The PRETORIA CENTRE

of the

Astronomical Society of Southern Africa

www.pretoria-astronomy.co.za

NEWSLETTER MAY 2022

NEXT MEETING

Internet meeting. *****

Date and time: Wednesday 25 May 2022 at 19h00.
Programme: **Inspiration and Engagement through Astronomy**
by Dr Daniel Cunnama ******.
Chairman: Bosman Olivier.

***** You will receive an e-mail invite from Johan Smit around 18:30 to join the meeting. Please join as quickly as possible. **People who want to attend this Internet meeting and who are not members of the Pretoria Centre: contact Johan Smit at johans@firsttech.co.za and request him to send you the link to the meeting.**
****** Dr Daniel Cunnama is Science Engagement Astronomer**:** South African Astronomical Observatory (SAAO) and incoming President of ASSA. He has been nominated for an award in the Communication category of the 2021/2022 NSTF-South32 Awards - the so-called "Science Oscars".

Virtual observing evening chat

Date: Friday 20 May 2022. Time: 18h30. Johan Smit will open the meeting at around 18h15 and anyone who wishes to join the chat is welcome to join in the fun. Be seated in front of your computer at 18h15 with a glass of wine/beer/coffee.

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Astronomy related articles on the Internet

This is the biggest known comet in our solar system | Science News

EarthSky | Asteroid Apophis to sweep close 7 years from now
Asteroid Apophis is about 340 meters across and has a mass of about 61 million tons. In 2029, Apophis should pass at a distance of 31 643 km from the Earth's surface, which is only 8.2% of the moon's average distance of 384 400 km from Earth. (This is too close for comfort. Let's hope that the astronomers did their calculations right.)

EarthSky | Fireball over Germany! Did you see it?
This meteor disintegrated high up in the atmosphere. But will the next one also do so?

"Against All Odds" -Unique Star System with Six 'Suns' - The Daily Galaxy
A source of starlight is mysteriously brightening and dimming some 1900 light-years away. The source, named TIC 168789840, is a rare system of three pairs of binary stars: three different stellar couplets revolving around three different centres of mass, but with the trio remaining gravitationally bound to one another and circling the galactic centre as a single star system.

EarthSky | Most distant galaxy yet discovered
This is the farthest astronomical object yet observed. It is 13.5 billion light-years away.

Here's how NASA's Ingenuity helicopter has spent 1 year on Mars | Science News
It has made 25 flights in its first year on Mars.

New Black-Hole-Merger Detections Hint at Exotic Astrophysical Scenarios - The Daily Galaxy
In 2019, gravitational waves from a black hole merger were detected at the gravitational wave observatory LIGO and the detector Virgo. Now Princeton researchers announced the discovery of 10 new black hole mergers hiding in the data from LIGO and Virgo.

Venus: Secrets of Our Strange Sister Planet - The Daily Galaxy
NASA has decided to send three space exploration missions to Venus over the next decade.

Astronomy basics: What is cosmology?

Astronomy Learning Videos - Vanderbilt Museum

Astronomy related images, video clips and documentaries on the Internet

Supermassive black hole at the centre of Milky Way pictured for first time (telegraph.co.uk)

The great galaxy in constellation Andromeda. It is visible to the naked eye.

Observing: Capella's two neighbours - by Magda Streicher

The constellation Auriga (Chariot Driver) is quite interesting in many ways. It can be easily recognized in the northern night sky as a pentagon shaped figure. The magnificent bright white magnitude 0.2 Alpha Aurigae that goes by the name Capella is only 42 light years distant, a supergiant type F star carrying the name She-Goat with the starry kid's Epsilon, Eta and Zeta Aurigae forming a triangle just west of Capella. The most interesting star of the three is Epsilon Aurigae, also a supergiant type F star 2 000 light years distant. It is usually of similar magnitude 2.9. A large opaque object partially obscures Epsilon Aurigae every 27.1 Earth years when it then dwindles down to only magnitude 3.8, losing a little more than half of its brightness. The solution to the mystery could be a secondary star covered with a large shroud of dust that causes a partial eclipse for a number of months. I followed the dimming of Epsilon Aurigae in the year 2010, and it was quite strange to see it much fainter than the other two stars.

Two open clusters, Berkeley 14 and Berkeley 15, are respectively situated less than half a degree north west and south west of the lovely white shining star Capella. Both are far too faint to spot with ordinary telescopes. Berkeley 14, situated north west of Capella, consists of only a few faint stars not brighter than around magnitude 14.5. Berkeley 15 is even fainter. However, it is a beautiful grouping to admire in photographs. There is so much to observe, and even if we cannot spot all deep sky objects, we can always learn something new. **Ω**

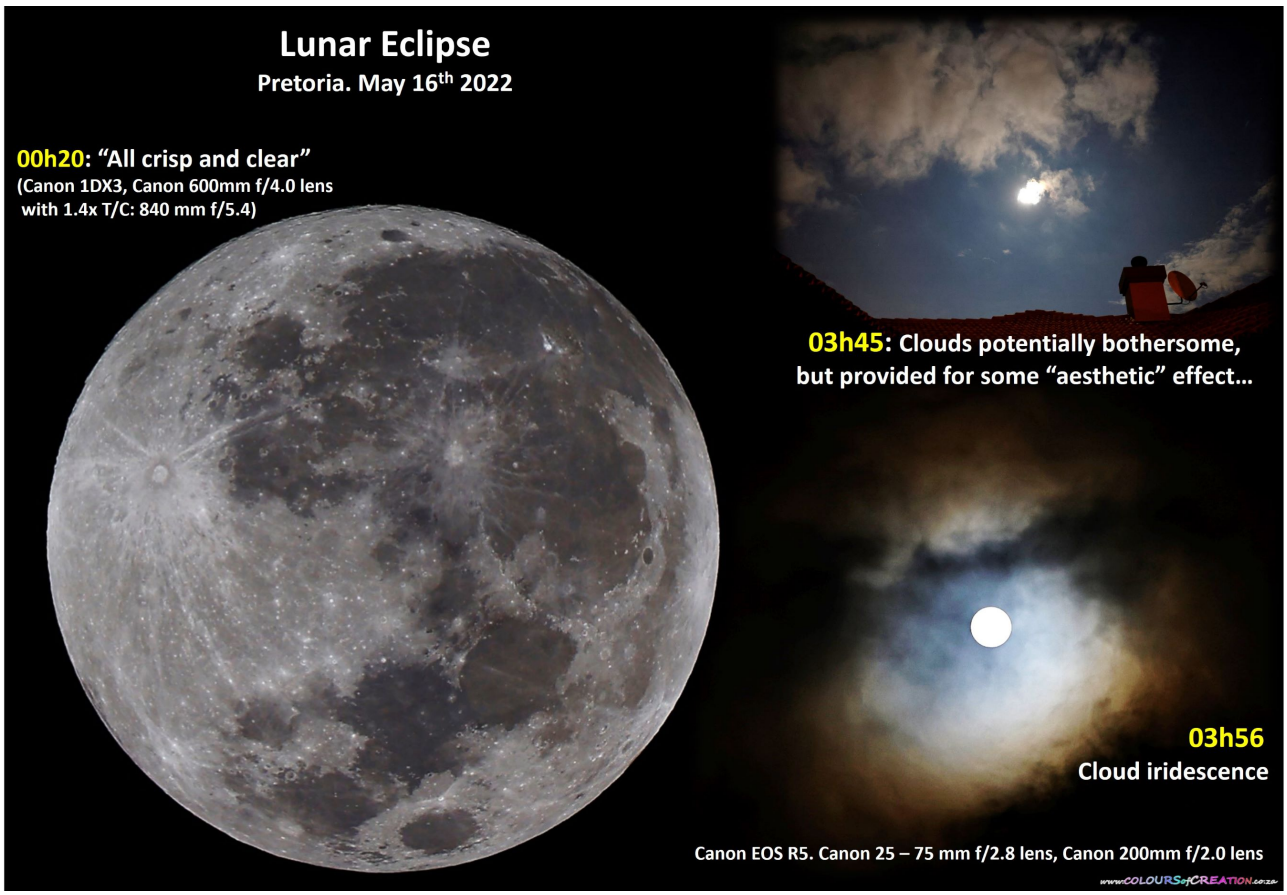
OBJECT	TYPE	RA	DEC	MAG	SIZE
Berkeley 14	Open Cluster	05 h 00.2 m	+43° 27.8'	15	8.4'
Berkeley 15	Open Cluster	05 h 02.1 m	+44° 30.3'	14.7	9'

Berkeley 14

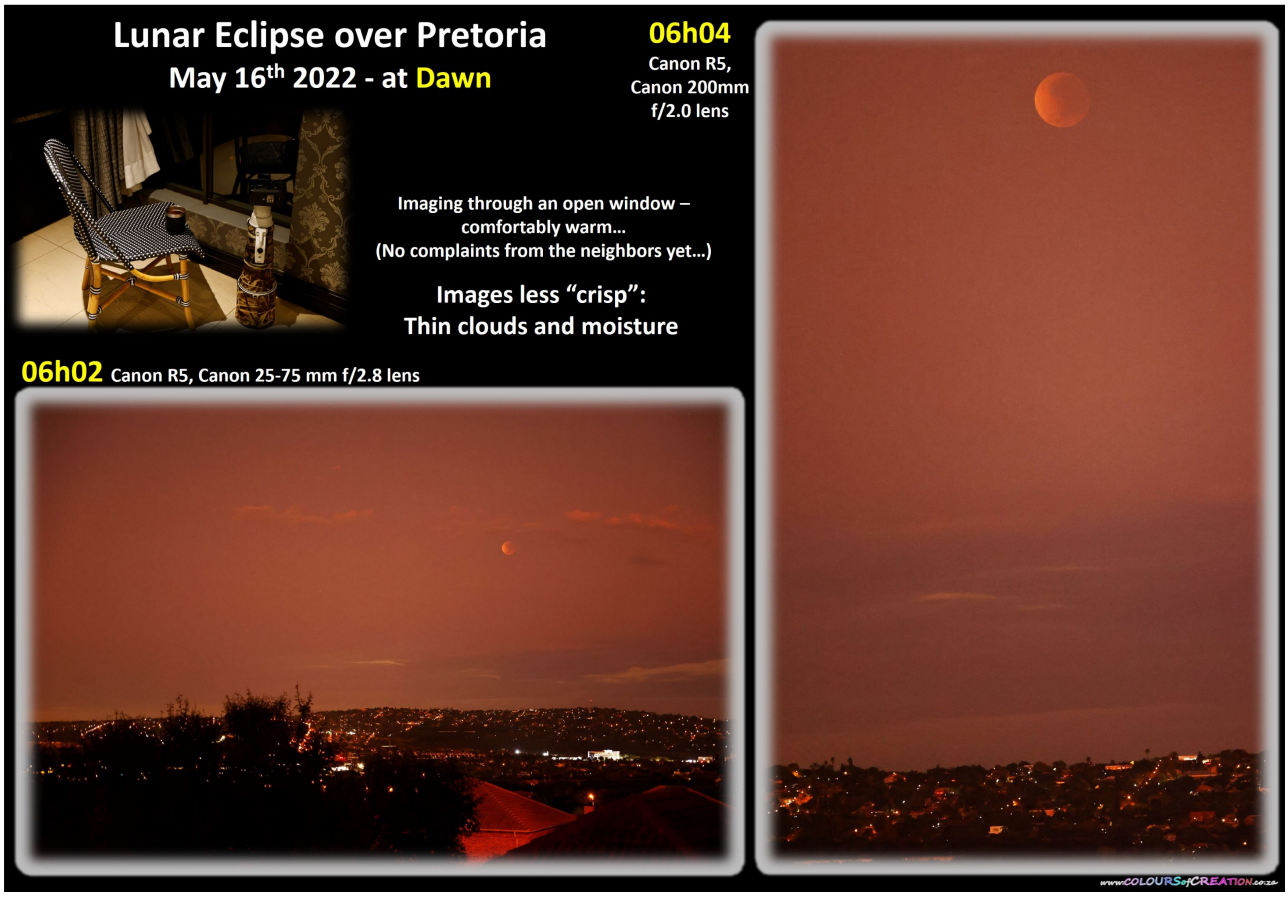
Berkeley 15

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

Seven images of the lunar eclipse on 16 May 2022 - by Johan Moolman




Lunar Eclipse
Pretoria, May 16th 2022
05h52
www.COLOURSofCREATION.co.za


Lunar Eclipse over Pretoria
May 16th 2022 - at Dawn
06h04
Canon R5,
Canon 200mm
f/2.0 lens
Imaging through an open window –
comfortably warm…
(No complaints from the neighbors yet…)
Images less "crisp":
Thin clouds and moisture
06h02 Canon R5, Canon 25-75 mm f/2.8 lens
www.COLOURSofCREATION.co.za

Lunar Eclipse
Pretoria, May 16th 2022

Comparing Exposure Settings
All images: Canon 1DX3 DSLR
Canon 600mm f4.0 lens + 1.4x T/C: 840 mm, f/5.6

1/500 sec, ISO 800

1/40 sec, ISO 6400

1/2 sec, ISO 6400

Lunar Eclipse
Pretoria, May 16th 2022

Time	Phase	Event
03:32 Mon, 16 May		*Penumbral Eclipse begins* — The Earth's penumbra start touching the Moon's face.
04:27 Mon, 16 May		*Partial Eclipse begins* — Partial moon eclipse starts - moon is getting red.
05:29 Mon, 16 May		*Total Eclipse begins* — Total moon eclipse starts - completely red moon.
06:11 Mon, 16 May		*Maximum Eclipse* — Moon is closest to the center of the shadow. Moon close to horizon, so make sure you have free sight to West-southwest.
06:50 Mon, 16 May	Setting	*Moonset* — Setting, but the combination of a very low moon and the total eclipse phase makes the Moon so dim before it sets, that it might disappear from view some time before it sets.
06:53 Mon, 16 May	Not directly visible	*Total Eclipse ends* — Below horizon

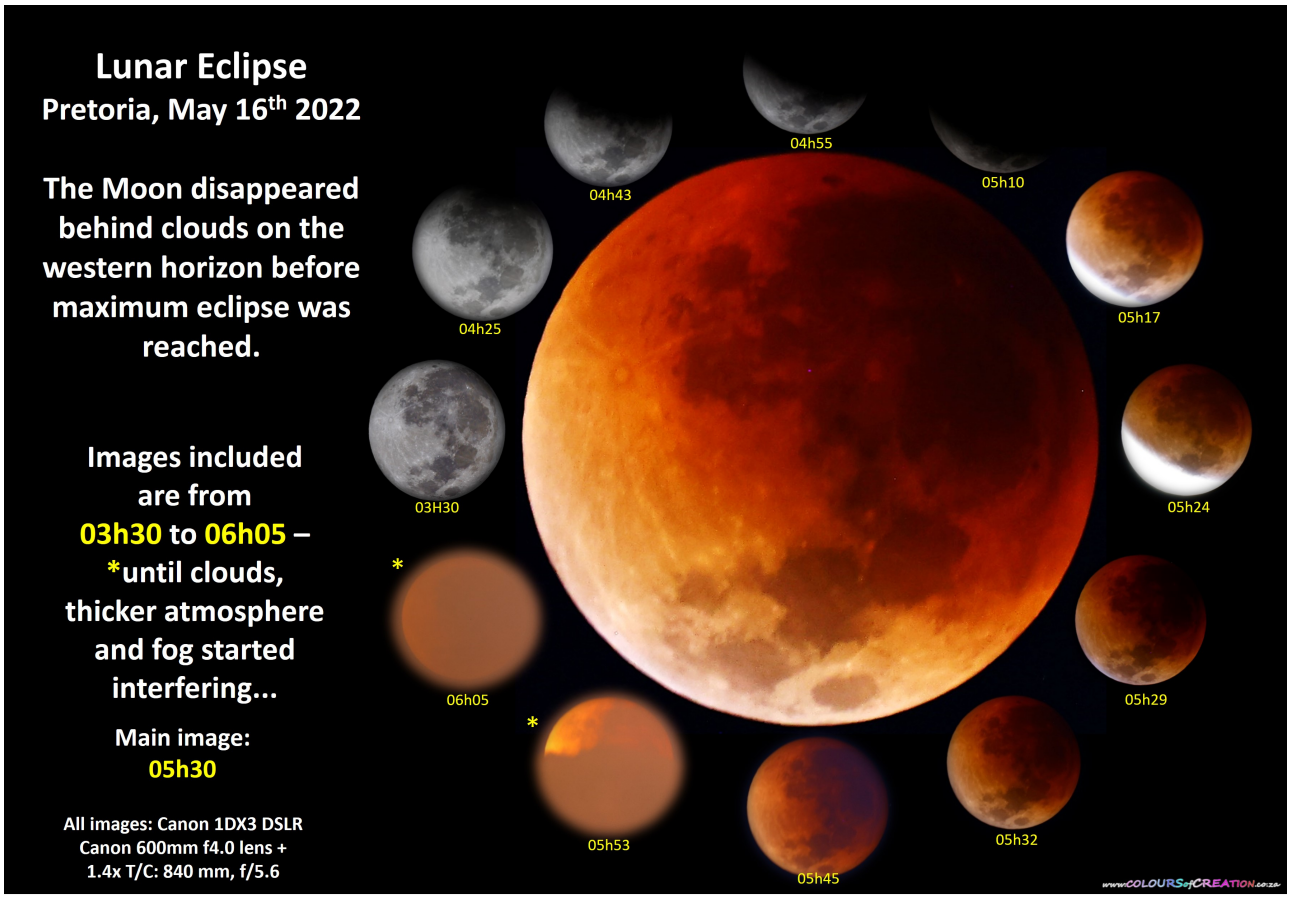
(Timeanddate.com/eclipse)

03h32

04h27

05h29

06h05. Clouds, thicker atmosphere and fog interfering...



Feature of the month: Life's building blocks found on asteroid

Scientists discovered an abundance of organic compounds, **including amino acids**, in samples brought back to Earth from asteroid Ryugu by Japan's Hayabusa 2 spacecraft. Proteins are built up of amino acids. There, on the surface of the asteroid, the building blocks of life were found. The conditions there are unfavourable for the formation of complex molecules like amino acids**:** the asteroid has no atmosphere and had been exposed to UV and X-rays from the Sun and to cosmic rays from space for 4**.**6 billion years. **Ω**

EarthSky | Asteroid Ryugu harbors life's building blocks

NOTICE BOARD

UFOs: For the first time in more than 50 years, the U.S. Congress held an open public hearing on May 17, 2022, on the subject of UAPs or **U**nidentified **A**erial **P**henomena (aka UFOs or **U**nidentified **F**lying **O**bjects). The Pentagon's new UAP task force now has collected approximately 400 reports. The reports don't show that the UAPs are the product of alien beings. And the reports don't show that the UAPs are examples of secret advanced technology from enemy adversaries here on Earth. But, as in the past, many questions remain. The video at this link shows the entire hearing, which lasted about an hour and a half: EarthSky | Big UFO hearing in Congress today

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.

Data base: Members are reminded that a data base of the books in our library is to be found on our website.

What's up from May 25th to June 30th – by Michael Poll

For this period there are still four of the naked eye planets in the morning sky – Mercury joins Venus, Mars and Jupiter. Saturn has moved into the (late) evening sky but can still be seen high in the north before sunrise.

Faster moving Mars is catching up with Jupiter, and the "overtake" takes place at the end of May – they are closest on May 29th when they will be less than 1° apart. The waning Moon will be near Mars and Jupiter on May 25th, and the Moon will be very close to Venus on May 27th.

Mercury moves into the morning sky during June (note that when in the morning sky it is *west* of the Sun). It is at maximum elongation on June 16th when it will be 23° from the Sun. It will be visible for most of June, but the best dates to see it would be from about June 10th – 20th .

Saturn rises at 22h30 at the beginning of June and at 20h30 at the end of the month. There are no bright stars near the planet – it is in eastern Capricornus, near the star Delta Capricornii which is magnitude +2.8, whereas Saturn is a magnitude +0.7.

For the most of June, but better in the second half of the month, between, say 5 a.m. and 6 a.m. all 5 naked eye planets can be seen strung out in a sloping line from the north to north-east with Saturn highest in the north and Mercury lowest in the north east. The waning Moon picks them out in turn, being closest to Saturn on June 18th and 19th, between Jupiter and Mars on the 22nd, near Venus on the 26th and Mercury on the 27th

The Moon passes near bright stars that are on or near the ecliptic during its orbit around the Earth : during this June, it will be near Pollux (early evening before they set) on the 3rd, near Regulus on the 6th, and near Spica on the 10th. These three stars are the brightest in Gemini, Leo and Virgo respectively. Then next Zodiacal constellation is Libra, and the Moon will be extremely close to its brightest star, Zubenelgenubi on June 12th – they will be closest at around 2h00 on that date but can be seen close together during the evening before. As seen from Harare the star will be occulted by the Moon.

Other dates to note in June are : June 9th : earliest sunset for Pretoria (17h 23m) and June 21st is the (winter) solstice when the Sun will be overhead at the Tropic of Cancer.

An interesting thing to note at this time of year at our latitude is that Canopus sets in the south west in the evening and rises in the south east before sunrise so it can be seen in the evening and the morning. However, south of latitude 38°S it is circumpolar, which means that from that latitude and further south it never sets.

The following is written with acknowledgements to James B Kaler.

Libra is not a bright constellation, but 2000 years ago the autumnal equinox was in this group. It is identified mainly by two stars to the northwest of Scorpius, which are called Zubenelgenubi (α Librae) and Zubeneschamali (β Librae). The names refer back to ancient times when the two were considered as outstretched claws of the Scorpion.

"Zubeneschamali" derives from an Arabic phrase meaning the "Scorpion's Northern Claw," while "Zubenelgenubi" refers to the Southern Claw. Although it has the Alpha designation, Zubenelgenubi at magnitude 2.75 is very slightly fainter than Zubeneschamali at magnitude 2.6.

Zubenelgenubi (α Librae) itself is a wide double star, easily split in binoculars. The two are probably a physical pair : they are both 77 light years away from us and they move through space together. The fainter of the pair (Alpha-1) is a class F (F4) star that, at about 6700° Kelvin, is 1000° Kelvin hotter than the Sun, while the brighter Alpha-2 is a white class A subgiant with a temperature of 8500° Kelvin. Alpha-1 and Alpha-2 are separated by at least 5500 Astronomical Units, nearly 140 times Pluto's distance from the Sun, and maybe more since the exact difference in distance is not known. At the assumed separation, the orbital period would be over 200,000 years. From Alpha-2, Alpha-1 would appear as a brilliant star at magnitude -10, and from Alpha-1, Alpha-2 would be 10 times brighter and rival our full Moon in brightness. **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,* 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
- **More web links can be found on page 118 of "2022 Sky Guide Africa South". Ω**

Pretoria Centre committee

Chairman	Bosman Olivier	082 883 1869	bosman.olivier@gmail.com
Vice Chairman	Johan Smit	072 806 2939	johanchsmit@gmail.com
Secretary	Michael Poll	074 473 4785	pollmnj@icon.co.za
Newsletter Editor	Pierre Lourens	072 207 1403	pierre.lourens@vodamail.co.za
Librarian and Webmaster	Danie Barnardo	084 588 6668	daniebar403@gmail.com
Public Relations Officer	Bosman Olivier	082 883 1869	bosman.olivier@gmail.com
Observing Coordinator	Louis Kloke	083 393 3594	dawn@mweb.co.za
	(with Craig Kloke)	083 404 2059	info@craigsmodels.co.za
Treasurer and Membership Secretary	Michelle Ferreira	073 173 0168	michellem.ferreira@standardbank.co.za
Curator of Instruments	Louis Kloke	083 393 3594	dawn@mweb.co.za
	(with Johan Smit)	072 806 2939	johanchsmit@gmail.com