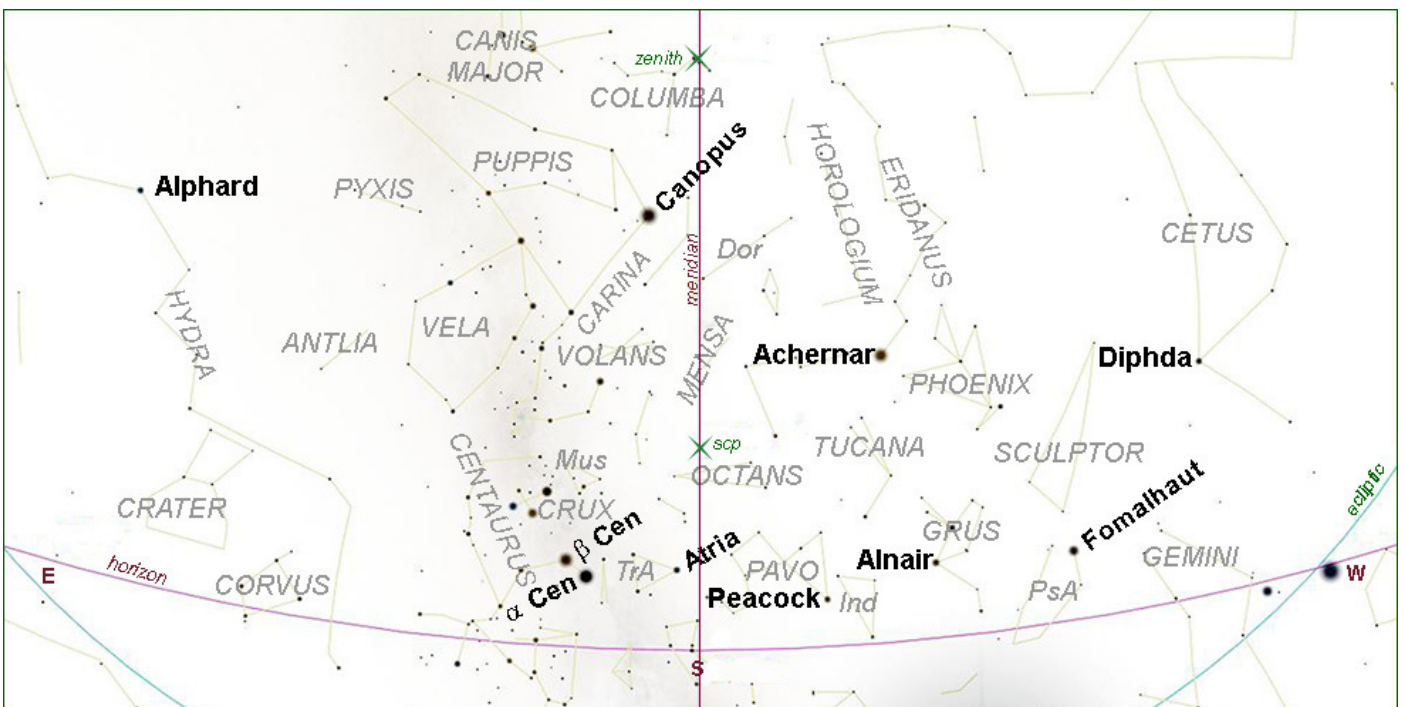


SKY CHARTS

EVENING SKY JANUARY 25th 22h00 (NORTH DOWN)



EVENING SKY JANUARY 25th 22h00 (SOUTH DOWN)



SUGGESTED EVENING OBSERVATION WINDOWS

(Lunar observations notwithstanding)

<i>Date</i>	<i>Moon</i>		<i>Dusk end</i>
December 19	<i>Rises</i>	23h26 (82%)	21h40
to January 2	<i>Sets</i>	20h25 (5%)	21h44
January 20	<i>Rises</i>	23h27 (59%)	21h36
to January 31	<i>Sets</i>	21h17 (5%)	21h25

THE SOLAR SYSTEM

PLEASE NOTE: allevents are as predicted for **HERMANUS**, Western Cape, South Africa.

JANUARY HIGHLIGHTS from THE SKY GUIDE 2025

<i>Date</i>	<i>Time</i> (SAST)	<i>Item</i>
2		Callisto at maximum from Jupiter (10')
3	12h00	Venus 3° east of the Moon (14%) *
4	22h00	The Moon passes 1.25° northwest of Saturn before setting together closely accompanied by Venus
7	01h56	First quarter Moon
9	22h00	The Moon (80%) passes within 1° of the Pleiades and Uranus
10	24h00	The Moon passes 6.2° north of Jupiter Callisto at maximum separation from Jupiter (10')
13		The Moon (99.8%) passes 1.3° north of Pollux
14	00h27	Full moon passes 0.5° north of Mars
16		The Moon (92%) passes 2.6° northwest of Regulus
18	22h11	Venus passes 2.2° north of Saturn as they set
	23h42	The Moon grazes +3.6 magnitude β Virginus Callisto at maximum separation from Jupiter (10')
21	22h31	Last quarter Moon
23		Mars passes 2.4° south of Pollux (β Gem)
25		The Moon passes 0.5° north of Antares (α Sco)
27		Callisto at maximum separation from Jupiter (10')
29	14h36	New Moon

* for those who ask “So what?”, the Moon is a useful locator for Venus. At magnitude -4, the lady is visible even in the middle of the day!

SOLAR SYSTEM VISIBILITY

2025 JANUARY 25th

When visible?

Sun	Capricornus	Rise:	05h57	Never look at the sun without SUITABLE EYE PROTECTION!
Length of day	13 hours 57 minutes	Transit:	12h55	
		Set:	19h54	
Mercury	Sagittarius	Rise:	05h05	Low in the east before sunrise
Magnitude	-0.7	Transit:	12h15	
Phase	96%	Set:	19h25	
Diameter	5"			
Venus	Pisces	Rise:	09h43	Evening
Magnitude	-4.5	Transit:	15h52	
Phase	42%	Set:	22h00	
Diameter	29"			
Mars	Gemini	Rise:	19h17	Throughout the night
Magnitude	-1.2	Transit:	00h07	
Phase	99%	Set:	04h52	
Diameter	14"			
Jupiter	Taurus	Rise:	16h02	Evening
Magnitude	-2.6	Transit:	21h02	
Diameter	44"	Set:	02h05	
Saturn	Aquarius	Rise:	09h16	Evening
Magnitude	+1.1	Transit:	15h37	
Diameter	16"	Set:	21h58	
Uranus	Aries	Rises:	14h36	Evening
Magnitude	+5.7	Transit:	19h46	
Diameter	4"	Set:	00h59	
Neptune	Pisces	Rise:	10h09	Evening
Magnitude	+7.9	Transit:	16h16	
Diameter	2"	Set:	22h24	
Pluto	Capricornus	Rise:	05h33	Too close to the Sun
Magnitude	+14.5	Transit:	12h43	
		Set:	19h52	

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 observed **angular diameter** is given in arc seconds.

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 the *zenith* to the horizon directly south.

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 (α Scorpii) at +1.05. The scale is 'inverse'; the brighter the object, the lower the value. A 'good' human eye on a clear night can see down to a magnitude of about +6.

THE MOON

Marius Hills with Cave

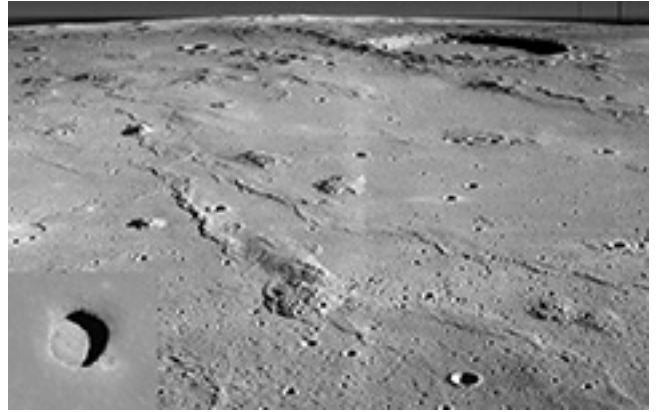
By **Avani Soares**, Brazilian astrophotographer

Location of Marius Hills: north-west of crater Kepler in Oceanus Procellarum (the Ocean of Storms)

Location of Photo: Parsec Observatory, Canoas, Brazil

Date of photo: 2nd November 2017

Could humans live beneath the surface of the Moon?
Might the cavernous systems below the Marius Hills offer some sort of sub-lunar dwelling?



Most researchers agree that the Moon is about 4.5 billion years old, possibly about 50 million years younger than the rest of the Solar System. One theory says the Moon was formed when another planet (about the size of Mars) struck the molten stone ball that was Earth at that time. Although this part of the Moon's history is generally accepted, other areas are still very uncertain. One is the question of when there was volcanic activity on the Moon, how long this activity lasted and how much there was.

For the full article, please click on the following link,

https://skyandtelescope.org/online-gallery/a-cave-in-marius-hills/#google_vignette

No eclipses, lunar or solar, will be visible from southern Africa in January 2025

METEOR ACTIVITY

No significant meteor showers are predicted for January 2025

COMETS and ASTEROIDS

Discovery in 2023 by the Purple Mountain Observatory in China and the [Asteroid Terrestrial-impact Last Alert System \(ATLAS\)](#) in South Africa

☐ Comet [C/2023 A3 \(Tsuchinshan-ATLAS\)](#) was first detected (but not confirmed) in early 2023 by Purple Mountain Observatory then re-discovered by ATLAS-Sutherland about a month later. Now [at perihelion](#), it is naked-eye visible in the early morning and will brighten and become an evening comet in October 2024.

☐ (2024-09-27) The so-called "mini-moon" [2024 PT5](#) discovered by ATLAS-Sutherland has been [in the news all over the place!](#)

☐ (2022-10-07) [The ATLAS Solar System Catalog \(SSCAT\) Version 1](#) has been released at DPS54. This catalog consists of over 125 million observations of 580 000 asteroids and comets. Check out the [README](#).

☐ (2022-09-26) ATLAS images the DART impact on moonlet Dimorphos at the Didymos system! This sequence consists of 185 images taken every 40 seconds, about two hours elapsed time.

MEMBERS' IMAGES

M42 - the Orion Nebula

Image by Derek Duckitt



Imaging and Processing:

43 x 90-second images, ISO 800, stacked in Affinity Photo, Sigma 500mm lens on Fujifilm XT 30 mirrorless camera, HEQ5 mount with PHD2 guiding; plus 20 x dark frames, 20 x flat frames, 20 x bias frames;

Background extracted in Graxpert 3.01 beta version; processed in Siril followed by Photoshop.

I also took 20 x 8-second images to combine with it in case the core was blown out, but didn't because I thought the core was Ok; using the Generalised Hyperbolic Stretch Transformation as well as processing the stars separately in Siril was able to deal with that beautifully.

NO 'SCOPE REQUIRED

Some tips for the less experienced observers in getting to know the night skies.



The chart to left is timed for January 25 at 22h00 but any night in the “moonless window” (page 2) will do just as well if the weather be good!

Leave the telescope inside for a change! And remember to be patient for 20 minutes or so after leaving the light to allow the eyes to adapt to the dark.

If you are anything like I am, you have probably built up a dependence upon the constellation lines drawn on star charts to identify the stars in their

constellations. Unfortunately, the real sky does not display such convenient guidelines. The trick is to recognise and remember the *patterns* of the prominent stars of each constellation. Takes practice!

We are all familiar, I believe, with much of this area of the night sky. Orion is probably the best known of all the constellations so, without going into too much detail regarding Orion itself, we shall have a look at the surrounding area to the east and north.

Here I offer you a chart *without* the lines. We can lie on the lawn (or reclined deckchair if you’re rich!) with toes pointed north-east and enjoy 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 a few times will quickly familiarise the viewer with the various stars and constellations.

Herewith some basic information on the stars depicted in the chart above, commencing with the **Pleiades** (M45) working roughly clockwise:

<i>object</i>	<i>magnitude</i>	<i>description</i>	<i>colour</i>	<i>colour index</i>
M45		Cluster associated with nebulosity		
Aldebaran	+0.85	Double variable star	Red	+1.55
Bellatrix	+1.6	Double star	Light blue	-0.22
Saiph	+2.05	Star	Light blue	-0.15
Sirius	-1.45	Double star	White	0.00
M42		The Orion Nebula		
Mintaka, Alnilam & Alnitak		The three belt stars		
Betelgeuse	+0.45	Double pulsating variable star	Red	+1.52
Procyon	+0.4	Double star	Yellow	+0.44
Alphard	+1.95	Double star	Red	+1.45
Regulus	+1.35	Double star	White	-0.09
Pollux	+1.15	Double star	Yellow	+0.98
Castor	+1.90	Double star	White	0.00
Capella	+0.05	Double star	Yellow	+0.79

Regarding the colour indices mentioned above, more information is available on <https://www.google.com/search?client=firefox-b-d&q=astronomy+colour+indices>

Jan Ridpath's

STAR TALES

Gemini

Genitive: Geminorum

Abbreviation: Gem

Size ranking: 30th

Origin: One of the 48 Greek constellations listed by Ptolemy in the

[Almagest](#)

Greek name: Δίδυμοι (Didymoi)

The twins

Gemini represents the mythical Greek twins Kastor (Κάστωρ) and Polydeukes (Πολυδεύκης). The Latinized forms of their names are Castor and Pollux (sometimes Polydeuces), by which they are now generally known. The Greeks referred to them jointly as the Dioskouroi (Dioscuri in Latin), literally meaning 'sons of Zeus'. However, mythologists disputed whether both really were sons of Zeus, because of the unusual circumstances of their birth. Their mother was Leda, Queen of Sparta, whom Zeus visited one day in the form of a swan (now represented by the constellation Cygnus). That same night she also slept with her husband, King Tyndareus. Both unions were fruitful, for Leda subsequently gave birth to four children. In the most commonly accepted version, Pollux and Helen (later to become famous as Helen of Troy) were children of Zeus, and hence immortal, while Castor and Clytemnestra were fathered by Tyndareus, and hence were mortal.

Castor and Pollux grew up the closest of friends, never quarrelling or acting without consulting each other. They were said to look alike and even to dress alike, as identical twins often do. Castor was a famed horseman and warrior who taught Heracles to fence, while Pollux was a champion boxer.

The inseparable twins joined the expedition of Jason and the Argonauts in search of the golden fleece. The boxing skills of Pollux came in use when the Argonauts landed in a region of Asia Minor ruled by Amycus, a son of Poseidon. Amycus, the world's greatest bully, would not allow visitors to leave until they had fought him in a boxing match, which he invariably won. He stamped down to the shore where the Argo lay and challenged the crew to put up a man against him. Pollux, stirred by the man's arrogance, accepted at once and the two pulled on leather gloves. Pollux easily avoided the rushes of his opponent, like a matador side-stepping a charging bull, and felled Amycus with a blow to the head that splintered his skull.

On the Argonauts' homeward trip with the golden fleece Castor and Pollux were of further value to the crew. Apollonius Rhodius tells us briefly that during the voyage from the mouth of the Rhone to the Stoechades Islands (the present-day Iles d'Hyères off Toulon) the Argonauts owed their safety to Castor and Pollux. Presumably a storm was involved, but he does not elaborate on the circumstances. Ever since this episode, says Apollonius – and he assures us there were other voyages on which they were saviours – the twins have been the patron saints of sailors. Hyginus said that the twins were given the power to save shipwrecked sailors by Poseidon, the sea god, who also presented them with the white horses that they often rode.

Mariners believed that during storms at sea the twins appeared in a ship's rigging in the form of the electrical phenomenon known as St Elmo's fire, as described by Pliny, the Roman writer of the first century AD, in his book Natural History:

On a voyage stars alight on the yards and other parts of the ship. If there are two of them, they denote safety and portend a successful voyage. For this reason they are called Castor and Pollux, and people pray to them as gods for aid at sea.

A single glow was called Helen and was considered a sign of disaster.

Castor and Pollux clashed with another pair of twins, Idas and Lynceus, over two beautiful women. Idas and Lynceus (who were also members of the Argo's crew) were engaged to Phoebe and Hilaira, but Castor and Pollux carried them off. Idas and Lynceus gave pursuit and the two sets of twins fought it out. Castor was run through by a sword thrust from Lynceus, whereupon Pollux killed him. Idas attacked Pollux but was repulsed by a thunderbolt from Zeus.

Another story says that the two pairs of twins made up their quarrel over the women, but came to blows over the division of some cattle they had jointly rustled. Whatever the case, Pollux grieved for his fallen brother and asked Zeus that the two should share immortality. Zeus placed them both in the sky as the constellation Gemini, where they are seen in close embrace, inseparable to the last.

The two brightest stars in the constellation, marking the heads of the twins, are named Castor and Pollux. Astronomers have found that Castor is actually a complex system of six stars linked by gravity, although to the eye they appear as one. Pollux is an orange giant star. Unlike the twins that they represent, the stars Castor and Pollux are not related since they lie at different distances from us. Eta Geminorum is called Propus, meaning 'forward foot' in Greek, a name that first appears with Eratosthenes.

Another identification – Apollo and Heracles

Aratus referred to the constellation only as the twins (Δίδυμοι, i.e. Didymoi), without identifying who they were, but a century later Eratosthenes named them as the Dioscuri, meaning Castor and Pollux. An alternative view, reported by Hyginus, says that the constellation represents Apollo and Heracles (i.e. Hercules), both sons of Zeus but not twins. Ptolemy called the constellation the Twins (Δίδυμοι) in the *Almagest*, but in a later, more obscure treatise about astrology, called *Tetrabiblos*, he referred to Castor as 'the star of Apollo' and Pollux as 'the star of Heracles', supporting the identifications given by Hyginus.

Several star maps personify the twins as Apollo and Heracles. On the illustration shown above, for example, one twin is depicted holding a lyre and arrow, attributes of Apollo, while the other carries a club, as did Heracles. Bode's *Uranographia* depicts them in the same way.

Chinese associations

In Chinese astronomy, the largest part of present-day Gemini was taken up by Jing, meaning Well (sometimes called the Eastern Well), which consisted of eight stars in the legs of the Twins: Lambda, Zeta, 36, Epsilon, Xi, Gamma, Nu, and Mu Geminorum. Together they form a shape resembling that of the Chinese character for 'well'. The 22nd Chinese [lunar mansion](#) was named Jing after this constellation; it is the widest of the 28 mansions, extending for 33 degrees, greater even than any of the 12 western houses of the zodiac, which were all 30 degrees wide. The modern star Eta Geminorum next to the Well was known as Yue, a battle axe, used for decapitating the corrupt and immoral.

Castor and Pollux were not part of Jing. Instead, with nearby Rho Geminorum they formed Beihe, the Northern River (the Southern River, Nanhe, was to be found in Canis Minor, incorporating Procyon and two other stars). Beihe and Nanhe lay north and south of the ecliptic respectively, so the pair were also interpreted as gates or sentries. At either end of Beihe were Jishui and Jixin, each marked by a single star, representing a supply of water for winemaking or brewing and a pile of firewood for cooking. Sun and Kistemaker identify the relevant stars as Omicron and Phi Geminorum, although Kappa looks a better fit for the latter.

Five stars from Theta to Kappa or Phi Geminorum were Wuzhuhou, five feudal lords or princes who acted as the Emperor's advisors and teachers. Delta Geminorum was one of a triangle of stars on the ecliptic forming Tianzun, a wine cup or water jar with three feet.

Shuiwei, 'water level', a curved line of four stars, was usually seen as extending from [Canis Minor](#) into Cancer, but some older versions show it as the stars 68 to 85 Geminorum, in an example of how Chinese constellations have literally changed their spots with time.

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Please keep in touch...

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

<https://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!

<http://www.mnassa.org.za/>

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