The PRETORIA CENTRE

of the

Astronomical Society of Southern Africa

www.pretoria-astronomy.co.za

NEWSLETTER SEPTEMBER 2008

The next meeting of the Pretoria Centre will take place at Christian Brothers College, Pretoria Road, Silverton, Pretoria

Date and time	Wednesday 24 September at 19h15
Chairperson	Pierre Lourens
Beginner's Corner	"Optical coatings" by Andrie van der Linde
What's Up in the Sky?	Presented by Tony Viljoen

++++++++++ LEG BREAK - Library open ++++++++++++

MAIN TALK

Topic: IYA2009 *

Presenters: Johan Smit & Michael Poll

The meeting will be followed by tea/coffee and biscuits as usual.

The next observing evening will be held on Friday 19 September at the Pretoria Centre Observatory, which is also situated at CBC. Arrive anytime from 18h30 onwards.

*IYA2009 = International Year of Astronomy 2009. See page 9.

CONTENTS OF THIS NEWSLETTER

Last month's meeting — Percy Jacobs

The main speaker pulled out at the last minute.

Beginners Corner - Astronomy Starter Pack CD
Percy took us through the Astronomy Starter Pack CD which contains three basic topics:
Part 1: Armchair Astronomy.
Part 2: World of Spaceflight.
Part 3: Sky Watching.
Of the 23 ASP's we had available for sale, all were sold the same evening. More CD's shall be ordered. CD's are available for R50 a CD. You may order the CD from ASSA or email: **astropack@webmail.co.za**. Or, contact one of the committee members of the Pretoria Centre.

What's Up in the Sky? – Sept
This was presented by Danie. A handy freeware program to enhance your viewing of Jupiter can be found at **http://www.astrosurf.com/rondi/jupiter/**

Main Talk – Titan, A Place Like Home
Instead of the main talk, we watched a video "Titan – a place like home". This video came from an internet site "Stage 6". This site has subsequently been disabled and is no longer accessible.

The video describes the apparent similarity of the atmosphere of Titan (the largest moon of Saturn) to that of early Earth. It expands on the possibility to use this phenomenon to help us to understand how life could possibly start on Earth. Titan is more than 1 billion kilometers from us and is the only moon in the solar system with a thick atmosphere. This atmosphere consists of methane and other natural gasses, mainly nitrogen, resembling that of early Earth about 4 billion years ago. Scientists believe that examining this atmosphere, and the way these gasses naturally combine to provide more complex molecules necessary for life, could provide clues to early life on Earth.

The first spacecraft to pass near Saturn, was the Voyager mission, which photographed Titan for the first time in 1977. These photographs from Voyager left more questions than answers. A mission to Titan to investigate the moon more intensively was initiated during the late 1990's. A spacecraft, Cassini, was designed by NASA and was to contain a probe that could descend to the surface of Titan. This probe, called Huygens (after the man who discovered Saturn) could be detached from the mother craft and land on the surface of Titan. It contained instruments to examine the surface of the moon and to send the findings of these examinations, via the mother craft, back to Earth. The most important of these instruments was the camera, which could transmit photographs of the surface of Titan. Another instrument called a "penetrometer" and was designed to determine the type of surface that the probe landed upon. Huygens was designed and built by the European Space Agency (ESA).

Cassini, containing the probe, Huygens, was launched on 14 October 1997 after extensive tests to make sure that it survived the trip to Saturn. This combination, at over 6 tons, was the largest spacecraft ever launched at the time. A powerful launch missile, aptly named a Titan rocket, was used to launch the spacecraft. A few passes close to Earth, and Jupiter, was used to accelerate the spacecraft enough to reach its destination.

The numerous problems encountered during the trip to Titan is described, and the way they were resolved. One of these problems was the journey through the famous rings of Saturn. These rings consist of thousands of objects, some dust grain-sized, and others the size of houses. The first problem, however, was a communications problem. No meaningful signals could be received from Cassini. The video describes the solution of these problems and the eventual landing of the Huygens probe on Titan on 14 January 2005. Imagine the skill required to fly the probe through Saturn's rings without any collisions. This is something. It took some planning from the NASA engineers.

Numerous photographs of the surface of Titan were received, and the data revealed what the surface of Titan looks like. It was revealed that methane plays much the same role on Titan than water does on earth. "Rain" of liquid methane (because of the extreme cold), occurs and the liquid methane creates much the same effect, shaping the landscape, that flowing water does on Earth. In fact, the scientists were amazed at the similarity between the landscape of Titan and that of Earth. Titan has a "greenhouse house" effect with methane liquid & gas and earth has the effect with water and water vapor. The only difference is that the landscape is not shaped by water, like on Earth, but by liquid methane.

Huygens has fallen silent, but Cassini continues to orbit Saturn and sends back images of Titan to Earth, whenever it passes the moon. Geological processes, similar to that on Earth, shape the surface of Titan. An example is so-called "cryo-volcanoes", which are volcanoes spewing out a strange type of water, consisting of a mixture of water and ammonia, lowering the freezing point of the resulting liquid. This strange liquid flows like lava down the slopes of these cryo-volcanoes.

Four Fast-Spinning Stars and one "Just Passing By" - Michael Poll

Most stars are round like the sun, but rapidly rotating stars are oblate i.e flattened at the poles and bulging at the equator. Examples of stars that show fast rotation are Regulus, Altair, Achernar and Vega. These stars are all of spectral type A or B and it is these young stars that rotate quickly.

Regulus

Regulus is the 21st brightest star in the night sky, and, of the bright stars in the sky Regulus is closest to the ecliptic, so it often has encounters with planets. It is 350 times brighter than the sun, and has 3.4 times the sun's mass. However, it is still on the main sequence, (i.e it is still shining by converting hydrogen to helium). At a distance of 77 light years, it is the nearest main sequence star of spectral type B. The surface temperature at the poles is 15400 K° whereas at the equator it is 10300°K. The difference in tempe rature between the poles and the equator is due to Regulus' rapid rotation. (The von Zeipel effect).

Regulus rotates once every 15.9 hours, (compared with about 27 days for the sun), consequently it is 32% fatter across the equator than through the poles. Its equatorial diameter is 4.15 times that of the sun and its polar diameter is 3.15 times. A spot on the equator of Regulus moves at about 315 km / second, 160 times faster than a similar spot on the Sun, and the star is spinning at 86% of the speed at which it would start to fly apart.
Past estimates of Regulus' age made it three times older than stars of a similar type, but if the effect of fast rotation and differing surface temperature are allowed for, the matter is corrected – Regulus is about 50 million years old, about 1% of the age of the sun.

Regulus is moving through space in the direction of its spin axis – ie pole first. The rotational axis is perpendicular to our line of sight so we see the star from almost side on as it rotates. it is moving almost exactly westward across the sky, towards Alpha Cancri and M67.

Altair

Altair is of spectral type A7 and as such is hotter than the sun. The rotation period is about 10 hours, and the equatorial rotation speed has been variously measured at 190 to 250 km/second. The actual rotation speed is probably higher, depending on the (at present unknown) tilt of the equator from our line of sight. It is estimated that an equatorial rotation speed of 450 km /second would cause the star to break up. The size and shape of Altair's disc was measured directly at Mount Palomar and found to be 3.46 milliarcseconds by 3.04 milliarcseconds, so the equatorial diameter is 14% greater than the polar diameter, although again, this figure could be higher, depending on the tilt of its axis.

Achernar ("The flattest star")

Achernar is a B type star, about 6 times as massive as the sun. It was long known that it was spinning so fast that it should be out of round and observations indeed show that the star's disc is 56% longer than it is wide. It was found to measure 2.5 x 1.6 milliarcseconds with the long axis oriented north west to south east. The equatorial diameter is 11.8 times that of the sun (11.8 times 1.4 million km!), and its polar diameter is 7.6 times that of the sun.The oblateness may be even more if the equatorial plane is not oriented towards the Earth. It is estimated to spin once every 2.2 days.

A point on Achernar is spinning at 225 km per second with respect to our line of sight, which is about 75% of its breakup speed. This rotation speed should not be enough to distort a B type star so much, so either Achernar is spinning faster than it is thought (somewhere near the breakup speed of 300 km/sec) or it rotates with very fast currents at different depths inside.

Vega

Vega is also another fast spinner, it spins in 12.5 hours with a velocity of 274 km/s at the equator, but in contrast with Regulus, it spins with one of its poles pointed directly at the sun. This means that our sun is a pole star for Vega (there may also be one in the direction away from

us!). If any planet orbits Vega with a spin axis perpendicular to the plane of its orbit (In our solar system, this applies to Mercury Venus and Jupiter - their spin axes are more or less vertical with respect to their orbital planes) the sun would be near one of the celestial poles and serve as a pole star, though at Vega's distance of 25 light years, the sun would be of magnitude 4.2 only.

Arcturus

Stars in the sun's vicinity move roughly in the same direction through space, as the stars stream around the centre of the galaxy. Arcturus is the only first magnitude star that is not moving with this stream. Instead it has an orbit that is highly inclined to the disc of the Milky Way, and it is moving southward past us through the galaxy. There is a hypothesis that Arcturus and 52 other stars which have similar galactic orbits ("The Arcturus Group") have come from further away than just the high latitudes of the Milky Way. The group could be the remnants of a dwarf galaxy that collided with, and was absorbed by, the Milky Way.

On a historical note, the Hawaiian Islands were discovered by Polynesians who probably came from Tahiti or from islands thereabouts. Arcturus may have served as a navigational aid, because in AD 1000 the star had a declination of +25° and would have been more or less overhead at the latitude range of the Hawaii chain of islands (19° – 28° north). To get back to Tahiti they may have used Sirus as a zenith star – its declination was -16° which is similar to the latitude of Tahiti at 18° south.

References

1. Oblate Altair. AlanMacRobert. Sky & Telescope, Sept 2001 p 27.
2. The flattest star. Alan MacRobert. Sky & Telescope, Sept 2003 p 20.
3. Secrets of the lions heart. FredSchaaf. Sky & Telescope, April 2006 p 46.
4. New facts about old friends. Fred Schaaf. Sky & Telescope, June 2007 p 42.

Summary of What's Up to be presented on 24th September 2008

Phases of the Moon

First Quarter - 7th October
Full Moon -14th October
Last Quarter - st October
New Moon - 28th October

Planet Visibility

Mercury (mag 2,7) continues to be an evening object until the 6th, then it becomes too close to the sun to be visible. From the 7th Mercury rises with the sun but by month end it is rising half an hour before dawn at mag -0,9. **Venus** (mag-3,9) is an evening object setting about 2 to 3 hours after sunset. **Mars** (mag 1,6) is visible in the evening all month for an hour after sunset. **Jupiter** (mag -2,3) is visible all evening until 01:00 and up until 23:30 at month end. **Saturn** (mag1,0) is a morning apparition just before sunrise and from 03:00 at month end. **Uranus** (mag 5,7) and **Neptune** (mag 7,9) are both visible all night to just before dawn.

Stars

The equinox is on the 22nd September and this means a changing of the guard from the winter to summer constellations.
Towards the end of the month Scorpius is low in the West early in the evening, and in the middle of the evening at the end of the month Orion rises in the East to mark the start of summer.
Whereas in the middle of winter the Milky Way stretched directly overhead, now the Milky Way extends from Cygnus in the North to Centaurus in the SW, before, later in the year this arm will set and the Orion arm will rise. Catch the central parts of the galaxy before they set in summer.

Deep Sky wonders to look out for are (from north to south), the Dumbbell nebula(M27) in Vulpecula, the Saturn nebula (M73) in Aquarius, M17 the Omega or Swan nebula in Sagittarius and the two Magellanic Clouds which are beginning to rise again in early evening.

A constellation to learn in October is Pegasus.

Comet

Comet C/2008 A1 McNaught is at its maximum brightness of ~mag 7 in October and has moved from Centaurus to Libra. Try to catch it early in the evening during moon free times after full moon.

Websites: **http://www.saao.ac.za/public-info/sun-moon-stars/**

http://www2.jpl.nasa.gov/calendar/

http://www.skyandtelescope.com/observing/highlights/19981449.html

Also: **Sky Guide Africa South 2008**.

Last month's Observing Evening - by Michael Poll and Johan Smit

No clouds, but a murky sky. Nevertheless, more than 30 people came to the observing evening and there were six telescopes plus some binoculars on stands. We were pleased to welcome some newcomers, including Nadine and Rookshana from Tukkies, who are organizing an astronomy month in October this year.

Venus and Mercury were close together low in the north-west, Mars above them was difficult to spot. Jupiter was well placed and presented a wonderful sight in the various telescopes – as well as the four moons, there were at least half a dozen stars as bright as the moons scattered the same field. In addition we looked at Neptune and Uranus in Michael's 6 inch. Most people commented on the bluish colour of Neptune. Neptune is quite easy to find at the moment (really!) - it just above (west) of the star 42 Capricornii which is the last star in an arc of three to the north of (left of when facing east) delta Capricornii. (See page 69 of the 2008 Sky Guide).

Scorpius was neck achingly high overhead, but we had a look at the open clusters M7, M6, NGC 6231 and the globular near G Scorpii, NGC 6441.

The binoculars were used to have a good look at the same open clusters in Scorpius as well as the Coathanger (CR399). They were also used to show visitors that a simple pair of binoculars is a good alternative observing tool to a telescope, especially on larger clusters and for finding objects. Showing the Jewel Box and Omega Centauri also illustrated this. Everyone was amazed that you could actually see these objects in binoculars while they were low on a very light.
Manuel, using his newly completed 6 inch telescope, found M22 by accident while searching for Jupiter with a mis-aligned finder scope. [It is interesting to note that this cluster was first discovered in 1665 by Abraham Ihle, a German, while he was observing not Jupiter, but Saturn]. M28 was also found and was soon admired.

Some simple star charts, downloaded from the Johannesburg Planetarium web site, were handed out to most of the visitors and every-one was given a quick practical demonstration in using these simple maps. They were pleased when they were able to identify many visible stars all by themselves after this demonstration. Prof Buch's mnemonic for remembering the signs of the zodiac in the proper order was also used. (Just in case you wonder, no, I will not repeat the mnemonic here. Come to the viewing evenings and learn it under real live conditions. JS)

Scorpius was used as a reference point to show where other "invisible" constellations were.
An extension of this was to describe the daily and annual movements of the sky caused by the Earth's rotation around its axis and the movement along its path around the sun.

The 12 inch telescope was not used, because Johan wanted to relax and spend quality time with the many visitors. However, the dome was opened so that every-one could see what the telescope looks like and how it operates. Be sure that it *will* be used at future viewing evenings.

BOOK REVIEW by Neville Young

THE DEMON-HAUNTED WORLD
Science as a Candle in the Dark

by

Carl Sagan

Published in the year of the author's death, one wonders if Carl Sagan was driven by a knowledge of his impending demise to finally and bluntly convey the message of science as forthrightly and unequivocally as could be done without offending or, perhaps, at the expense of the sensitivities of much of the human race. In previous books such as *Cosmos* and *Broca's Brain*, Sagan attempted to attract human minds to science and to scientific thinking. In the Demon-Haunted World, he bluntly warns of the dangers of NOT being able to deal with our lives scientifically - of resorting to `pseudoscience' to appease the wishes of civilisation.

Carl Sagan deals in great depth with the human propensity for *belief* as opposed to *knowledge* gained by scientific method. Belief is discussed in its application from aliens to religion. Sagan analyses man's need to believe and the motives behind those people and organisations who - for their own ends - create, manipulate and promote certain beliefs. This desperate desire to believe is very quickly turned into gullibility - an uncritical acceptance of assertions or declarations and a selective choice of facts which fit the belief [*The lure of the marvellous blunts our critical faculties*]. Sagan refers us to "The British scientist Michael Faraday [who] warned of the powerful temptation *to seek for such evidence and appearances as are in the favour of our desires, and to disregard those which oppose them . . . We receive as friendly that which agrees with [us], we resist with dislike that which opposes us; whereas the very reverse is required by every dictate of common sense."*

Sagan demonstrates that gullibility is not harmless - it may be the most serious danger facing the continued existence of the human race. Misplaced belief in unsubstantiated, untested principles and assertions has proved lethal on a regular basis - witness David Jones poisoning himself and hundreds of his followers in South America; witness the group who recently committed suicide in the belief that Comet Hale-Bopp was the host of a spaceship coming to Earth to transport them to some nirvana. Expand this group gullibility to the entire human race and see how misguided faith, particularly in the principles of astrology and quack medicine can equally lead us like lemmings towards self-destruction. A passive belief which does not necessarily cause it's believers to actively embark on a course of action is just as dangerous - it has all the potential to distract attention away from scientific knowledge which may uncover serious threats to humankind such as asteroids on a collision course with Earth. Astrology would neither predict nor have a hope of counter-acting such an asteroid yet "*Nancy and Ronald Reagan relied on an astrologer in private and public matters - unknown to the voting public*".

Sagan looks at the differences between scientific and pseudoscientific beliefs. He asks *"So how is shamanistic or theological or New Age doctrine different from quantum mechanics? The answer is that even if we cannot understand it, we can verify that quantum mechanics works.*" I enjoyed his comment on the oft repeated and resorted-to plea by fanciful thinkers to keep an open mind - "*Keeping an open mind is a virtue - but, as the space engineer James Oberg once said, not so open that your brains fall out.*" Those among us who consider ourselves scientific thinkers and normally practice critical reasoning sometimes are attracted to 'gut' feeling. Having given his well-known point of view on extra-terrestrial life, Sagan was often asked "`*Yes but what's your gut feeling?*'". He says "*But I try not to think with my gut. If I'm serious about understanding the world, thinking with anything besides my brain, as tempting as that might be, is likely to get me into trouble. Really, it's okay to reserve judgement until the evidence is in.*"

The confidence and sometime arrogance of those holding an alternative belief contrary to scientific knowledge is explained with reference to an extract from Charles Darwin's introduction to *The Descent of Man* (1871) - "*[I]gnorance more frequently begets confidence than does*

knowledge: it is those who know little, and not those who know much, who so positively assert that this or that problem will never be solved by science." This same confidence and arrogance has lead to atrocities committed in the name of religion by Middle Age Crusaders and are in evidence in societies of 2000 years ago just as much as they are today.

Sagan expounds with frightening detail on the ignorance of scientific knowledge and the low literacy levels in American schools. This is an ignorance which leaves gaping cranial cavities ready to be filled with every form of jellified mumbo-jumbo imaginable. From a South African perspective, do not feel safely distant from USA schools - for a scholar to be 'cool' right here in sunny SA means to remain distant and aloof from any serious desire to achieve not only in academic endeavours but also in sporting activities. To be interested and knowledgeable and to appear intelligent and discriminating is under severe threat from the pressure of 'cool' peers. To succumb to peer pressure is to deprive the brain of the practice and experience of critically gathering knowledge.

Sagan carefully devotes a chapter to pointing out that science is never proclaimed to be infallible and complete in it's hard and patiently won knowledge base. It is an iterative process which arrives at useful knowledge in an atmosphere which provides all the opportunity needed to sift apart those hypotheses which survive critical examination and those hypotheses which are not accurate models of our existence or may even be dangerous in their erroneous application. The application of science or scientists themselves must not be confused with science per se. The nuclear missile threat to mankind is not the wrongdoing of science. Science has no morality - man's application of science applies the moral pigment. Neither is science ever claimed as the exclusive domain and prerogative of scientists - it is put forward as the only method of knowledge gathering for any human being which will ultimately benefit the human race.

The Demon-Haunted World is a vitally important warning to humanity to examine how it thinks and how it nurtures the critical thinking capacity of its youth. It requires an open mind when, perhaps, personal beliefs are touched upon but not a mind so open that the brains all fall out.

THE DEMON-HAUNTED WORLD
Science as a Candle in the Dark
by Carl Sagan

HEADLINE BOOK PUBLISHING

ISBN 0 7472 5156 8

Note: Neville Young is a freelance technical writer. He has a background in electronics. He was at one time chairman of the Pretoria Centre of the ASSA. Although currently not very active in astronomy, he is still a member.

Dark Sky Weekend

ASSA Pretoria will be hosting a Dark Sky Weekend on Friday 26th and Saturday 27th September 2008. The venue lends itself to 1st class observing due to its location (approx. 20km East of Bela Bela). Temperature should be perfect at this time of the year. The entire campus has 24 hr security and the observing fields are situated far from any lights.

Accommodation has been provided for in the dormitories. Each member will have access to their own room. Each room has four beds that will lend itself to family / children etc. The dormitories are fully equipped with showers and baths. You are required to bring your own linen.

Food & Beverage: Each member is responsible for their own requirements. There is a hotel near to the school, overall feedback has been positive. Braai facilities are provided. There is a pool for the day time hours.

(Continued on next page.)

Date: 26/27th September 2008.
Venue: Lord Milner School
(email address:
www.lordmilner.co.za)
Directions: See map on right.
Cost: R50pp per night

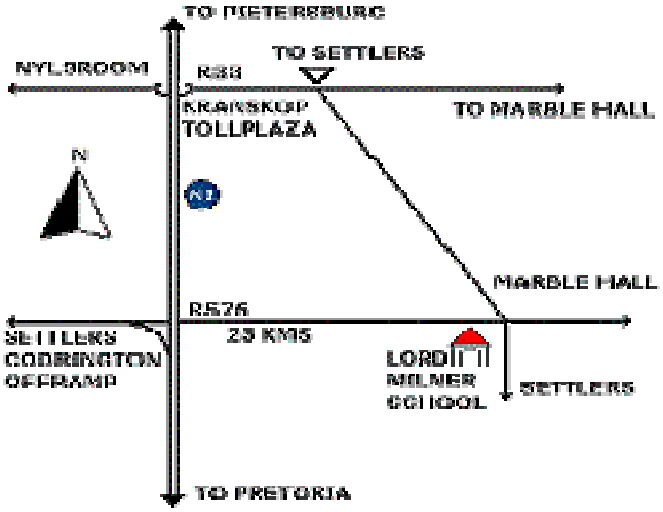
Provided:
Dark Sky
Dormitories
Braai Facilities
Braai Wood
24hr Security

You need to bring:
Linen
Food & Beverage
Mosquito repellent
Skottel for breakfast

RSVP – SMS name and number of people to 073 220 6824 or e-mail **gareth.gregory@gregoryint.com**

To confirm your booking please deposit the total funds (No. of people x number of nights @ R50 pppn).

Bank – Nedbank
Account Number – 1634 049 209
Branch Code – 163 445
Reference :
Surname / 1 or 2 nights / no. of people
The Settlers hotel has planned a breakfast for Saturday morning @ 9:30. Cost R40 per person. Please confirm numbers by **15th Sept 2008.**



Omega Centauri Hides Middle-Weight Black Hole

Omega Centauri is one odd bird. Sparkling almost as big as the full moon in Earth's southern hemisphere, the object has been classified as a globular star cluster for more than a century. But it had some troubling peculiarities.

First of all, the cluster, located about 17,000 light-years from Earth, is huge -- nearly 10 times larger than other globular clusters, which typically have about one million stars tightly bound by gravity. Also, most globular clusters are like retirement communities for senior stars. Omega Centauri has a more integrated population with old, middle-aged and young stars. It rotates faster and has a flatter shape.

Astronomers may have figured out the reason why: Omega Centauri has a black hole in its heart, a finding that may have revealed the globular cluster's true identity as a dwarf galaxy that was robbed of outlying stars by our very own Milky Way.

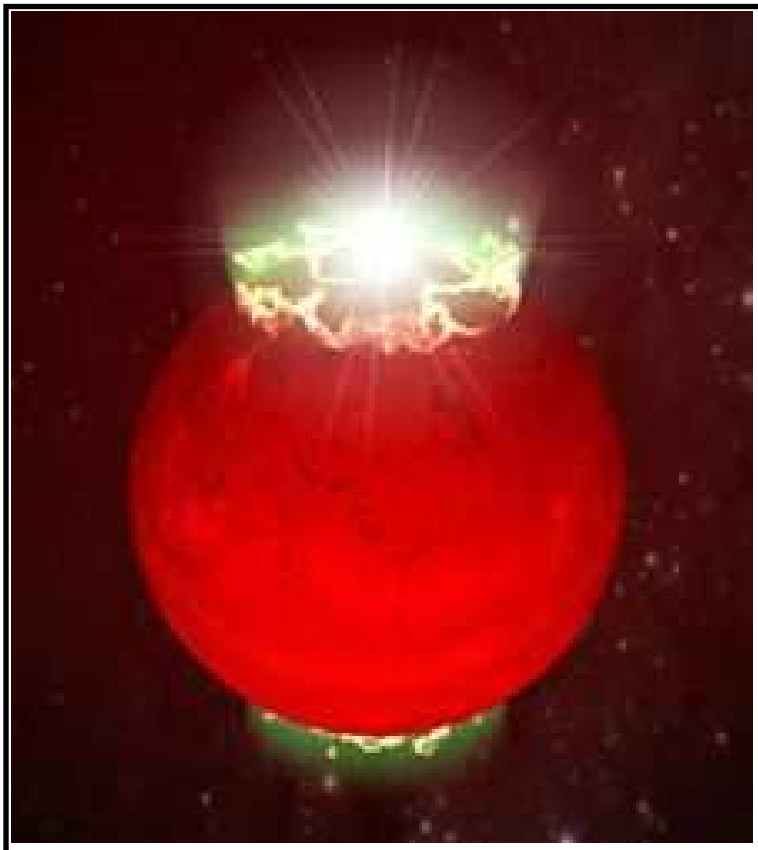
The image shows Omega Centauri, a.k.a. NGC5139. At apparent visual magnitude 3.7, it is visible even with the naked eye. Centaurus is a southern constellation.

http://dsc.discovery.com/news/2008/04/08/omega-centauri-star.html

http://www.spacetelescope.org/news/html/heic0809.html

Maansverduistering 16 Augustus 2008

Die eerste foto onder toon Percy Jacobs se opnames van stadiums in die verduistering in chronologiese volgorde van regs na links soos wat die maan van wes na oos (van bo na onder op die opnames) deur die aarde se skaduwee beweeg het. Sy kommentaar: "*My attempt with simple snap-&-go camera - will get better.*"



Coolest known star

A dim, lonely, weakling star with the lowest stellar temperature yet recorded has been found just 40 light-years from Earth.

The brown dwarf star is between 15 and 30 times the mass of Jupiter and has a surface temperature of a mild 350 degrees Celsius - about the surface temperature of the planet Mercury at the equator and much cooler than the surface of Venus.

The spectacularly unspectacular object is of special interest because it falls right smack in the middle of the final frontier that divides mega-planets from the puniest stars. Stars in that realm theoretically qualify as an entirely new stellar type - what's called a Y class dwarf.

The image shows an artist's impression of the "super-aurorae" present at the magnetic poles of a brown dwarf where extremely bright beams of radiation originate.

http://dsc.discovery.com/news/2008/04/11/coldest-dwarf-star.html

IYA2009

2009 has been declared as the International Year of Astronomy and ASSA and its Centres will be involved. This month's main topic looks at the Vision and Goals of IYA2009, and discusses some of the eleven programmes of global activities designated as "Cornerstone Topics". This first part will be presented by Michael, after which Johan will walk through a Resources CD, copies of which will be given out free at the meeting. Amongst other things, the CD contains a 3D tour of SALT, an "Essential Astronomy" quick reference guide for outreach, a resources file that includes IYA brochures and some teaching guides from NASA**,** and some astronomy software.

National Star Party

The ASSA Pretoria Centre wants to hold the first National Star Party in South Africa during the weekend of 25 to 27 April 2009 about 20 km north of Britstown in the Karoo. The Karoo sky is fabulous there. Danie Barnardo is the driving force behind this venture.

This will form part of the activities for IYA2009. See our Centre's website for more details.

Gamma Velorum - deur Danie Barnardo *

In die konstellasie van Vela, die Seile, is een van die interessantste voorwerpe in die Suidelike hemel. Dit is die beroemde ster Gamma Velorum, wat ook bekend is as Suhail, Al Suhail al-Muhlif of volgens die moderne benaming, Regor. Soos die naam aandui, is dit die 3de helderste ster in die konstellasie. Die naam Regor kom van Roger agterstevoor gespel - vernoem na Roger Chaffee, een van NASA se ruimtevaarders wat tydens die toetsing van die Apollo 1-tuig, in 'n brand gesterf het.

Gamma Velorum is 'n wye dubbelster en word maklik gesplit met selfs die kleinste teleskoop. Die twee sigbare komponente is egter nie verwant aan mekaar nie. Gamma Velorum A (mag 1.7) is sowat 800 ligjare van die aarde af en sy metgesel, Gamma Velorum B (mag 4.2) meer as 1 600 ligjare. Daar is ook nog twee dowwer metgeselle in die stelsel, Gamma Velorum C (mag 8.5) en Gamma Velorum D (mag 9.4). Hulle is dus moeiliker om te sien en benodig 'n groter apparatuur. Met my 6" kan ek beide duidelik sien. Gamma Velorum D is ook 'n binêre stelsel, maar baie moeilik om te split.

Wat Gamma Velorum A interessant maak is dat dit ook 'n binêre stelsel is, en wel 'n spektroskopiese dubbel. Dit beteken dat hulle slegs spektroskopies geskei kan word, omdat hulle te naby aan mekaar is. Die twee komponente is ongeveer een AU (*astronomical unit*, of die afstand tussen die aarde en die son) uitmekaar. Hulle voltooi een omwenteling elke 78.5 dae. Die een komponent is 'n sg. "Wolf-Rayet" (WR) ster en die helderste van die tipe sterre wat met die blote oog sigbaar is. Die ander metgesel is 'n klas O blou superreus.

Beide het geweldige sterk sonwinde en hulle buitelae word teen 'n heftige tempo afgestroop. Dit lê die geweldige warm heliumkern van die sterre bloot. Die tipe O metgesel is die helderste van die twee, en is sowat 180 000 keer helderderder as ons son, met 'n temperatuur van 32 000 Kelvin, 13 keer so groot soos die son en met 'n massa van 30 keer meer as die son. Die WR sterre is ontsettend skaars en in die geval van Gamma Velorum A, sowat 100 000 keer so helder soos die son. Hy is egter baie warmer en berekeninge kom uit by 57 000 tot 70 000 Kelvin.

Die WR ster het waarskynlik 'n massa van 40 keer dié van ons son gehad en het homself nou al so uitgewoed dat hy waarskynlik tans slegs 10 of minder sonmassas het. Die meeste van die energie word in die ultravioletband uitgestraal.

Beide sterre is aan die einde van hulle lewe; die WR meer as sy metgesel. Daar word bereken dat die WR ster ongeveer 'n honderd duisendste van ons son se massa per jaar verloor as gevolg van sy sterwind – dit is 100 miljoen keer sterker as ons eie son se sonwind! Die WR ster is heelwat verder op sy sterevolusie as die tipe O metgesel. Dit is dus, byna seker, dat die WR komponent in die laaste stadium van supernova-vorming is en dat die O metgesel hom binnekort sal volg.

Alles van die geweldig interessante ster is ontsagwekkend – geen wonder dat hy "the spectral gem of the southern skies" genoem word nie!

Astrofoto: **http://www.southernskyphoto.com/southern_sky/gamma_vela.htm***

Ult: "Fokus", nuusbrief van die Orion Observasie Groep, Julie 2008.

***Danie is een van ons komiteelede.

Now at the Johannesburg Planetarium

Thu 7pm - Sky Tonight - a tour around the constellations of our evening skies, updated as our view changes with the seasons.
Fri 8pm & Sat 3pm - "Planet Report" - an update on the planets of our solar system, and searches for other possible solar systems.
Sat 10:30am - "Space Travel" for 5-8yr olds.

Details at **www.planetarium.co.za**.

Planets Forming In Pleiades

Rocky terrestrial planets, perhaps like Earth, Mars or Venus, appear to be forming or to have recently formed around a star in the Pleiades star cluster. One of the cluster's stars, known as HD 23514, which has a mass and luminosity a bit greater than those of the sun, is surrounded by an extraordinary number of hot dust particles. Astronomers using the Gemini Observatory in Hawaii and the Spitzer Space Telescope reported their findings in the Astrophysical Journal.

"This is the first clear evidence for planet formation in the Pleiades, and the results we are presenting may well be the first observational evidence that terrestrial planets like those in our solar system are quite common," said Joseph Rhee, a UCLA postdoctoral scholar in astronomy and lead author of the research.

Although referred to as the "seven sisters," the cluster actually contains some 1,400 stars. Located about 400 light-years away, the Pleiades is one of the closest star clusters to Earth.

The image shows the Pleiades in the constellation Taurus. It is well-known in many cultures.

http://www.spacedaily.com/reports/Planets_Forming_In_Pleiades_Star_Cluster_999.html

Hypervelocity stars

Astronomers have discovered two stars racing out of the Galaxy with Galactic rest-frame velocities at least 558 and 638 kilometers per second, respectively, so fast that they will never return. "These stars literally are castaways," said an astronomer. "They have been thrown out of their home galaxy and set adrift in an ocean of intergalactic space."

The latest discovery brings the total number of known exiles to five. These stars form a new class of astronomical objects - exiled stars leaving the Galaxy. Astronomers suspect that about 1,000 exile stars exist within the Galaxy. By comparison, the Milky Way contains about 100 billion stars, making the search for them much more difficult than finding the proverbial needle in a haystack. The astronomers improved their odds by preselecting stars with locations and characteristics typical of known exiles. They sifted through dozens of candidates spread over an area of sky almost 8000 times larger than the full moon to spot their quarry. "Discovering these two new exiled stars was neither lucky nor random," said an astronomer. “We made a targeted search for them. By understanding their origin, we knew where to find them."

According to theory, the runaway stars were thrown from the galactic center millions of years ago. Each star once was part of a binary star system. When a binary swings too close to the black hole at the galaxy's center, the intense gravity yanks the binary apart, capturing one star while violently flinging the other outward at tremendous speed (hence their technical designation of hypervelocity stars).

The image is an artist’s representation of a hypervelocity star speeding out of the Galaxy, after having been flung out of it by the black hole at its center. Such a star is truly a lonely traveler to nowhere.

http://www.cfa.harvard.edu/press/2006/pr200610.html

NGC7793

This SD class galaxy has a small central region and a chaotic spiral pattern. It lies 11.9 million light years away in the minor southern constellation Sculptor (the Sculptor). Imaged with the 1 meter reflector telescope at SAAO near Sutherland, South Africa.

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