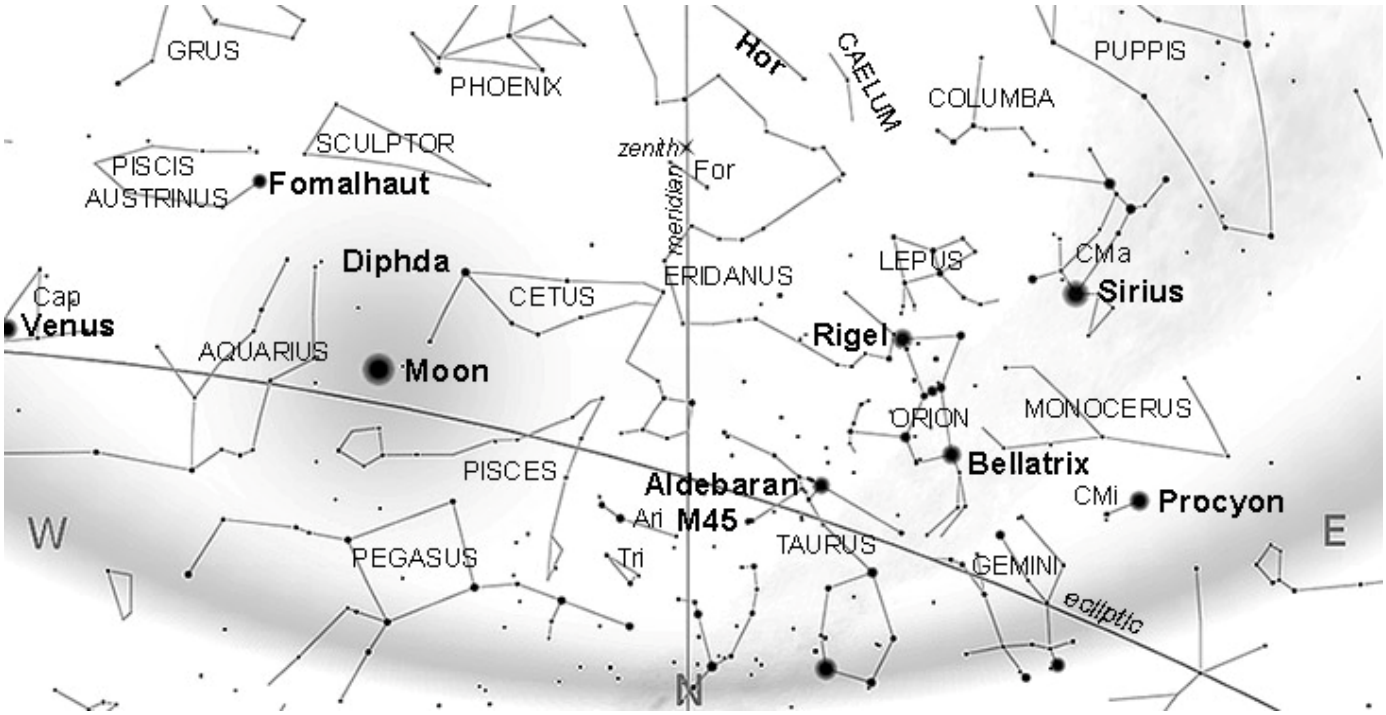
SKYNOTES from Hermanus

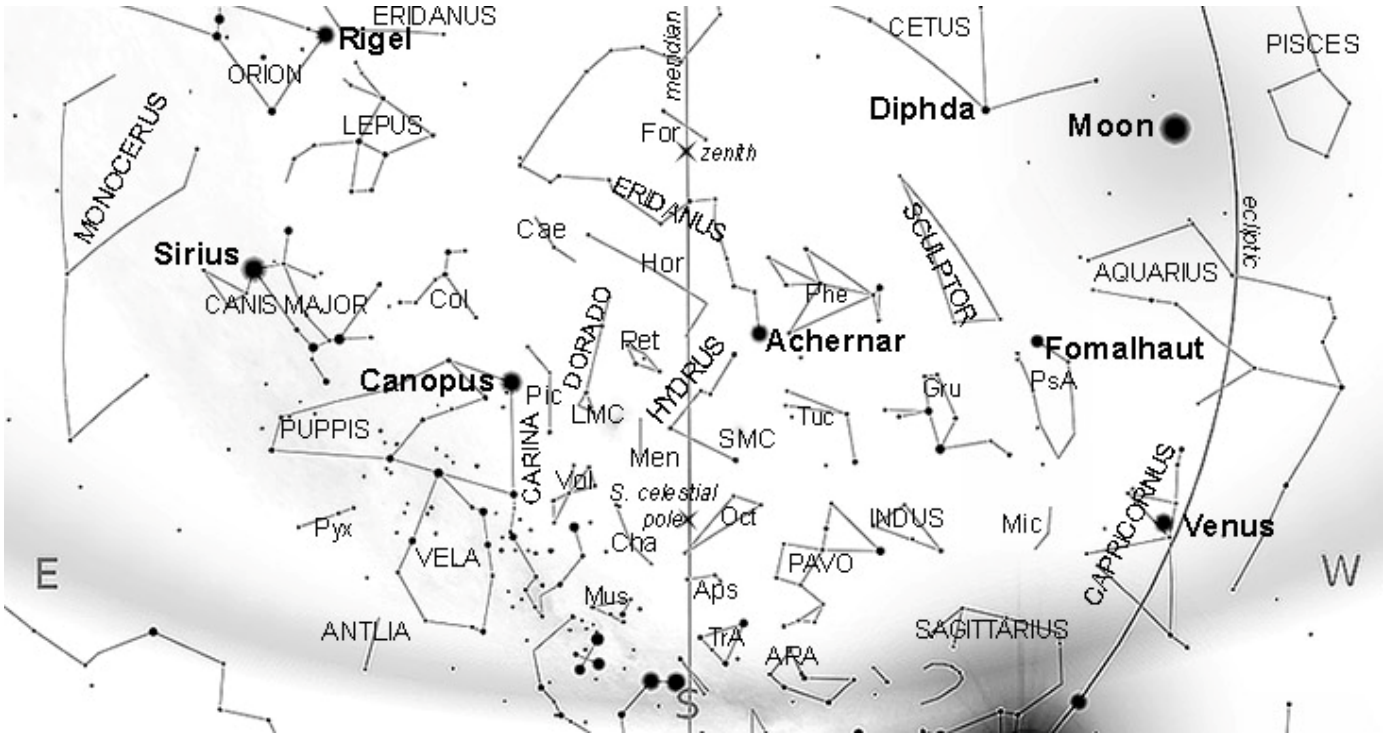
JANUARY 2020

1. SKY CHARTS

EVENING SKY 1st JANUARY at 21h00 (NORTH DOWN)



EVENING SKY 1st JANUARY at 21h00 (SOUTH DOWN)



2. HIGHLIGHTS FROM THE SKY GUIDE

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

Date	*Time*	*Item*
1		**Moon** near **Neptune**
		Vesta stationary
2	03h30	**Moon** at apogee (404 600 Km)
		Mercury near **Jupiter**
3	06h45	**First quarter Moon**
4		**Moon** near **Uranus**
5	11h59	**Earth** at perihelion (0.9832 AU)
7		**Moon** passes 3.7º north of **Aldebaran**
10	21h21	**Full Moon** (lunar penumbral eclipse [1])
	08h03	**Moon** furthest north (+23.2º)
	17h01	**Mercury** superior conjunction
11	04h32	**Moon** passes 4.6º south of **Pollux**
		Uranus stationary
12	03h50	**Moon** passes 1.8º north of the **Beehive** cluster (M44, “Praesepe”)
		Mercury near **Saturn**
		Saturn near **Pluto**
13		**Moon** near **Regulus**
	22h20	**Moon** at perigee (366 000 Km)
		Saturn, Ceres and **Pluto** in conjunction with **Sun**
17	14h58	**Last quarter Moon**
18		**Mars** near **Antares**
19		**Mercury** greatest latitude south
		α Crucid meteor shower at maximum (see **METEOR SHOWERS** p. 4)
20		**Moon** near **Mars**
23	03h25	**Moon** near **Jupiter** (0º16’ centre to centre, no occultation from southern Cape)
	05h37	**Moon** furthest south (-23.2º)
24	01h55	**Moon** occults **Pluto**
	02h57	**Moon** passes 0.8º south of **Saturn**
	23h42	**New Moon**
25		**Moon** near **Mercury**
27	21h58	**Venus** passes 0º4’ south-east of **Neptune**
28		**Moon** near **Venus** and **Neptune**
29	23h28	**Moon** at apogee (405 400 Km)

[1] Penumbral Lunar eclipse 10 January (see **THE MOON** page 4.)

3. THE SOLAR SYSTEM

JANUARY 2020			*1st January*	*1st February*	*Visibility*
Sun Length of day	Sagittarius to Capricornus 14h25 to13H12	Rises: Transit: Sets:	05h34 12h46 19h59	06h03 12h57 19h50	***Never look at the sun without SUITABLE EYE PROTECTION!***
Mercury Magnitude Phase Diameter	Sagittarius to Capricornus -0.9 to -1.0 99% to 83% 5" to 6"	Rises: Transit: Sets:	05h06 12h23 19h41	07h14 12h56 20h37	**Low in the west after sunset**
Venus Magnitude Phase Diameter	Capricornus to Aquarius -4.0 to -4.1 82% to 73% 13" to 15"	Rises: Transit: Sets:	08h18 15h13 22h07	09h19 15h32 21h45	**Evening**
Mars Magnitude Phase Diameter	Libra to Ophiuchus +1.6 to +1.4 96% to 93% 4" to 5"	Rises: Transit: Sets:	02h48 09h47 16h46	02h04 09h14 16h25	**Morning**
Jupiter Magnitude Diameter	Sagittarius -1.9 32"	Rises: Transit: Sets:	05h20 12h30 19h41	03h50 10h59 18h07	**Close to Sun then low in the east before sunrise**
Saturn Magnitude Diameter	Sagittarius +0.5 to +0.6 15"	Rises: Transit: Sets:	06h28 13h33 20h39	04h44 11h47 18h50	**Low in the west after sunset then low in the east before sunrise**
Uranus Magnitude Diameter	Aries +5.7 to 5.8 4"	Rises: Transit: Sets:	14h34 20h02 01h35	12h33 18h01 23h29	**Evening**
Neptune Magnitude Diameter	Aquarius +7.9 2"	Rises: Transit: Sets:	10h52 17h11 23h30	08h54 15h12 21h31	**Evening**
Pluto Magnitude	Sagittarius +14.4	Rises: Transit: Sets:	06h31 13h38 20h45	04h34 11h40 18h47	**Low in the east before sunrise**

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 -1.8. 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

Montes Apenninus

Type: Rugged mountain range.

Dimensions: Length approximately 600 Km. Heights up to 5000 metres.

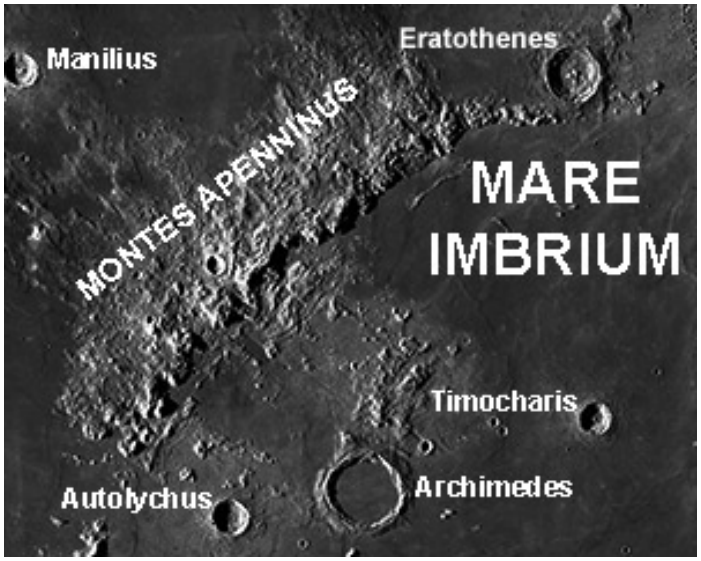
Notes: The range is a remnant of the rim of the Imbrium Basin that was not flooded by lava. From crater Eratosthenes, the mountains form an arcing chain that gradually bends from east to northeast. A gap at the north-east end of the range joins Mare Imbrium to the Mare Serenitatis in the east. At the north-east end of this gap lie the Montes Caucasus.

Best seen: Two days after first quarter and one day after last quarter.

Age: About 3.9 billion years.

Location The south-eastern border of Mare Imbrium; coordinates 18.9°N, 3.7°W.

Naming Named after the Apennine Mountains in Italy and first used by the Polish astronomer and lunar observer Hevelius (1611–1687).



A penumbral **Lunar Eclipse** is visible from Hermanus, on **10th January**:

commences	maximum	ends
19h07	21h10	23h12

METEOR SHOWERS

Name	*Date & Time of Max*	*Duration*	*Radiant*	*ZHR*	*velocity*	*Observing Prospect*
Alpha Crucids	19 January 00h00 -03h30	6 – 28 January	**The Coalsack** in **Crux**	<5	50	Good

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 **17th** (moonrise 23h42) to **29th December** (moonset 22h38, 9%). Then from **16th** (moonrise 23h35) to **29th January** (moonset 21h42, 8%).

Henceforth, Stargazing evenings will be planned on a "pop up" basis! We have had so many cancelled evenings (mainly weather related but also due to lack of telescope operators) that it has been decided not to plan ahead more than a few days. Members will receive updated information by e-mail. Also, please check our website calendar on http://www.hermanusastronomy.co.za.

DEEP SKY

THE PLEIADES, one of the most beautiful of the open clusters, was covered in our February issue of last year. But may I beg your indulgence, please. I repeat this choice but with more historic and exotic cultural detail. And this is the perfect time of year to view the Sisters. This cluster is among the nearest to Earth and a prominent object in the sky during our summer nights.

Although only a few stars are visible to the naked eye, it contains hundreds, some surrounded by swirls of nebulosity. These nebulae are blue-coloured, indicating that they reflect the carbon-rich light of the bright stars near or within them. Though it was once thought the Pleiades formed from this and surrounding nebulae, it is now known that the Pleiades nebulosity is caused by a chance encounter with the cloud.

The Pleiades have been known since antiquity to cultures all around the world, including the **Maori** (who called them "*Matariki*") and **Australian Aborigines**, the **Chinese**, the **Mayans** ("*Tzab-ek*"), the **Aztecs** ("*Tianquiztli*") and the **Sioux** and **Cherokee** of North America. The earliest **Greek** references to the Pleiades were by Homer in the *Iliad* (750 BCE) and the *Odyssey* (720 BCE) and by Hesiod, about 700 BCE. Some Greek astronomers considered the Pleiades to be a distinct constellation. They are called "*Kiymah*" in **Hebrew** and the **Bible** refers to them three times - Job 9:7-9, Job 38:31-33 and Amos 5:8. The cluster was revered in **Hindu** mythology as "*Krittika*", the six mothers of the war god Skanda who developed six faces. Some scholars of **Islam** suggest that the Pleiades ("*al Thuraiya*" in Arabic) are the star Najm which is mentioned in the Quran. Their **Persian** name is "*Soraya*", after which the former Iranian empress was named. In **Japan**, the Pleiades are named "*Subaru*". The Japanese car maker derives its name from the cluster which is represented in their corporate logo.

Old English and **German** names indicate that the Pleiades were once compared to a "hen with chicks". The modern English name is of Greek origin though of uncertain etymology. The name may be derived from "*plain*" for "to sail" or the word "*pleios*" meaning "full" or "many"; or from "*peleiades*" meaning "flock of doves".

In 1769, Charles Messier included the Pleiades as number 45 in his first list of comet-like objects, published in 1771. Messier's inclusion of the cluster is curious as most of Messier's objects are much fainter and more easily confused with comets – something which scarcely seems possible with the Pleiades. He may simply have wanted a larger catalogue than his scientific rival Lacaille, whose 1755 catalogue contained 42 objects.

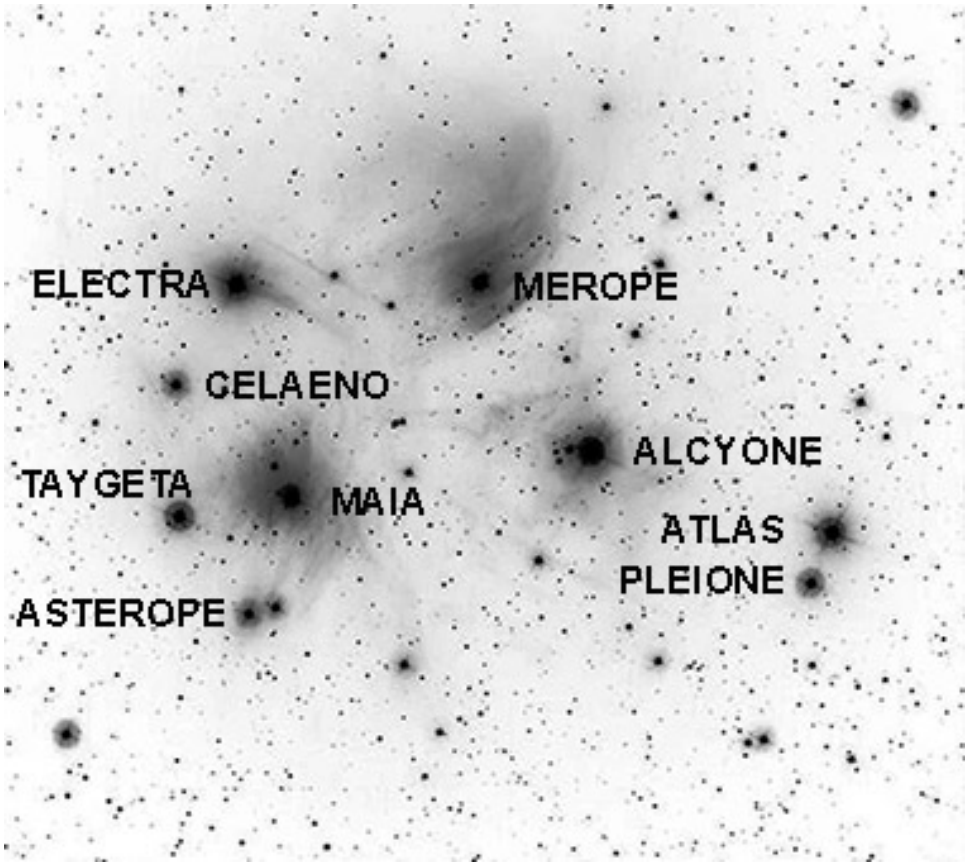
The cluster is a great object in binoculars with more than 100 stars in the field and the nine brightest stars concentrated within a diameter of 1º. A telescope with a wide-angle, low power eyepiece is needed to view the entire group.

The Pleiades
(M45, Mel 22, Seven Sisters, Subaru Cluster)

Description	Open cluster	Azimuth Altitude	12º 38' 38" to north +30º 20' 50" above horizon
Distance	Average 430 ly, 130 pc	J2000 coordinates	RA 3h47m29s Dec +24º06'18"
Magnitude	+1.50	Guide star	about 13.8º north-west of **Aldebaran** (α Tauri),
Apparent size	120.0 arcmin	Availability 1 Jan 2020	Rises 16h56 Transits 21h47 Sets 02h42
Physical Parameters	Diameter 4.6 pc, 15.1 ly	Naked eye	About 6 to 12+ stars
		Binoculars	More than 100 stars

Telescopes: About 200 stars. The nebulosity would require a *reflector* objective of about 14". But take note: The brightest of the nebulae, surrounding Merope, was discovered in 1859 by Wilhelm Tempel at Venice using a 4" *refractor*! Makes you think ...
The Merope nebula (NGC 1435) is best seen under dark skies using a rich-field telescope.

THE PLEIADES (north down)
Basic image by Steve Paukin of Winslow, Arizona



WISHING YOU CLEAR SKIES AND A WONDERFUL 2020

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.saao.ac.za
ASSA Deep-Sky Section
Whatsappchat group: [074 100 7237]
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