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

NEWSLETTER FEBRUARY 2024

NEXT MEETING

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

- "What's up in March?" by Johan Jordaan.
- Main talk: "The scale of the Universe" by Johan Smit.
- Socializing over tea/coffee and biscuits.

The chairperson at the meeting will be Johan Jordaan.

NEXT OBSERVING EVENING

Friday 23 February 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

A galaxy without stars!
Astronomers find a galaxy without stars by accident (earthsky.org)

Constellation Lepus (The Hare) is visible under the feet of constellation Orion (Orion The Hunter) in the early evening in March.
Lepus the Hare hops through the January sky (earthsky.org)

What we actually know about aliens, according to science.
https://www.washingtonpost.com/science/2023/11/25/aliens-uaps-scientific-evidence/?utm_source=substack&utm_medium=email

The Euclid Space Telescope.
Reliving the first images taken by the amazing Euclid Space Telescope (msn.com)

The Hyades star cluster in Taurus (The Bull). See also Aldebaran (the red eye of The Bull), El Nath, the Pleiades and the Crab nebula. Visible in the early evening in March above the western horizon.
The Hyades star cluster: The Face of Taurus the Bull (earthsky.org)

Aldebaran is Taurus the Bull's fiery eye (earthsky.org)

SETI. SETI is searching for alien life at previously unexplored frequencies | Space

Super flares from super bright stars.
Scientists study violent 'superflares' on stars thousands of times brighter than the sun | Space

Pulsars devouring stars.
X-ray telescope catches 'spider pulsars' devouring stars (image) | Space

Stream of stars between galaxies.
Astronomers spot 1st giant stream of stars between galaxies (earthsky.org)

The "Dog Star" in Canis Major (The Big Dog) will be visible in the early evening in March.
See Sirius, the brightest star in the night sky (earthsky.org)

The "Little Dog Star" aka "The Pup" in Canis Minor (The Little Dog) will be visible at the same time. Bright Procyon: The Little Dog Star in Canis Minor (earthsky.org)

New images of Io. Jupiter's moon Io as you've never seen it (earthsky.org)

The Sun is approaching the maximum of its 11-year cycle, which is expected to be between mid-2024 and the end of 2025. Solar maximum is coming, but we won't know it happened until 7 months after it's over | Space

Venus has a temporary quasi-moon named "Zoozve". It is a sub-kilometer sized asteroid. Like all asteroids, it actually orbits the Sun, and has virtually the same year as Venus. The gravity of Venus, Earth and Mercury perturb its orbit, so that it seems to orbit Venus once every Venusian year. See the video clip.
Why Everyone Is Talking About "Zoozve", The Solar System's First Quasi Moon | IFLScience

Astronomers have found evidence for massive cyclones and other dynamic weather swirling on a hot, Jupiter-sized planet that orbits very close to its star. See the simulation.
Weather on distant planet Tylos! Watch here (earthsky.org)

What's up in March 2024 - by Johan Jordaan

See the star chart on page 7.

CONTENTS

1. STARS AND PLANETS IN 2024 MARCH EARLY EVENING

- Crux and Pointers are low in the south.
- Canopus is prominent high up from south.
- Achernar is lower to the southwest.
- Fomalhaut is closer to the west.
- Sirius and Orion are brilliant in the north.
- Jupiter is the bright evening star during March in the northwest.
- Binoculars will show Uranus in the vicinity of Jupiter during the whole month.

(From 2024 Sky Guide for Southern Africa, p. 16).

2. CELESTIAL ALMANAC FOR MARCH 2024

02: Moon occults globular cluster NGC 5897 shortly after midnight.
03: **Last Quarter Moon** (17:24)
Moon near Antares
08: Moon near Venus and Mars, morning sky
09: Moon near Saturn
10: **New Moon** (11:00), Moon at perigree (09:06, 365,895 km)
14: Moon near Jupiter and Uranus
15: Moon near Pleiades
17: First Quarter Moon (06:11)
19: Moon near Pollux
20: March Equinox (05:07)
22: Moon near Regulus
23: Moon at Apogee (17:44; 406 292 km)
25: **Full Moon** (09:00, 29.48°), Moon eclipse, Micromoon
30: Moon near Antares

Note: The best dates for deep sky observations are between 3 and 17 March 2024. Refer to the 2024 Sky Guide for Southern Africa, p. 16 for the full celestial almanac.

3. CONSTELLATIONS BEST SEEN IN MARCH

Cancer, **Canis Minor** and **Lynx** are located in the northern celestial hemisphere, while **Carina**, **Vela**, **Pyxis** and **Volans** lie in the southern sky. Lynx lies too far north in the direction of Ursa Major to view its galaxies from our southern latitudes.

Northern Sky

Cancer is a faint constellation, however it lies between two considerably brighter zodiac constellations, Leo to the east and Gemini to the west.
Lynx lies above Cancer to the north in the direction of Ursa Major.
Canis Minor, with the bright star Procyon, lies to the south of M44 in Cancer. An easy way to find the cluster is to draw a line from Pollux in Gemini to Regulus in Leo.

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Southern Sky
Argo Navis (The Ship), was one of the 48 constellations known to the Greeks.
It occupied a vast area of space between the constellations Canis Major and Crux (The Southern Cross).
Carina (The Keel, Argo Navis) lies to the right of the Gacrux - Acrux axis of the Southern Cross.
The star Canopus marks the blade on one of the ship's steering oars.
Puppis represents the stern of Argo Navis.
Pyxis (The Compass) represented the Argo Navis ship's mast in ancient times and lies between Vela (The Sail) and Puppis (the stern of Argo Navis).
Volans (The Flying Fish, lies below the False Cross towards the Dorado constellation and overlaps the oar of Carina that ends in Canopus.

4. DEEP SKY OBJECTS IN THE CONSTELLATIONS

4.1 Cancer Constellation

Beehive Cluster (Praesepe, Messier 44, NGC 2632)
The Beehive Cluster lies in the centre of the Cancer constellation.
It is one of the nearest and most populated open star clusters to the solar system. Covering an area three times the size of the full Moon.
The Beehive Cluster is also one of the largest visible open clusters in the sky. The brightest stars in the cluster are 6th magnitude.
It is about 577 light-years from Earth with an apparent magnitude of 3.7 and its estimated age is 600 million years.
The Beehive Cluster contains at least a thousand stars. More than half of them (63%) are red dwarfs, and about a third (30%) of the stars are Sun-like, classified as F, G and K-class stars. The brightest stars in the cluster are blue-white in colour and with magnitudes ranging between 6 and 6.5.

Messier 67 (M67, NGC 2682)
Messier 67 is an open cluster. It is one of the oldest open clusters known. It has an apparent magnitude of 6.1. Its estimated age is between 3.2 and 5 billion years.
M67 contains over 100 stars similar to the Sun and a number of red giants. Almost all the stars in the cluster are roughly at the same distance and of the same age (with the exception of 30 or so blue stragglers), which makes M67 one of the most observed and studied objects by those studying stellar evolution.

4.2 Canis Minor Constellation

The brightest star in the constellation is Procyon, aka Alpha Canis Minoris, which is also the seventh brightest star in the sky.
Canis Minor contains a number of deep sky objects, but all are very faint and difficult to observe. The brightest is the spiral galaxy NGC 2485, with an apparent magnitude of 12.4. The galaxy is located 3.5 degrees northeast of Procyon.

4.3 Lynx Constellation

Lynx, although far north, contains several notable deep sky objects, including the Intergalactic Wanderer (NGC 2419), one of the most distant globular clusters known in the Milky Way, the unbarred spiral galaxy NGC 2683, also known as the UFO Galaxy, and the Bear's Paw Galaxy (NGC 2537), a blue compact dwarf galaxy.

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4.4 Carina Constellation

Carina contains the second brightest star in the night sky, Canopus, along with several other notable bright stars, among them Eta Carinae, surrounded by the famous Carina Nebula. Other famous deep sky objects in the constellation include the Theta Carinae Cluster (Southern Pleiades), the Wishing Well Cluster, and the open cluster NGC 3603.

Eta Carinae

Eta Carinae (η Car) is a massive binary star system located approximately 7 500 light-years away in the constellation Carina. Composed of at least two exceptionally massive stars, the system is shrouded in the Homunculus Nebula, a bipolar emission and reflection nebula located within the larger Carina Nebula. The primary component of the Eta Carinae system is one of the most massive stars known in the Milky Way.

Carina Nebula (NGC 3372, Caldwell 92)

The Carina Nebula is a vast region of bright and dark nebulosity located in the southern constellation Carina. It is also known as the Eta Carinae Nebula, the Grand Nebula, and the Great Carina Nebula. With an apparent magnitude of 1.0 and an apparent size of 120 arcminutes, the nebula is easily visible to the unaided eye on a clear night.

The Carina Nebula lies 8 500 light-years away. It is one of the largest diffuse nebulae known. It spans about 460 light-years in diameter. The nebula is more than six times more distant than the Orion Nebula (Messier 42) and nevertheless appears both brighter and larger than the more famous M42.

The Southern Pleiades (Theta Carina Cluster, IC 2602)

IC 2602 is one of the brightest and closest open clusters to the Solar System. It has a combined magnitude of +1.9. For comparison, IC 2602 is 70% fainter and about half the apparent size of its northern namesake, the Pleiades (M45).

It contains about 60 stars spread across 50 arc minutes and is easily visible to the naked eye. The brightest member is blue-white Theta Carinae (θ Car), which shines at magnitude +2.74. Of the remaining constituents all are of fifth magnitude or fainter. When seen through binoculars and small scopes, IC 2602 is a stunning object and a superb example of its type.

NGC 3532 (Wishing Well Cluster, Caldwell 91)

The appearance of the cluster has been compared to scattered silver coins in a well. It is also called the Pincushion Cluster, the Football Cluster, the Firefly Party Cluster and the Arrow Cluster. This is a bright open cluster located approximately 1 321 light-years away in the southern constellation Carina. It has an apparent magnitude of 3, and an angular size of 64.3 arcminutes – about twice the size of the full Moon. It is one of the finest telescope targets in the southern sky.

NGC 3603

NGC 3603 is the most massive visible cloud of glowing gas and plasma, known as an H II region, in the Milky Way. The central star cluster is the densest concentration of very massive stars known in the Galaxy. Strong ultraviolet radiation and stellar winds have cleared the gas and dust, giving an unobscured view of the cluster.

NGC 3603 is visible in the telescope as a small rather insignificant nebulosity with a yellowish tinge due to the effects of interstellar absorption.

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4.5 Vela Constellation

Southern Ring Nebula (Eight Burst Nebula, NGC 3132, Caldwell 74)

NGC 3132 was nicknamed the Southern Ring Nebula because of its resemblance to the better known Ring Nebula (Messier 57) in the northern constellation Lyra. The name Eight Burst Nebula comes from the nebula's appearance, which resembles the figure 8 in some telescopes.

The Southern Ring Nebula is a planetary nebula about 2 000 light-years away in the southern constellation Vela. With an apparent magnitude of 9.87 and an apparent size of 62 by 43 arcseconds (a diameter of 0.4 light-years), it can be observed in amateur telescopes. In 2022, the nebula became one of the first targets of NASA's James Webb Space Telescope (JWST).

4.6 Pyxis Constellation

Pyxis and Volans are considerably smaller and fainter than Vela and Carina. Neither constellation contains any stars brighter than magnitude 3.00.

Pyxis, which represents a mariner's compass, is located next to what used to be Argo Navis and occupies 221 square degrees. Notable deep sky objects in the constellation include the planetary nebula NGC 2818, the Pyxis Globular Cluster, the open cluster NGC 2627 and the barred spiral galaxy NGC 2613.

4.7 Volans Constellation

Volans contains several notable deep sky objects, among them the Lindsay-Shapley Ring (AM0644-741), the Meathook Galaxy (NGC 2442), the spiral galaxy NGC 2397, and the galaxy cluster SMACS 0723, one of the first targets of NASA's James Webb Space Telescope (JWST).

Lindsay-Shapley Ring aka AM0644-741

AM0644-741 is an unbarred lenticular galaxy in Volans. It has an apparent magnitude of 13.96 and is approximately 300 million light-years distant from Earth.

The ring surrounding the galaxy's nucleus is about 150 000 light years in diameter. The ring is believed to have formed after a collision with another galaxy, which caused the dust in AM0644-741 to condense and begin to form stars, and then to expand away from the galaxy and form a ring.

The ring is a starburst region and contains many hot blue stars. It will likely continue to expand for another 300 million years, and then begin to disintegrate.

Meathook Galaxy (NGC 2442)

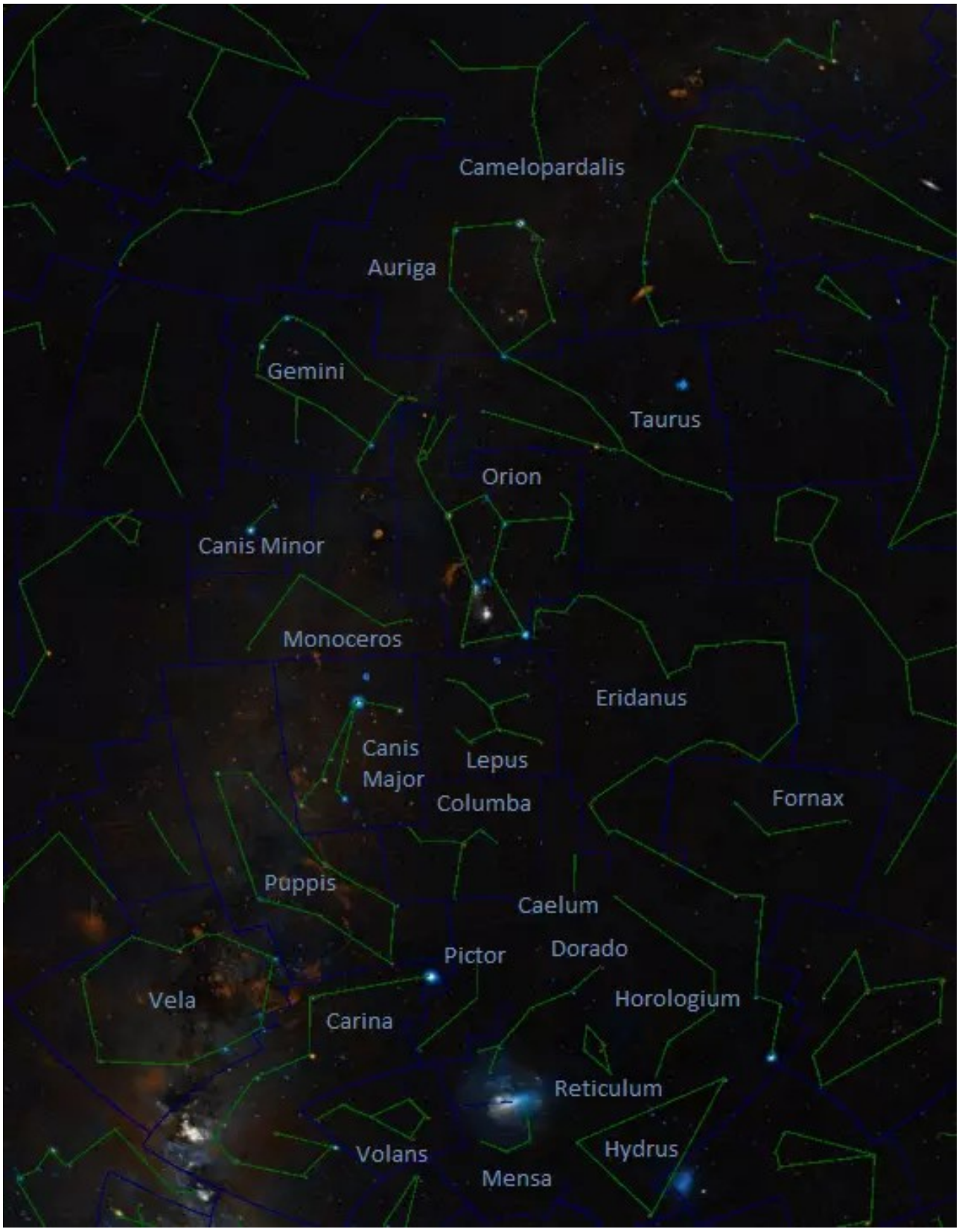
NGC 2442 is an intermediate spiral galaxy in Volans. It was discovered by John Herschel, who described one of the galaxy's spiral arms as hook-like. The galaxy's distorted appearance is believed to be the result of an encounter with a smaller galaxy.

The galaxy has a visual magnitude of 11.2 and is approximately 50 million light years distant from Earth. Its visible disk and spiral arms span approximately 150 000 light -years.

NGC 2397

NGC 2397 is a spiral galaxy in Volans. It has an apparent magnitude of 12.68 and is approximately 60 million light years distant. The galaxy's nucleus contains old red and yellow stars, and the outer spiral arms are regions where star formation has recently taken place. **Ω**

Summer constellations for southern hemisphere



Astronomy related images, video clips and documentaries on the Internet

Hubble ultra deep field video. This is something special. Bing Videos

Mysteries of the Universe.
Unsolved mysteries of the universe that have puzzled scientists for centuries (msn.com)

Discoveries in astronomy.
The greatest discoveries and advancements in the history of astronomy (msn.com)

Photographs from space of the magnificent third planet from the Sun.
Nature from space: Amazing photos of our planet (msn.com)

Natural wonders of the same planet.
The most colourful natural wonders across the world (msn.com)

Northern lights photos. See the best northern lights photos of 2023 (earthsky.org)

The Pretoria Centre library – by Neville Young

Our centre used to have a library compromising hundreds of books and journals and Sky & Telescope magazines. In those days we had a place to house them in four steel cabinets in a room at the back of the CBC auditorium where we held our meetings from the late 1980s until Covid in 2020. When we were eventually allowed access to the premises again and discovered that the school was upgrading the auditorium and was going to use that room, we had to clear out the books. Hospice was the major beneficiary of some good books for them to sell as well as many books and journals to be recycled.

Michelle Ferreira and Neville Young spent a full day in August 2022 sorting through the library and making difficult decisions about which books should be kept. About thirty books found space on a shelf at Neville's house. The book list was posted on the club website but no book has been borrowed – a sign of the digital age where any information can be googled in an instant.

Neville needed his shelf space and so the committee decided that the remaining books could be distributed amongst club members and kept for as long as they wanted to keep them, on the proviso that if anyone wanted to borrow one of the books, that the book's adopted parent would be obliged to lend the book out. An updated list of the books and their adoptive homes will be available on the club website at this link - www.pretoria-astronomy.co.za/pdf/library_books_2022.pdf.

Nine books have already been adopted. Neville continues to take care of the remaining 23 while they wait for a new home. Contact him if you wish to put any of these books on your bookshelf. Many of the books are really good looking. Most are interesting in one way or another. But like all books, the pages can be felt and turned. The book can be browsed and cuddled under the glow of a gentle bedside lamp.

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TITLE	AUTHOR	PUBLISHER	PARENT
			Neville Young
1001 Wonders of the Universe	Bizony, P.	Quercus Publishing Plc	Neville Young
Amateur Telescope Making Book three	Ingalls, A.G.	Scientific American Books, Inc.	Johan Jordaan
Amateur Telescope Making Book two	Ingalls, A.G.	Scientific American Books, Inc.	Johan Jordaan
Amateur Telescope Making: Book 0ne	Ingalls, A.G.	Scientific American Books, Inc.	Johan Jordaan
Armchair Astronomy	Patrick Moore		Neville Young
Astronomical objects for southern telescopes: a handbook for amateur observers	Hartung, E.J.	Cambridge University Press	Neville Young
Astronomy Delights	Magda Streicher		Johan Jordaan
Astronomy in colour	Lancaster Brown, P.	Blandford Press Ltd	Neville Young
Astronomy within reach	Young, N	Lapa Puiblishers	Neville Young
Astronomy: the cosmic journey	Hartmann, W.K.	Wadsworth Publishing Company	Neville Young
Atlas of the skies: Journeying between the stars and planets in the discovery of the Universe	Mazzucconi, F.	TAJ Books	Neville Young
Collins guide to stars and planets	Ridpath, I., Tirion, W.	Collins	Neville Young
Deep Sky Companions: The Caldwell Objects	O'Meara, S.J.		Johan Jordaan
Einstein's Legacy	Schwinger, J	Scientific American Books, Inc.	Neville Young
Everything Einstein Book	Priver, Phillips		Neville Young
Exploring the Moon through binoculars and small telescopes	Cherrington, E.H. (Jr)	Dover Publications, Inc, New York	Neville Young
Galaxies	Ferris, T	Harrison House	Johan Jordaan

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Galaxies in the Universe	Hartmann		Neville Young
Glorious eclipses: their pasr, present and future	Brunier, S., Luminet, J.P.,	Cambridge University Press	Neville Young
Green Mars	Robinson, K.S.	HarperCollinsPublishers	Neville Young
Guide to the Night Sky	David Levy		Neville Young
Living amongst the stars at the Johannesburg Observatory	Vermeulen, D.J.	Chris van Rensburg Publications	Neville Young
Moons and planets	Hartmann, W.K.	Wadsworth Publishing Company	Neville Young
Ontsluier die heelal: inleiding tot sterrekunde	Van Zyl, J.E.	Protea Boekhuis	Neville Young
Prism and lens making	Twyman, F.	Hilger & Watts Ltd, Hilger Division	Johan Smit
Royal Observatory, Cape of Good Hope, 1820 - 1831: the founding of a Colonial observatory	Warner, B.	Kluwer Academic Publishers	Neville Young
Spherical Astronomy	Robin Green		Johan Smit
Star clusters	Norton, A.P., Scovil, C.E.	Willmann Bell Inc	Neville Young
The astronomy of Southern Africa	Collins, P., Moore, P.	Howard Timmins	Neville Young
The atlas of the Solar System	Cattermole, P., Hunt, G., Moore, P., Nicolson, I.	Michell Beazley Publishers	Neville Young
The Cambridge encyclopedia of space: Missions, applications and exploration	Ghirardi, R.,Verger, F., Sourbes-Verger, I.	Cambridge University Press	Neville Young
The real Mars	Hanlon, M.	Constable & Robinson Ltd	Neville Young
University astronomy	Kutner, M.L.	W.B. Saunders Company	Johan Jordaan

From the archives: The June 2004 transit of Venus – by Neville Young

There have been many memorable observing occasions in the history of the Pretoria Centre. The photograph below was taken at the celebration meal in one of the restaurants at Tukkies following a successful and exciting public viewing morning of the June 2004 transit of Venus there. Mauritz Geyser set up his telescope and computer to take a photograph every minute. These photographs were automatically posted on the Tukkies website, which came close to overload due to the visits from people all over the world. One example:

From Dr E.J. Restall in Great Britain.
"Thank you very much for the fantastic images you've been broadcasting. We in the N.E. of England have been clouded out for most of the Transit of Venus; only caught snippets through the gloom. Your images have helped us beyond measure ... particularly with the school groups that we had in our planetarium. Many thanks once again."

From left to right in the photograph below: Neville Young, unknown, Jay (Koos) van Zyl, Prof Johan van Staden, Fred Oosthuizen, Michael Poll, Sybil deClark, Mauritz Geyser.

Left: The scene on the campus at Tukkies where viewing of the June 2004 transit of Venus took place.

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Left to right: Jay (Koos) van Zyl, Mauritz Geyser.

NOTICE BOARD

➔ **Magda Streicher is busy compiling a book containing about 180 articles on astronomical observing, written by herself. Some have been published in our newsletter since September 2014. It is intended for use at the telescope. She expects it to be available by the second half of this year.**

➔ **Help to classify light curves of gamma-ray bursts (GRBs), one of the most energetic explosions in the Universe.**
Burst Chaser — Zooniverse

➔ **SF movies &TV shows.**
Everything we know about 'Constellation' | Space

➔ **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.

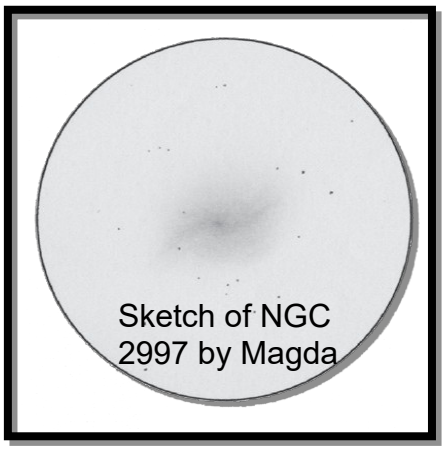
Feature of the month: Loss of dark skies

Astronomers are using a new word to express their grief over the loss of dark skies: **noctalgia.** Learn more about their sky grief at the following two sites:

Astronomers have noctalgia (sky grief), or sadness at the loss of dark skies (earthsky.org)

Confirmed! BlueWalker 3 satellite outshines 99% of stars (earthsky.org)

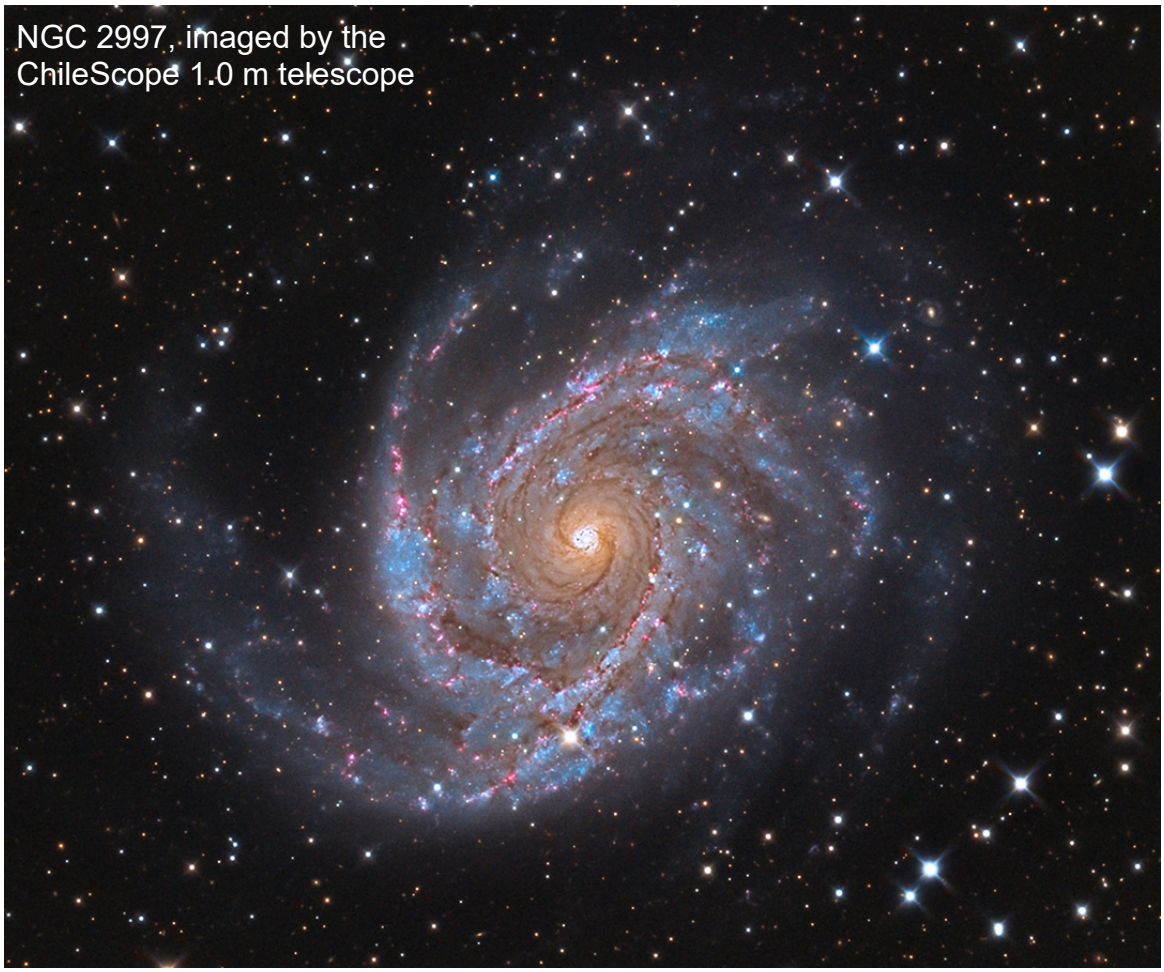
Observing: NGC 2997 – by Magda Streicher


Sketch of NGC 2997 by Magda

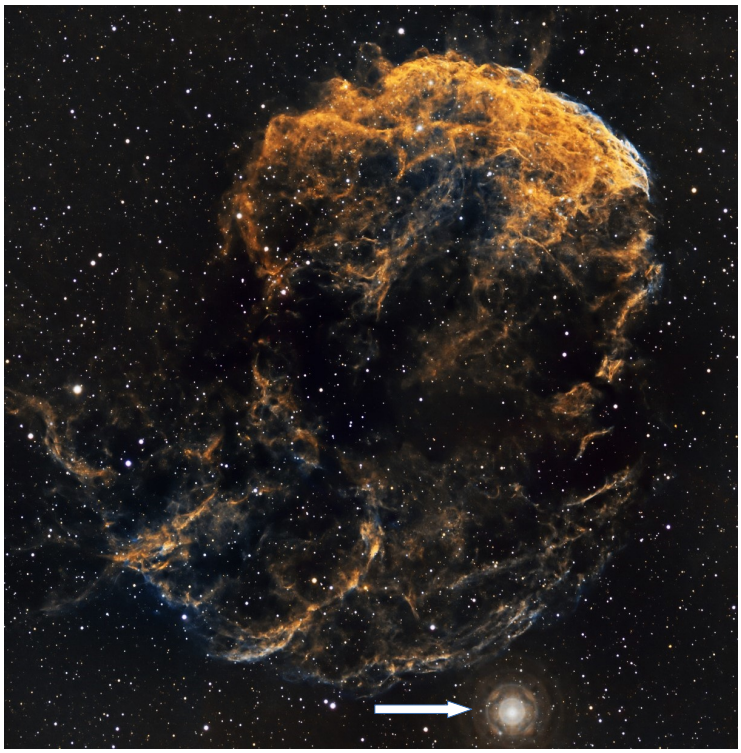
Notwithstanding the fact that galaxies are some of the faintest objects, observing them remains an unbelievable privilege. Although not very bright, NGC 2997 is seen as a north-west to south-east hazy oval. Higher magnification reveals that it gradually brightens towards a well-defined, but small nucleus. The eastern and western outer edges appear gaseous and bulge slightly, almost like drooping shoulders, with a hint of spiral structure towards the north-western tip. A few faint stars can be seen close to the south-eastern rim of this galaxy.

NGC 2997 was discovered by William Herschel in 1793, when only 8 degrees above the horizon at Slough, England. He noted it as a nebulous atmosphere, extremely dilute and little brighter towards the middle. Other observers disagree about the appearance of the galaxy's nucleus. John Herschel records the nucleus as fairly distinct and round. Walter Scott Houston, the late American amateur, recorded it as a glow with little central condensation while Ernst Johannes Hartung notes it as having a well-defined, much brighter nucleus. **(**Magda Streicher's e-mail address: magdalena@mweb.co.za) **Ω**

OBJECT	TYPE	RA	DEC	MAG	SIZE
NGC 2997	Galaxy	09 h 45.6 m	-31°11'.2	9.3	10'×6.3'


NGC 2997, imaged by the ChileScope 1.0 m telescope

Immediately below: The Jellyfish Nebula extends its tentacles. The cosmic jellyfish is part of bubble-shaped supernova remnant IC 443, the expanding debris cloud from a massive star that exploded 30 000 years ago. The nebula is about 5 000 light-years away and spans about 140 light-years across. It is travelling at approximately 800 000 km/h away from the site of the explosion.



Right: The bubble-shaped, rapidly expanding supernova remnant IC 443. It is known to harbour a neutron star, the remnant of the collapsed stellar core. The Jellyfish Nebula is the part at top right in the image. The bright star Eta Geminorum is indicated by the arrow.

The expanding debris cloud known as supernova remnant Cassiopeia A. This sharp image from the James Webb Space Telescope shows the still hot filaments and knots in the cloud. The whitish, smoke-like outer shell of the expanding blast wave from the supernova is about 20 light-years across. The remnant is 11 000 light-years away. It has a temperature of around 30 million K, and is expanding at 4000 − 6000 km/s. At the centre is a neutron star, the incredibly dense, collapsed remains of the massive stellar core. It is estimated that light from the supernova itself first reached Earth near the 1690s, although there are no definitively corresponding records from that time.

Below is a copy of the certificate awarded to Percy Jacobs by the AAVSO. Percy is one of our committee members. Congratulations, Percy! Keep up the observations!

The American Association of Variable Star Observers

Proudly Recognizes
Variable Star Observer

Percy Michael Jacobs

for your invaluable contribution of over 500
Spectroscopic variable star observations to the
AAVSO Spectroscopy Database through September 2022.

...and it is a fact that only by the observation of variable stars can the amateur turn his modest equipment to practical use, and further to any great extent the pursuit of knowledge in its application to the noblest of the sciences.

William Tyler Olcott, 1911
Founder of the AAVSO

David E. Cowall, President

Brian K. Kloppenborg, Executive Director

Awarded at the 111th AAVSO Annual Meeting, held in Tucson, Arizona, on November 6, 2022.

Astronomy basics: Red giant stars

What are red giants? Our sun will become one! (earthsky.org)

Report for the observing evening on January 19th 2024 - by Johan Smit and Michael Poll

There were eight attendees and 5 telescopes, including Bruce's 6 inch refractor. There was a sky that had been cleared by the recent rain, so the conditions were better than expected, but there was also a nippy breeze blowing across the cricket field which was a bit of a bother.

There was a nine day old Moon. Michael showed some named lunar craters including: Plato (the second darkest place on the Moon) in the north, and Aristillus, Autolycus, Archimedes and Timocharis were noted in Mare Imbrium – Timocharis was right on the terminator. Also in this region were the lunar Caucasus and Apennines, which are part of the rim of Imbrium. At the western end of the Apennines is Eratosthenes.

Just south of the equatorial region is a distinctive trio of Ptolemaeus (153 km), Alphonsus, and Arzachel, running north to south respectively, with the smaller craters Herschel (41 km diameter) touching the north rim of Ptolemaeus and Alpetragius (40 km) squeezed up against Alphonsus. Close to the east of Ptolemaeus and only slightly less wide is Albategnius (136 km), and south of Arzachel is Purbach (118 km). In the far south Clavius was noted.

Some possibly less well known of names in this selection are: **Autolycus**: 330 BC Greek astronomer and mathematician; **Timocharis:** 280 BC Greek astronomer; **Alpetragius:** 12th Century Arab astronomer; and **Purbach:** Georg von Purbach (1423-1461) Austrian astronomer.

Jupiter was high in the north to the west of the Moon. Its four bright Moons were to the east of the planet, Ganymede was the furthest out, Io, Europa and Callisto were in a tight little group about halfway between Ganymede and Jupiter.

By naked eye we noted Capella and twins Castor and Pollux low in the north east, the (northern) Winter Triangle of Betelgeuse, Sirius and Procyon, and Canopus high in the south. Although of similar brightness, Canopus is about 40 times further away than Sirius.

Castor is a now quite widely separated double, but was too low down to be seen clearly. Bruce's 6" showed the star known informally as "Rigel's Companion" (Rigel B, 9.5" away) quite easily. Rigel B has a magnitude of 6.7, but it is more or less overwhelmed by the brightness of Rigel itself

Apart from looking at the Moon, Jupiter, the Pleiades and trying to see Sirius B, we looked in the south east where favourite objects were rising high enough to be viable targets.

We observed IC 2602, (the Southern Pleiades), and from there found Eta Carinae, but hardly any nebulosity was visible due to the sky conditions. Close to Eta is the Gem cluster, NGC 3293, and the Wishing Well cluster, NGC 3532, which provided some pleasing views. There was also NGC 2516, a pretty cluster on the south end of the long axis of the False Cross. And, no observing would be complete without having a look at the heart cluster, NGC 2547, near Gamma Velorum in constellation Vela.

Moving north again we looked at M42 with various eyepieces and compared fields of view between the different telescope and eyepiece combinations. Lastly we had a look at the big "S" asterism between the two westernmost belt stars of Orion (Mintaka and Alnilam). Because the S is so large it is a better binocular target, and, not surprisingly, gave the best views in the finder scopes. it was not recognisable as an S in telescopes, because of the limited field of view

Bruce's refractor is a 6" Takahashi apochromatic telescope. We were quite fortunate to be able to view through such a quality instrument. On the plus side, when we compared views in that telescope with views in our home made 6" Newtonians, the home made telescopes performed remarkably well. The Takahashi obviously outperformed the home made telescopes on open clusters and close double stars, but not by as much as one might expect. We can be truly proud of our home made telescopes. **Ω**

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 "2024 SKY GUIDE Southern Africa". Ω**

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