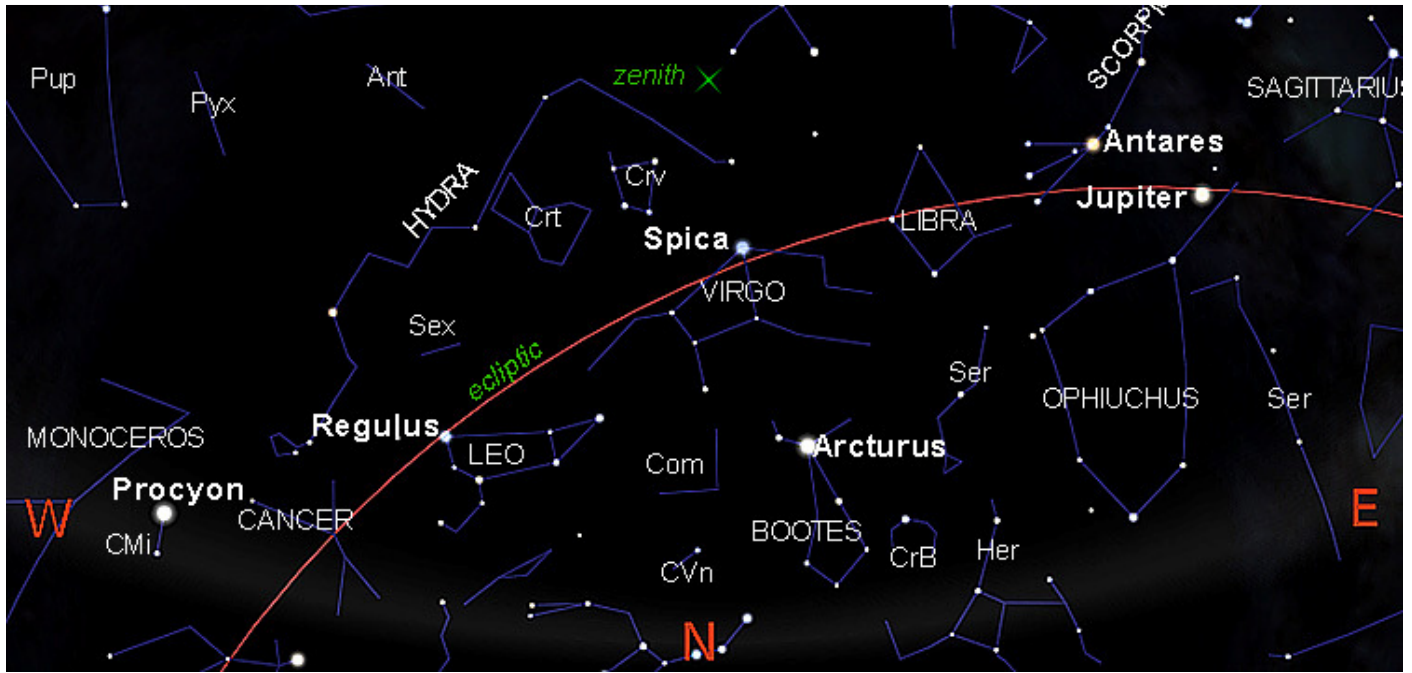
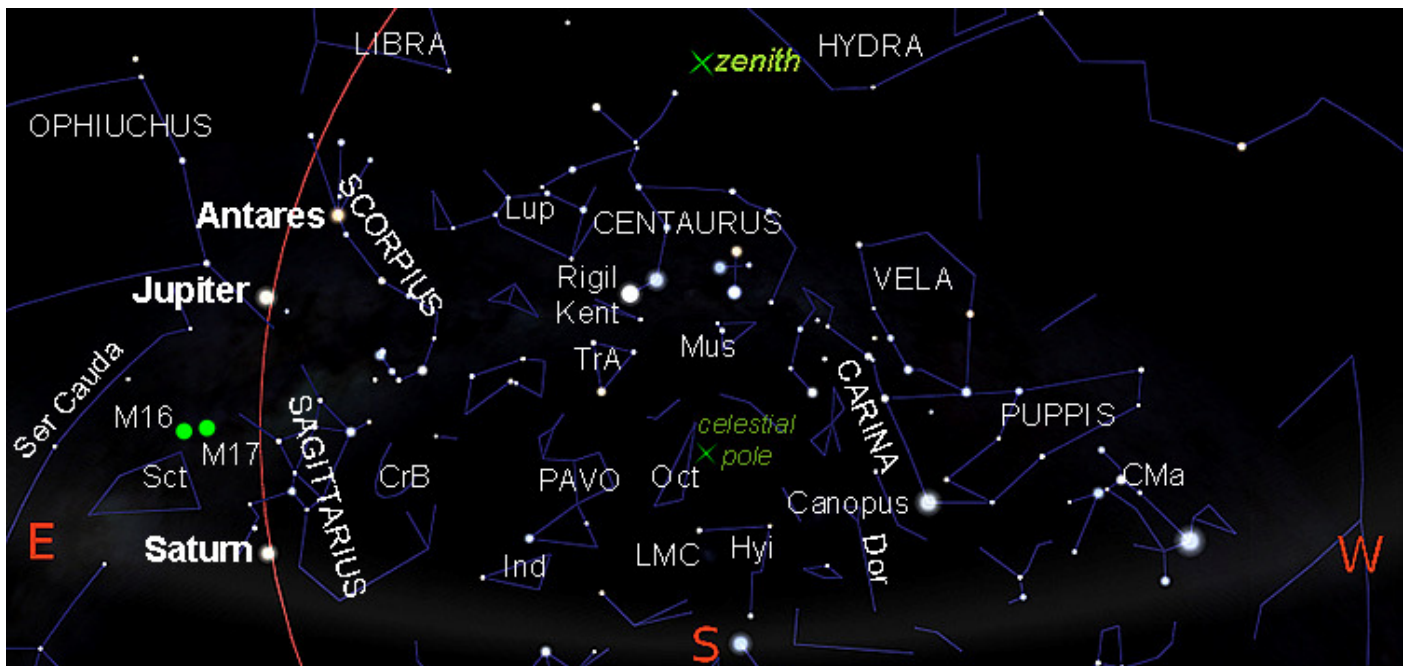


1. SKY CHARTS

EVENING SKY 1st JUNE at 21^h00 (NORTH DOWN)



EVENING SKY 1st JUNE at 21^h00 (SOUTH DOWN)



2. HIGHLIGHTS FROM THE SKY GUIDE

PLEASE NOTE: All events predicted are as observed from **Hermanus, Western Cape, South Africa**.

Date	Time	Item
1		Moon near Venus
3	12h02	New Moon
		Moon near Aldebaran
		Mercury at greatest latitude north
		Pallas stationary
4	18h00	The fine crescent Moon passes 0.9° south of Mercury ***
5		Moon furthest north (+22.4°)
		Moon near Mars
		Mercury at northernmost declination for the year (+25.5°)
8		Moon at perigee (368 506 Km)
		Moon near Regulus
10	07h59	First quarter Moon
	06h17	Luna X feature forms
		Jupiter at opposition
13		θ Ophiuchid meteor show at maximum (see p. 4 METEOR SHOWERS)
15	04h00	Moon occults γ Lib
		Moon near Ceres
16	19h43	Moon 2.5° NE of Jupiter
		June Lyrid meteor shower at maximum (see p. 4 METEOR SHOWERS)
17	10h31	Full Moon
	06h50	Venus 4.7° north of Aldebaran
18		Moon furthest south (-22.4°)
	18h20	Mercury 13.2° north of Mars
19	06h36	Moon occults Saturn
		Moon near Pluto
		Mercury near Pollux
21		SOLSTICE
	02h18	Mars 5.5° south of Pollux
	21h45	Moon occults γ Cap
22		Neptune stationary
23	09h52	Moon at apogee (404 548 Km)
24		Moon near Neptune
		Mercury at greatest eastern elongation (25°)
25	11h46	Last quarter Moon
28		Moon near Uranus
28 - 30		6 TH FREE STATE STAR PARTY ¹
30		INTERNATIONAL ASTEROID DAY ²
		Moon near Aldebaran

*** This promises to be a fine apparition and presents a good photo opportunity.

¹ Venue - the guest farm Gansvlei near Brandfort, about 50 Km north-east of Bloemfontein.

assabfn@gmail.com , www.assabfn.co.za

² [Asteroid Day - UN-sanctioned global awareness campaign](http://asteroidday.org/) . Asteroid Day is a global awareness campaign where people from around the world come together to learn about asteroids, and how we can protect our planet. <https://asteroidday.org/>

3. THE SOLAR SYSTEM

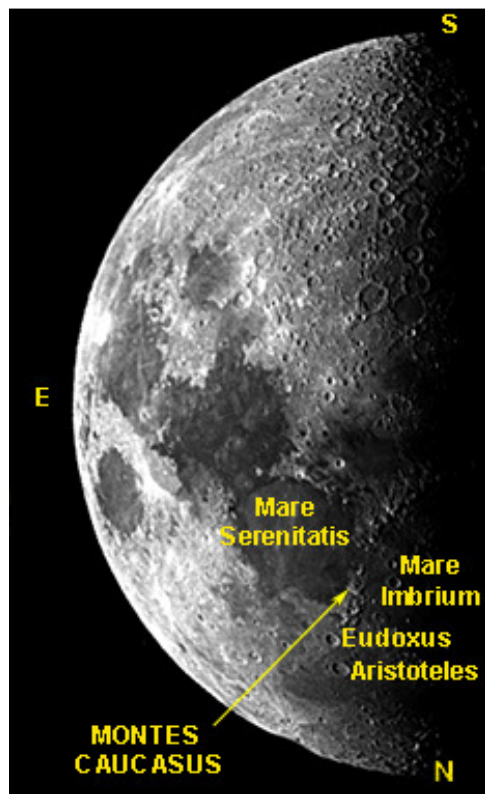
JUNE 2019			1st June	1st July	Visibility
Sun Length of day	Taurus to Gemini 10h00 to 09h53	Rises:	07h41	07h50	Never look directly at the sun without suitable eye protection!
		Transit:	12h41	12h47	
		Sets:	17h41	17h44	
Mercury Magnitude Phase Diameter	Taurus to Cancer -1.1 to +1.2 86% to 25% 5" to 10"	Rises:	08h46	09h16	Low in the west after sunset
		Transit:	13h36	14h26	
		Sets:	18h25	19h35	
Venus Magnitude Phase Diameter	Aries to Taurus -3.9 94% to 98% 10"	Rises:	06h03	07h00	Low in the east before sunrise
		Transit:	11h19	11h55	
		Sets:	16h35	16h49	
Mars Magnitude Phase Diameter	Gemini to Cancer +1.8 98% to 99% 4"	Rises:	09h59	09h14	Low in the west after sunset
		Transit:	14h51	14h15	
		Sets:	19h42	19h15	
Jupiter Magnitude Diameter	Ophiuchus -2.6 46" to 45"	Rises:	18h14	16h01	Throughout the night
		Transit:	01h26	23h08	
		Sets:	08h34	06h19	
Saturn Magnitude Diameter	Sagittarius +0.3 to +0.1 18"	Rises:	20h22	18h15	Throughout the night
		Transit:	03h31	01h25	
		Sets:	10h36	08h31	
Uranus Magnitude Diameter	Aries +5.9 to +5.8 3"	Rises:	04h49	02h57	Morning
		Transit:	10h15	08h22	
		Sets:	15h42	13h48	
Neptune Magnitude Diameter	Aquarius +7.9 2"	Rises:	01h08	23h07	Morning
		Transit:	07h25	05h28	
		Sets:	13h42	11h44	
Pluto Magnitude	Sagittarius +14.2	Rises:	20h35	08h34	Throughout the night
		Transit:	03h45	01h44	
		Sets:	10h51	08h51	

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 Antares (in Scorpius) at +1.05 and the planet Jupiter, at (for example) magnitude -2.6. The latter is considerably brighter than Antares as 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



The image to right shows, in the foreground, the western half of **Mare Serenitatis** with the eastern part of **Mare Imbrium** beyond the mountains.

Photograph attributed to James Stuby based on a NASA image from Apollo 11.

MONTES CAUCASUS

Type: a substantial mountain range intersected by numerous deep valleys.

Size: extends for some 536 Km reaching a high of 3.6 Km

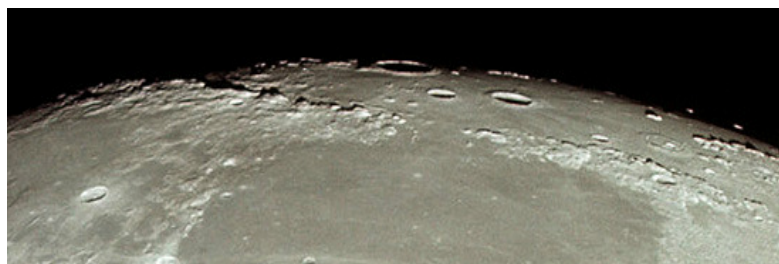
Prominent Craters: at the northern end, **Eudoxus** and **Aristoteles**.

Best seen: six days after **New Moon** (9th June) and five days after **Full Moon** (22nd June).

Location: Marks the boundary between Mare Serenitatis and Mare Imbrium.

Notes: readily visible in 10 X binoculars. Named after the Eurasian mountain system by the 18th century German selenographer Johann Mädler.

The range continues to the south-west as the **Montes Appenninus**



ECLIPSES (visible from Southern Africa) :
No eclipses, solar or lunar, are predicted for this month.

METEOR SHOWERS

Name	Date & Time of Max	Duration	Radiant	ZHR velocity		Observing Prospect
				ZHR	velocity	
θ Ophiuchids	13 th June 20h00 - 05h30	8 – 16 June	5.5° ESE of Jupiter	5	27	Unfavourable
June Lyrids	16 June 23h30 – 02h00	11 – 21 June	3.5° south of Vega (α Lyra)	5	31	Poor (Full Moon)

Guide 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 Africa South (SGAS), pages 86- 87.

4. STARGAZING

SUGGESTED OBSERVATION DAYS

Unless *specifically* targeting the moon, may I suggest the most convenient dates to plan evening stargazing are from **25th May** (moonrise 23h42) to **6th June** (moonset 20h49). Then from **23rd June** (moonrise 23h22) to **5th July** (moonset 20h52).



The next club stargazing evening is scheduled for August or September. Members will receive updated information by e-mail (and, remember, it's always weather dependant!). Please check our website calendar closer to the date for confirmation and venue. (<http://www.hermanusastronomy.co.za>)

DEEP SKY HIGHLIGHTS

	EAGLE NEBULA (M16, NGC 6611)	OMEGA or SWAN NEBULA (M17, NGC 6618,)
<u>Description</u>	Nebula and cluster	Bright nebula
<u>Distance</u>	1.8 Kpc, 5.7 Kly	1.3 Kpc, 4.2 Kly
<u>Location</u>	Serpens Cauda (the tail of the serpent)	Sagittarius (the archer)
<u>Guide stars</u>	11.8° NE of Kaus Borealis (λ Sgr)	9.4° NE of Kaus Borealis (λ Sgr)
<u>J2000 coordinates</u>	S 18h 18m 48s -13° 47' 0"	S 18h 20m 48s -16° 11' 0"
<u>Visibility</u>	Magnitude 6.4	Magnitude 6.0
<u>Naked eye</u>	No	No
<u>Binoculars & Telescopes</u>	Yes	Yes
	Notes Philippe Loys de Cheseaux discovered the cluster in 1745-1746 with no mention of "nebula". Rediscovered in 1764 by Charles Messier who described its stars as "enmeshed in a faint glow". The Herschels ' catalogued the cluster, again with no mention of "nebula". Isaac Roberts ' photograph of 1897 finally resulted in its inclusion as a nebula in the second index catalog in 1908 as IC4703 "with cluster M16 involved".	Notes Philippe Loys de Cheseaux discovered the nebula (not widely known) in the spring of 1746. Charles Messier rediscovered it independently in June of the same year and catalogued it as M17. The core of the nebula is a tick, the bar of which extends 12' ESE-WNW. Fainter nebulosity loops west from the tick enclosing a dark patch popularly known as "the fish's mouth".

Sagittarius

The archer

Genitive: Sagittarii

Abbreviation: Sgr

Size ranking: 15th

Origin: One of the 48 Greek constellations listed by Ptolemy in the [Almagest](#)

Greek name: Τοξότης (Toxotes)

Sagittarius is depicted in the sky as a centaur, with the body and four legs of a horse but the upper torso of a man. He is shown wearing a cloak and drawing a bow, aimed in the direction of the neighbouring scorpion, Scorpius. Aratus spoke of the Archer, Τοξότης (Toxotes), and his Bow, Τόξον (Toxon), as though they were separate constellations. Most likely this is because the stars of the bow and arrow are the most distinctive part of the figure. They form the asterism that we now know as the Teapot

Sagittarius is a constellation of Sumerian origin that represented PA.BIL.SAG, a god of war and hunting whom they depicted as a centaur-like archer with wings. The Sumerian figure was subsequently adopted by the Greeks, although without the wings. As a result there are no particular myths associated with this constellation and the Greek mythographers were confused as to its identity.

Some doubted that this was a centaur at all, among them Eratosthenes who gave as one of his reasons the fact that centaurs did not use bows. Instead, Eratosthenes described Sagittarius as a two-legged creature with the tail of a satyr. He said that this figure was Crotus, son of Eupheme, the nurse to the Muses, who were nine daughters of Zeus. The Roman mythographer Hyginus in his *Fabulae* added the information that the father of Crotus was Pan, agreeing with Eratosthenes that the archer was a satyr rather than a centaur.

Crotus was said to have invented archery and often went hunting on horseback. He lived on Mount Helicon among the Muses, who enjoyed his company. They sang for him, and he applauded them loudly. The Muses requested that Zeus place him among the stars, where he is seen demonstrating the art of archery. In the sky he was given the hind legs of a horse because he was a keen horseman.

Aratus and Ptolemy, though, both spoke of the archer as a four-legged creature, which is how he is usually depicted. Ptolemy described him with a flowing cloak, known as the ephaptis, attached at his shoulders. By his forefeet is a circle of stars that Hyginus said was a wreath 'thrown off as by one at play'. This circlet of stars is the constellation Corona Australis.

Sagittarius was sometimes misidentified as Chiron, a wise and scholarly centaur. But Chiron is in fact represented by the other celestial centaur, the constellation Centaurus.

Stars of Sagittarius

Alpha Sagittarii is called Rukbat, from the Arabic rukbat al-rami, 'knee of the archer'. Beta Sagittarii is a naked-eye double; the two components are called Arkab Prior and Arkab Posterior, Arkab coming from the Arabic name meaning 'the archer's Achilles tendon'. Gamma Sagittarii is Alnasl, from the Arabic meaning 'the point', referring to the tip of the archer's arrow.

Delta, Epsilon, and Lambda Sagittarii are respectively called Kaus Media, Kaus Australis, and Kaus Borealis. The word Kaus comes from the Arabic al-qaus, 'the bow', while the suffixes are Latin words signifying the middle, southern, and northern parts of the bow. Zeta Sagittarii is Ascella, a Latin word meaning 'armpit'. All these names closely follow the descriptions of the stars' positions given by Ptolemy in his *Almagest*.

Last, but not least, is Sigma Sagittarii, called Nunki. This name was applied relatively recently by navigators, but it was borrowed from a list of Babylonian star names. The Babylonian name NUN-KI was given to a group of stars representing their sacred city of Eridu on the Euphrates. The name has now been applied exclusively to Sigma Sagittarii, and is reputed to be the oldest star name in use.

Ptolemy in the *Almagest* inexplicably classified the stars that we know as Alpha and Beta Sagittarii as second magnitude, when they are in fact fourth. Bayer, who lived too far north to see these stars for himself, accepted Ptolemy's assessment and labelled them Alpha and Beta. (Al-Şūfī had corrected the mistake in his *Book of the Fixed Stars*, but Bayer ignored him.) In fact, Alpha Sagittarii is only the 15th brightest star in the constellation, over seven times fainter than the brightest star, Epsilon, which is mag. 1.8 (wrongly assessed by Ptolemy as third magnitude).

Tea, with milk

Among present-day astronomers, the shape outlined by the eight main stars of Sagittarius (Gamma, Delta, Epsilon, Lambda, Phi, Sigma, Tau, and Zeta) is popularly known as the Teapot. Its handle consists of Phi, Sigma, Tau, and Zeta, the top of the lid is marked by Lambda, while Delta, Epsilon, and Gamma are the triangular spout. This same group of stars, with the addition of Mu Sagittarii, was originally visualized as the archer's bow and arrow.

A subset of these stars – Lambda, Phi, Sigma, Tau, and Zeta – form a ladle shape called the Milk Dipper, fittingly placed in a rich area of the Milky Way.

Please keep in touch...

Don't forget to have a look at our excellent website, edited by Derek Duckitt.
<http://www.hermanusastronomy.co.za/>

Also...

ASSA website <http://assa.saa.ac.za>

[ASSA Deep-Sky Section](#)

Whatsapp chat group: [074 100 7237]

[MNASSA http://assa.saa.ac.za/about/publications/mnassa/](http://assa.saa.ac.za/about/publications/mnassa/)

[Nightfall https://assa.saa.ac.za/?s=Nightfall](https://assa.saa.ac.za/?s=Nightfall)

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Grateful thanks to the following:

ASSA

Auke Slotegraaf

Ian Ridpath

Johan Retief

Sky Guide Africa South 2019

Sky Safari

Stellarium

Edited by Peter Harvey

e-mail: petermh@hermanus.co.za

Tel: 081 212 9481