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

NEWSLETTER OCTOBER 2023

NEXT MEETING

Venue: Christian Brothers College (CBC), Mount Edmund, Pretoria Road, Silverton, Pretoria.
Date and time: Wednesday 25 October at 19h15.
Programme:

- "What's up in November 2023" by Danie Barnardo. (Summary on page)
- Main talk: "Fun with the Sun" by Jaques van Delft.
- Socializing over tea/coffee and biscuits.

The chairperson at the meeting will be Bosman Olivier..

NEXT OBSERVING EVENING

Friday 20 October 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 tarred road that drifts to the left out of the car park and then swerves to the right. 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

NASA has hired Lockheed Martin to design, build and test a nuclear-powered rocket for space travel**.**
NASA's Nuclear Rocket Could Shorten Trip to Mars to 45 Days (popularmechanics.com)

Space junk is an increasing problem.
Space junk is increasing, and no one's in charge of clean up (earthsky.org)

NASA's future Habitable Worlds Observatory will analyse the atmospheres of exoplanets, looking for signatures of alien life. But launch is a long way off. It will be in the late 2030s or early 2040s. The Habitable Worlds Observatory aims to spot alien life (earthsky.org)

The most plausible explanation of this explosion is that it is a black hole colliding with a star. Astronomers discover new class of cosmic explosion brighter than 100 billion suns | Live Science

NASA wants to increase the number of spacecraft that will visit asteroid Apophis when it again passes safely by Earth in 2029.
NASA wants a spacecraft swarm to visit Apophis asteroid: report | Space

Spacecraft Lucy has its first target in sight. It is a main belt asteroid and is named Dinkinesh. Lucy will do a flyby of it on November 1, 2023.
Lucy spacecraft gets its 1st view of target asteroid (earthsky.org)

This galaxy was discovered not by the light that it emits, but by the light that it absorbs from a quasar further away.
Hubble discovers 11-billion-year-old galaxy in a quasar's glare | Space

Fomalhaut, aka Alpha Piscis Austrinus, is also called the *Loneliest Star*. It's because It is the only bright star in a wide stretch of sky. It is visible in the evening sky in November.
Fomalhaut is the loneliest star in the southern sky (earthsky.org)

The spacecraft OSIRIS-REx delivered an asteroid sample from asteroid Bennu to Earth on September 24, 2023. It then continued on a mission to asteroid Apophis as OSIRIS-APEX. Asteroid sample arrived safely on Earth (earthsky.org)

This black hole is 10 times as massive as the Sun and is (fortunately) 1600 light years away - 3 times closer than the previous record holder. A star orbits around it.
Astronomers Just Discovered the Closest Black Hole to Earth (popularmechanics.com)

Mercury has been shrinking for at least the last 3 billion years - and it still might be shrinking today.
Mercury was shrinking for at least 3 billion years — and it still might be today (yahoo.com)

This double star observing guide gives you a range of choices for observing with your eyes alone. Or go further using binoculars or a telescope.
Double stars: How to find, observe and enjoy (earthsky.org)

SpaceX Falcon Heavy rocket launches NASA's Psyche probe to a bizarre metal asteroid named Psyche.
SpaceX Falcon Heavy launches NASA Psyche probe to metal asteroid | Space

Astronomers reported the first ever sightings of the aftermath of two super Earths colliding around a Sun-like star in another planetary system.
1st evidence of giant exoplanet collision afterglow explains unusual eclipse | Space

Report for the meeting on 27 September 2023 – by Johan Jordaan

"What's up in October?" was presented by Bosman Olivier. After that, Michael Poll presented his talk titled "Blue Moons". It was a discussion about the origin of this and other Blue Moon sayings. Here follows a summary of his talk:

Commonly nowadays, the second Full Moon in a month is called a Blue Moon.

Example: In August 2023 there were two Full Moons.

Full Moon: August 1st 2023

Full Moon: August 31st 2023

The phases of the Moon, including Full Moon, repeat every 29½ days.

The two-in-a-month type of Blue Moon can occur in any month but February.

February is 28 or 29 days long and is always shorter than the time between successive full Moons.

The first mention of the Blue Moon saying can be found in **Sky and Telescope, March 1999, page 52.**

"Once in a Blue Moon" by **Philip Hiscock**, Archivist at the Folklore and Language Archive, Memorial University of Newfoundland.

Hiscock first heard the two-in-a month expression in 1988. There were two full Moons in May that year. Hiscock searched for an earlier example of the two-in-a-month usage, or for any other name for two Full Moons in a single calendar month. There seemed to be no history. Newspapers and radio stations carried the story as a "bit of old folk lore".

Across North America the "Blue Moon" caught the public's imagination. In the following months restaurants, clothing stores and book stores opened under the name "Blue Moon". In 1999 in America and Europe : Two full Moons in January and March. No full Moon in February.

- The unusual pattern of lunar phases in 1999 again triggered public interest.
- Countless newspapers and radio and TV stations ran stories about Blue Moons.

The following different meanings of the words "Blue Moon" were identified by Michael Poll:

1st Meaning: Telling People What They Must believe
2nd Meaning: " Absurd"
3rd Meaning: "Never"
4th Meaning: "Rarely"
5th Meaning: The Moon Actually looks Blue.
6th Meaning: Sadness
7th Meaning: Drinks
8th Meaning: Second Full Moon in a Month
9th Meaning:: The 'Maine' Rule: The Third Full Moon in a Season with Four
10th Meaning: The Blue Moon Diamond **Ω**

Summary of "What's up in November 2023" to be presented on 25 October - by Danie Barnardo

Moon phases:

Last quarter: 6 November
New moon: 13 November
First quarter: 21 November
Full moon: 28 November

There is a penumbral lunar eclipse starting on 28 October at 20:21 and ending at 00:26 on 29 October.

Moon-astronomical object conjunctions:

A Moon-astronomical object conjunction occurs when an astronomical object appears to be near the Moon, as observed from Earth.

Astronomical Object	Date and Time
Pollux	4 November – before sunrise – one of the two bright stars in Gemini
Regulus	7 November – before sunrise – brightest star in Leo
Venus	9 November – before sunrise and at noon, creating an opportunity to spot Venus in the daytime
Saturn	20 November – most of the evening
Pleiades	26 November – most of the evening
Pleiades	27 November – before sunrise – occultation by the Moon

These conjunctions can provide opportunities to acquire impressive astronomical images.

Planets:

Mercury becomes visible just after sunset in the west towards the end of the month, starting about 18 November.
Venus rises at about 02:30 in the east as the bright morning star on 1 November and is visible in the morning sky for the whole month.
Mars is not visible during September.
Jupiter is at opposition on 3 November, rising at sunset in the east and is visible in all its glory for the whole month. **Jupiter** is visible near the Moon on 24 and 25 November.
Saturn is in the evening sky for the whole month, setting at about 02:00 at the beginning of the month and at about midnight at month's end.
Uranus and **Neptune** are also visible for most of the night during the whole month. On 13 November, **Uranus** is at opposition.

The Northern Taurid (12 November) and Alpha-Monocerotid (22 November) meteor showers peak on the dates given in brackets.

Constellations:

Being the end of spring, the summer constellations are coming into view and towards month's end, are becoming prominent while the winter constellations are disappearing in the west. Especially Puppis, Canis Major, Orion and Taurus are becoming more and more prominent. The constellations of Aquarius, Pegasus, Aries and Cetus are still prominent, while Capricornus and Sagittarius are setting in the west and Scorpius is already out of sight. **Ω**

Report for the observing evening on September 22nd 2023 – by Johan Smit

With much excitement we went to the viewing evening. The weather was looking promising. Lots of visitors were expected and most of them came. Fortunately, the sky stayed open to enable us to show everything that was available to everyone there.

There were 4 telescopes and about 15 to 20 people on the field throughout the evening. The sky however was very murky and washed out, so only bright targets were on the menu.

Everyone saw Saturn, the Moon and Jupiter. As luck would have it, both the lunar X and V optical features were visible for the early part of the evening. We also tried some double stars, and my personal favourite, Albireo, did not disappoint. We tried some open clusters, M6 and M7 were seen, as well as the Coat-hanger Cluster (aka Brocchi's Cluster, aka Collinder 399 (Cr 399) aka Al Sufi's Cluster). It can be found in the Southern part of Vulpecula, near Sagitta. It is one of the targets that are best suitable for binoculars.

Because the sky conditions made viewing nebulous objects all but impossible, the views of various objects were compared in different telescopes to explain the strengths and weaknesses of different telescope configurations.

Four telescopes were on the field, three of them were homemade: my own Castor, the 8"; Vicus with his 6"; and Christo van der Merwe, also with a 6" Dobsonian. There was one commercial 12" from Johan Jordaan. Christo completed his telescope more than 10 years ago in the ATM class, disappeared for a while and returned to join us again. Vicus completed his telescope about 2 months ago. Comparing what the class produced 10 years ago with what is produced now, I can proudly say that our standards have stayed very high.

Throughout the evening we compared different designs of focusers and finders and discussed the pros and cons of each, and explained, and tested methods on how to use finders to locate objects in the sky.

Because of the non-optimal sky conditions, we tried to see the most in each instrument. One method to do that is averted vision and the technique was explained and practised by everyone. Once learned everyone report seeing "better".

So, an imperfect viewing evening turned out a very good learning exercise for all present - in fact, it went so well that we only closed up just before midnight. **Ω**

NOTICE BOARD

Find kilonovae. This project asks volunteers to play "spot-the-difference" to find kilonovae - the cosmic explosions of neutron stars and black holes colliding in distant galaxies. Using data from the Gravitational-wave Optical Transient Observer (GOTO) telescopes, this unique project enables you to help in the identification of these rare events and other transient events such as supernovae. Kilonova Seekers — Zooniverse

AUP again. The **A**ll-domain **A**nomaly **R**esolution **O**ffice (AARO) of the **D**epartment **o**f **D**efense (DoD) of the USA Government has created a new website for **U**nidentified **A**nomalous **P**henomena (UAP) reports. It's all part of the recent interest in UFOs (or UAP, as it is now called) of the US Congress.

Transparency? New UFO website for military reports (earthsky.org)

AARO Home

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.

Feature of the month: TON 618 - by Pierre Lourens

TON 618 (short for **Tonantzintla 618**) is a hyper luminous, radio-loud quasar, located in the northern constellation Canes Venatici (The Hunting Dogs). Quasar stands for **qua**si-**s**tell**a**r **r**adio object. The nature of quasars had been a puzzle for a long time, but it is now known that they are super massive black holes at the centres of galaxies.

TON 618 shines as brilliantly as **140 trillion (= 140 million million) Suns**, making it one of the brightest objects in the known Universe. It is one of the most massive black holes ever found. Its mass is **40 billion (= 40 thousand million) solar masses**.

Below is an artist's depiction of such a super massive black hole. It shows the brightly shining, rapidly spinning accretion disk of matter around its equator and the radiation from the two jets of particles moving at relativistic speed along its magnetic axis and striking the particles in the intergalactic medium. **Ω**

Astronomy related images, video clips and documentaries on the Internet

See images of Mars.
Mesmerizing photos of Mars that will make you want to move there (msn.com)

See a short video clip (2 min 44 s) about the HST.
Gaze at Galaxies with NASA's Hubble Space Telescope | NOVA | PBS

Annular solar eclipse October 14, 2023. See photographs.
Eclipse photos here! Annular solar eclipse October 14, 2023 (earthsky.org)

See a video about the solar eclipse.
Satellites watch the annular solar eclipse 2023 sweep over the U.S. (video) | Space

Astronomy basics: Sunset and twilight – by Pierre Lourens

Near sunset, the Sun changes colour. It becomes orange and then red. Clouds in the sky are also illuminated by the orange and red light, creating beautiful cloudscapes. No two cloudscapes are the same, and they are always in a state of flux. (But hopefully, it won't be very cloudy when you wait for the Sun to set so that you can start stargazing!)

Twilight after sunset is that magical time of day when a glow still pervades the air even though the Sun has set. Astronomers recognize 3 different stages of twilight: civil, nautical and astronomical twilight. The Sun moves along its path in the sky at 15º/hour = 1º/(4 minutes) = 6º/(24 minutes). At sunset, if the path of the Sun is perpendicular to the horizon, each stage lasts 24 minutes. If it is not so, each stage lasts longer, depending on the angle of the path of the Sun to the horizon. There is plenty of time to watch the 3 stages.

See video clips and photographs. Learn more about sunset and twilight so that you can appreciate it more while you wine and dine and wait for the Sun to set after you have set up your telescope for an evening's stargazing.

Soothing Science: The Light You See at Sunset | NOVA | PBS

Do you love twilight? Learn about the 3 stages (earthsky.org)

Footnote: If there is no light pollution, you might see the zodiacal light. And late in the night, you might see the "Gegenschein" (= Counterglow) at the antisolar point as well. See on our website the newsletter for November 2011, page 9. **Ω**

The Large Magellanic Cloud, one of the 3 extragalactic objects that can be seen with the naked eye.

The Small Magellanic Cloud, one of the 3 extragalactic objects that can be seen with the naked eye.

The Great Galaxy in constellation Andromeda, one of the 3 extragalactic objects that can be seen with the naked eye.

Observing: A monkey head against the stars - by Magda Streicher

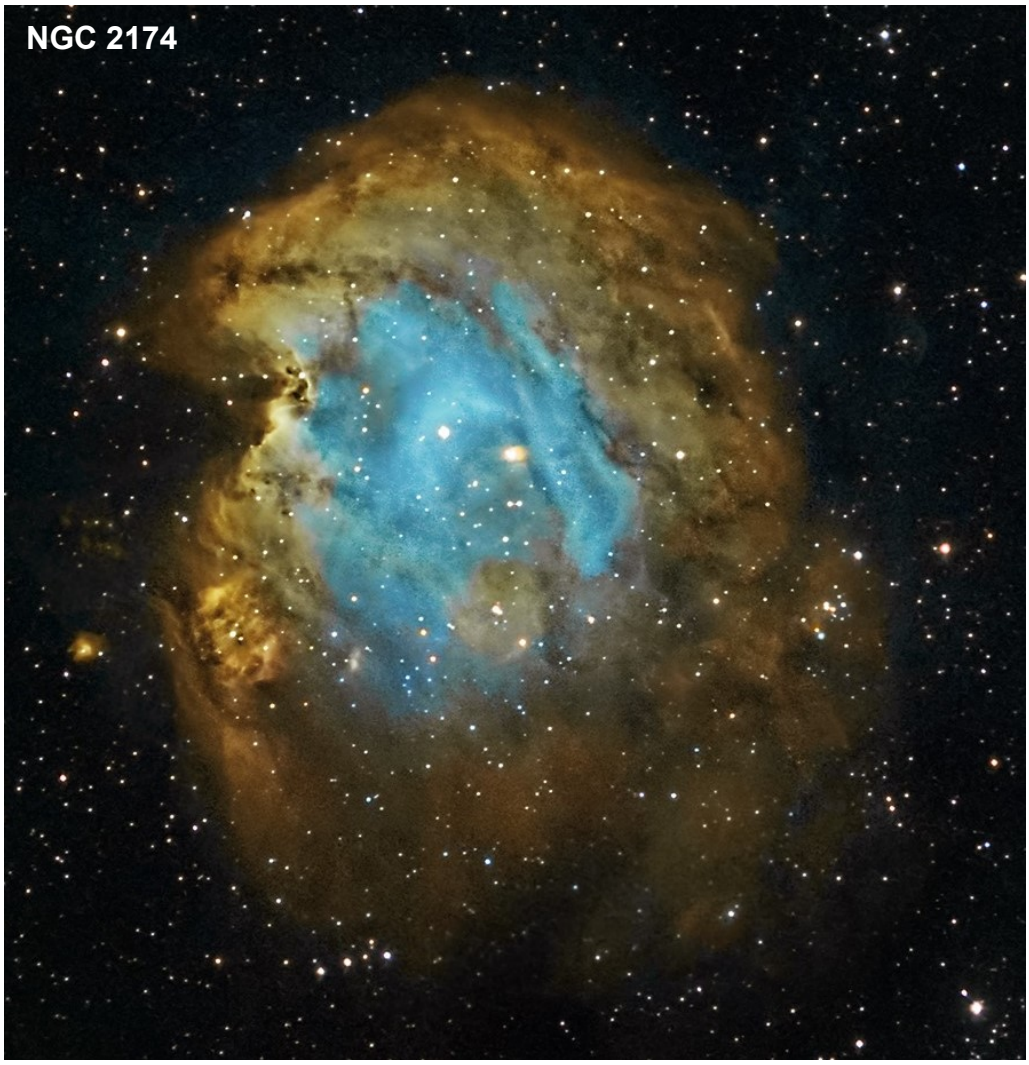
The well-known and loved constellation Orion is currently rising in the east during our summer time. In the far north of the constellation, a combination of star groups and nebulae can be found one and a half degrees east of the magnitude 4.5 chi2, the area known as NGC 2174. The large misty emission nebula, indicated as GN 06.05.6, has what looks like a monkey hairdo together with a few other objects to be untangled. The uneven western edge is shaped in a way that creates an image of a primate's face staring into the distance.

Towards the middle area a few stars of various magnitudes, catalogued as the group NGC 2175, are situated in the gaseous inner core and extended towards the far eastern end with a compacted small cluster known as NGC 2175S. Deep pictures show two very faint intervening nebulae named IC 2159 and Ced 67b. That just shows you: Never underestimate the creativity of those naming deep sky objects: let us known what is your impression.

Next month a tour through southern constellation Dorado is worth waiting for. **Ω**

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

OBJECT	TYPE	RA	DEC	MAG	SIZE
NGC 2174	Open cluster Emmision nebula	06 h 09.4 m	+ 20° 39.6'	-	40' in total



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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