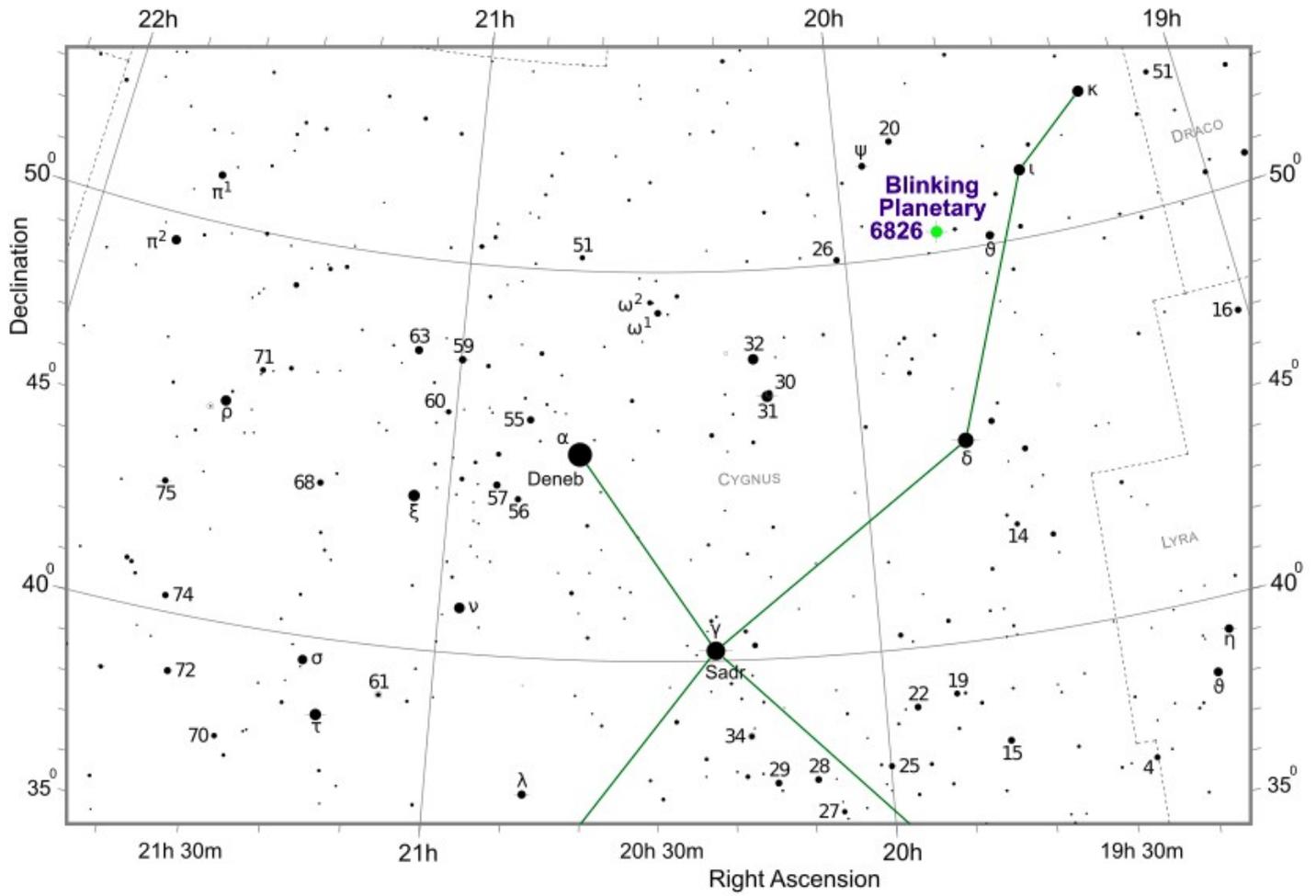
Constellation Patterns From the Pointer stars

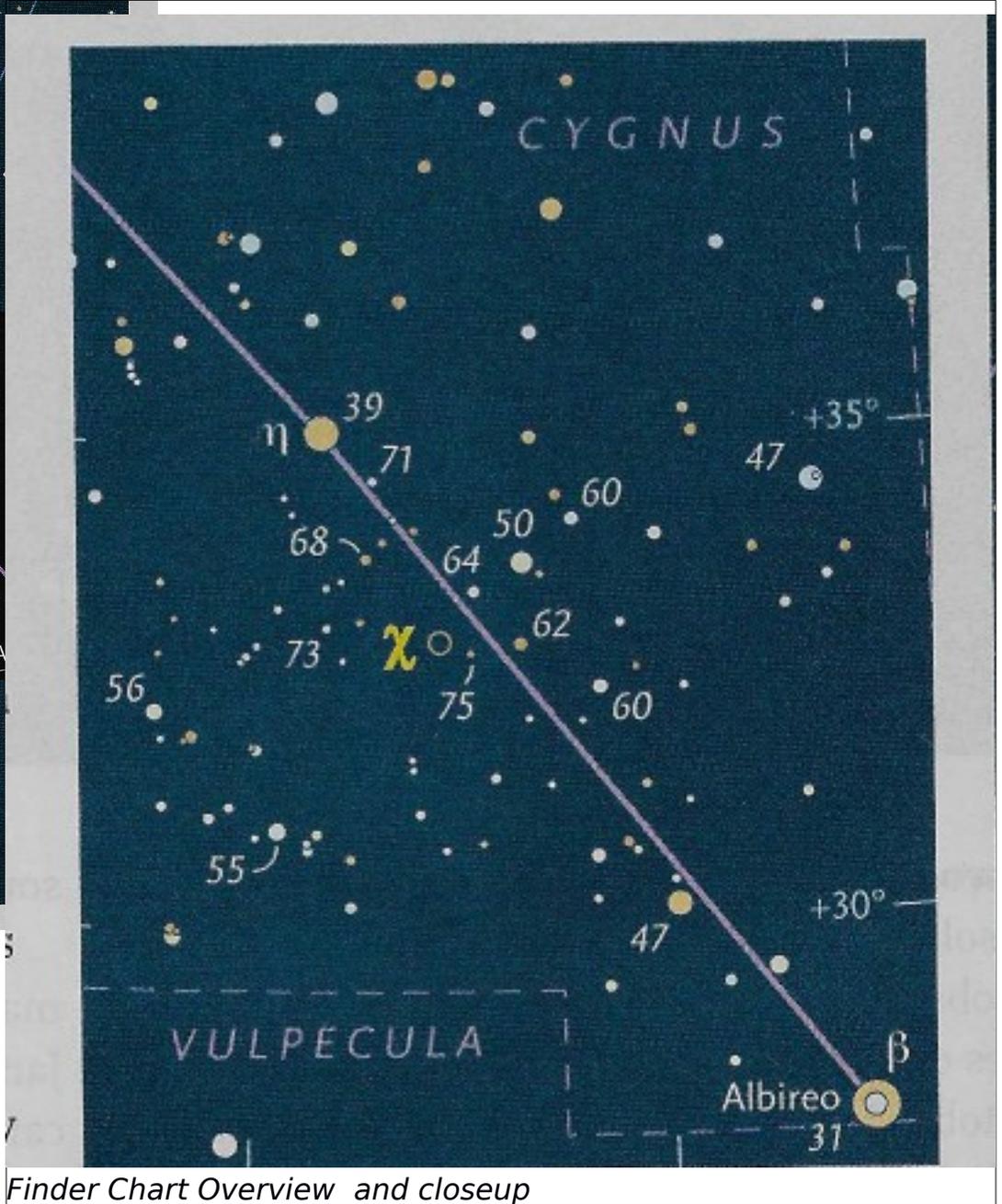
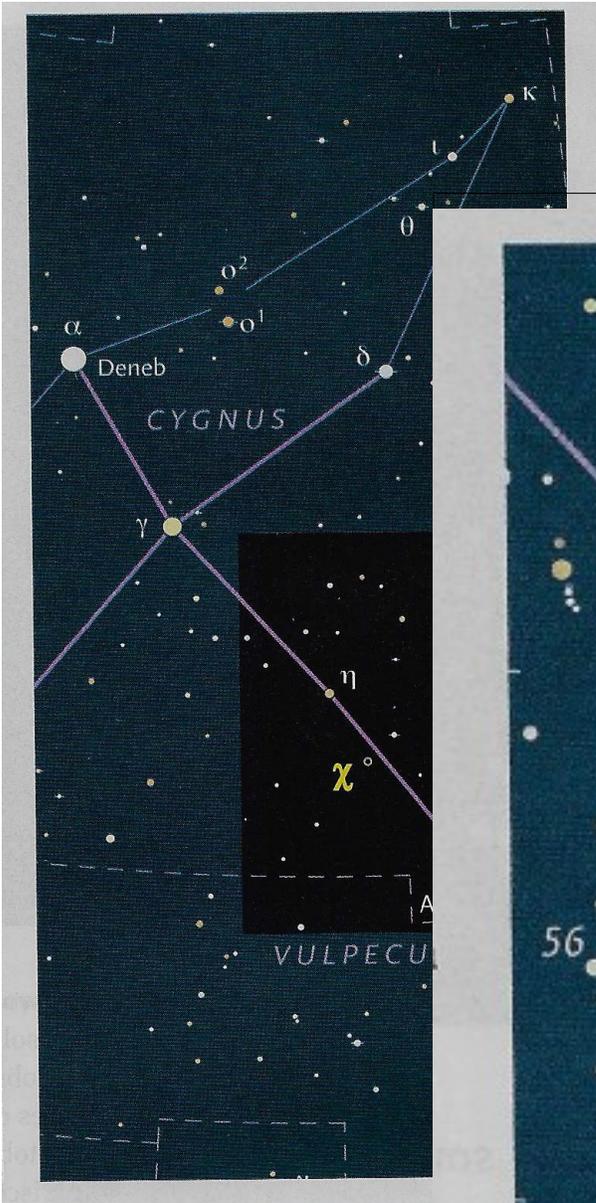
Getting to know your SkyMarks - this is an all year map - some of these bright stars are now hidden by the glare of the Sun.
 Start from the Big Dipper and see what you can see...



Finder Chart Veil Nebula - near 52 Cyg

NGC 6826 - Blinking Planetary - Planetary Nebula





Finder Chart Overview and closeup

khi Cyg

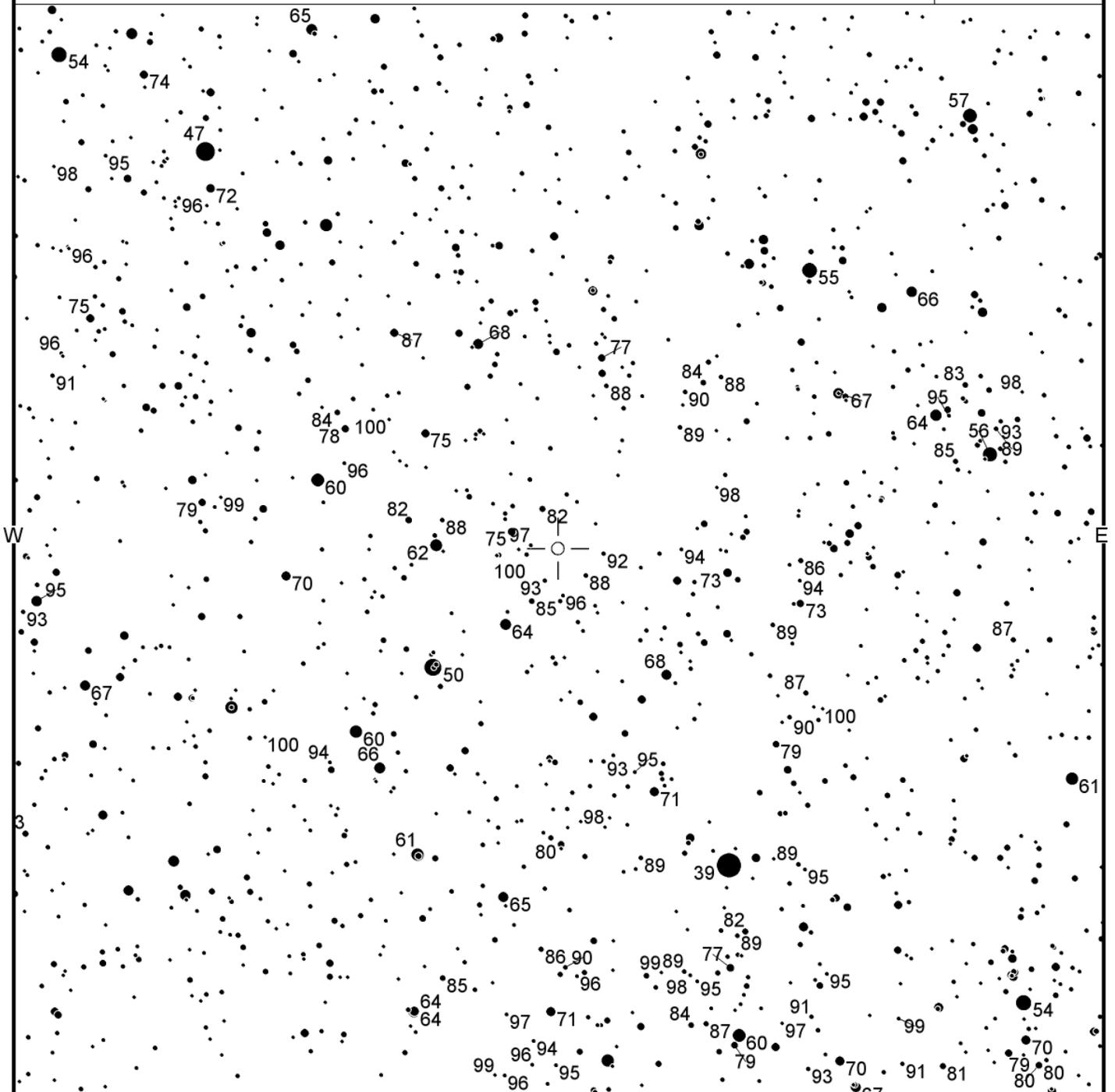
chi cyg

AAVSO
Chart

Magn: 3.3 - 14.2 V
Period: 408.05
Type: M
Spec: S6,2e-S10,4e(MSe)

(2000) 19:50:33.92 +32:54:50.6

X20733M



FOV = 7.5°

Please use the photometry table for CCD observations.

<https://www.aavso.org/vsp/>

Copyright © 2017 AAVSO

AAVSO Chart showing comparison star magnitudes