



***Crux –  
our Southern  
heritage***

by Magda Streicher  
*magda@pixie.co.za*



Image source: Stellarium

It has long been overdue that we explore our own southern trophy, the Crux constellation. Not only is it the smallest constellation of a total of 88 in the sky, but it is also one of the most popular. The Southern Cross reminds me of the many crosses planted by the early explorers, today found along the coast amongst the rocks and between lighthouses. We are indeed privileged to see a starry cross in our sky, especially since this cross aptly shows the direction to real south. Drawing a line through Gamma to Alpha Crucis and extending it some 25 degrees, roughly gets us to the south celestial pole.

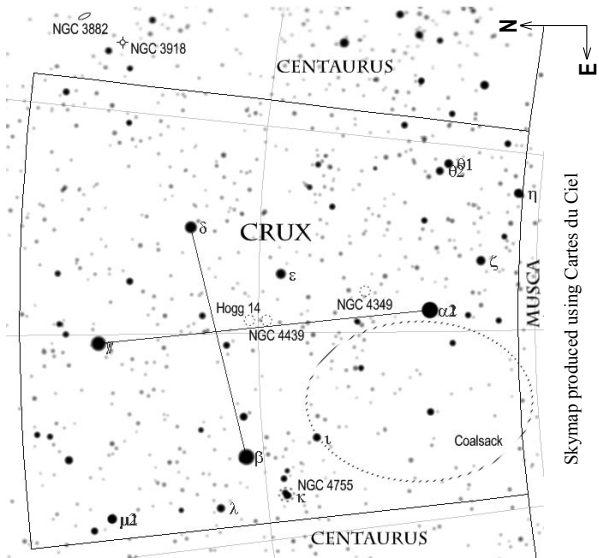
The Portuguese navigators saw Crux as the symbol of their faith. It is also honoured on the flags of Australia and New Zealand. Ptolemy assigned Beta, Gamma and Delta Crucis to Centaurus, but it is generally believed that the French astronomer Augustin Royer gave Crux its own identity. The starry cross was mentioned by the Italian Navigator Amerigo Vespucci way back in 1501. The constellation Centaurus literally stands guard over the cross on three of its sides – Musca lies to its South.

Each of the four corner stars has its own

fascination. **Alpha Crucis**, at magnitude 1.4, occupies the southern tip of Crux and is a brilliant bluish-white pair, 370 light years distant. The neighbouring **Beta Crucis**, sometimes also known as “Mimosa”, is another brilliant white star of magnitude 1.3, lying east on the short arm of Crux. It is also the 20<sup>th</sup> brightest star in the sky, around 500 light years distant. A crimson-red star of magnitude 8.6 lies just 2.4’ west of it, making a fine contrast. On the western end of Crux’s short arm the variable star **Delta Crucis**, magnitude 2.7. It is some 360 light years distant and has a massive expanding stellar shell and a rotation period of only 3.6 days. North of Alpha, on the opposite side of the cross, is **Gamma Crucis**, the reddish beacon star of the constellation. It is a red giant (type M4) of magnitude 1.6 and is the nearest of the four Crux stars, some 220 light years away. It is also the nearest red giant, similar in fact to the red giant star Antares in Scorpius. The true fifth wheel on the Crux wagon is magnitude 3.5 Epsilon, situated between Alpha and Delta Crucis. In a way it spoils the cross shape, but at the same time distinguishes it from the other crosses in the sky.

## crux - our southern heritage

The constellation Crux is king, with a multitude of bright and exceptional star clusters. Sometimes only binoculars are needed; just lie comfortably flat on your back and explore the variety of star groupings in our southern skies and especially in this constellation. Crux is loaded with beautiful star clusters in various shapes and sizes and if I had to share all with you it would fill up several pages.



Of course we should take pride in what is surely one of the most unique star clusters south of the equator. **NGC 4755**, our pride and joy, is situated only 1° SE of Beta Crucis. The “Jewel box”, or to use the other name for this brilliant cluster, the “Crucis Star Cluster”, is surely a champion in its class. In a statement made by John Herschel while observing at the Cape of Good Hope, he compared this stellar group to a piece of multi-coloured jewellery. As a piece of creative thinking, Dave Gordon’s description of the stars within the cluster is unique: “... a burnt orange giant, a dusty yellow main sequence, handfuls of Omo whites and some sparkling Surf super blues”. I am always amazed by the three colourful stars in a row towards the centre crossbar in this outstanding cluster, resembling in a way Orion’s belt stars at 95x. It took

the imagination of a child to see these three as a traffic light with mixed up colours! Explore the Jewel Box through a telescope, binoculars or even with the naked eye – your effort will not be in vain. Another pretty open cluster, NGC 4852, can be seen just one degree northeast of the Jewel Box.

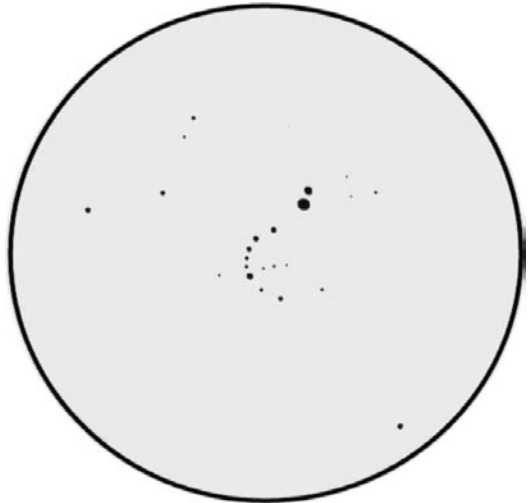
I don’t have to introduce you to the rare but well known dark nebula, the “**Coal-sack**”, which is a starless dark cloud adjoining Alpha Crucis and Beta Crucis, covering around 7x5 degrees of sky at a distance of over 550 light years. Sir William Herschel once referred to dark nebulae as “holes in the heavens” and heaven knows what his thoughts might have been at the time. In dark skies this unusual piece of sky is particularly striking with the naked eye. One of my most

precious memories was in the deep dark Kalahari, with the Coalsack hanging like a dark cloud of just nothing on the Southern Cross's arm, in a night sky crowded with brilliant scintillating stars.

An exceptional cluster is **NGC 4349**, situated only 1.3° north of Alpha Crucis, about midway to Epsilon Crucis, quite easy to find. James Dunlop discovered this bright outstanding cluster, describing it as a pretty large faint nebula with extremely small stars. With my 12-inch telescope at 218x, I see a multitude of suns that spiral and snake away from a slightly more crowded centre. One extension of very faint stars swings out of the cluster's western side towards the north, almost like a curly seashell. In his journal John Herschel wrote that this cluster was observed with his friend Thomas Maclear, the Astronomer Royal at the Cape of Good Hope.

Going through the list of open star clusters is a satisfying journey to faraway destinations. **NGC 4439**, only 50' NW of magnitude 3.5 Epsilon Crucis, is one of my favourites and seems to contain the sickle emblem of the Russian flag (or is my imagination running away with me again? - see sketch). Approximately eleven stars resemble an eastern dome-shape that is quite outstanding against the background star-field. Three faint stars pointing west,

nestle inside the dome's western side. Two comparatively bright 8<sup>th</sup> magnitude stars, 3' towards the north of the cluster, complete this composition. Well, imagination or not, I would love to hear your thoughts about this star grouping. The cluster **Hogg 14**, named after its discoverer Arthur Robert Hogg, is situated about 18' to the north. It consists of the 10th magnitude GSC 8658 949 and a few faint members around the south, with an overall brightness of magnitude 8.5. For the more experienced and brave observers there are many faint PK Planetary Nebulae and LEDA Galaxies within the borders of the Southern Cross constellation.



The Open Cluster NGC 4349 sketched by Magda using her 12-inch telescope at 95 power. North is up and west to the right.

Since Centaurus once included some of the Crux stars, I decided to borrow two objects just inside its border for this article. Extending a line connecting Beta and Delta Crucis an equal distance to the NW gets you to the bright planetary nebula **NGC 3918**, only 50' inside the constellation Centaurus. This is a very small well-defined round nebula. It is very bright and stands out well against the background star field. Higher power (218x) shows it in a distinctive soft blue-green colour. The central star is difficult to see because of the planetary's high surface brightness but it is around magnitude 14.5.

**NGC 3882**, the closest NGC galaxy outside the border of the constellation Crux, is situated only one degree further NW from the planetary NGC 3918 in Centaurus. It is rather faint, slightly oval in a NW-SE direction, and slowly brightens towards the middle. Higher power (218x) reveals two faint stars on its dusty surface towards the SE edge. Two equal 8<sup>th</sup> magnitude stars to the north and west form an

interesting triangle with the galaxy.

A few years ago I had the privilege of showing the southern skies to Daniel Ravier, visiting president of the Ocean Association of Astronomy in France. Great was my surprise when I read a poem written by him in our local newspaper:

*Magdalene shows me the Southern Cross,  
the Cross that is so fantastic with its marker  
that is used to guide in the night.  
Carina that is bright as a fire over your  
tropic home.  
Braam van Zyl shows me the coupolas of  
Boyden  
that follow the stars during their foolish  
riding.  
May the astronomers of Africa and the  
world  
always have the ocean in view for sharing  
knowledge  
and friendship with all humanity.*

Thank you Daniel.



Object	Type	RA (J2000.0)	Dec	Mag	Size
NGC 3882	Galaxy	11 <sup>h</sup> 46.1 <sup>m</sup>	-56°22'	12.5	2.3'x1.3'
NGC 3918	P/Nebula	11 50.3	-57 11	8.1	12"
NGC 4349	Open Cluster	12 24.5	-61 54	7.4	15'
NGC 4439	Open Cluster	12 28.4	-60 06	8.4	4'
Hogg 14	Open Cluster	12 28.6	-59 49	9.5	3'
NGC 4755 (Jewel box)	Open Cluster	12 53.6	-60 20	4.2	10'
Delta Crucis	Star	12 15.8	-58 44	2.7	*
Alpha Crucis	Double star	12 26.6	-63 06	1.4&1.9	5.6" sep
Gam Crucis	Double star	12 31.2	-57 07	1.6&6.7	93.1" sep
Beta Crucis	Double star	12 47.7	-59 41	1.3&11.2	44.3" sep