

# Armchair Astronomy No.2 - Constellations

## Heavens Above! Astronomy from your Armchair. (© R Bee 2007)

### The Colour of Constellations

If you venture out at night under a starry sky and you look up, what will you see? Stars, hopefully lots of stars. What else? Patterns in the stars, recognizable groupings?

Welcome to the world of constellations, a word derived from the Latin for 'with stars'. You are seeing the groupings of stars seen by civilizations as far back as the ancient Babylonians, Mesopotamians, Mayans, Aboriginals and many others. Like children seeing recognizable shapes in clouds, the people of these cultures saw the shapes of their tools, farm animals, predators and finally their deities and mythological characters. These were passed on down the centuries until entrenched by the Greeks and Romans, with late add-ons by southern Dutch explorers, into our current stable of 88 constellations. They range alphabetically from Andromeda through to Vulpecula the Fox, and many a story they tell, or at least represent.

Some constellations leap out at you from the sky. Orion the Hunter (which we see Down-under to the north from November to May as the Saucepan); Sagittarius the Archer (which most recognize as The Teapot); Crux (the Southern Cross), Cygnus the Swan; Leo the Lion (upside-down as The Sickle); Pegasus the Horse; Scorpius; and Taurus the Bull. Others are reasonably obvious once they are pointed out to you. The rest... well, the astronomers had to fill the sky up somehow.

The important thing about constellations is they are just random patterns in the sky. Their stars are not usually associated with each other or even close to each other. But still, over the millennia and even today, they provide a fascination to the human mind, a source of drama and poetry. Many of their tales are interlinked, so in some areas of the sky, whole stories are being acted out by a tableau of multiple constellations, year after year. The constellations Andromeda, Pegasus, Cetus, Perseus, Cassiopeia and Cepheus play out a sordid soap opera of vanity, love, sacrifice and betrayal, while the grouping of Orion, Scorpius, Ophiuchus, Aquila and Sagittarius tell a tale of ego, loyalty and murder.

But mostly there is simple beauty. Out of a myriad of possible quotations describing a poet's enchantment with the stellar spectacle, one of my favourites which captures both Orion and the Pleiades in Taurus is this from Tennyson's Locksley Hall:

*"Many a night from yonder ivied casement,  
Ere I went to rest,  
Did I look on great Orion,  
sloping slowly to the west.  
Many a night I saw the Pleiads,  
rising through the mellow shade,  
Glitter like a swarm of fireflies  
tangled in a silver braid."*

When looking at the constellations, what do you notice about the stars? Yes, they vary in brightness and also in colour. Have you ever stopped to wonder why?

The answer is in a paraphrase of that old car oil ad: "Stars ain't stars, Sol."

The average naked eye can see stars with brightness down from 1st magnitude to what astronomers call magnitude 6 while 50mm aperture binoculars can show stars as faint as magnitude 9. (The higher the magnitude, the fainter the star.) But the fascinating thing is that just because one star is fainter than another doesn't mean it is further away. This is because stars come in all sizes and colours, from much smaller than our Sun, to 100s of times the diameter of our Sun. So, for example, the brightest star in the sky, Sirius, is very close at 8.7 light years. But the second brightest star, Canopus, is a whopping 313 light years away. It is so bright because it is huge, a white supergiant star. So stars can be deceptive in their apparent nature and the next time you say "Twinkle twinkle little star...", don't be so sure. Also, stars have colours ranging from blue (very hot) through white, yellow, orange and red (cool).

*Twinkle twinkle little star  
How I wonder what you are  
Blue or white or red or gold  
What mystery does your colour hold?*

Astronomers describe these colours (and temperatures) of stars by the letters O, B, A, F, G, K, M, N, which you notice is out of order. So they remember it with a mnemonic: Oh Be A Fine Girl(Guy) Kiss Me Now. Who said astronomers weren't poets, or at least romantics?