The PRETORIA CENTRE

of the

Astronomical Society of Southern Africa

www.pretoria-astronomy.co.za

NEWSLETTER JANUARY 2009

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

Date and time	Wednesday 28 January at 19h15
Chairperson	Johan Smit
Beginner's Corner	"**The Stevick Paul telescope**" by Fred Oosthuizen
What's Up in the Sky?	Percy Jacobs

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

MAIN TALK

TOPIC: Frontiers of astronomy *

PRESENTER: Prof Derck Smits (UNISA)

The meeting will be followed by tea/coffee and biscuits as usual.
The next observing evening will be held on Friday 23 January at the Pretoria Centre Observatory, which is also situated at CBC. Arrive anytime from 18h30 onwards.

*This will be the same as the talk he gave at an S_2A_3 meeting late last year..

CONTENTS OF THIS NEWSLETTER

Last November's meeting - by Percy Jacobs

Beginners corner, "The Earth is Flat!, was presented by Neville Young and put the "scale" of things into perspective. Depending on the scale used in one's graph (x – height & y – distance axis), it can be shown that the earth is really flat.

What's up, for Dec 08 & Jan 09, was presented by Wayne Mitchell. Wayne also presented his completed "Star Gazers Atlas" (for southern hemisphere). A very useful book for identifying and finding objects in the sky.

The main Topic for the evening was presented by Professor Andrè Buys, Part 2 on "Leonardo da Vinci's telescope".

Part 1 was all about Andrè making a replica model of what is expected to be Leonardo's telescope from Leonardo's sketches and after a great deal of research. The model telescope was shown in Part 1. Andre had 4 attempts at making the extremely brittle speculum mirror before resorting to the conventional way of grinding a glass mirror.

Part 2 covered the history of optics and mirror & lens making dating back to 2040 BC such as the Egyptian Bronze Mirror and covered in detail the major mile stones in the development of the astronomical telescope from 3,000 BC – bronze mirrors to Herschel's Herschelian telescope in 1780. Galileo & Newton feature strongly in this timeline but it appears that Leonardo had built his telescope before Galileo & Newton. It is believed that others had made and used simple lenses to magnify things but did not report their work due to various reasons such as being accused of sorcery or were even illiterate craftsman. All these previous findings contributed to the first telescope made.

Part 3 covered modern day "Aperture Fever". Larger & larger telescopes such as the current 2x 10 meter Keck Telescopes in Hawaii. Future telescopes such as the 24.5 meters Giant Magellan Telescope & the 100 meter OWL (Overwhelmingly Large Telescope) are planned.

Observing Evening November 28th 2008 - Michael Poll

Although billed in the Newsletter as an "End of Year Function", the evening of November 28th at Erich Nockler's plot out along the Garsfontein Road turned into a nice observing evening for Michael Poll, Casper van der Linde and Pat Kuhn. Erich's plot has an admirable dark sky and we were able to look at a few things extra compared with the previous week. In the north we got a better look at M31. We were only able to see one of the satellite galaxies, presumably it was M32, but one needed to see the other one as well to confirm which is which. (Expert galaxy observers may not have this problem!).

The Orion Retinue was well up and we spent some time in that area of the sky. In Monoceros we saw M50, an open cluster lying about 1/3rd of the distance from Sirius to Procyon, and M46 and M47, open clusters in Puppis. Further south in the same constellation we looked at NGC 2451 and NGC 2277, another conspicuous pair of open clusters.

As an aside, we checked two variable stars in Horologium, these are R and T Horologii, and both were visible, and we looked at S Sculptoris in Sculptor, also a variable on the AAVSO list.
Erich had some house guests for the evening, and they came and as they were leaving had a look at a few sights, including the Pleiades and the Orion Nebula. By this time the leading stars of the False Cross were up, so we showed them the open cluster NGC 2516 which is just off the long axis of the False Cross.

In spite of the day just ended being quite warm, the evening was cooling off considerably. After a bit more viewing we called it a day, well, a night, at about midnight, but as a parting shot we found and had a look at M1, the Crab Nebula.

Observing Evening November 21st 2008 - Michael Poll & Johan Smit

Clear at last, and a lot of things to look at. More than 20 people were there, including some guests of Don Roos, and quite a number of telescopes. Johan spent some time with Albie's family, who set a good example by bringing along a well stocked picnic basket, and Johan entertained them with some African star lore stories about Taurus, the Pleiades and Orion, which were well up. Maybe the picnic idea could catch on - it can turn a good evening into an excellent evening!

Venus and Jupiter were a wonderful sight in the western twilight. Venus' phase was just more than half, and all four of Jupiter's moons were visible, and one of the stars in the field was positioned just right to look like a fifth moon.

In the north, the Square of Pegasus was impressive, and we saw a satellite pass the eastern side, heading north. The Andromeda Galaxy (M31) was up a bit later. We did have a look at it, but it was a bit low down to compete with the hazy city atmosphere. Later on we were able to see the stars of Perseus through a dip in the tree line. Perseus is a fairly far northern group, not often mentioned in southern hemisphere observing sessions. Also low down was the double star Gamma Andromedae. This is a northern hemisphere showpiece, and consists of two unequal components of contrasting colours. Another double in this part of the sky which we looked at was Gamma Arietis, which comprises two bright, white, equal components. We examined was the globular cluster M15 which is in a pretty star field. It lies not far from Epsilon Pegasi, also known as Enif – the Horse's Nose.

The Pleiades cluster was admired, and the Orion Nebula (M42) was well up. The Trapezium stars in the nebula were noted and through the larger telescopes we could see the two fainter associated stars, which makes the Trapezium a six-some. Similarly, with increasing aperture the multiple group around Sigma Orionis showed more and more stars. The viewing of Sigma Orionis led to a discussion about the Horsehead Nebula, as it is the ionizing radiation from Sigma that clears the gas and dust, and creates the Horsehead silhouette. We also saw the companion of Rigel, which was visible in 6" telescopes.

We noted the constellations south of Orion – Lepus, the Hare and Columba, the Dove, which lead down to Canopus. We looked at the globular cluster M79 in Lepus. A line from Alpha through Beta Leporis extended as far again points to the cluster. It was quite late (10.25 pm) when we were looking at M79, but surprisingly, a satellite passed slowly through the field. Common knowledge states that we only see satellites during evening or morning twilight, but this was late at night. The conclusion is that this satellite was at very high altitude, meaning that it could still catch the sun's rays, and the slow movement would confirm a high orbit.

After Venus and Jupiter, the third planet we observed for the evening was Neptune, which is still in Capricornus, near Delta Capricorni.

Altogether a satisfactory evening. The next observing evening is on January 23rd 2009.

Day Trip to Tswaing Crater : March 14th 2009

Danie Barnardo is organizing a day trip for the Centre to go to the Tswaing Crater on Saturday March 14th 2009. Members, their families and friends are welcome. Danie will also facilitate the visit with an expert commentary. Further details will be in the February 2009 newsletter, but please make a note of the date. The entrance fee is R15 per person.

Neville Young

Neville is a former committee member of our Centre. He underwent an operation on his thyroid gland recently. He is already up and running, but has not resumed working yet. One of his New Year's resolutions, amongst many others, is to get back into astronomy. We'll be glad when he does and starts making contributions to our Centre's activities again.

Resonances and Migrations Part 1: Resonances - by Michael Poll

Resonances occur when one object perturbs another gravitationally, and they give a great deal of extra insight into mechanisms of the formation and evolution of planetary systems.

A number of resonances exist in our own solar system. It was known as early as the 1700s that Jupiter's three innermost Galilean moons, Io, Europa and Ganymede were locked in orbital periods with a 1:2:4 ratio. Io orbits Jupiter in 1.769 days, Europa orbits in 3.551 days and Ganymede orbits in 7.155 days. (Callisto orbits in 16.69 days and is not in resonance with the other three). There are resonances between Saturn's moons and its ring particles that create specific gaps and bands in the rings. If any matter tries to settle into the resonance zone the relationship with the moon imparts extra energy to the particle, which alters its orbital eccentricity. The energized particles then assume a new orbital path and leave the zone. The boundaries that the resonances create are very sharp – the number of particles can drop off from ring to void is less than 100 metres. One example is at the boundary represented by the inside edge of the Cassini division i.e. the outer edge of the B ring. This boundary exists because of a 2:1 resonance with the moon Mimas – the ring particles orbit Saturn every 11.3 hours, Mimas orbits in 22.6 hours.

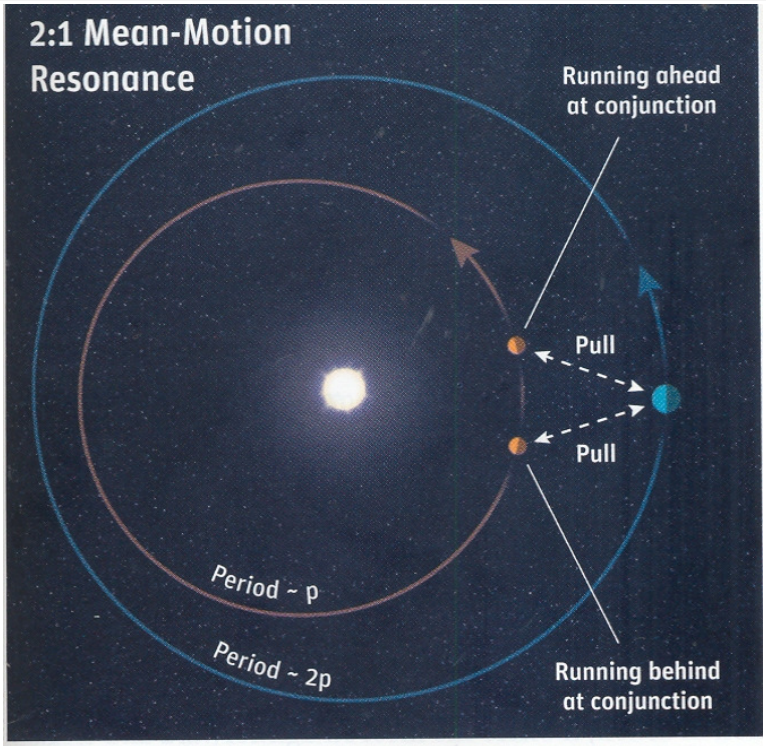
In the 20th Century it was realized that Neptune and Pluto are in a 3:2 resonance, meaning that Neptune orbits the sun three times while Pluto does it only twice. Although Pluto spends most of its orbit far from Neptune, at the times that they become closest Pluto is tugged strongly by Neptune. If Pluto gets too far ahead it is pulled back, and if it is too far behind it gets pulled forward. The Jovian moon, Saturn's ring particles and Neptune/Pluto relationships are called **mean motion resonances.** *(See Figure).* Two or more bodies in this type of resonance show a long term average orbital ratio that is an exact unit, and the objects oscillate about this fixed ratio. For example, at present, Pluto orbits the sun every 248.0 years compared with Neptune's 163.7 years. The current ratio is therefore slightly greater than 3:2 (248/163.7 = 1.512). In a few tens of thousands of years it might be less than 3:2, but over billions of years Pluto will go around the sun exactly two times to Neptune's three.

Resonances are sometimes disruptive and, sometimes protective. In 1866 the American astronomer Daniel Kirkwood noticed that there are no asteroids orbiting in a 2:1, 3:1 or 5:2 resonance with Jupiter's 11.86 year period – these missing ratios are called Kirkwood Gaps. They are caused by repeated tugs from Jupiter which are cumulative, and so the tugs increase the eccentricity of the asteroid orbit. Eventually the asteroids obtain such high eccentricities that they cross the orbit of either Jupiter or Mars, and then a close approach to either planet leads to a collision, or ejection from the solar system. Collision or ejection are examples of a disruptive resonance.

Protective (stable) resonances include the ratios 3:2, 4:3, and 1:1. Jupiter provides such stability when it shepherds asteroids into orbits from which they cannot escape. An example is the Trojan asteroids, which are in a 1:1 resonance with Jupiter - these asteroids share Jupiter's orbit and have the same orbital period, but they travel in two groups, one group is 60 degrees ahead of Jupiter and the other group is 60 degrees behind. (There are thousands of these asteroids. Originally they were all called Trojans, but this has been changed in that the preceding group is now called "Greeks" and the following group is called Trojans).

Harmonious ratios do not by themselves prove that bodies are in resonance. Resonances are caused by gravity acting on mass. For example, the case of dust particles, where one particle may go around the sun in one year, and another in two years, is not an example of resonance - neither particle is massive enough to enforce a 2:1 orbital ratio. In true resonance there must at least one massive object, such as a planet, shepherding another body gravitationally.

It was soon realised that resonances play a large role in the structure of exoplanetary systems. In January 2001 it was announced that a second planet had been found orbiting Gliese 876, a red dwarf star in Aquarius. The two planets have a minimum mass of 0.56 and 1.89 Jupiters, and orbit the star in slightly eccentric orbits with periods of 30.12 days and 61.02 days, a 2:1



Gravity maintains a 2:1 mean-motion resonance in this hypothetical two-planet system. When the inner planet is running slightly ahead of the outer planet at periastron, the gravity between the two planets pulls the inner planet back, so later conjunctions occur closer to periastron. If the inner planet falls behind at periastron, the outer planet's gravity will tug it forward. The inner planet thus librates (oscillates) around the perfect 2:1 ratio, but over long time scales, the inner planet orbits *exactly* twice as often as the outer planet.

resonance. Computer simulations show that the planets are tightly locked in this mean motion resonance, which is stable for billions of years. The Gliese 876 system is the best example of such a resonance. With the short orbital periods it is possible to observe the system interact gravitationally in real time. The periods are not exactly 2:1 at present, but the planets oscillate around the perfect ratio over a cycle of 9 years. In the same way as Neptune and Pluto, over billions of years the number of orbits completed by each star will be exactly the same as the ratio.

There is another type of resonance called **Secular Resonance**. Secular resonance refers to several types of long term gravitational interactions between planets that induce changes when the planet comes closest to the host star, or where their orbital planes intersect. In some cases, secular resonances cause the long axis of planetary orbits to precess at nearly the same rate. An example of this is in the three planet system around Upsilon Andromedae (the first known extrasolar multiplanetary system). The first planet found in this system was a hot Jupiter. The outer two planets have moderately eccentric orbits, and periods of 241.27 and 1294.4 days. It was realised that the major axes of both these planets' orbits were aligned i.e. they both point in the same direction. The axes probably oscillate about 15 deg either side of the line that defines the average alignment. If it were not for this resonance, gravitational interaction would increase the eccentricity of the orbits, which might eventually cross each other. The outer planet, which has about twice the mass of the middle one, would then eject the middle one from the system. However, with the resonance, if the eccentricity of one planet increases, then the other eccentricity decreases, so the planets are prevented from approaching each other too closely. Gravitational interactions are damped down, keeping the system stable over long periods of time.

A proposed scenario for the creation of this system is that these two outer planets probably started off in circular orbits, and then the outer planet interacted gravitationally with the remnants of the gas disc, which increased the eccentricity of its orbit. Gravitational interaction with the outer planet then pulled the middle planet into an eccentric orbit, and then mutual torque aligned the axes. Thus the circumstellar disc created the orbit of the outer planet, and the outer planet created the orbit of the middle planet.

At the date of the reference below, 18 multiple-planet extrasolar systems were known. Seven of them show evidence of resonances, but 11 do not. The latter 11 are hierarchical systems in which the orbital period ratios are more than 5:1, which means that the planets are spaced too far apart to interact with each other. They appear to be systems where odd configurations were left behind after destructive gravitational scattering events which involved three or more planets.

Reference :

Planetary Harmony. Robert Naeye, Sky and Telescope, January 2005, p44

Summary of "What's Up in the Sky?" to be presented on 28 January

Phases of the Moon

First Quarter – 3rd February
Full Moon – 9th February
Last Quarter – 16th February
New Moon – 25th February
Dark Sky – 1st to about 6th & 16th to 28th

Planets

Mercury: In the eastern morning sky all month (mag. 0.7)
Venus: Visible in the west after sunset for about 2hrs. From the 1st, Venus will have a crescent similar to the moon) (mag. -4.5)
Mars: Visible in the east for an hour before sunrise all month (mag. 1.3)
Jupiter: Rises ½ hr before sunrise on the 1st and 2 hrs before sunrise at month end (mag. -1.9)
Saturn: Visible in the east rising at about 21h00 from the 1st Feb
Uranus: Visible 1 hr after sunset in the west but gets closer to the sun by month end
Neptune: Sets just after sunset & becomes a morning object from the 12th
22nd Feb @ 05h00 in the east - looking towards the centre of our galaxy, which is amongst the stars of Sagittarius, the three planets Mercury, Jupiter & Mars (as well as a crescent moon) can all be seen rising in Capricornus.

Meteor Showers

Alpha Centaurids
max. on 7th Feb, 5 per hr, unfavourable (due to moon), 22h00 to 03h30.
35 deg up in SE in constellation Centaurus.

Constellations & other "goodies" in February

Looking North – 7th Feb @ 09h00
Orion, Tarus the Bull, Gemini the Twins, Perseus
Pleiades, Moon, M44 Beehive, Orion Nebula, M1 Crab Nebula
Saturn can been close to the moon at about 23h00
Looking South – 15th Feb @ 09h00:
Southern Cross, Triangulum, Carina, Tucana, etc.

A useful tool is the Monthly SkyMap for Feb 09 that can be downloaded at **www.skymaps.com** from the 1st of Feb. For easier viewing, objects are listed according to, 1) Naked Eye, 2) Binocular, 3) Telescope.

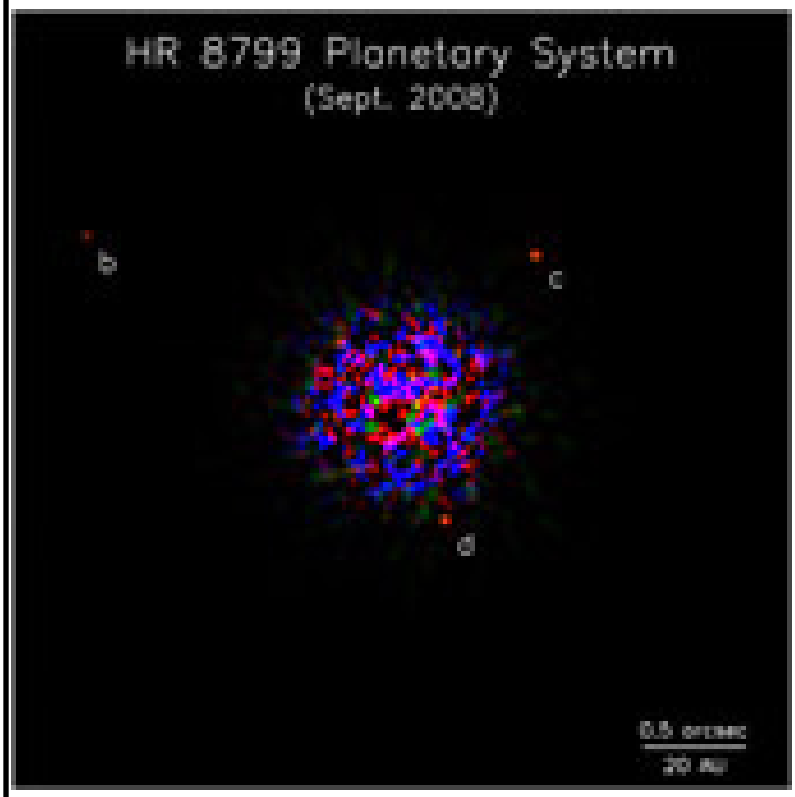
Websites: **http://www.saao.ac.za/public-info/sun-moon-stars/**
http://www2.jpl.nasa.gov/calendar/
http://www.skyandtelescope.com/observing/highlights/19981449.html

Also: **Sky Guide Africa South 2009**.

Neville Kearney 1934 - 2008

It is with regret that we report the death of one of our members, Neville Kearney, who died on December 1st 2008. Neville was an astronomy enthusiast amongst many other interests, a long standing member of the Centre, and regularly attended meetings. Michael Poll attended the funeral at St Michael and All Angels in Sunnyside. Our sympathy is extended to his wife, Joan, and to other members of the family.

First Pictures of Alien Planet System



Astronomers have unveiled unprecedented glimpses of alien planets, including the first ever images of another multiplanet system and the first visible-light images of a planet outside the solar system.

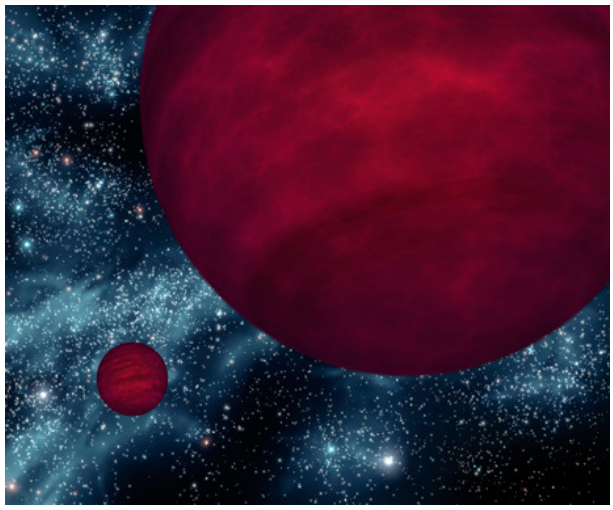
The discoveries represent major advances in our planet-finding abilities and raise hopes for perhaps the ultimate astronomical milestone: the first picture of an Earthlike planet.

Planets outside our solar system—called exoplanets—are usually detected only indirectly, without any kind of visual confirmation of the planets.

The exoplanets reported are gaseous, like Jupiter. The next step will be to find rocky planets like Earth—planets that could potentially harbour life as we know it.

The infrared image shows three planets (marked *b, c,* and *d*) orbiting the star HR 8799.This is the first ever image of a multiplanet system. In a visible-light photo, the planets would be invisible, due to the glare from their host star.

http://news.nationalgeographic.com/news/2008/11/081113-planet-pictures.html



Dimmest known stars

The faintest known starlike objects in the universe (shown in an artist's rendering) have emerged from the shadows. A pair of brown dwarfs—each about a millionth as bright as the sun—were discovered by NASA's Spitzer Space Telescope.

Previously, astronomers had thought the dim bodies were a single, run-of-the-mill brown dwarf—a compact ball of gas floating in space that is neither planet nor star.

http://news.nationalgeographic.com/news/2008/12/081210-faintest-star-photo.html

Sad news

It is with great sadness that I inform you that on the afternoon of Sunday 23 November 2008, Professor Anthony Patrick Fairall (65) passed away in a tragic incident while diving near Hout Bay. He was one of South Africa's leading experts on extra-galactic astronomy, and a highly acclaimed educator and astronomy populariser. He will be sorely missed by the astronomical fraternity in South Africa. He was highly active in the Astronomical Society of Southern Africa for many years and served as the President of ASSA in the 1983-1984 year.

The members of the Pretoria Centre of the ASSA express their condolences to the Fairall family and to his friends and colleagues.

SETI*

Die Allen Telescope Array (ATA), voorheen bekend as die Een Hektaar-Teleskoop by die Hat Creek Sterrewag in Kalifornië, is nou in werking met die samestelling van die eerste 42 antennes. Die projek, onder leiding van die SETI Instituut, is 'n nie-regeringsonderneming wat deur die mede-stigter van Microsoft, Paul Allen, befonds word. By voltooiing sal daar 350 antennas wees wat gesamentlik die hemele sal fynkam vir radioseine vanaf intelligente buiteaardse lewe. Om die stelsel uit te toets, het ATA ra-dioseine van die New Horizons ontdekkingstuig, wat op pad na Pluto is, nagespoor en opgetel.

Seth Shostak, 'n senior wetenskaplike by SETI voorspel dat teleskope soos ATA teen 2025 sterk genoeg sal wees om kontak te maak. Dit veronderstel egter dat nuwe en sterker instrumente ge-bou sal word om ons in staat te stel om dieper in die kosmos te kyk en dat die beraamde reke-naarvermoë sal tred hou met verwikkelinge.

As al die bespiegelings reg is, meen Shostak dat ons teen daardie tyd radioseine 500 ligjare ver sal kan opvang. Hierdie is die afstand wat Frank Drake beraam het voldoende sal wees om enige van die geskatte 10,000 intelligente beskawings in ons galaksie deur hul radioseine te vind. Net tyd sal ons leer.

Die beeld toon die ATA. **http://www.seti.org/Page.aspx?pid=503**

Uit : Fokus, nuusbrief van die Orion Observasie Groep (OOG), November 2008.

*SETI = **S**earch for **E**xtra**t**errestrial **I**ntelligence.

Tomb of Copernicus found

Nicolaus Copernicus (1473 - 1543) shocked his contemporaries by asserting that the Earth rotated on its axis once a day and trav-eled around the sun once a year in his pio-neering work *De Revolutionibus Orbium Caelestium* (On the Revolution of the Heav-enly Spheres), published shortly before his death in 1543.

Earlier beliefs based on the Ptolemaic theory put the Earth at the center of the universe, with the sun and stars revolving around the Earth. Martin Luther (1483 - 1546), the church reformer, ridiculed Copernicus' groundbreaking work and declared Copernicus a fool. Copernicus' work was also condemned later in 1616 by Pope Paul V as contrary to scripture.

DNA studies have ended a centuries-old hunt for the tomb of Copernicus. Scientists compared genetic material from two strands of hair found in *Calendarium Romanum Magnum*, a book by Johannes Stoeffler published in 1518 and owned by Copernicus for many years, to a tooth from a skull found buried with other remains in a tomb inside Frombork Cathedral in Northern Poland. It was found that the DNA from the two sources have the same genome sequence.

The image shows the facial reconstruction of Copernicus from the skull, shown at the left.

http://dsc.discovery.com/news/2008/11/20/copernicus-tomb.html

http://en.wikipedia.org/wiki/Nicolaus_Copernicus

Vast Frozen Water Reserves Found on Mars

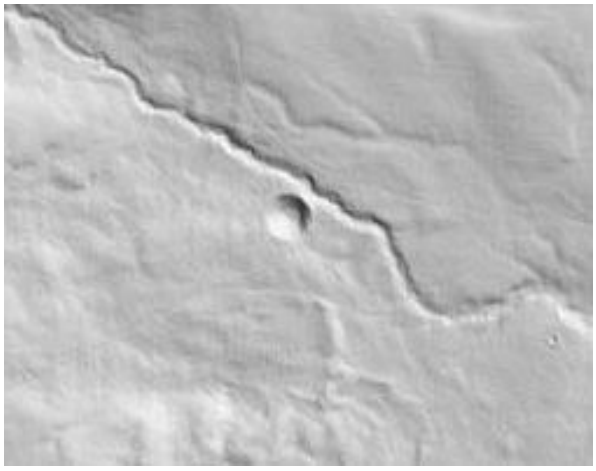
NASA scientists have discovered enormous underground reservoirs of frozen water on Mars, away from its polar caps, in the latest sign that life might be sustainable on the red planet. Ground-penetrating radar used by the Mars Reconnaissance Orbiter reveals numerous huge glaciers up to 800 meters thick buried beneath layers of rock and debris. One glacier is three times the size of Los Angeles in area.

Because water is one of the primary requirements for life, the frozen reservoirs are an encouraging sign of extra-terrestrial life. They could also be a source of water to support future exploration of Mars.

This view shows a mountain in the eastern Hellas region of Mars, surrounded by a deposit that shows how water once flowed on its surface. Recent measurements from the Mars Reconnaissance Orbiter have detected large amounts of water ice in similar deposits.

http://dsc.discovery.com/news/2008/11/20/mars-frozen-water.html

Huge Impact Crater Uncovered in Canadian Forest



About 1100 years ago a space rock the size of a big tree stump slammed into western Canada, carving an amphitheater-like crater into the ground and littering it with meteorites, a new study found.

But unlike the recent fireball of 20 November 2008—which broke apart as it streaked through Earth's atmosphere—the meteorite that carved the newly announced crater would have stayed solid until impact.

Until recently, the Canadian crater was little more than a dip in a thicket of aspen trees known among local hunters as a good spot to bag a deer. That changed when two hunters hauled a metal detector to the site in July 2007 and found four metallic fragments on the depression's rim.

Scientists used a new crater-spotting imaging technique to "strip" away the vegetation and reveal the 36-meter wide circular impression. This is clearly visible in the image.

http://news.nationalgeographic.com/news/2008/11/081125-crater-canada.html

Reminder: Eclipse

All of South Africa will see a partial eclipse of the Sun from 07:15 to 09:30 on Monday, January 26th, 2009. The eclipse will be 23% for Musina, 65% for Cape Town. More details are available at **www.planetarium.co.za**

South African National Space Agency Bill

Information on this topic can be found at:

http://www.pmg.org.za/report/20080610-south-african-national-space-agency-bill-department-response-public-s

FIRST LIGHT

Praise poem of the
Southern African Large Telescope

"At the mountain's top I reach up,
I fill my haversack with stars."
- Tatamkhulu Afrika: Nightrider

when the sun sets
we stand in the failing light
stretch our arms,
catch the falling drops.

Medupe & Marang cup our CCD,
save all falling photons,
deepening into a pool of light
whose surface reflects:

stretch marks from the birth of time
hints of gravity's lenses
the pulse of stars
& mating dance of binary suns;

galaxies digitalized - a heaven
captured in butterfly nets of circuitry
red on the readout, disked for storage:
mysteries, solved and sensuous.

Keith Gottschalk

SALT *

In blanket of chill blues and fire red,
The Karoo night does to bed the earth put,
And awakens our eye,
To see the limbs of gods and hear the infant cry,
So far across this ancient nursery of space.

And we look with opened mouths and widened minds,
'Our space' this time…

Jason Elrick,
in an eagerly awaited 2005, Cape Town

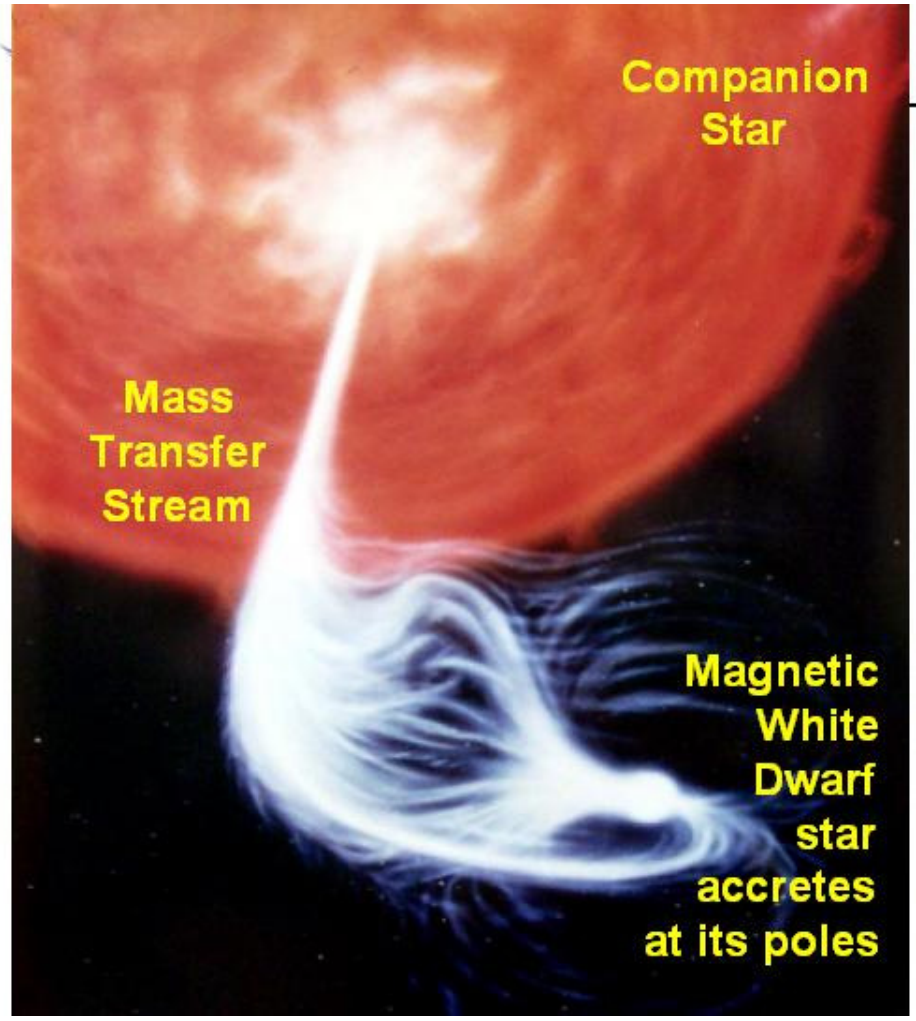
* **SALT** = **S**outhern **A**frican **L**arge **T**elescope

The image below is an artist's representation of the type of close binary star system about which the first science with SALT was done. The white dwarf in such a binary system eventually becomes a supernova of type 1.

See the November 2006 newsletter, page 3.

An old press release can be found at

http://www.salt.ac.za/fileadmin/files/images/picture_gallery/first_science/first-salt-science-aug2006.pdf



SALT

The typical layout of a "Polar": 2 stars VERY close to each other (~ earth-moon distance). One is a normal star, shown in red. The other is a tiny "white dwarf" star (the size of the Earth roughly). The white dwarf is gravitationally sucking off the outer layers of its friend, and channeling the gas on to its magnetic poles

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Report Back : December 5th 2008 at Irene Oval - Michael Poll

Gareth Gregory, Michael Poll and Jim Prentice attended the observing evening for the children of the Jerome Place of Safety at Irene Oval on December 5th. Unfortunately it was cloudy, so Gareth organised a room and projector at the nearby Guesthouse. Michael gave a Powerpoint presentation to about 20+ people – there were also some other guests there, from Irene Home. The presentation seemed to be well received and people said that they found the evening interesting. Thanks go to Rikus de Beer for organizing this initiative between the Centre and the Children's Home.

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