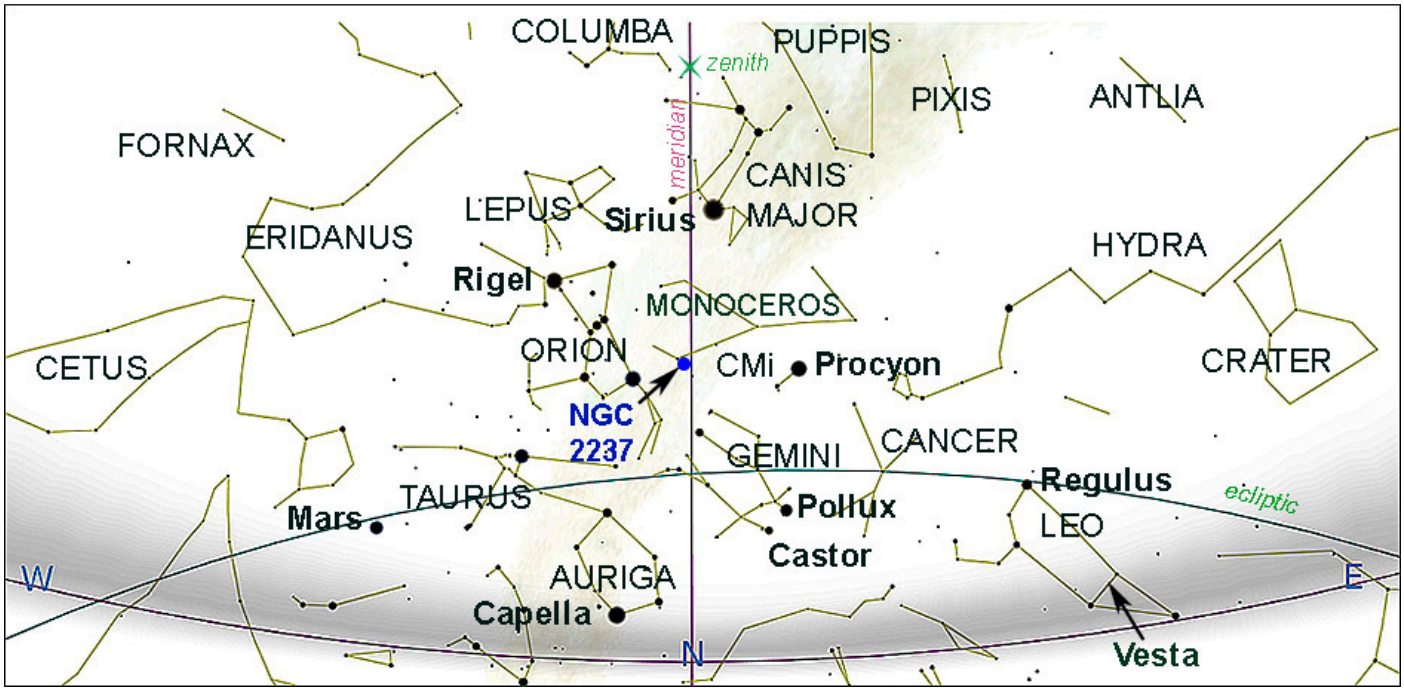
SKYNOTES from Hermanus

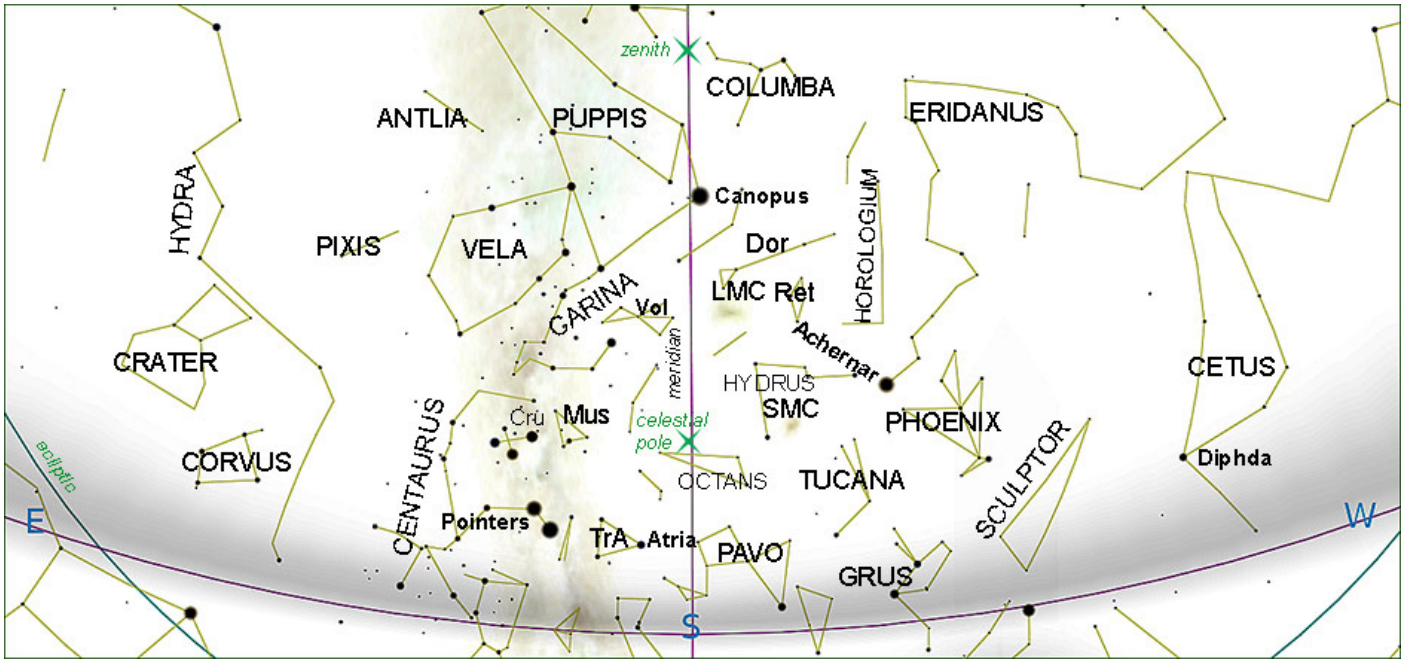
FEBRUARY 2021

1. SKY CHARTS

EVENING SKY 8th FEBRUARY at 22h00 (NORTH DOWN)



EVENING SKY 8th FEBRUARY at 22h00 (SOUTH DOWN)



PLEASE NOTE: All events predicted are as observed from **Hermanus, Western Cape, South Africa. Times are South African Standard Time (UTC +2).** *Also please note*: with the exception of **Pluto** (magnitude +14.4), all events predicted are visible with the naked eye.

2. THE SOLAR SYSTEM

HIGHLIGHTS FROM THE SKY GUIDE

Date	*Time*	*Item*
3	21h34	**Moon** at perigee (370 126 Km)
4	19h37	**Last quarter Moon**
6	10h33	**Moon** near **Antares**
	09h00	**Venus** near **Saturn**
7	02h29	**Moon** at descending node
		Autumn equinox on **Mars** (southern hemisphere)
8	17h34	**Moon** southernmost (25.0º)
	15h39	**Mercury** at inferior conjunction
10		**Moon** near **Venus**, **Jupiter** and **Saturn**
11	21h06	**New Moon**
	17h00	**Venus** near **Jupiter**
13		**Venus** near **Mercury**
15	16h18	**Mercury** near **Jupiter**
18	12h23	**Moon** at apogee (404 465 Km)
19	20h47	**First quarter Moon**
		Moon near **Mars**
20	15h15	**Moon** near **Aldebaran**
		Mercury stationary
21	03h44	**Moon** at ascending node
		Main-belt asteroid **Vesta** reaches magnitude +5.83 *
23	02h12	**Moon** northernmost (+25.1)
	09h38	**Mercury** near **Saturn**
24	03h10	**Moon** near **Pollux**
	02h16	**Moon** near **Beehive** (M44)
26	06h04	**Moon** near **Regulus**
27	10h17	**Full Moon** (370 600 Km, 32.2º)

* asteroid **Vesta**

Although **SGAS 2021** mentions this, I believe that waiting until March (about 7th) will make observation a bit easier as the moon will be out of the way and **Vesta** will be a bit higher above the horizon. And a wee bit brighter!

FEBRUARY 2021			1st February	1st March	Visibility
Sun Length of day	Capricornus to Aquarius 13h45 to 10h51	Rises: Transit: Sets:	06h04 12h57 19h49	06h57 12h22 17h48	***Never look at the sun without SUITABLE EYE PROTECTION!***
Mercury Magnitude Phase Diameter	Capricornus +1.2 to +0.3 17% to 48% 9" to 8"	Rises: Transit: Sets:	07h15 13h46 20h17	06h07 10h39 15h12	**Low in west after sunset then low in the east before sunrise**
Venus Magnitude Phase Diameter	Sagittarius to Aquarius 3.9 98% to 99% 10"	Rises: Transit: Sets:	05h00 12h04 19h08	06h58 12h01 17h05	**The morning star then moving too close to the sun**
Mars Magnitude Phase Diameter	Aries to Taurus +0.5 to +0.9 89% to 90% 8" to 6"	Rises: Transit: Sets:	13h20 18h35 23h49	12h47 17h48 22h49	**Evening**
Jupiter Magnitude Diameter	Capricornus -2.0 32" to 33"	Rises: Transit: Sets:	05h52 12h47 19h41	04h34 11h23 18h11	**Low in west after sunset then low in the east before sunrise**
Saturn Magnitude Diameter	Capricornus +0.6 to +0.7 15"	Rises: Transit: Sets:	05h29 12h27 19h24	03h55 10h50 17h45	**Low in west after sunset then low in the east before sunrise**
Uranus Magnitude Diameter	Aries +5.8 3"	Rises: Transit: Sets:	12h49 18h13 23h38	11h03 16h26 21h50	**Evening**
Neptune Magnitude Diameter	Aquarius +7.9 to +8.0 2"	Rises: Transit: Sets:	09h01 15h17 21h34	07h16 13h31 19h46	**Evening then low in the west after sunset**
Pluto Magnitude	Sagittarius +14.4	Rises: Transit: Sets:	04h38 11h45 18h53	02h52 09h59 17h06	**Low in west after sunset then in the morning**

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 the planet Jupiter at magnitude -1.8 is considerably brighter than the star Antares (in Scorpius) at +1.05. 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

MARE CRISIUM (the Sea of Crises)

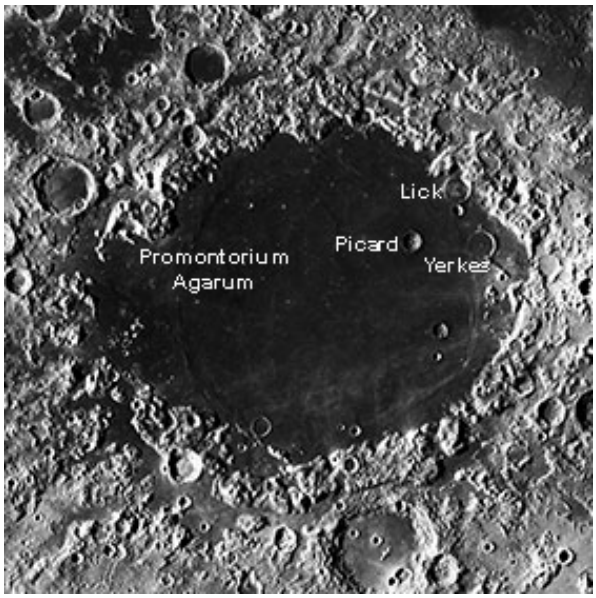
(from the 2021 Sky Guide)

Location: east-north-east of **Mare Tranquilitatis**

Best seen: Three days after **New Moon** to two days after **Full Moon**

Age: The basin is of the Pre-Imbrian period, 4,55 to 3,85 billion years ago

Size: Diameter 556 Km, are 176 000 square Km



The image to right is north down

Description: A small mare easily identified. The floor is very flat with a ring of wrinkle ridges toward its outer boundaries. On the western rim of the mare is the palimpsest* **Yerkes**. **Lick** is to the southeast and similar. A mass concentration (mascon), or gravitational high, was identified in the centre of Mare Crisium from Doppler tracking of the five **Lunar Orbiter** spacecraft in 1968. The mascon was confirmed and mapped at higher resolution with later orbiters such as **Lunar Prospector** and **GRAIL**. Binoculars will show the ray system of the crater **Proclus** overlying the north-western mare.

Naming: by **Giovanni Riccioli**, pioneer lunar scholar who first named features on the moon for scientists. He published one of the earliest books on astronomy, *Almagestum Novum***,** in 1651.

* *a geographical feature comprising superimposed structures created at different times. The term "Palimpsest" is beginning to be used by glaciologists to describe contradicting glacial flow indicators usually consisting of smaller indicators overprinted upon larger features. The name arises by analogy to a medieval palimpsest, a reused parchment manuscript page in which the previous text can sometimes be deciphered.*

Lunar and Solar eclipses : ***No eclipses, solar or lunar, are predicted for February 2021***

METEOR SHOWERS

Name	*Date & Time of Max*	*Duration*	*Radiant*	*Zenithal hourly rate*	*velocity Km/sec*	*Observing Prospect*
Alpha Centaurids	7 February 22h00 -03h30	28 January – 21 February	1º north of **Hadar** (β Centauri)	5	60	Good

For more details regarding meteor watching, please see the Sky Guide Africa South (SGAS), pages 86- 87.

3. LOOKING UP

SUGGESTED OBSERVATION SCHEDULE for **FEBRUARY**
(Lunar observations notwithstanding)

Date	***dusk end***		
3th	21h22	***moonrise***	**23h33 (61%)**
14th	21h08	***moonset***	**21h27 (5%)**

CLUB STARGAZING – our centre stargazing plans are still on hold owing to the resurgence of the pandemic. We shall let you know as soon as the restrictions are lifted.

Please consult our website for updates:
http://www.hermanusastronomy.co.za.

DEEP SKY HIGHLIGHTS

ROSETTE NEBULA
NGC 2237, C49

		Visibility on 8th February :		
		Rise	*Transit*	*Set*
Constellation	Monoceros			
Distance	5.5 Kly, 1.7 Kpc	16h10	21h58	03h50
Visual magnitude	+5.50			
Apparent size	80 x 60 arcmins	Naked eye:	no	
Actual size	128 ly, 39.3 pc	Binoculars:	Yes, the star cluster	
Alt/Azimuth	+50º 34 / 359º 15’	Telescopes:	Yes but challenging	
J2000 lat/long	DE +5º 03’ 00” / RA 6º 30’ 18”		(see below)	

Observation

The **Rosette Nebula** is a vast cloud of dust and gas extending over 1º across and covers an area about five times that of the full moon. With a total magnitude of +4.8, the star cluster **NGC 2244** is visible in binoculars and seen quite well in small telescopes. The cluster appears about 24’ across. That brightest star at its south-east corner is **12 Monocerotis.**

The nebula itself is more difficult to spot visually and requires a telescope with low magnification at a dark site. Good sky transparency and a wide-field eyepiece will show a faint, circular glow around 80’ x 60’ with a central hole containing NGC 2244.

The Rosette Nebular (north down) © Robert Gendler

Once identified, higher power may be used to see brightness variations and dark material along the nebula’s edge. Telescopes in the 8 to 12 inch range reveal dark lanes snaking across the faint glow. Two dark globules are easily seen in the western and northern sections of the nebulosity.

This nebula is more easily observed photographically. This is the only way to record its red colour which is not visually apparent.

Physical Properties

The Rosette is an H II region at a distance of some 5 500 light years near one end of a large molecular cloud in Monoceros. Its diameter is about 130 light years across. The nebula is estimated to contain around 10 000 solar masses.

The open cluster is closely associated with the nebulosity having recently formed from the nebula itself. Ultra-violet radiation from its hot O type stars energizes the nebula causing it to fluoresce. They heat the surrounding gas to a temperature of around 6 million K, generating large amounts of X-ray emission seen by the Chandra X-ray Observatory in 2001.

Stellar winds from this group of stars has swept out the hollow at the centre of the Rosette. These stellar winds exert pressure on the interstellar cloud, compressing it. This leads to star formation which is currently still ongoing in this vast cloud of interstellar matter. Astronomers announced the finding of a very young star with a Herbig-Harrow jet in 2004.

Discovery and History

The open cluster **NGC 2244** was discovered by **John Flamsteed** around 1690 and also found by William Herschel. The nebula, however, was not seen by Herschel. Its different parts were discovered by his son, **John Herschel** and by German **Albert Marth** (1828 – 1897) and American **Lewis A. Swift** (1820 – 1913).

The brightest parts of the nebula have their own catalogue numbers. Today, the following numbers are used to describe the various parts of the nebula but note that their descriptions in the original NGC (in quotes) are quite different:

NGC 2237 – usually used to denote the whole nebula, “pretty bright, very very large, diffuse”

NGC 2238 – part of the nebulous region (GC 5631= Marth 99, identified by Marth and Swift), “small star in nebulosity”

NGC 2239 – part of the nebulous region (GC 1420 = h392, John Herschel), “star of magnitude 8 in large, poor, bright cluster”

NGC 2244 – the open cluster within the nebula (John Flamsteed in 1690)

NGC 2246 – part of the nebulous region (Swift), “extremely faint, large, irregularly round, extremely difficult”

From Ian Ridpath’s “Star Tales”

Monoceros

The unicorn

Genitive: Monocerotis
Abbreviation: Mon
Size ranking: 35th
Origin: Petrus Plancius

The mythical single-horned beast, the unicorn, is represented by this constellation which was unknown to the ancient Greeks. Monoceros was first depicted in 1612 under the name Monoceros Unicornis on a globe by the Dutch theologian and cartographer Petrus Plancius. This was the same globe on which Camelopardalis, another of his inventions, first appeared.

In 1624 the German astronomer Jacob Bartsch depicted it under the name Unicornu (sic) on a star chart in his book *Usus Astronomicus Planisphaerii Stellati* and as a result he was sometimes

wrongly credited with its invention. In his book, Bartsch pointed to several passages in the Bible that supposedly mention unicorns, although these are now regarded as mistranslations. It is not clear whether Plancius introduced the constellation because of these Biblical references, but the unicorn has long been regarded as a Christian symbol of purity. The Polish astronomer Johannes Hevelius adopted Monoceros in his influential star atlas and catalogue published in 1690 which ensured its acceptance by other astronomers.

Its six brightest stars were allocated Greek letters by the American astronomer Benjamin Apthorp Gould in his Uranometria Argentina catalogue of 1879. However, by modern measurements, Beta Monocerotis is brighter than Alpha, so this is another constellation in which Alpha is not the brightest star. (An earlier attempt at lettering by the English astronomer Francis Baily in his British Association Catalogue of 1845 was a failure; through an oversight, he missed out the letters Alpha and Beta, and gave the letter Gamma to the star that became Gould's Alpha.)

Monoceros fills a large area between Hydra and Orion where there was no Greek constellation. It is not prominent (its brightest stars are of fourth magnitude) but it lies in the Milky Way and contains a host of fascinating objects, most notably the Rosette Nebula, a wreath-shaped mass of glowing gas with embedded stars.

There are no legends associated with the constellation, as it is a modern figure, and none of its stars has a name.

keep in touch...

Please 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]
MNASSAhttp://assa.saao.ac.za/about/publications/mnassa/
Nightfall https://assa.saao.ac.za/?s=Nightfall
Official Big 5 of the African Sky web page
Official Big 5 Facebook group
ASSA Deep-Sky Section mailing list

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You can find us on Facebook, Twitter, the ASSAInfo mailing list and the ASSADiscussion mailing list.

Grateful thanks to the following:

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