

# Events

- Venus – bright evening star
- 1<sup>st</sup> Feb to 28<sup>th</sup> Feb - track Minor Planet, Vesta (~+6 mag), easy binocular view, as it moves through Gemini. On the 2<sup>nd</sup> Feb, it can be seen below “kappa”(κ) Geminorum in a 1 deg FOV
- 1<sup>st</sup> Feb – daytime Venus observing - Venus approx. 10 deg above the moon at about 11:30
- 11<sup>th</sup> Feb - Penumbral Lunar Eclipse
  - Start – 00:34
  - Max – 02:43
  - End – 05:53
- 26<sup>th</sup> Feb – Annular Solar Eclipse (~60%) (for Pretoria, it is a Partial Eclipse)
  - Start – 17:14
  - Max – 18:13
  - End – 18:40 (sunset)
- Comet challenges - Comet P/2003 SQ215 = 2016 P3 Neat-Loneos / Comet P/2006 G1 / Comet, C/2016 U1 NEOWISE – low magnitudes and one of them is in the twilight
- No favourable meteor showers in Jan





# Carbon Stars

Carbon stars are giants much larger than the Sun that have evolved past the point where only hydrogen fusion provides their energy. In these stars' cores, helium fuses into carbon and oxygen at much higher temperatures. Because the energy output has increased, the outer layers of these stars swell and cool, thus becoming red. But a standard red giant doesn't appear all that red because its production of oxygen is greater than that of carbon. In carbon stars, however, carbon production outpaces that of oxygen, and carbon compounds such as carbon monoxide (CO) and cyanogen (CN) migrate to the star's surface. There, carbon molecules absorb short-wavelength light (green, blue, and violet), making the star abnormally red.

<http://www.skyandtelescope.com/astronomy-blogs/carbon-stars-will-make-see-red1203201401>

[http://www.astronomy.com/~media/import/files/pdf/9/b/e/september\\_2010\\_we\\_red\\_dest\\_stars.pdf](http://www.astronomy.com/~media/import/files/pdf/9/b/e/september_2010_we_red_dest_stars.pdf)

# A few common carbon stars for us to observe

**Herschel's GARNET star (Mu [μ] Cephei)** sits at the northern edge of emission nebula IC 1396. Mu lies 3.6° west-northwest of Zeta (ζ) Cephei.

**LA SUPERBA (Y Canum Venaticorum)** lies 4.5° north-northeast of magnitude 4.2 Chara (Beta [β] CVn). La Superba is a variable star. Its brightness changes from magnitude 4.8 to 6.

**HINDS CRIMSON Star (R Leporis)** glows blood-red 3.5° west-northwest of Mu (μ) Leporis. For the reddest view, observe R Lep through a 6-inch or larger telescope at its faintest, magnitude 11.7.

**V CYGNI** sits 2.9° due north of Deneb (Alpha [α] Cygni), but it's not easy to find. At maximum brightness, it glows weakly at magnitude 7.8, but it fades 6 magnitudes as it moves to minimum. It will appear reddest near minimum brightness.

**RUBY CRUCIS (DY Crucis)** lies less than 1' northwest of magnitude 1.3 Mimosa (Beta [β] Crucis). To see 9<sup>th</sup> magnitude DY Crucis, insert an eyepiece that gives 100x or more, and place brilliant Mimosa outside the field of view.

**PERHAPS THE SKY'S reddest star is V Hydrae.** It sits 3.5° south-southwest of Alkes (Alpha [α] Crateris). At maximum brightness, V Hya hovers near naked-eye visibility at magnitude 6.5, but it drops to magnitude 12 during a 533-day period.



Need some help describing the great variety of carbon star hues? Use the "red block" from Ingrid Sundberg's color thesaurus.

*Ingrid Sundberg*

red	cherry	rose	jam
merlot	garnet	crimson	ruby
scarlet	wine	brick	apple
mahogany	blood	sangria	berry
currant	blush	candy	lipstick