The PRETORIA CENTRE
of the
Astronomical Society of Southern Africa
www.pretoria-astronomy.co.za

NEWSLETTER JUNE 2023

NEXT MEETING

Venue: Christian Brothers College (CBC), Mount Edmund, Pretoria Road, Silverton, Pretoria.
Date and time: Wednesday 28 June at 19h15.
Programme:

- "What's up in July?" by Bosman Olivier.
- Main talk: "Radians & degrees" by Andrie van der Linde.
- Socializing over tea/coffee and biscuits.

The chairperson at the meeting will be Pierre Lourens.

NEXT OBSERVING EVENING

Friday 23rd June from sunset onwards at the Pretoria Centre Observatory, which is also situated at CBC. Turn left immediately after entering the main gate. Carry straight on through the car park and proceed down the road (it drifts to the left out of the car park). About 50 to 100 metres after the last row of studs there is a cricket sight-screen on the right. Observing will be on the cricket pitch just past the sight-screen.
Please note that we have been instructed that no one is to drive on to the sports fields because of possible damage to the irrigation systems there.

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Astronomy related articles on the Internet

Astronomers have found convincing evidence for a new type of supernova. The supernova explosion that created the Crab Nebula and its pulsar was likely of this type.
Finally, an electron-capture supernova (earthsky.org)

The winter solstice for the southern hemisphere will be on Wednesday 21 June 2023 at 16:57 SAST.
Summer Solstice 2023: Celebrate the First Day of Summer | The Old Farmer's Almanac

Why Future Exploration of Our Solar System Will Require Robots (popularmechanics.com)

A star called Gliese 710 is headed our way.
When Gliese 710 passes through our solar system, will life on Earth be disrupted in any way?

Wolf 1061 is an M class red dwarf star located about 14.1 light-years away in the constellation Ophiuchus. Three super Earths orbit close to it. (A super Earth has a mass between 1X and 10X that of Earth.) Maybe we can visit them in the distant future.....
Wolf 1061 – Wikipedia

Radiation belt seen beyond our solar system for the 1st time | Space

These 3 dusty debris rings around the star are like the Sun's asteroid and Kuiper belts.
Fomalhaut has 3 nested belts around the star (earthsky.org)

This little asteroid – only 15 meters in diameter – orbits Earth at a much greater distance and with a much longer period than the Moon.
Newfound 'Quasi-Moon' Has Been Earth's Fellow Traveler for Thousands of Years - Scientific American

Interesting notes about Venus, which recently reached its eastern elongation.
Why Venus Is So Bright Right Now - Scientific American

In the central bulge of the Milky Way, a large number of stars are packed close together. Astronomers plan to look for pulsating artificial radio signals from there – emitted like the rotating light beam from a lighthouse.
SETI looks to Milky Way's heart for alien signals (earthsky.org)

A new paper suggests not "thousands of years" but "tens of years" as the time scale for Betelgeuse to become a supernova.
EarthSky | Will Betelgeuse explode in "tens of years"?

This is SF becoming reality. Seriously. They want to use it to clear orbiting space junk.
Scientists Are Building a Real Tractor Beam: How It Works (popularmechanics.com)

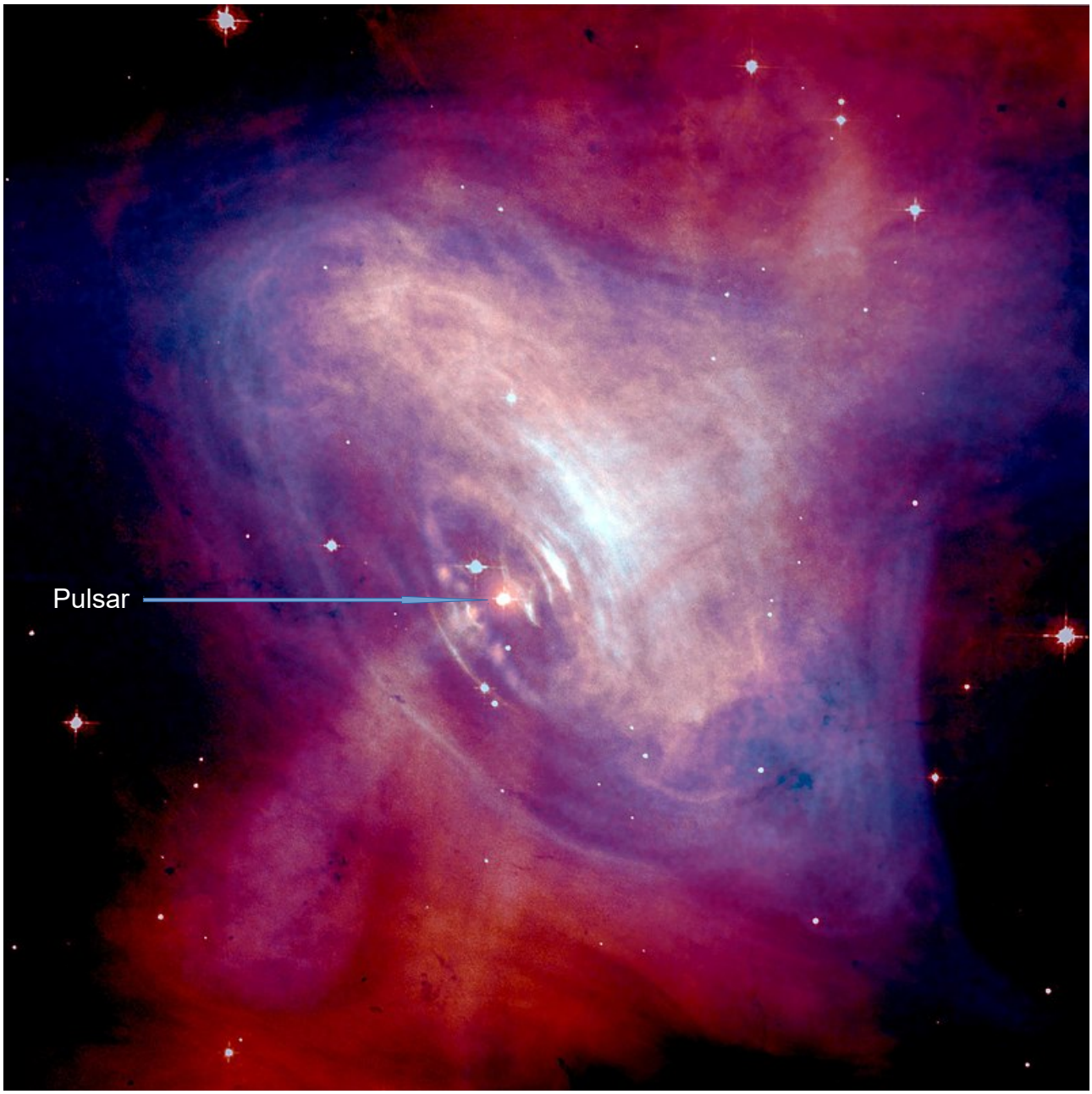
The loneliest of galaxies | ESA/Hubble (esahubble.org)

Complex organic molecules reside within a galaxy that formed when the Universe was about 10% of its current age.
James Webb Space Telescope spies earliest complex organic molecules | Space

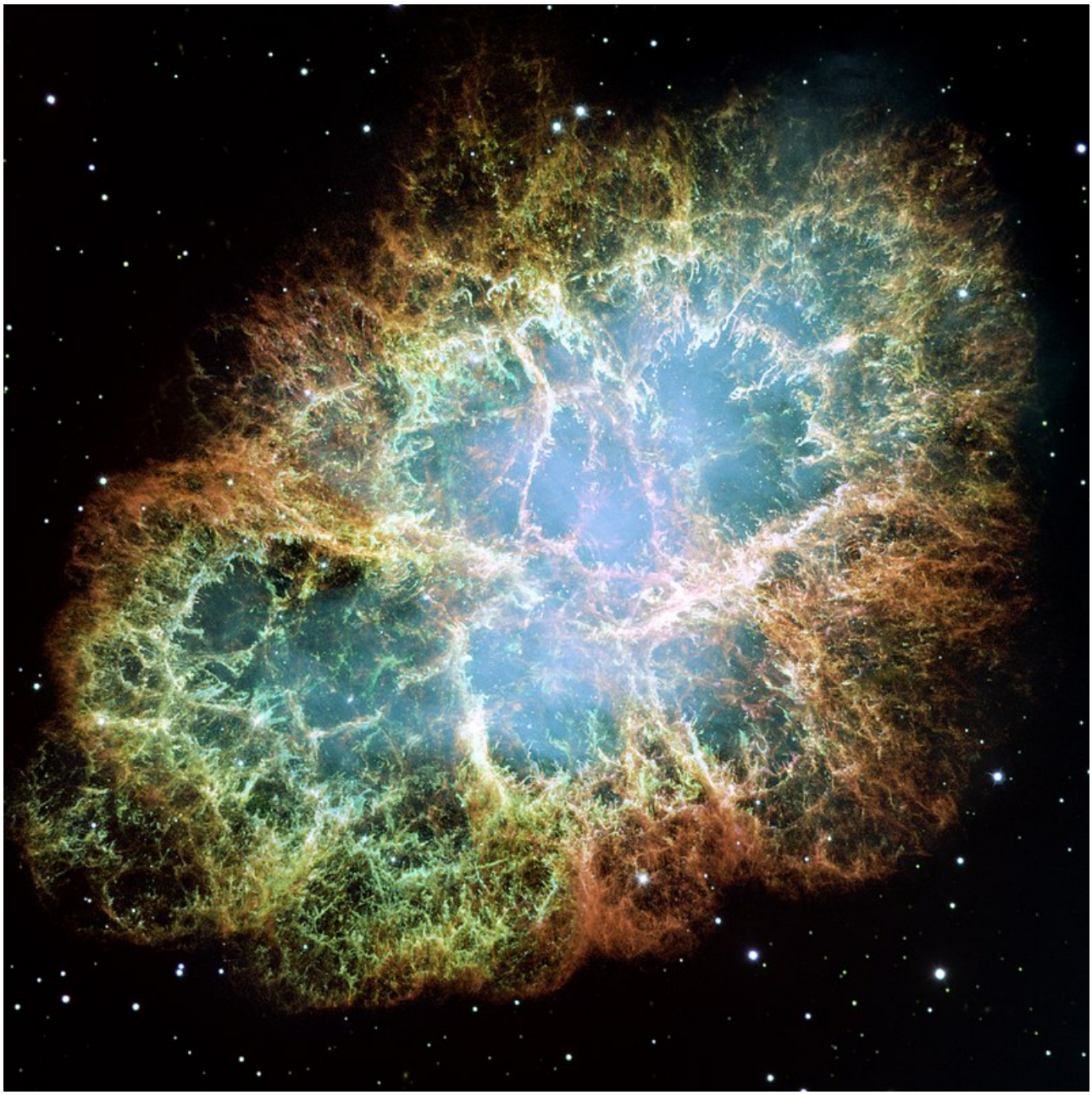
Regulus, aka Alpha Leonis, is now visible in the evening sky.
EarthSky | Meet Regulus, the Lion's Heart

Spica, aka Alpha Virginis, is also now visible in the evening sky.
Spica, the bright beacon of Virgo, is 2 stars (earthsky.org)

A pulsar and its immediate surroundings, embedded in the Crab Nebula (see next page) in constellation Taurus (The Bull). It is a false colour representation. An optical image made by the Hubble Space Telescope is shown in red. An X-ray image made by the Chandra X-ray Observatory is shown in blue. The glowing star in the centre is the pulsar. It has the mass of the Sun but is only about 19 km in diameter and spins 30 times per second. It is built up out of neutrons packed close together and has the density of an atomic nucleus. The doughnut-shaped accretion disk around the equator of the pulsar and the particle jets from its magnetic poles are clearly visible.
Chinese astronomers noticed the sudden appearance of a star blazing in the daytime sky on July 4, 1054 CE. It likely outshone the brightest planet, Venus, and was temporarily the 3rd brightest object in the sky, after the Sun and Moon. This “guest star” – an exploding supernova – remained visible in daylight for some 23 days. What remained after the explosion was the pulsar, which originally formed the central part of the red giant star that exploded, and the still rapidly expanding nebula, which originally formed the outer layers. **Ω**



The Crab Nebula (aka M1) in constellation Taurus (The Bull). It is the still rapidly expanding nebula which originally formed the outer layers of the red giant star that exploded as a supernova on July 4, 1054 CE. The nebula is still expanding at a speed of 1500 km per second. This is a mosaic assembled from 24 individual exposures made by the Wide Field and Planetary Camera 2 of the Hubble Space Telescope. **Ω**



Summary of the coming presentation "What's up in July" - by Bosman Olivier

Moon: Full Moon - 3 July. Dassie Supermoon is smallest supermoon for the year.
Last Quarter – 10 July
New Moon – 17 July
First Quarter – 24 July

Planets: Venus and Mars northwest at sunset. Later joined by Mercury around mid month. Jupiter and Saturn become prominent in the north before sunrise.

The pointers (Centaurus) and Crux are prominent in the south and southwest at sunset, while Scorpius is high in the east. Crux sets early in the morning before sunrise, while Orion and Taurus rise before sunrise.
Ophiuchus straddles the ecliptic between Sagittarius and Scorpius, but it is not a zodiacal galaxy. It belongs to the Hercules family. Contains several notable stars, deep sky objects and globular clusters. **Ω**

Feature of the month: First calculation of Earth's size

Eratosthenes, an ancient Greek polymath, not only understood that Earth is round, but was able to calculate its circumference with remarkable accuracy in the 3rd century BCE. Before then, everyone believed that Earth was flat and that the heavenly bodies all rotated around Earth. See a video clip at:

How an ancient polymath first calculated Earth's size, as told by Carl Sagan | Aeon Videos

NOTICE BOARD

Galaxies galore. Do you like classifying galaxies? Are you interested in helping researchers find the most unusual and interesting galaxies in the Universe that are one in a million? If your answers are yes, go to:
Galaxy Zoo: Weird and Wonderful!

Bermuda Triangle. There is a far fetched theory that intelligent aliens with advanced technology use the Bermuda Triangle as a portal to our planet from which they hijack aeroplanes and ships and abduct the crews of ships in order to conduct their research on our species. This theory and other far more fanciful theories about the Bermuda Triangle are debunked in this article:
What Is the Bermuda Triangle? A Scientist Has Solved the Mystery (popularmechanics.com)

UAP's again. The existence of alien spacecraft in our skies is still highly uncertain. A US government report on sightings of unidentified anomalous phenomena (UAP's) found no evidence of alien activity, but does not rule it out. Out of 144 reports made about the phenomena since 2004, all but one remain unexplained.
UFO report: US finds no explanation for sightings - BBC News

Astronomy Delights 88 Constellations. This is the title of a book written by Magda Streicher and available on the ASSA web page in digital format. It may be downloaded free but she stated that none of the contents may be used in any other form without her permission, except that you may print it on paper and put it in a ringed file for personal use. Go to:
Stargazing 101 | ASSA (saao.ac.za)

Old newsletters. All old newsletters from January 2004 onward are on our website. They contain a record of our Centre's activities as well as astronomical information.

Astronomy related images, video clips and documentaries on the Internet

A new composite image from the JWST shows the Universe when it was less than 600 million years old. You can explore more than 45000 baby galaxies in this image, especially if you zoom into the large interactive image.
Glimpse 45,000 baby galaxies in the early universe (earthsky.org)

See a simulation of the movement of the solar system through the Milky Way.
The motion of the solar system through our galaxy (earthsky.org)

Astronomy basics: The life cycle of stars

GCSE Physics - The Life Cycle Of Stars / How Stars are Formed and Destroyed #84 - Bing video

Report of meeting held on 24 May 2023 at 19:15 – by Johan Jordaan

Attendance

The meeting was well attended with the normal number of people – 14 attended in person and 10 attended remotely through Jitsi.

What's Up

The What's Up for June 2023 was presented by Johan Smit.
He highlighted the following upcoming star parties:

- 14 to 19 June at Kambro near Britstown in the Karoo. He pointed out that this is no longer an official event of the Pretoria Centre of the ASSA. Johan Moolman and Percy Jacobs arranged it.
- 15 to 19 June at Gansvlei near Brandfort in the Free State. Johan Smit will attend this event.

He prepared a list of the best 250 deep sky objects for interested observers. He did it from the Jack Bennet and NGC catalogues. They are mostly galaxies, globular clusters, planetary nebula and a few open clusters and nebulae.

The Moon phases were presented and 13 to 22 June was pointed out as good observing evenings.

The planets that will be visible at the beginning of the month: Mercury and Uranus will be visible at 05:00. Saturn will be rising at 23:30, Neptune just past 23:00. Venus and Mars will be visible till around 21:00.

With the aid of Cartes du Ciel maps, he showed how to find his most loved deep sky objects during the early evening in all four directions, as well as late at night when Scorpion and Sagittarius are accessible.

The following wonders of the night sky, amongst others, were mentioned: The binary stars Rigel Kent (Alpha Centauri) and Acrux, Omega Centauri, Centaurus A (the Hamburger Galaxy), Southern Pinwheel Galaxy, Carina Nebula, Wishing Well Cluster, Jewel Box, Ruby Crux, Southern Pleiades, NGC 2516 (southern Beehive Cluster), M83 (Southern Pinwheel Galaxy), M104 (Sombrero Galaxy), the Leo Triplet Galaxies and Virgo Galaxy Cluster, Double Double (Epsilon Lyrae) and Ring Nebula in Lyra, Dumbbell Nebula in Vulpecula, M6 (Butterfly Cluster), M7 (Ptolemy's Cluster), M22 (Great Sagittarius Cluster), Omega Nebula, Lagoon Nebula.

Johan mentioned the recent supernova, discovered by Koichi Itagaki on 19 May 2023, named SN 2023ixf by the International Astronomical Union (IAU). It is in the Pinwheel Galaxy, also known as Messier 101, a face-on spiral galaxy in the constellation Ursa Major. It may just be seen from a dark place as a discernible star in the Pinwheel Galaxy.

Challenge of the month: Johan gave the astronomers the Sculptor Galaxy, aka NGC 253, a spiral galaxy in the constellation Sculptor as the challenge.

Note: Johan Smit can be contacted for the list of the best 250 deep sky objects that he compiled at JohanS@firsttech.co.za.

Main talk

The title was **"Impacts re-visited part 2".** It was presented by Michael Poll. A summary of it was provided in the newsletter of May 2023. **Ω**

Report for the observing evening on May 19th 2023 – by Michael Poll

A perfectly clear sky, but only Michael and Johan were there for the observing. Johan Jordaan came around 19h00 just as we were packing up. Pierre also told us that he came later on but could not find us. (Sorry, Pierre!) We were again on the cricket pitch just past the sight screen on the right, where viewing conditions are better that those on the football pitch by the observatory.

We scanned a few favourites with Johan's six inch telescope. There was a quick look at Venus, which showed a nearly half phase – it was only 16 days away from its greatest elongation east, which was on June 4th.

Next was the red star Ruby Crucis which is very close to Beta Crucis, then we looked at the open cluster M41 in Canis Major, a cluster that is not often visited. It lies about 4 degrees due south of Sirius but can also be located about 1/3 of the way from Sirius to Delta Canis Majoris.

M41 is the only Messier object in Canis Major and was discovered by Giovannie Batista Hodierna before 1654 and discovered independently by John Flamsteed in1702. However the cluster may have been known to Aristotle - around 325 BC he described it as " a star with a tail". This observation would make M41 the faintest object reported in ancient times.

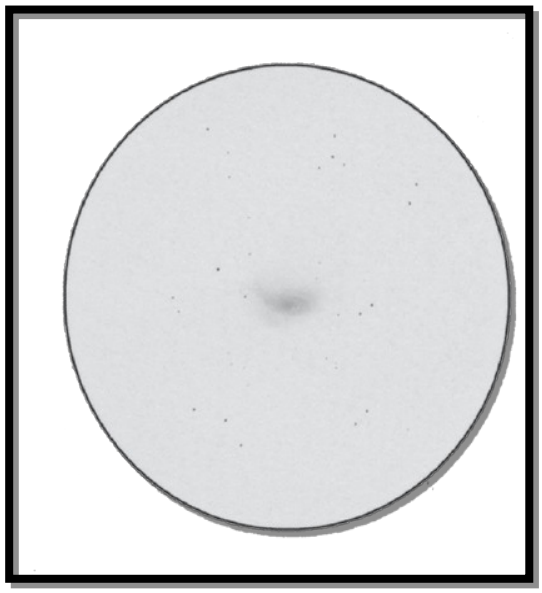
Omega Centauri showed up well against the sky glow, it was easier to see than last month. Eta Carinae was very clear, and we could even see the surrounding nebulosity. Near Eta are the Gem Cluster (NGC 3293) and the Wishing Well Cluster (NGC 3532), which are both very impressive.

Lastly we looked at M44 (NGC 2632), an open star cluster in the constellation of Cancer, known as the Beehive Cluster or alternatively Praesepe. M44 is the brightest object in Cancer, making Cancer the only constellation where the brightest object is not a star.

M44 has been known since the time of the Greeks. Aratus of Soli wrote about it before 250 BC. He called it a "little mist" and said that if it was invisible on an apparently clear night, rain would be on the way. In about 130 BC Hipparchus called it "a cloudy star". The name Praesepe means "Manger", the Greeks and Romans named it as such. The stars on either side of the cluster are known as "The Asses" - Asellus Borealis (Gamma Cancri) and Asellus Australis (Delta Cancri), and they eat from the Manger. Eratosthenes reported that these were the Asses on which the gods Dionysos and Silenus rode into the battle against the Titans, who were so frightened by the animals' braying that the gods won. As a reward, the Asses were put in sky together with a Manger. The name "Beehive" is a relatively recent name, the layers of stars suggest a traditional dome shaped beehive.

Galileo was the first to see the individual stars in the cluster. In 1610 he resolved it using his newly invented telescope. He wrote that it comprised "not one star but a mass of more than forty small stars". The cluster contains about 200 stars to magnitude 14, and about 350 to magnitude 17. Its distance is about 610 light-years and diameter about 23 light-years. As it lies well above the plane of our galaxy, it will take a long time for it to be disrupted by gravity. It is about 600 million years old. **Ω**

Observing: A one arm galaxy - by Magda Streicher



Sketch of NGC 1672 by Magda

Between the fins of the heavenly fish, the galaxy NGC 1672 can be spotted just 30' north of magnitude 5.2 Kappa Doradus in the middle area of the constellation. The galaxy is an excellent example of a well-defined bar shape in an east to west direction showing off a bright pinpoint nucleus. Towards the eastern end of the bar a faint spiral arm can be glimpsed, extending northwards. This large relatively bright galaxy displays a very misty washed out outer halo, more so towards the northern and southern ends. Towards the east just 6' away a small group of faint stars nestle in between a triangle of brighter stars, the brightest 6 magnitude HD 30790 shining with a strong orange colour. **Ω**

(Magda Streicher's e-mail address: magdalena@mweb.co.za)

OBJECT	TYPE	RA	DEC	MAG	SIZE
NGC 1672 Bennett 26	Barred spiral galaxy	04 h 45.7 m	- 59° 15.0'	9.8	6.2' × 3.4'

NGC 1672, imaged by the 4 meter Víctor M. Blanco Telescope, located at the Cerro Tololo Inter-American Observatory, Chile.

Web links for the astronomy enthusiast

- **The website for all information about the ASSA and the ASSA Centres:**
  https://assa.saao.ac.za/
- **ASSA Specialist Sections:**
  ASSA has various areas of interest. Join and participate!
  https://assa.saao.ac.za/sections/
- **ASSA Publications to download and enjoy:**
  MNASSA: https://www.mnassa.org.za/
  Nightfall: http://assa.saao.ac.za/sections/deep-sky/nightfall/
  To receive as part of ASSA membership benefits - *Sky Guide Southern Africa,* the astronomical handbook for Southern Africa:
  http://assa.saao.ac.za/about/publications/sky-guide/
- **Mail Groups to join:**
  For general ASSA related information: https://groups.io/g/ASSA-announce
  For posting general items and discussion: https://groups.io/g/ASSA-discussion
- **Social Media to join and share:**
  Facebook: https://www.facebook.com/Astrosocsa/?_rdc=1&_rdr
  Youtube: https://www.youtube.com/channel/UCJ4b1fhmPvYTOsy15YP-_JA
  Twitter: https://twitter.com/AstroSocSA
- **Planetaria:**
  WITS Planetarium (Johannesburg): Welcome to Wits Planetarium
  Naval Hill Planetarium (Bloemfontein): Planetarium Home (ufs.ac.za)
  Iziko Planetarium (Cape Town): Planetarium and Digital Dome - Iziko Museums
  Sutherland Planetarium (Sutherland): Sutherland Planetarium
- **More web links can be found on page 118 of "2023 SKY GUIDE Southern Africa". Ω**

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