



## HERMANUS ASTRONOMY CENTRE

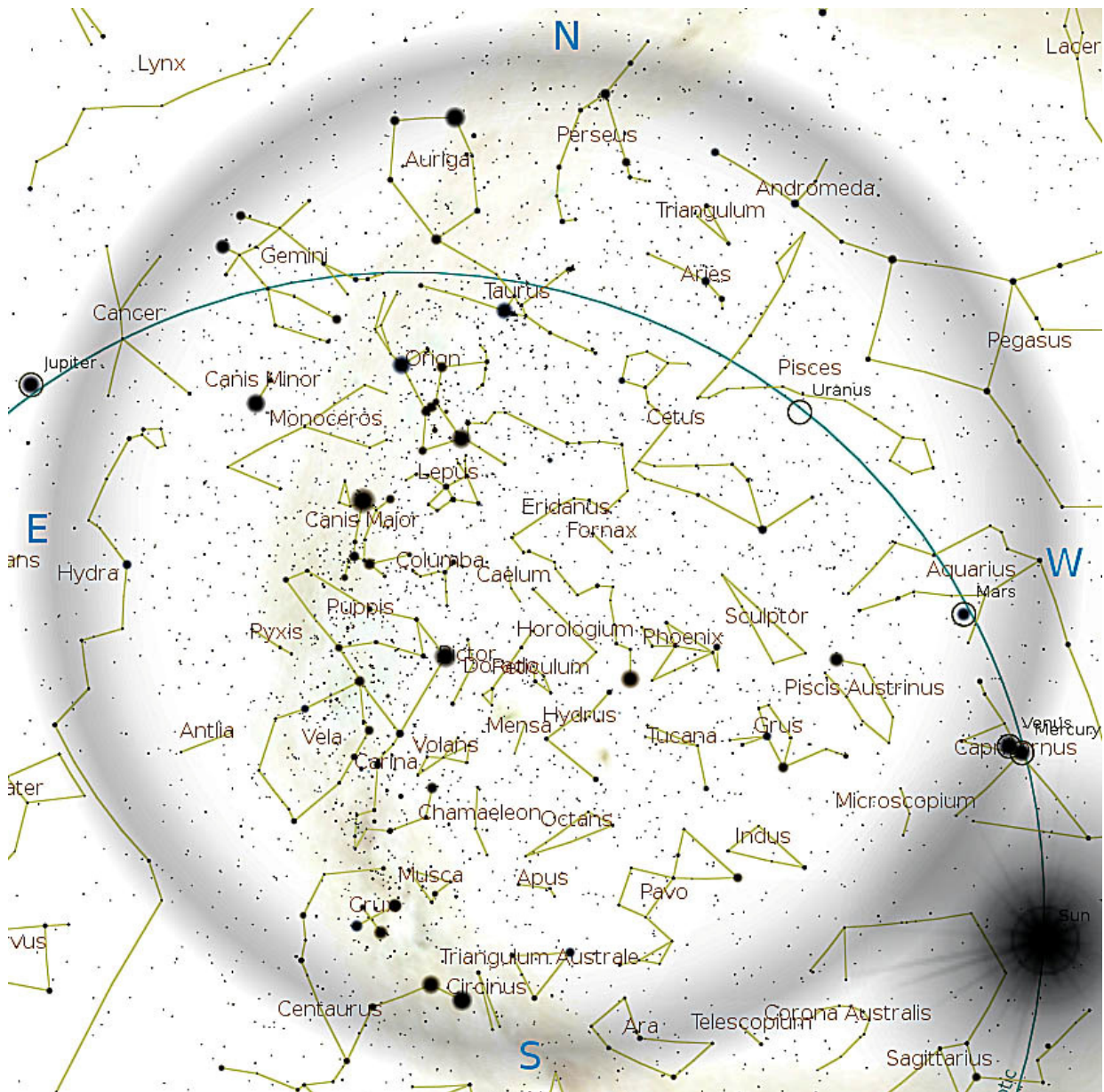
### THE SKY THIS MONTH : JANUARY 2015

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

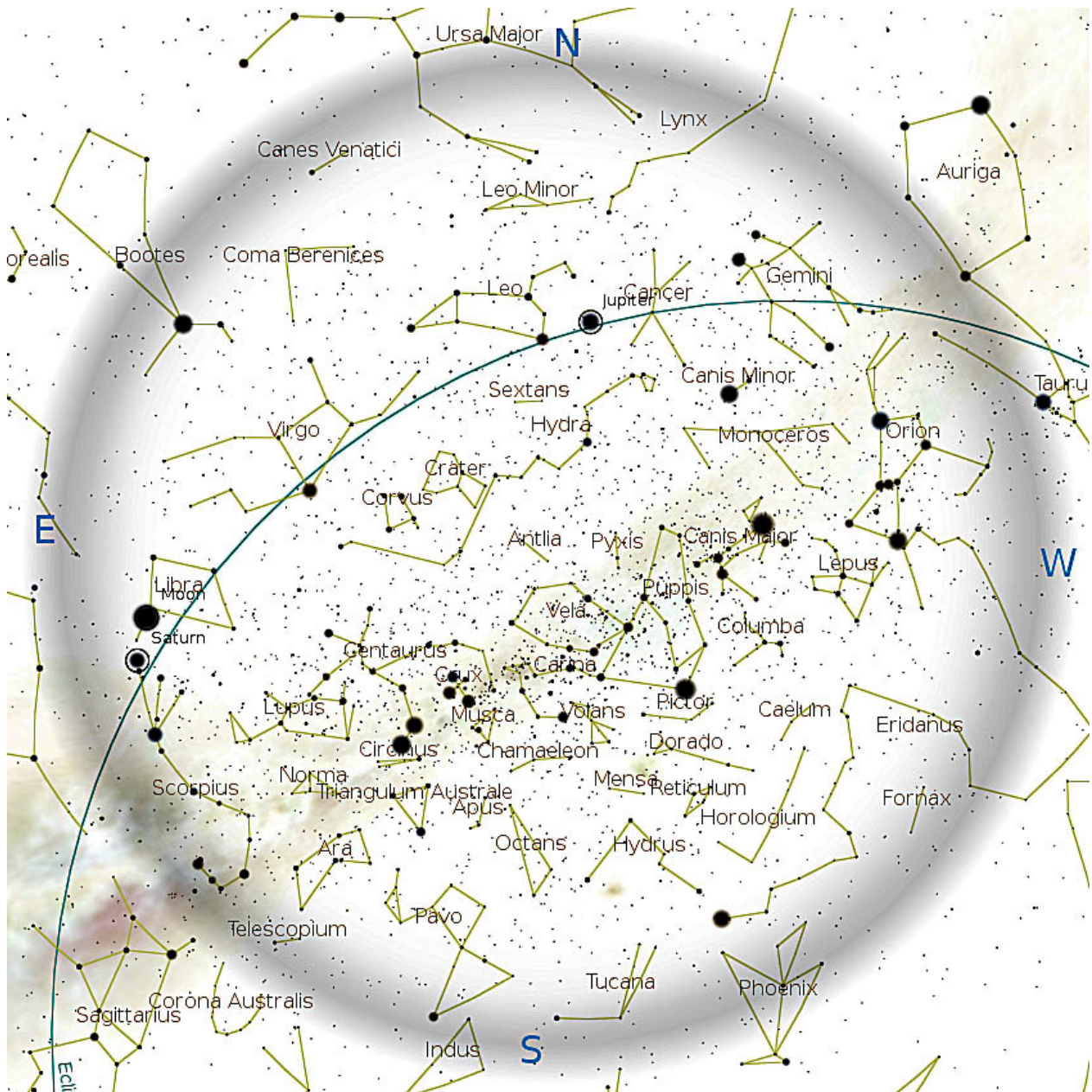
#### 1. SKY MAPS

Having long been dissatisfied with the readability of the sky charts, I have inserted the following charts adapted from Stellarium which I feel are an improvement. However, I have attached to the e-mail the normal 'Heavens Above' charts so you have a choice. Please let me know if you have any strong feelings on this.

**Times** quoted below are given in the 24-hour format South African Standard Time (SAST).



**EVENING SKY 15<sup>th</sup> JANUARY at 21<sup>h</sup>00**



**MORNING SKY 16<sup>th</sup> JANUARY at 03<sup>h</sup>00**

## 2. THE PLANETS

The New Year ushers in **Jupiter**, our friendly giant (at a distance!) with his retinue of Galilean moons, and is visible throughout the night; indicated in the Night Sky table below are transits of Io and Europa. **Mars** and **Neptune** are setting not long after sunset with **Uranus** available a bit longer in the evening sky. **Saturn** remains an early morning object until next month. **Venus** and **Mercury**, separated by about 3°, are close companions early in the month and set within an hour of the sun. By month end, **Mercury** has disappeared and **Venus** has the **War God** hot on her heels. **Pluto** appears just before the dawn later in the month but will challenge the most dedicated observer.

On 22<sup>nd</sup> January, if the weather be good, **Venus** will be visible at noon for the simple reason that we shall have the moon in close proximity to serve as a “guide star”, so to speak. Shielding your eyes from the sun’s glare, find the 2-day old moon about 30° east of the sun and **Venus** about 7° south-west of the moon.

### 3. THE NIGHT SKY

Highlights from the Sky Guide Africa South (SGAS):

<i>Date</i>	<i>Time</i>	<i>Item</i>
2	12h00	<b>Moon</b> near <b>Aldebaran</b> (within 2°)
3	00h54 to 03h12	<b>Jupiter</b> double shadow transit of <b>Europa</b> and <b>Io</b>
4		<b>Earth</b> at perihelion
5	07h00	<b>Full Moon</b>
7	06h00	<b>Moon</b> near (6°) <b>M44 Beehive (Praesepe)</b> open cluster (mag. 3.1)
8	08h00	<b>Moon</b> near <b>Jupiter</b>
8	23h50	<b>Moon</b> 3.3° south of <b>Regulus</b>
10	03h12 to 05h06	<b>Jupiter</b> double shadow transit of <b>Io</b> and <b>Europa</b> . Red Spot visible.
11	23h12 to 23h34	<b>Jupiter</b> double shadow transit of <b>Ganymede</b> and <b>Io</b> . Red Spot visible.
13	12h00	<b>Moon</b> last quarter
16	16h00	<b>Moon</b> near <b>Saturn</b>
19	00h00 to 03h30	<b>α Crucid</b> meteor show at maximum
20	15h00	<b>New Moon</b>
20		<b>Mars</b> near <b>Neptune</b>
21		<b>Moon</b> near <b>Mercury</b>
22		<b>Moon</b> near <b>Venus</b> (7.5°, see note above) and <b>Mars</b>
23	21h00	<b>Moon</b> 10° east <b>Mars</b>
25	21h00	<b>Moon</b> 4° east of <b>Uranus</b>
27	07h00	<b>First quarter Moon</b>
27	21h44 to 21h50	<b>Jupiter</b> shadow transits of <b>Europa</b> and <b>Io</b>
29	19h00	<b>Moon</b> 2° south of <b>Aldebaran</b>

### 4. METEOR SHOWERS

<i>Name</i>	<i>Date &amp; Time of Max</i>	<i>Duration</i>	<i>Radiant</i>	<i>ZHR vel.</i>		<i>Observing Prospect</i>
<b>Puppis-Velids</b>	29 Dec	5 Dec to 7 Jan	in <b>Vela</b> , 3° NW of <b>Southern Cross</b>	5	40	Good
<b>α Crucids</b>	19 January 00h00 to 03h30	6 Jan to 28 Jan	<b>Acrux</b>	<5	50	New Moon

Key to the table above:

ZHR – zenithal hourly rate

vel. Velocity in km per second

*For more details regarding meteor watching, please see the Sky Guide for Africa South (SGAS) pp. 86 – 87*

## The Sun and Planets

<i>Sun &amp; Planets</i>	<i>January 2015</i>		<i>J<sup>ST</sup></i>	<i>3J<sup>ST</sup></i>
<b>Sun</b> Constellation: Sagittarius to Capricornus Length of day: 14h 24m to 13h 48m	Rises:		05h35	06h03
	Transits:		12h47	12h57
	Sets:		19h59	19h50
<b>Mercury</b> phase 91% to 1%, $\phi$ 5" to 10" Constellation Sagittarius to Capricornus Magnitude: -0.8 to +4.2	Rises:		06h34	06h04
	Transits:		13h47	12h45
	Sets:		20h59	19h26
<b>Venus</b> phase 96% to 92 % Constellation: Sagittarius to Aquarius Magnitude: -3.9	Rises:		06h51	07h56
	Transits:		13h59	14h31
	Sets:		21h06	21h05
<b>Mars</b> phase 94% - 96% $\phi$ 5" to 4" Constellation: Capricornus to Aquarius Magnitude +1.1 to +1.2	Rises:		08h51	08h46
	Transits:		15h37	15h07
	Sets:		22h23	21h28
<b>Jupiter</b> diameter 43" - 45" Constellation: Leo Magnitude: -2.4 to -2.6	Rises:		22h16	20h18
	Transits:		03h40	01h29
	Sets:		08h59	06h45
<b>Saturn</b> diameter 15" to 16" Constellation: Libra to Scorpius Magnitude: +0.6 to +0.5	Rises:		03h03	01h14
	Transits:		09h58	08h10
	Sets:		16h52	15h06
<b>Uranus</b> diameter 4" to 3" Constellation: Pisces Magnitude: +5.8 to +5.9	Rises:		12h57	11h02
	Transits:		18h47	16h51
	Sets:		00h41	22h40
<b>Neptune</b> diameter 2" Constellation: Aquarius Magnitude: +7.9 to +8.0	Rises:		10h00	08h06
	Transits:		16h30	14h35
	Sets:		23h00	21h04
<b>Pluto</b> Constellation: Sagittarius Magnitude: +14.2	Rises:		05h55	04h02
	Transits:		12h57	11h03
	Sets:		19h58	18h04

## The Moon

### Observation:

The Sky Guide's lunar highlight for January is Langrenus, a 136 km dia. crater with steeply rising walls up to 2.6 km high. The central, double-peaked mountain is 1 km high. The location is on the western edge of Mare Fecunditatis. The suggested best viewing days are Wednesday 7<sup>th</sup> and Friday 23<sup>rd</sup>.

**Eclipses:** No eclipses, solar or lunar, are predicted for this month.

## 5. CONSTELLATION OF THE MONTH

From Ian Ridpath's *Star Tales*:

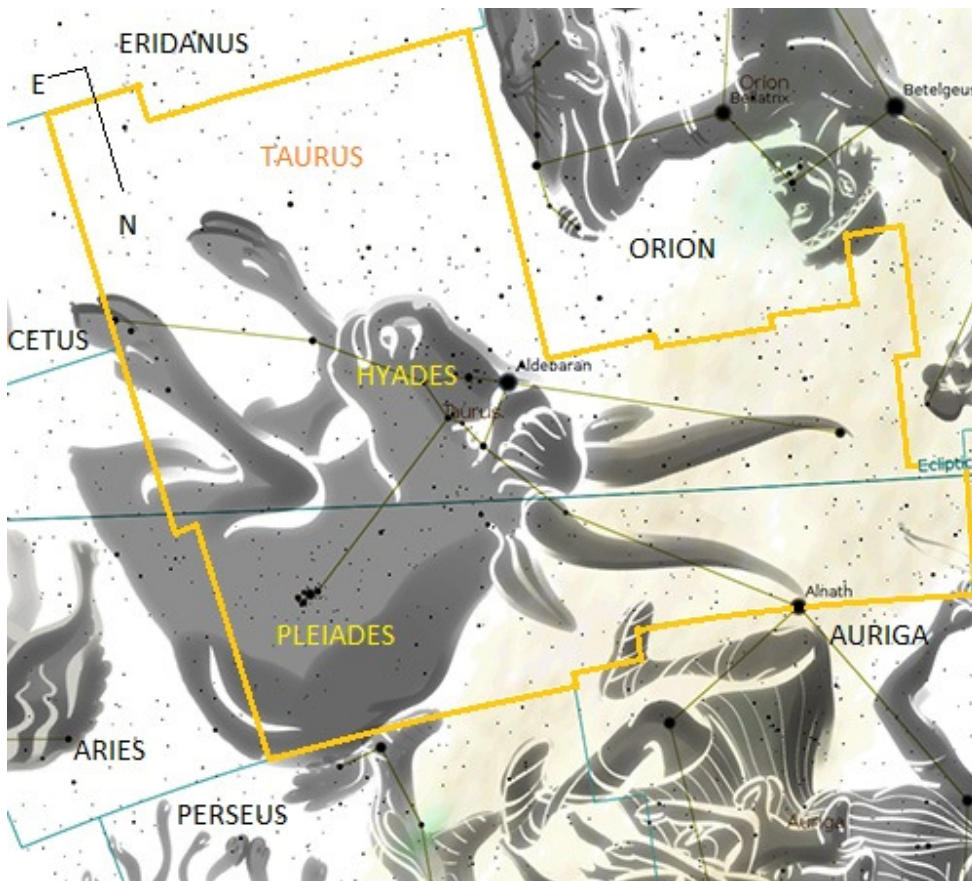
### Taurus – the Bull

Taurus is a distinctive constellation, with star-tipped horns and a head defined by a V-shaped group of stars. Two Greek bull-myths were associated with Taurus. Usually it was said to represent Zeus in the disguise he adopted for another of his extramarital affairs, this time as the bull that carried away Europa, daughter of King Agenor of Phoenicia.

Europa liked to play on the beach with the other girls of Tyre. Zeus instructed his son Hermes to drive the king's cattle from their pastures on the mountain slopes towards the shore where the girls were playing. Adopting the shape of a bull, Zeus surreptitiously mingled with the lowing herd, awaiting his chance to abduct

Europa. There was no mistaking who was the most handsome bull. His hide was white as fresh snow and his horns shone like polished metal.

Europa was entranced by this beautiful yet placid creature. She adorned his horns with flowers and stroked his flanks, admiring the muscles on his neck and the folds of skin on his flanks. The bull kissed her hands, while inwardly Zeus could hardly contain himself in anticipation of the final conquest. The bull lay on the golden sands and Europa ventured to sit on his back. At first, she feared nothing when the bull rose and began to paddle in the surf. But she became alarmed when it began to swim strongly out to sea. Europa looked around in



dismay at the receding shoreline and clung tightly to the bull's horns as waves washed over the bull's back. Craftily, Zeus the bull dipped more deeply into the water to make her hold him more tightly still.

By now, Europa had realized that this was no ordinary bull. Eventually, the bull waded ashore at Crete, where Zeus revealed his true identity and seduced Europa. He gave her presents that included a dog that later became the constellation Canis Major. The offspring of Zeus and Europa included Minos, king of Crete, who established the famous palace at Knossos where bull games were held.

An alternative story says that Taurus may represent Io, another illicit love of Zeus, whom the god turned into a heifer to disguise her from his wife Hera. But Hera was suspicious and set the hundred-eyed watchman Argus to

guard the heifer. Hera, furious at this, sent a gadfly to chase the heifer who threw herself into the sea and swam away.

In the sky, only the front half of the bull is shown. This can be explained mythologically by assuming that the hind quarters are submerged. In reality, there is no space in the sky to show the complete bull, for the constellations Cetus and Aries lie where the bull's hind quarters should be. Taurus shares with Pegasus this uncomfortable fate of having been sliced in half in the sky.

Taurus is depicted on star maps as sinking on one leg, perhaps to entice Europa onto its back. Manilius described the bull as lame and drew a moral from it: 'The sky teaches us to undergo loss with fortitude, since even constellations are fashioned with limbs deformed', he wrote.

### **The Hyades** – the face of the bull

The face of Taurus is marked by the V-shaped group of stars called the Hyades. Ovid in his *Fasti* asserts that the name comes from the old Greek word *hycin*, meaning 'to rain', so that Hyades means 'rainy ones', because their rising at certain times of year was said to be a sign of rain. In mythology the Hyades were the daughters of Atlas and Aethra the Oceanid. Their eldest brother was Hyas, a bold hunter who one day was killed by a lioness. His sisters wept inconsolably – Hyginus says they died of grief – and for this they were placed in the sky. Hence it seems equally likely that their name comes from their brother Hyas. In another story, the Hyades were nymphs who nursed the infant Dionysus in their cave on Mount Nysa, feeding him on milk and honey. The Romans had a different name; they called the Hyades *Suculae* meaning 'piglets'.

The mythographers were massively confused about the names and even the number of the Hyades. They are variously described as being five or seven in number. The Greek astronomer Ptolemy listed five Hyades in his star catalogue. Hyginus alone gives four different lists of their names, none of which agrees completely with the list of five originally given by Hesiod, viz: Phaesyale, Coronis, Cleia, Phaeo and Eudore. Astronomers have avoided the problem by not naming any of the stars of the Hyades.

Binoculars and small telescopes show many more members of the Hyades than are visible to the naked eye. In all, astronomers now estimate that several hundred stars belong to the cluster, which lies 150 light years away.

### **The Pleiades** – Seven Celestial Sisters

Even more famous than the Hyades is another star cluster in Taurus: the Pleiades, commonly known as the Seven Sisters. To a casual glance, the Pleiades cluster appears as a fuzzy patch like a swarm of flies over the back of the bull. According to Hyginus, some ancient astronomers called them the bull's tail. So distinctive are the Pleiades that the ancient Greeks regarded them as a separate mini-constellation and used them as a calendar marker. Hesiod, in his agricultural poem *Works and Days*, instructs farmers to begin harvesting when the Pleiades rise at dawn, which in Greek times would have been in May, and to plough when they set at dawn, which would have been in November. Ptolemy did not list individual members of the Pleiades in his *Almagest*, giving only an indication of the cluster's size.

In mythology the Pleiades were the seven daughters of Atlas and the oceanid Pleione, after whom they are named. One popular derivation is that the name comes from the Greek word *plein*, meaning 'to sail' – so Pleione means 'sailing queen' and the Pleiades are the 'sailing ones', because in Greek times they were visible all night during the summer sailing season. When the Pleiades vanished from the night sky, it was considered prudent to remain ashore. 'Gales of all winds rage when the Pleiades, pursued by violent Orion, plunge into the clouded sea', wrote Hesiod.

Alternatively, and possibly more likely, the name may come from the old Greek word *pleos*, 'full', which in the plural meant 'many', a suitable reference to the cluster. According to other authorities, the name comes from the Greek word *peleides*, meaning 'flock of doves'.

Unlike their half-sisters the Hyades, the names of all seven Pleiades are assigned to stars in the cluster: Alcyone, Asterope (also known as Sterope), Celaeno, Electra, Maia, Merope and Taygete. Two more stars are named after their parents, Atlas and Pleione. Alcyone is the brightest star in the cluster. According to mythology, Alcyone and Celaeno were both seduced by Poseidon. Maia, the eldest and most beautiful of the sisters, was seduced by Zeus and gave birth to Hermes; she later became foster-mother to Arcas, son of Zeus and Callisto. Zeus also seduced two others of the Pleiades: Electra, who gave birth to Dardanus, the founder of Troy; and Taygete, who gave birth to Lacedaemon, founder of Sparta. Asterope was ravished by Ares and became mother of Oenomaus, king of Pisa, near Olympia, who features in the legend of Auriga. Hence six Pleiades became paramours of the gods. Only Merope married a mortal, Sisyphus, a notorious trickster who was subsequently condemned to roll a stone eternally up a hill. Although the Pleiades are popularly termed the Seven Sisters, only six stars are easily visible to the naked eye, and a considerable mythology has grown up to account for the 'missing' Pleiad. Eratosthenes says that Merope was the faint Pleiad because she was the only one who married a mortal. Hyginus and Ovid also recount this story, giving her shame as the reason for her faintness, but both add another candidate: Electra, who could not bear to see the fall of Troy, which had been founded by her son Dardanus. Hyginus says that, moved by grief, she left the Pleiades altogether, but Ovid says that she merely covered her eyes with her hand. Astronomers, however, have not followed either legend in their naming of the stars, for the faintest named Pleiad is actually Asterope.

Binoculars show dozens of stars in the Pleiades, and the entire cluster contains a hundred or so members. The Pleiades lie 380 light years away, two and a half times the distance of the Hyades. They are relatively youthful by stellar standards, the youngest being no more than a few million years old.

A famous myth links the Pleiades with Orion. As Hyginus tells it, Pleione and her daughters were one day walking through Boeotia when Orion tried to ravish her. Pleione and the girls escaped, but Orion pursued them for seven years. Zeus immortalized the chase by placing the Pleiades in the heavens where Orion follows them endlessly.

## 6. DEEP SKY OBJECTS

From the Sky Guide:

### **The Tarantula Nebula** (NGC 2070, magnitude 8.2)

The Tarantula is the brightest emission nebula in the Large Magellanic Cloud and can easily be seen as a bright patch on the eastern side. Spanning almost 900 LY of space, the Tarantula is also the most massive and largest-known star-forming region in the entire Local Group of galaxies. The loops and curls that lead to its nickname (given by John Herschel during his visit to the Cape in the 1830s) were formed by past supernova explosions that created rapidly expanding shells of ionized matter. The Tarantula is 500 times more energetic than the Orion Nebula (M42).

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PLEASE NOTE: *Should you have any suggestions or requests, or spot any errors, please do not hesitate to let me know.*

Bibliography:

Johan Retief

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