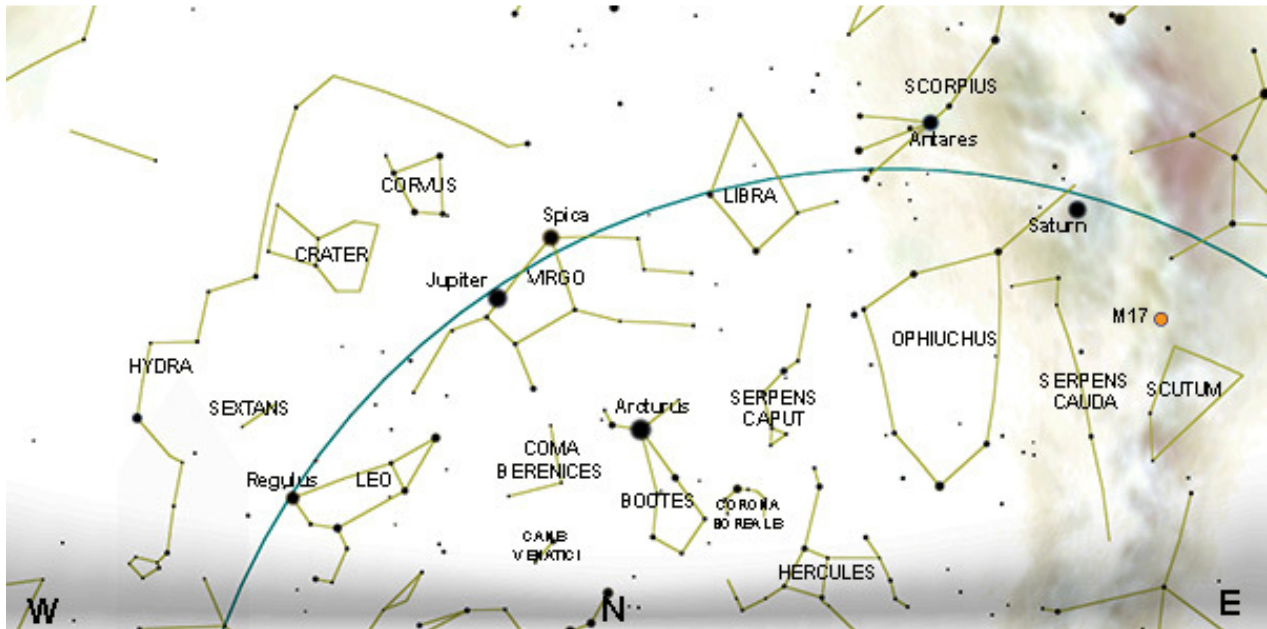


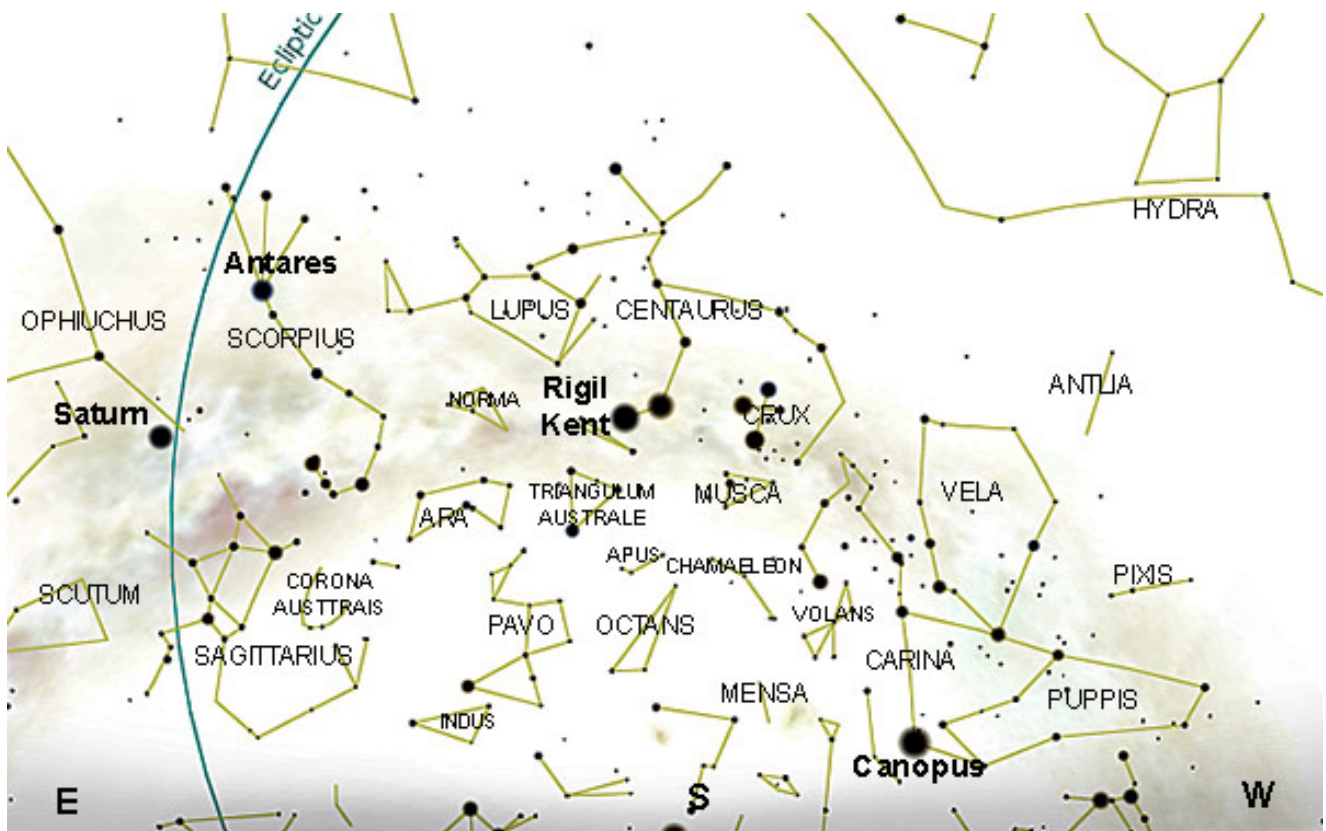


## 1. SKY MAPS

### EVENING SKY MID JUNE at 21<sup>h</sup>00 (NORTH DOWN)



### EVENING SKY MID JUNE at 21<sup>h</sup>00 (SOUTH DOWN)



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

## 2. THE SOLAR SYSTEM

### PLANET VISIBILITY

<i>Sun &amp; Planets</i>	<i>JUNE 2017</i>		<i>1<sup>st</sup></i>	<i>30<sup>th</sup></i>
<b>Sun</b> Constellation Length of day	Taurus to Gemini 10h 01m to 9h54m	Rises:	07h41	07h50
		Transits:	12h41	12h47
		Sets:	17h41	17h44
<b>Mercury</b> phase Constellation Magnitude	ϕ 6" to 5" 68% to 91% Aries to Gemini -0.3 to -1.1	Rises:	05h58	08h39
		Transits:	11h18	13h33
		Sets:	16h37	18h27
<b>Venus</b> phase Constellation Magnitude	ϕ 24" to 18" 49% to 63% Pisces to Taurus -4.3 to -4.1	Rises:	03h58	04h25
		Transits:	09h40	09h42
		Sets:	15h21	15h47
<b>Mars</b> phase Constellation Magnitude	ϕ 4" 99% to 100% Taurus to Gemini +1.7	Rises:	09h02	08h28
		Transits:	13h53	13h23
		Sets:	18h45	18h17
<b>Jupiter</b> Constellation Magnitude	ϕ 41" to 37" Virgo -2.2 to -2.0	Rises:	14h40	12h47
		Transits:	20h53	19h01
		Sets:	03h09	01h18
<b>Saturn</b> Constellation Magnitude	ϕ 18" Ophiuchus +0.1	Rises:	18h36	16h33
		Transits:	01h45	23h38
		Sets:	08h51	06h48
<b>Uranus</b> Constellation Magnitude	ϕ 3" Pisces +5.9 to +5.8	Rises:	04h10	02h21
		Transits:	09h44	07h54
		Sets:	15h19	13h28
<b>Neptune</b> Constellation Magnitude	ϕ 2" Aquarius +7.9	Rises:	00h46	22h48
		Transits:	07h07	05h13
		Sets:	13h28	11h34
<b>Pluto</b> Constellation Magnitude	Sagittarius + 14.2	Rises:	20h19	18h22
		Transits:	03h26	01h29
		Sets:	10h29	08h33

<b>Mercury</b>	Low in the east before sunrise moving to low in the west after sunset
<b>Venus</b>	The "Morning Star"
<b>Mars</b>	Visible in the early evening becoming too close to the sun for observation
<b>Jupiter</b>	Visible in the evening
<b>Saturn</b>	Visible throughout the night
<b>Uranus</b>	Visible in the morning
<b>Neptune</b>	Visible in the morning
<b>Pluto</b>	Visible throughout the night

### **'Beginner's guide' to the table above**

**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 ( $\phi$ ) is given in arc seconds ( $"$ ). This is the apparent size of the object as we see it from Earth. To illustrate this point, consider the average binoculars through which we see about  $7^\circ$  of sky. Therefore, for example, Mars at  $19"$  on 1st June would cover approximately 1/1300th of the field of view.

**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 magnitude -1.9. 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 to the horizon directly south.

## **THE MOON**

*Lunar Highlight* (information from the 2017 *Sky Guide Africa South*):

### **ARISTOTELES**

**Type:** A crater with 2 mountain peaks positioned off-centre towards the northern edge

**Location:** near the Moon's northern limb

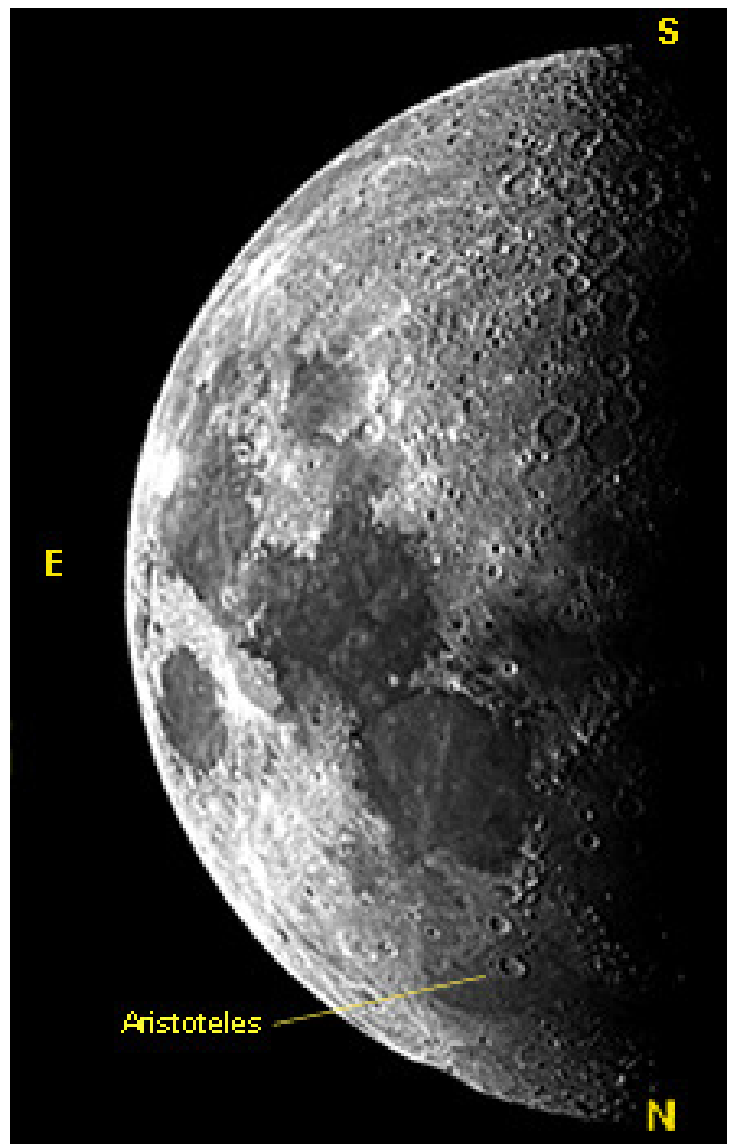
**Diameter:** 90 km

**Notes:** its inner walls display some of the most complex terracing in any crater on the moon. Together with Eudoxis, forms a prominent pair visible with 10x binoculars

**Best seen:** 6 days after **New Moon** and 5 days after **Full Moon**

**Eclipses** (visible from Southern Africa):

There are no eclipses, lunar or solar, visible from southern Africa in June 2017.



## **METEOR SHOWERS**

There are 2 meteor showers predicted for June: **θ Ophiuchids** and **June Lyrids**. However, in both cases, the hourly rate and the observing prospects are unfavourable. Hardly worth the midnight watch so I have omitted the usual detail table.

## JUNE HIGHLIGHTS FROM THE SKY GUIDE

<i>Date</i>	<i>Time</i>	<i>Item</i>
1	14h42	<b>First Quarter Moon</b>
		<b>Comet 234P/LINEAR</b> at perihelion (2.85 AU, 7.4 years)
3		<b>Venus</b> at greatest western elongation (45.9°)
4		<b>Moon</b> near <b>Jupiter</b>
5		<b>Jupiter</b> multiple transit event: <b>Io</b> and <b>Europa</b> , shadow transits of both
6		<b>Ceres</b> in conjunction with the <b>Sun</b>
7		<b>Mercury</b> near the <b>Pleiades</b>
9	15h10	<b>Full Moon</b> at apogee (406 401 km)
10		<b>Jupiter</b> stationary
		<b>Moon</b> near <b>Saturn</b>
		<b>Comet 47P/Ashbrook-Jackson</b> at perihelion (2.82 AU, 8.4 years)
11		<b>Moon</b> furthest south (-19.4°)
12		<b>Venus</b> at aphelion
		<b>Mercury</b> near <b>Aldebaran</b>
		<b>Moon</b> near <b>Pluto</b>
		<b>Comet P/1999 XN120 (Catalina)</b> at perihelion (3.3 AU, 3.6 years)
13		<b>Jupiter</b> multiple transit event: <b>Io</b> and <b>Europa</b> , shadow transits of both
15		<b>Saturn</b> at opposition
17	13h33	<b>Last quarter Moon</b>
		<b>Neptune</b> stationary
19		<b>Mercury</b> at perihelion
		<b>Moon</b> near <b>Uranus</b>
		<b>Comet 90P/Gehrels</b> at perihelion (2.98 AU, 14.9 years)
20	12h00	<b>Venus</b> near <b>Moon</b>
		<b>Jupiter</b> multiple transit event: <b>Io</b> and <b>Europa</b> , shadow transit of <b>Io</b>
21	06h24	WINTER SOLSTICE
	12h00	<b>Venus</b> near <b>Moon</b>
		<b>Mercury</b> in superior conjunction
22		<b>Moon</b> near <b>Aldebaran</b>
		<b>Comet 227P/Catalina-LINEAR</b> at perihelion (1.79 AU, 6.8 years)
23		<i>Free State Star Party (23 to 25 June)</i>
24	04h31	<b>New Moon</b> , furthest north (+19.4°)
		<b>Moon</b> near <b>Mars</b> and <b>Mercury</b>
		<b>Comet P/2000 S1 (Skiff)</b> at perihelion (2.54 AU, 17.1 years)
25		<i>International SUN-day<sup>1</sup> (SGAS)</i>
26		<b>Moon</b> near <b>Beehive Cluster (M44, NGC 2632, Praesepe)</b>
28		<b>Moon</b> near <b>Regulus</b>
		<b>Mercury</b> and <b>Mars</b> in conjunction (47' apart, elongation 9° east)
29		<b>Mercury</b> greatest latitude north
30		<i>Asteroid Day<sup>2</sup></i>
		<b>Comet 71P/Clark</b> at perihelion

<sup>1</sup> <https://www.facebook.com/INTLSUNDAY/> but this site says June 18!

<sup>2</sup> **Asteroid Day** (also known as International Asteroid Day) is an annual global event that aims to raise awareness about [asteroids](#) and what can be done to protect the [Earth](#), its families, communities and future generations.

Read more on [https://en.wikipedia.org/wiki/Asteroid\\_Day](https://en.wikipedia.org/wiki/Asteroid_Day). Well worth the read as there are some interesting names on the list of involved people.

#### 4. STARGAZING

##### SUGGESTED BEST OBSERVATION DAYS FOR JUNE:

Unless specifically targeting the moon, *my* suggestion for the most convenient dates to plan *evening* stargazing in June: **14<sup>th</sup>** (moonrise 22h11) to **27<sup>th</sup>** (moonset 21h39).



*The next stargazing evening is yet to be planned but will probably be Friday 23<sup>rd</sup> June.*

*More information will be posted to members' e-mail addresses and on our*

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

#### 5. DEEP SKY HIGHLIGHT (from the Sky Guide Africa South)

12° east-north-east of **Saturn** lies the **Swan nebula** (NGC6618 or M17), SGAS describes it thus:



*The graceful **Swan Nebula** in Sagittarius was first seen in 1764 by the*



*youthful de Cheseaux who described it as having “the perfect form of a ray or the tail of a comet”. A few weeks after his discovery, it was seen by French comet-hunter Charles Messier. Binoculars show its rectangular shape and north-western tick-like feature clearly. Even a small telescope reveals its splendour, entralling Carol Botha to write, “I am sure this is one of the most beautiful sights in the heaven.”*

*A larger telescope shows the curved ‘head’ of the swan more distinctly, accounting for several of its other popular names: “Horseshoe” and “Omega Nebula”. The Swan is part of a star-forming complex about 5 000 light years away.*

**NB: The Swan Nebula is also marked on the North Down chart on page 1 of this document.**

## "Star Tales"

### SAGITTARIUS

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. Aratus spoke of the Archer, Toxotes (Τοξότης), and his Bow, Toxon (Τόξον), 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, subsequently adopted by the Greeks, and this helps explain the confusion over its identity. Eratosthenes doubted that this constellation was a centaur, giving as one of his reasons the fact that centaurs did not use bows. Instead, Eratosthenes described Sagittarius as a two-footed 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. According to the Roman mythographer Hyginus, the father of Crotus was Pan, which confirms the view of Eratosthenes that he should be depicted as a satyr rather than a centaur.

Crotus 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 in the sky, where he is seen demonstrating the art of archery. 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 is sometimes misidentified as Chiron. 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 called Arkab, 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.

## 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. Ancient Chinese astronomers also imagined a dipper among these same stars (see below).

Sagittarius contains dense Milky Way star fields that lie towards the centre of our Galaxy. The exact centre of the Galaxy is believed to be marked by a radio-emitting source that astronomers call Sagittarius A, near the border with Ophiuchus. The archer's arrow coincidentally points towards it. There are many notable objects in Sagittarius, including the Lagoon Nebula and the Trifid Nebula, two clouds of gas lit up by stars inside them.

### *Chinese associations*

Sagittarius contained two ancient Chinese constellations after which the seventh and eighth [lunar mansions](#) were named: Ji and Dou. Ji ('winnowing basket') consisted of four stars – Gamma, Delta, Epsilon, and Eta Sagittarii – and represented a basket used for separating rice grains from chaff by shaking it in the air. The chaff, blown away by the breeze, is represented by a single star nearby called Kang, although opinions differ as to whether Kang lay in Sagittarius, Scorpius, or even Ophiuchus. A related constellation was Chu, the pestle, to the south of Ji in Ara, for pounding the rice to remove the husks.

Dou ('dipper', also known as Nandou, 'southern dipper') was formed by Mu, Lambda, Phi, Sigma, Tau, and Zeta Sagittarii. These same stars, bar Mu, form the present-day asterism called the Milk Dipper. In [a Chinese proverb](#), the southern dipper marks life while the northern dipper (Beidou, our Big Dipper in Ursa Major) marks death. A single star nearby, probably 5th-magnitude HR 7029, was Nongzhangren, an old farmer, perhaps measuring out grain with the dipper and using the winnowing basket.

To the north of Dou, the arc formed by Upsilon, Rho, 43, Pi, Omicron, and Xi Sagittarii was known as Jian, representing a flag or banner, perhaps at a city gate. Next to this was Tianji, 'celestial cock', formed by 55 and 56 Sagittarii; the bird represented by this constellation was said to be in charge of time, because it was the first to crow at dawn and all others followed it.

South of Tianji were two canine-related constellations. Gouguo consisted of Omega, 59, 60, and 62 Sagittarii. The name Gouguo is translated as 'territory of dogs' or 'dog kingdom'; it could represent a nation that appears in [a Chinese fable](#) or it may simply be an area for dogs around a farm. Next to it was Gou, formed by 52 and Chi-1 Sagittarii, representing a guard dog.

In southern Sagittarius, ten stars probably including Alpha and Beta formed Tianyuan, representing a body of water such as a lake or sea. It was said to govern the irrigation of fields. Some faint stars in Sagittarius on the border with Ophiuchus, identities uncertain, formed part of Tianyue. Lying exactly on the ecliptic, Tianyue represented a lock or keyhole through which the Sun had to pass every year. It lay directly opposite in the sky from Tianguan, a gate on the ecliptic in Taurus.

## HOW TO READ A STARCHART [adapted to southern African conditions from Brian Ventrudo's "One Minute Astronomer"]

When you're just starting out you need a good basic star chart that shows you where to find the bright stars and main constellations at a particular time and place. At first, star charts are a little confusing. So here's how to read a star chart:

On page 1 above there is a basic star chart showing the sky on 15th of the month at 21.00 from 34.4° south and 19.2° east (Hermanus).

The chart tries to represent a hemispherical sky on a flat surface. The edge of the chart represents the horizon, and the centre of the chart is supposed to represent the zenith (the point directly overhead) at 34° south. East and west are reversed compared to a map of the Earth but they will point in the right directions when you raise the map over your head.

To learn the night sky, you will need star charts.

- Find a location that's isolated from street and house lights. Stray light will make it harder for you to see fainter stars. Also, for the same reason, try to avoid nights with a full moon or too much haze.
- Once you go outside, give your eyes 5 or 10 minutes to become adapted to the dark. And to see the star charts, use a red LED flashlight or a white flashlight covered with red plastic. The red light will preserve the sensitivity of your eye for night viewing.
- Pick a direction to face, say, South, and rotate the chart so South is at the bottom. Now raise the chart overhead. The directions on the chart will now correspond to the directions in the sky.
- Don't try to take in the whole sky at once. Choose a quarter of the map, preferably one with several bright stars or a large well-known constellation like Orion or Crux (Southern Cross). Now, look up at the quarter of the sky that corresponds to the quarter of the map. Make a connection with what you see in the sky with what you see on the map. Take your time... it's a little strange and overwhelming at first.
- Learn a few more stars at a time... don't rush. Once you've identified a few bright stars and constellations, move from what you know to what you don't know. Once you've learned most of a quarter of the sky, move to another quarter.
- While the charts are set for 21.00 (9 p.m.) local time, they are still useful for an hour or two on either side. The stars will appear in about the same position, except for the stars near the horizon. After 3 hours, the stars will have turned 1/8 of the way around the sky. And after 6 hours, they will have turned 1/4 of the way around the sky.
- If you see an out-of-place star near the ecliptic (and in one of the constellations of the zodiac), it's almost certainly a planet. Since the planets move around in the sky almost daily, you will need to consult an almanac or website to figure out which planet you are seeing. We also review the positions of the planets each month in the SKY THIS MONTH.

That's all there is to it. Well, that and a whole lot of practice. Be patient, and savour your personal discovery of each new star and constellation.



## **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 Deep-Sky Section](#)

Whatsapp chat group: [ 074 100 7237 ]

[Official Big 5 of the African Sky web page](#)

[Official Big 5 Facebook group](#)

[ASSA Deep-Sky Section mailing list](#)

## **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!](#)

You can also find us on [Facebook](#), [Twitter](#), the [ASSA Info mailing list](#) and the [ASSA Discussion mailing list](#).

*Grateful thanks to the following, without whom this publication just would not be the same:*

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