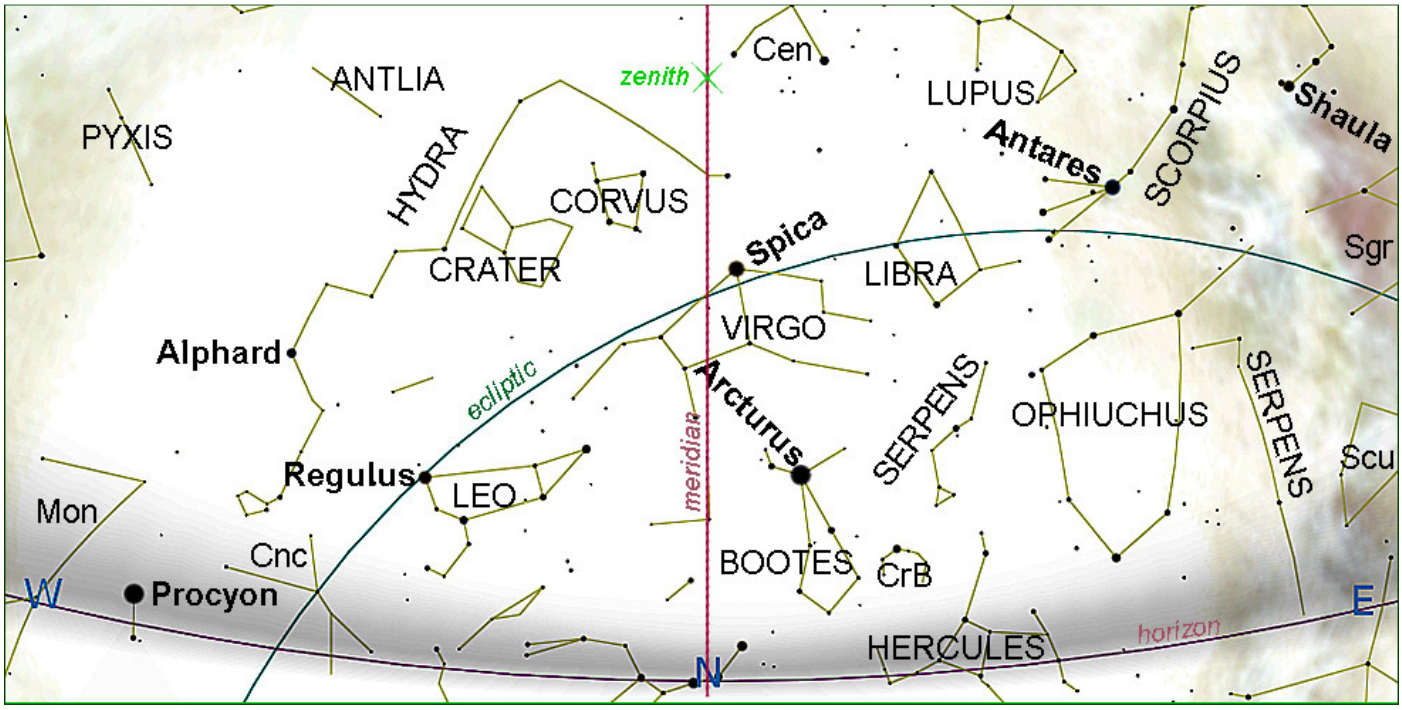
SKYNOTES from Hermanus

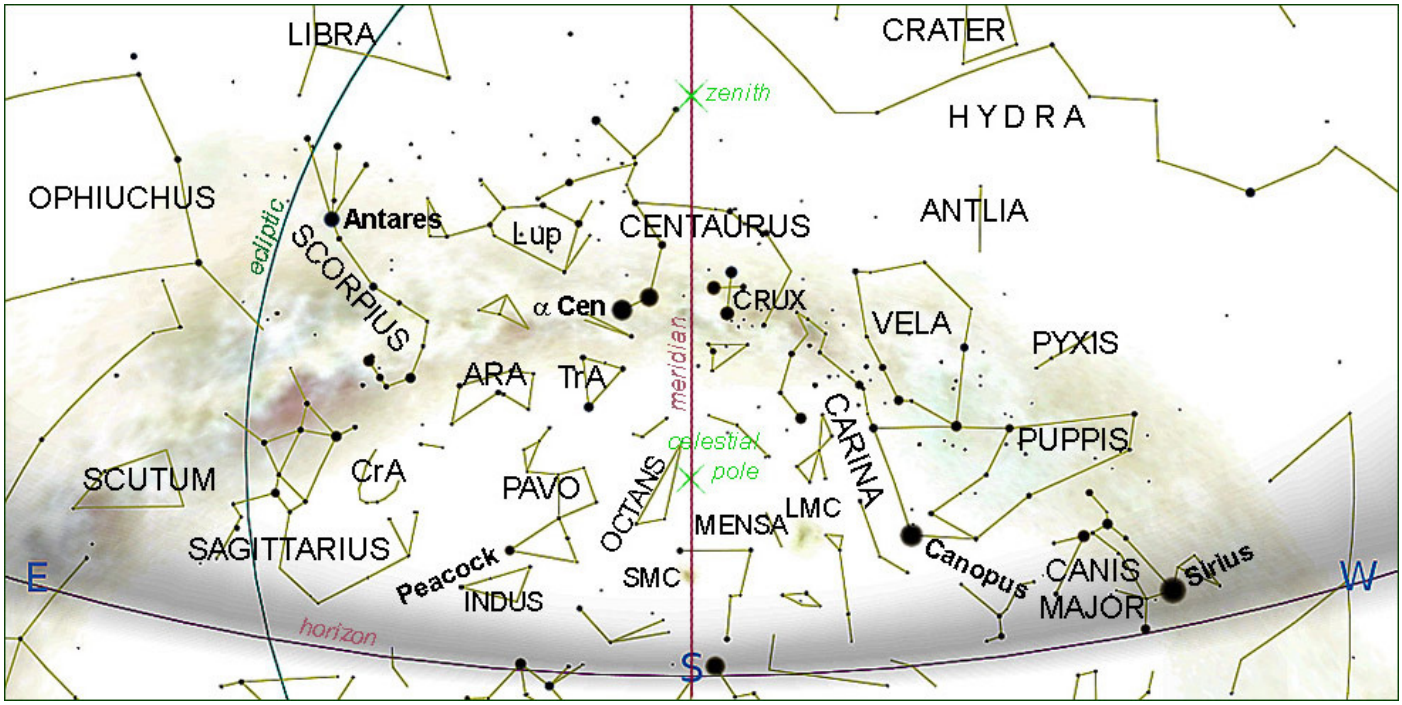
MAY 2022

SKY CHARTS

EVENING SKY 28th MAY at 21h30 (NORTH DOWN)



EVENING SKY 28th MAY at 21h30 (SOUTH DOWN)



THE SOLAR SYSTEM

PLEASE NOTE: All events predicted are as observed from **Hermanus, Western Cape, South Africa. Times are South African Standard Time (UTC +2).**

HIGHLIGHTS FROM THE SKY GUIDE

May 2022

Date	*Time*	*Item*
1	06h00	5 and a half planets line up in the east before dawn (see p. 6)
5	14h47	Moon at apogee (405 286 km)
	17h54	Moon northernmost (+27.0º)
7		Moon (31%) near Pollux
9	20h21	**First quarter Moon**
10	00h37	Mercury stationary
	Evening	Moon (60%) near Regulus
12	23h42	Moon crosses equator southbound
14	Evening	Moon (94%) 12.6º east of Spica (α Vir)
15	12h33	Venus at aphelion (0.728 au)
16	06h14	**Full Moon** (360 383 km, 33.2º)
16	**05h29 to 06h54**	**Total lunar eclipse** (see p. 4)
17	07h30	Moon passes 3.3º west of Antares
	17h24	Moon (99%) at perigee (360 297 km)
		Mercury crosses the ecliptic
18		Mars 0.5º north of Neptune
19	03h23	Moon (82%) southernmost
20		Moon near Pluto
21	21h18	Mercury at inferior conjunction
22	20h27	Moon passes 3.6º north-east of Saturn
	20h43	**Last quarter Moon**
24	**05h10**	**29% Moon and four planets lined up before dawn** (see chart on p. 4)
25	**01h24**	**Moon, Mars and Jupiter form an almost perfect equilateral triangle (<3º)**
	15h29	Moon crosses the equator northbound
26		Mars southernmost for the year
27	00h25	Mercury at aphelion (0.467 au)
30	13h30	**New Moon**

SUGGESTED EVENING OBSERVATION WINDOWS *(Lunar observations notwithstanding)*

Date		*Moon*	*Dusk end*
22nd April	*Rises*	23h12 (61%)	19h35
to **4th May**	*Sets*	10h41(14%)	19h24
21st May	*Rises*	23h21 (61%)	19h13
to **3rd June**	*Sets*	20h23 (14%)	19h10

SOLAR SYSTEM VISIBILITY

MAY 2022			*1st May*	*1st June*	*Visibility*
Sun Length of day	Aries to Taurus 10.44 to 10.00	Rises: Transit: Sets:	0718 12h40 18h02	07h41 12h41 17h41	**Never look at the sun without *SUITABLE EYE PROTECTION!***
Mercury Magnitude Phase Diameter	Taurus + 0.7 to +2.6 31% to 10% 8 " to 11"	Rises: Transit: Sets:	09h05 14h00 18h55	06h26 11h43 17h00	**Behind the Sun then after sunset**
Venus Magnitude Phase Diameter	Pisces to Aries -4.1 to -4.0 68% to 78% 17" to 14"	Rises: Transit: Sets:	03h55 10h03 16h10	04h43 10h15 15h47	**Morning**
Mars Magnitude Phase Diameter	Aquarius to Pisces +0.9 to +0.7 89% to 87% 6"	Rises: Transit: Sets:	02h37 09h03 15h29	02h26 08h27 14h28	**Morning**
Jupiter Magnitude Diameter	Pisces -2.1to -2.3 35" to 37"	Rises: Transit: Sets:	03h54 10h01 16h07	02h19 08h20 14h21	**Morning**
Saturn Magnitude Diameter	Capricornus +0.8 to +0.7 16" to 17"	Rises: Transit: Sets:	01h12 07h54 14h37	23h11 05h56 12h38	**Morning**
Uranus Magnitude Diameter	Aries +5.9 to +5.8 3"	Rises: Transit: Sets:	07h37 12h55 18h12	05h44 11h00 16h15	**Behind the Sun then low in the east before sunrise**
Neptune Magnitude Diameter	Pisces +7.9 2"	Rises: Transit: Sets:	03h37 09h48 15h59	01h39 07h49 13h59	**Morning**
Pluto Magnitude	Sagittarius +14.4	Rises: Transit: Sets:	23h00 06h11 13h19	20h57 14h09 11h16	**Morning**

Phase: In a telescope, the inner planets (Mercury, Venus and Mars) appear to us in phases, depending on the angle of the Sun's illumination, as does the Moon. The **angular diameter** is given in arc seconds ("). This is the apparent size of the object as we see it from Earth.

Magnitude: we are accustomed to hearing stars described in terms of 'magnitude'. For example the planet Jupiter at magnitude -1.8 is considerably brighter than the star Antares (in Scorpius) at +1.05. The scale is 'inverse'; the brighter the object, the lower the number. A 'good' human eye on a clear night can see down to a magnitude of about +6.

Transit: When an object crosses the **local meridian** it is said to **'transit'**. The local meridian is an imaginary line from the horizon directly north passing overhead (through *zenith,* see charts on page 1) to the horizon directly south.

THE MOON

Some facts and figures:

The **Moon** orbits Earth in the prograde direction and completes one revolution relative to the Vernal Equinox and the stars in about 27.32 days (a **tropical month** and **sidereal month**) and one revolution relative to the Sun in about 29.53 days (a **synodic month**). Earth and the Moon orbit about their **barycentre** (common centre of mass), which lies about 4 670 km from Earth's centre (about 73% of its radius), forming a satellite system called the **Earth–Moon system**. On average, the distance to the Moon is about 385 000 km from Earth's centre, corresponding to about 60 Earth radii or 1.282 light-seconds. The **March equinox** or **northward equinox** is the equinox on the Earth when the subsolar point appears to leave the Southern Hemisphere and cross the celestial equator, heading northward as seen from Earth. The March equinox is known as the **vernal equinox** (**spring equinox**) in the Northern Hemisphere and as the **autumnal equinox** in the Southern Hemisphere. https://en.wikipedia.org/wiki/March_equinox

With a mean orbital velocity of 1.022 km/s, the Moon covers a distance of approximately its diameter, about half a degree on the celestial sphere, each hour. Our Moon differs from most satellites of other planets in that its orbit is close to the ecliptic plane instead of to its primary's (in this case, Earth's) equatorial plane. The Moon's orbital plane is inclined by about 5.1° with respect to the ecliptic plane, whereas the Moon's equatorial plane is tilted by only 1.5°.

FORTHCOMING ATTRACTIONS COMING TO A SKY NEAR YOU

PLANET GROUPING BEFORE SUNRISE

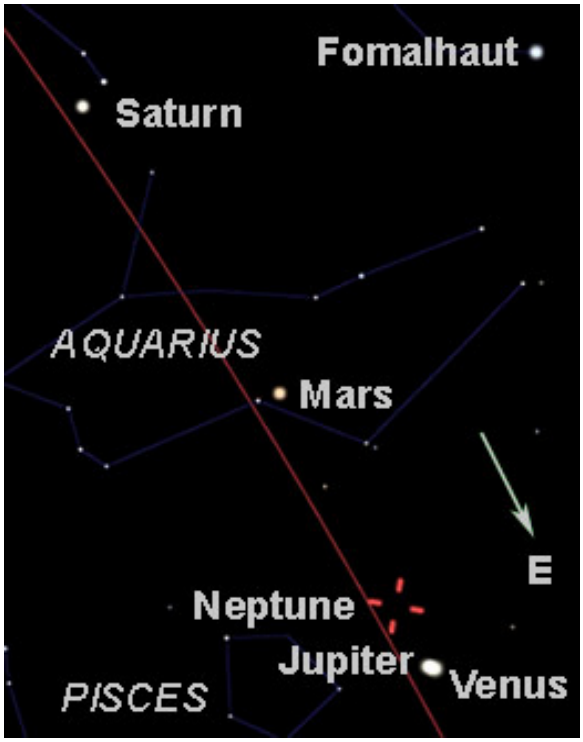
The early morning eastern sky is decorated with most of our planets with only Mercury and Uranus avoiding the crowd.

Sunday, 1st May 06h00

From the eastern horizon, looking upwards: **Venus**, **Jupiter**, **Neptune** (indicated), **Mars**, **Saturn** and Pluto (off the chart) line up along the ecliptic before dawn.

With a telescope and just possibly with binoculars, Neptune (mag. +7.9), should be available in good seeing conditions if you know where to look. Jupiter, just 3.5º away, provides a handy guide.

Pluto (mag. +14.4) will not be visible through smaller than about a 15” telescope.



TOTAL LUNAR ECLIPSE (*Details from SGAS 2022*)

A total lunar eclipse will take place on **16 May 2022**, the first of two total lunar eclipses in 2022. A second eclipse will happen on 8 November. The eclipse will be a dark one with the northern tip of the Moon passing through the centre of the Earth's shadow. This is the first central eclipse of Saros series 131.

TIME	*ECLIPSE STAGE*	*VISIBILITY*
03h32	Moon enters penumbra	Weather dependent
04h28	Moon enters umbra	
05h29	Total eclipse starts	
06h11	Eclipse maximum	
06h54	Total eclipse ends	Hermanus Sunrise 07h33 - Moonset 07h34
07h55	Moon leaves umbra	
08h51	Moon leaves penumbra	no

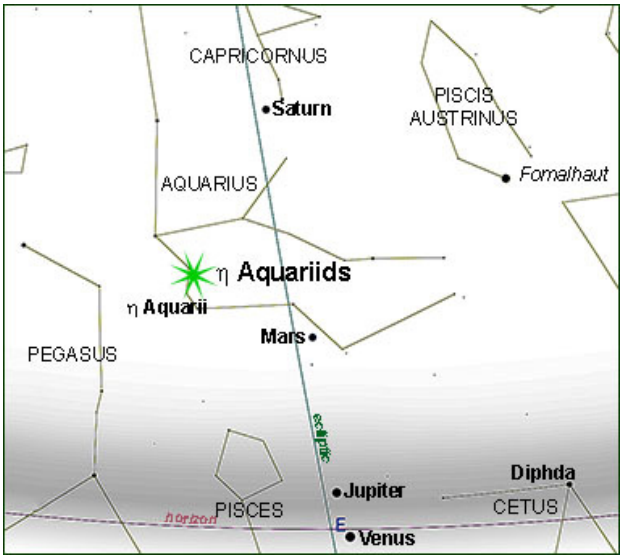
METEOR SHOWERS

From SGAS 2022	*Maximum Date/Time*	*Duration*	*Observing Prospects*	*Radiant*	*ZHR* [1]	*Velocity Km/sec*
η Aquariids	5th May 03h30 to 05h30	21st Apr to 12th May	Good, the moon is out of the way	22h24m / -2º (See chart below) [2]	55	65

[1] *A word of caution regarding predicted Zenithal Hourly Rate (ZHR)*:

A meteor shower's activity is gauged by its zenithal hourly rate. This value is often quoted in the press and astronomy publications and has sometimes been the source of misunderstanding and disappointment. ZHR is an ideal value; it is by definition the number of meteors a single observer could possibly see during a shower's peak with the radiant directly overhead on a clear, dark night. Most observers, however, will not see as many meteors as the ZHR suggests.

[2] *Below: radiant of* ***η Aquariids*** *(5th May 04h00)*



For more details regarding meteor watching, please see SGAS 2022, pages 86- 87.

LOOKING UP

CLUB STARGAZING – the possibility of Stargazing is now back thanks to the relaxation of the COVID restrictions.
The calendar on the front page of our website indicates our planned events.

Please consult our website for updates: http://www.hermanusastronomy.co.za

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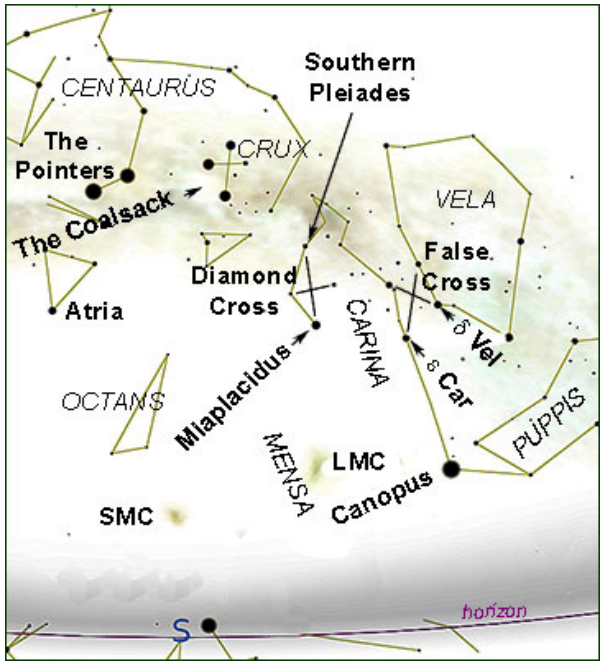
NO SCOPE REQUIRED

I offer here some tips for the less experienced enthusiast on getting started with recognising constellations and identifying some of the lesser-known features of the night sky. In future editions of Skynotes, we shall be looking at different areas of the sky, north, south, east and west.

Lying on a well-reclined deck chair, a small table beside you with a warming beverage, allows a sweeping view of the sky without tiring the neck muscles.

A headlight, selected to RED (available reasonably cheaply in the stores in town), will aid with reading the chart. Repeating this exercise for a few nights running will quickly familiarise the viewer with the various stars and constellations.

With your toes pointed south, the night sky will appear as in the sky chart to right.



Starting at the top left of the chart, **The Pointers** (α and β Centauri) point to the top of the **Southern Cross** (Crux). The dark nebula, **The Coalsack**, is easily identified against the bright background of **Milky Way** stars.

Moving clockwise from Crux, we come to **Carina** (the keel of the ship Argo Navis) in which we find the **Diamond Cross,** topped by the **Southern Pleiades** (IC 2602) with **Miaplacidus** (β Car) at the bottom. **The False Cross** shares its four stars between constellations **Carina** (the keel) and **Vela** (the sails).

Further down is **Puppis** (the poop deck).

To the left is the **Large Magellanic Cloud** (LMC)**,** the table cloth above **Mensa** (Table Mountain).

Further left we have the **Small Magellanic Cloud** (SMC).

And then, moving our eyes up, we come to **Octans** (the Octant).

Completing the circle, we have **Atria** (α TrA) in Triangulum Australe.

Argo Navis
The ship Argo

Argo (Ἀργώ in Greek) is a constellation that is not so much disused as dismantled. It was one of the 48 constellations known to Greek astronomers, as listed by Ptolemy in the Almagest, but astronomers in the 18th century found it large and unwieldy and so divided it into three parts: Carina, the Keel or body; Puppis, the Poop (i.e. stern); and Vela, the Sails. Were the three parts to be reunited, the resulting figure would be almost 28% larger in area than the current largest constellation, Hydra.

The modern constellation Pyxis, the compass, occupies an area next to the mast, but it is not considered a part of the original Argo. In 1844 the English astronomer John Herschel proposed replacing Pyxis with a fourth subdivision of Argo which he called Malus, the mast, but this suggestion was not widely adopted.

Voyage of the Argo

Argo Navis represents the 50-oared galley in which Jason and his crew of Argonauts sailed to fetch the golden fleece from Colchis, on the eastern shores of the Black Sea in present-day Georgia. This fleece, incidentally, came from the ram that is now represented by the constellation Aries.

Jason was the rightful successor to the throne of Iolcus in eastern Greece. But the throne had been seized by his arrogant uncle Pelias while Jason was still a child and there seemed no chance that Jason would inherit it. When Jason had grown into a man, Pelias deceitfully offered to relinquish the throne if Jason could bring back the golden fleece from Colchis. It was a round trip of over 2,000 miles, and Pelias secretly hoped that Jason would perish along the way.

First, he needed a ship capable of such an epic voyage. Jason entrusted its construction to Argus, after whom it was named. Argus built the ship under supervision of the goddess Athene at the port of Pagasae (the modern Volos), using timber from nearby Mount Pelion.

Into the prow Athene fitted an oak beam from the oracle of Zeus at Dodona in north-western Greece. This area, like the island of Corfu nearby, was once noted for its forests of oak, before later shipbuilders stripped them bare. Being part of an oracle, this oak beam could speak and it was crying out for action by the time the Argo left harbour.

Jason took with him 50 of the greatest Greek heroes, including the twins Castor and Polydeuces, the musician Orpheus, as well as Argus, the ship's builder. Even Heracles interrupted his labours to join the crew.

Apollonius of Rhodes, who wrote the epic story of the ship's voyage to Colchis and back, described Argo as the finest ship that ever braved the sea with oars. Even in the roughest of seas the bolts of Argo held her planks together safely, and she ran as sweetly when the crew were pulling at the oars as she did before the wind. Isaac Newton thought the voyage of the Argo was commemorated in the 12 signs of the zodiac, although the connections are hard to see.

Among the greatest dangers the Argonauts faced en route were the Clashing Rocks, or Symplegades, which guarded the entrance to the Black Sea like a pair of sliding doors, crushing ships between them. As the Argonauts rowed along the Bosporus, they could hear the terrifying clash of the Rocks and the thunder of surf. The Argonauts released a dove and watched it fly ahead of them. The Rocks converged

on the dove, nipping off its tail feathers, but the bird got through. Then, as the Rocks separated, the Argonauts rowed with all their might. A well-timed push from the divine hand of Athene helped the ship through the Rocks just as they slammed together again, shearing off the mascot from Argo's stern. Argo had become the first ship to run the gauntlet of the Rocks and survive. Thereafter the Clashing Rocks remained rooted apart.

Once safely into the Black Sea, Jason and the Argonauts headed for Colchis. There they stole the golden fleece from King Aeëtes, and made off with it back to Greece by a roundabout route. After their return, Jason left the Argo beached at Corinth, where he dedicated it to Poseidon, the sea god.

Eratosthenes said that the constellation represents the first ocean-going ship ever built, and the Roman writer Manilius concurred. However, this attribution must be wrong because the first ship was actually built by Danaus, father of the 50 Danaids, again with the help of Athene, and he sailed it with his daughters from Libya to Argos.

Argo in the sky

Only the stern of Argo is shown in the sky. Map makers attempted to account for this truncation either by depicting its prow vanishing into a bank of mist, as Aratus described it, or by passing between the Clashing Rocks, as shown on Bayer's atlas. Robert Graves recounts the explanation that Jason in his old age returned to Corinth where he sat beneath the rotting hulk of Argo, contemplating past events. Just at that moment the rotten beams of the prow fell off and killed him. Poseidon then placed the rest of the ship among the stars. Hyginus, though, says that Athene placed Argo among the stars from steering oars to sail when the ship was first launched, but says nothing about what happened to the prow.

Argo was first split into three by the French astronomer Nicolas Louis de Lacaille in his catalogue of the southern stars published in 1756 and it now lies permanently dismembered. In the notes to his catalogue Lacaille wrote: 'I have divided [Argo] into three parts, namely la Pouppe [Puppis], le Corps [Carina] & la Voilure [Vela]'. Pyxis, the ship's compass, was also introduced by Lacaille in this same area but he listed it separately, among his 14 new constellations, and so it is not considered a part of Argo, despite occasional assertions to the contrary.

There is, though, still an echo of Argo's former unity. Lacaille was dissatisfied with Bayer's allocation of Greek letters to the stars of Argo, so he decided to change them. However, when he did so, he used just one sequence of Greek letters, from Alpha to Omega, as though Argo were still a single figure. The designations Alpha and Beta were given to the two brightest stars of Argo, which are in Carina; hence there are no stars labelled Alpha or Beta in either Puppis or Vela. Equally, the brightest star in Puppis is Zeta and the brightest in Vela is Gamma, but there is no Zeta or Gamma Carinae.

Please keep in touch...

Have a look at our excellent website, edited by Derek Duckitt.

http://www.hermanusastronomy.co.za/

Contact ASSA - Get in touch with officers of the Society - we're real people with a passion for astronomy, **so contact us and let's talk!**

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Grateful thanks to the following:

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Edited by Peter Harvey - petermh@hermanus.co.za –

Tel: +27 (0) 81 212 9481