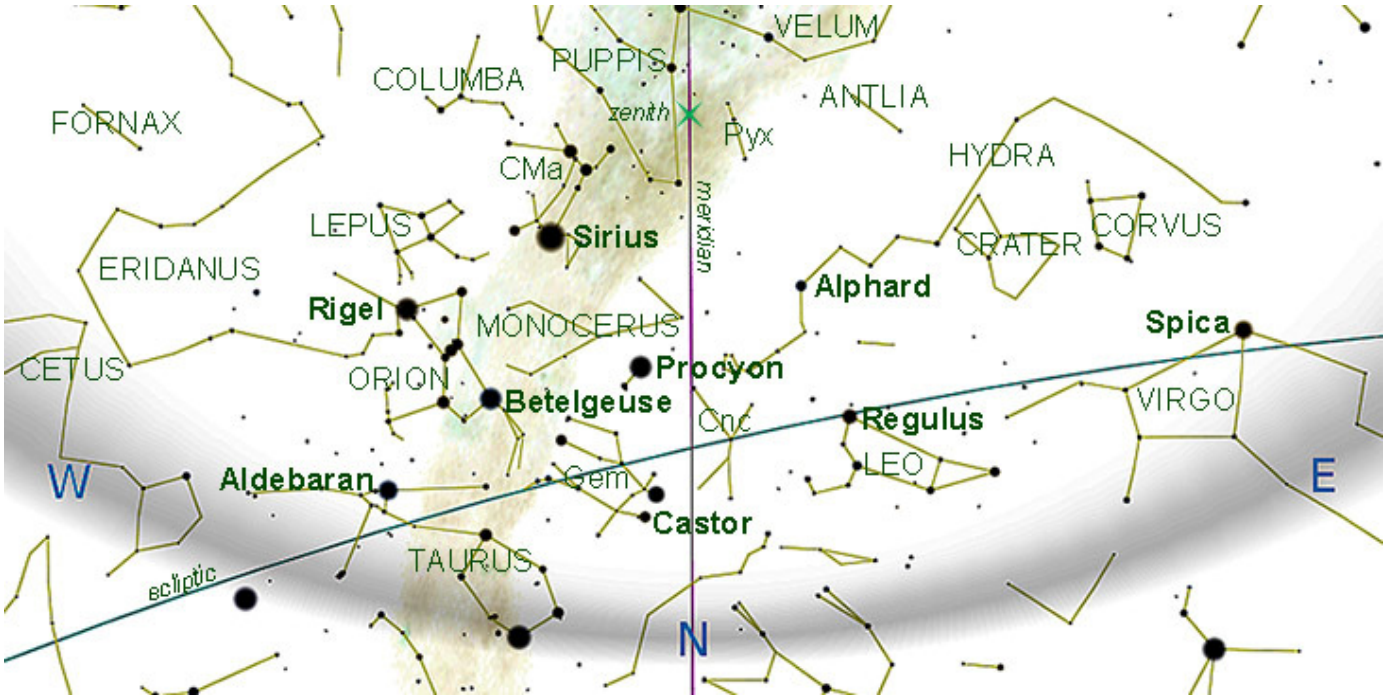
SKYNOTES from Hermanus

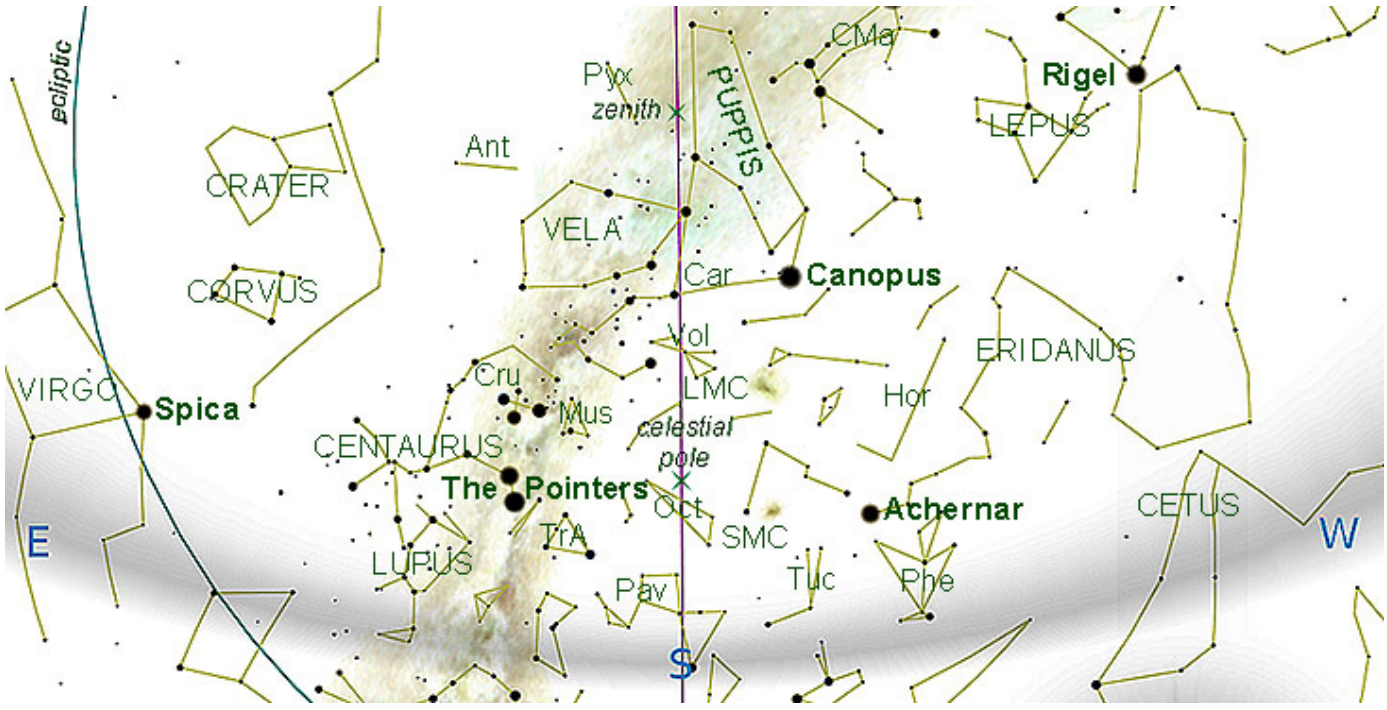
MARCH 2020

1. SKY CHARTS

EVENING SKY 21st MARCH at 21h30 (NORTH DOWN)



EVENING SKY 21st MARCH at 21h30 (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).** *Also please note*: with the exception of **Pluto** (magnitude +14.4), all these objects are visible with binoculars and, in most cases, to the naked eye.

Date	Time	Item
1	07h30	**Moon** occults **Vesta**
2	15h35	**Moon** near **Aldebaran**
	21h57	**First quarter Moon**
5	03h34	**Moon** furthest north (+23.4)
6	01h33	**Moon** passes 4.6º south of **Pollux**
7	01h22	**Moon** passes 1.7º south of the **Beehive** (M44)
8	12h50	**Moon** passes 4º north of **Regulus**
	14h09	**Neptune** in conjunction with **Sun**
	21h21	**Venus** passes 2.2º south-east of **Uranus** (magnitude +5.8)
9	19h38	**Full Moon**
		Mercury stationary
10	08h33	**Moon** at perigee (357 100Km)
16	11h34	**Last quarter Moon**
17	16h07	**Moon** furthest south (-23.5º)
18	17h54	**Moon** occults **Pluto**
	21h20	**Moon** grouped with **Mars**, **Jupiter** and **Saturn** after sunset
19	01h17	**Moon** passes 1.6º south of **Saturn**
20	05h50	*EQUINOX*
		Mars near **Jupiter**
		Venus at perihelion
21		**Moon** near **Mercury**
23		*WORLD METEOROLOGICAL DAY* [1]
	07h13	**Mars** near **Mercury** (see Sky Guide 2020 page 16 for more details)
		Moon passes 3.5º south of **Neptune**
24	03h59	**Mercury** at greatest elongation (27.8º)
	11h28	**New Moon**
	17h23	**Moon** at apogee (406 700 Km)
25	23h59	**Venus** at greatest elongation (46.1º)
27		**Moon** near **Uranus**
		Mercury at aphelion
28	20h30	*EARTH HOUR* [2]
29	07h30	**Moon** occults **Vesta**
30	00h42	**Moon** near **Aldebaran**
31		**Moon** near **M35**
		Mars near **Saturn**

[1] *WORLD METEOROLOGICAL DAY* - The date of the establishment of the World Meteorological Organization on 23 March 1950, named **World Meteorological Day.**
https://en.wikipedia.org/wiki/World_Meteorological_Day

[2] *EARTH HOUR* is a worldwide movement organized by the World Wide Fund for Nature (WWF). This annual event is held to encourage individuals, communities and businesses to turn off non-essential electric lights for one hour from 20h30 to 21h30 on a specific day towards the end of March. A symbol of commitment to the planet.

3. THE SOLAR SYSTEM

MARCH 2020			1st March	1st April	Visibility
Sun Length of day	Aquarius to Pisces 12h48 to 11h42	Rises: Transit: Sets:	06h31 12h55 19h19	06h56 12h47 18h37	***Never look at the sun without SUITABLE EYE PROTECTION!***
Mercury Magnitude Phase Diameter	Aquarius +3.3 to +0.1 5% to 7% 6" to 7"	Rises: Transit: Sets:	05h56 12h17 18h39	04h49 11h13 17h37	**Low in the east before sunrise**
Venus Magnitude Phase Diameter	Pisces to Taurus -4.1 to -4.2 73% to 63% 15" to 19"	Rises: Transit: Sets:	10h07 15h39 21h10	10h46 15h41 20h36	**Evening**
Mars Magnitude Phase Diameter	Sagittarius to Capricornus +1.1 to +0.8 91% to 88% [illegible]	Rises: Transit: Sets:	01h34 08h46 15h59	01h13 08h17 15h20	**Morning**
Jupiter Magnitude Diameter	Sagittarius -2.0 to -2.1 34" to 37"	Rises: Transit: Sets:	02h23 09h30 16h36	00h44 07h48 14h52	**Morning**
Saturn Magnitude Diameter	Sagittarius to Capricornus +0.7 15" to 16"	Rises: Transit: Sets:	03h04 10h06 17h07	01h15 08h14 15h14	**Morning**
Uranus Magnitude Diameter	Aries + 5.8 to +5.9 3"	Rises: Transit: Sets:	10h43 16h10 21h38	08h48 14h14 19h40	**Evening**
Neptune Magnitude Diameter	Aquarius +8.0 2"	Rises: Transit: Sets:	07h05 13h22 19h39	05h08 11h24 17h40	**Low in the east before sunrise**
Pluto Magnitude	Sagittarius +14.3	Rises: Transit: Sets:	02h44 09h50 16h56	00h45 07h51 14h57	**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 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.

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THE MOON

(Sky Guide lunar highlight)

Mare Nectaris - The Sea of Nectar (well-suited to binocular viewing)

Description: Small lunar mare. A volcanic lava plain noticeably darker than the rest of the moon's surface and formed by massive volcanic eruptions.

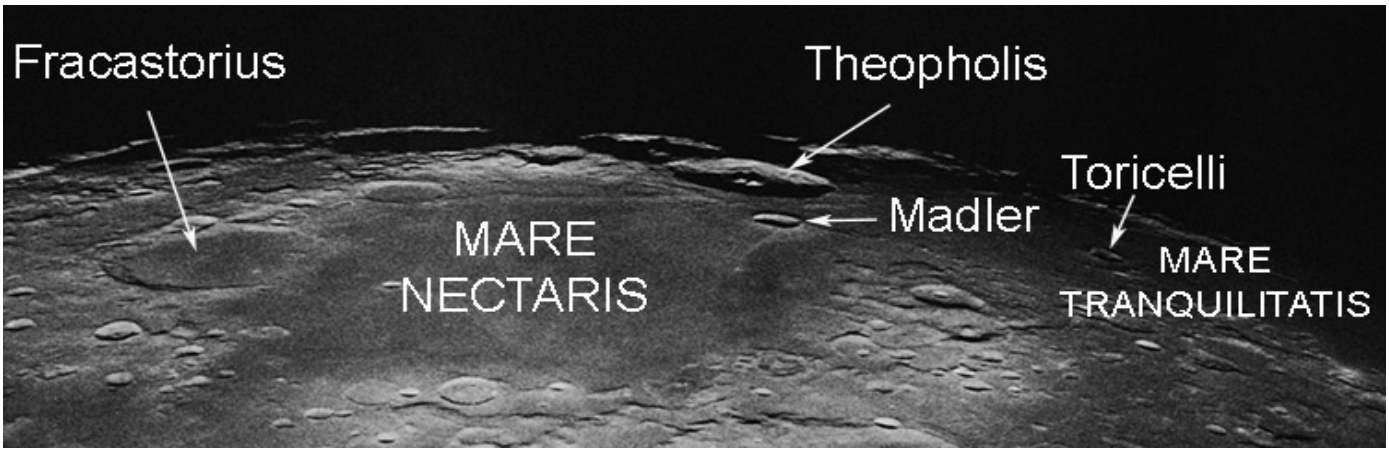


Image taken from Apollo 8 (facing west)

Location: south of Mare Tranquilitatis and south-west of Mare Fecunditatis.

Dimensions: dia. 340 Km, 84 000 square kilometres.

Best seen: **New Moon** + 5 days, **Full Moon** + 4 days

Age: > 3.8 billion years.

Naming: by Giovanni Riccioli**.**

No eclipses, solar or lunar, are predicted for March 2020

METEOR SHOWERS

Name	*Date & Time of Max*	*Duration*	*Radiant*	*ZHR*	*velocity*	*Observing Prospect*
γ Normids	13th March 00h00 to 04h30	25th February to 22nd March	Constellation Norma, close to s. horizon	8	56	Poor
δ Pavonids	6th April 02h00 to 04h30	11th March to 16th April	Constellation Pavo, close to s. horizon	5	59	Unfavourable

ZHR – the zenithal hourly rate (ZHR) of a meteor shower is the number of meteors a single observer would see in an hour of peak activity, assuming the conditions are excellent (stars visible up to magnitude 6.5). The rate that can effectively be seen is nearly always lower and decreases the closer the radiant is to the horizon.

velocity - 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 **15th** (moonrise 23h18) to **27th March** (moonset 20h37, 8%).

Stargazing is provisionally planned for Friday 27th March to celebrate Earth Hour. As always, it is weather dependant . Members will receive updated information by e-mail. Also, please check our website calendar on http://www.hermanusastronomy.co.za.

DEEP SKY HIGHLIGHTS

A fine time to view again the wonderful nebulae in the Orion constellation.

While we're at it, let's have a look at the drastically reduced brightness of **Betelgeuse** (α Orionis). One thing seems professionally accepted: it seems most unlikely **α Ori** will go bang soon. But then again, our news from Betelgeuse *is* 500 years out of date! Of course the media have covered this phenomenon with a whole lot of hype.

COMPARATIVE MAGNITUDES	DESCRIPTION	*Stellarium*	*Sky Safari*	*SkyMap*
Betelgeuse α Ori	Variable double	+0.45	+0.56	0.0 to +1.3
Rigel β Ori	Pulsating variable	+0.15	+0.28	+0.17 to +0.22
Bellatrix γ Ori	Star	+1.6	+1.6	+1.64
Saiph κ Ori	Star	+2.05	+2.05	+2.07

My naked-eye observation on 15 February put Betelgeuse's brightness between Bellatrix and Saiph.

M42 is the closest region of massive star formation to Earth. The M42 nebula is estimated to be 24 light years across.

It is one of the most scrutinized and photographed objects in the night sky and amongst the most intensely studied celestial features. The nebula has revealed much about the process of how stars and planetary systems are formed from collapsing clouds of gas and dust. Astronomers have directly observed protoplanetary discs, brown dwarfs, intense and turbulent motions of the gas and the photo-ionizing effects of massive nearby stars in the nebula.

ORION NEBULA
M42, NGC 1976

Description	Diffuse emission nebula
Distance	1400 ly, 430 pc
Magnitude	+4.00
Apparent size	85 x 60 arcmin
Actual size	24 ly diameter
Alt/Azimuth	+37º 6' / 292º 28'
J2000	5h 35min 24s / -5 27' 0"
Location	Surrounding θ Orionis, the middle star in the sword

Visibility on **21 March**

Rise: 12h 18m Transit: 18h 26m Set: 00h 39m

Naked eye	Yes, like a fuzzy star
Binoculars	Nebulosity and some stars
Telescopes	Much detail including stars within the nebulosity and, with good conditions and optics, the "Trapezium".

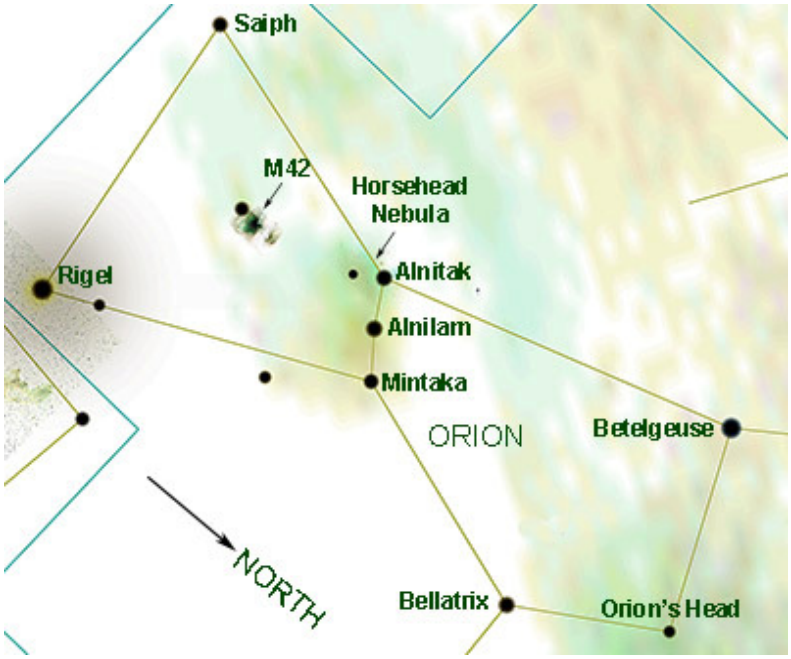
Discovery and History

Despite being visible to the naked eye, this nebula is not mentioned in any records prior to the invention of the telescope. Around 130 CE **Claudius Ptolemy** catalogued the brightest stars as one bright star as did **Tycho Brahe** in the 16th century. Neither Ptolemy nor **al Sufi** noted the nebula though they both listed patches of nebulosity elsewhere in the sky. **Bayer**, in 1603, designated them **θ Orionis**. In 1610, **Galileo** detected a number of faint stars when he first looked at this region with his telescope. He curiously failed to note the nebula as well. [*ed. Not so curious given the nature of his telescope?*]

However, the **Mayans** had a folk tale suggesting that they knew of the Orion Nebula.

The discovery is generally credited to **Nicholas-Claude Fabris de Pieresc,** a French lawyer, in 1610. His sighting was only reported in his own documents and was never published. Found independently in 1611 by Jesuit astronomer **Johann Baptist Cysatus of Lucerne**, this sighting was published. The first known drawing of the Orion Nebula was created by **Giovanni Batista Hodierna.**

Eventually **Christian Huygens's** sketch was the first to be published and he was thus credited with its rediscovery in 1656 both by **Edmond Halley,** who included it in his list of six nebulae in 1716, and by **Charles Messier** in 1769, including it and its three central stars as the 42nd object in his catalog. The nebula's smaller north-eastern portion was added by Messier as number 43. M42 and M43 were the first deep sky objects observed by **William Herschel** who, in 1789, described them as "an unformed fiery mist, the chaotic material of future suns".



ORION CONSTELLATION, from the southern hemisphere, 21 MARCH 2020 at 21h30

The gaseous nature was revealed in 1865 with spectroscopy done by **William Huggins.** In 1880, **Henry Draper** photographed the nebula with an 11-inch refractor, pioneering deep sky photography.

Amateur Observation

The star **θ Orionis,** the middle "star" in the sword, is an extremely wide (135") binocular double whose western component, **θ^1 Ori**, is the famous Trapezium multiple star.

Note the dark dust lane separating M42 and M43.

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]
MNASSAhttp://assa.saao.ac.za/about/publications/mnassa/
Nightfall https://assa.saao.ac.za/?s=Nightfall
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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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Sky Safari
Stellarium

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