The PRETORIA CENTRE

of the

Astronomical Society of Southern Africa

www.pretoria-astronomy.co.za

NEWSLETTER OCTOBER 2009

The next meeting will take place on Wednesday 28 October at 19h15 at Christian Brothers College, Mount Edmund, Pretoria Road, Silverton, Pretoria.

PROGRAMME

Beginner's Corner: "The human eye" by Johan Smit

What's Up in the Sky? by Pat Kühn

10 minute break — library will be open

Main talk: "The Square Kilometer Array" by dr Adrian Tiplady

Tea/coffee and biscuits.

The next observing evening will be held on Friday 23 October at the Pretoria Centre Observatory, which is also situated at CBC. Arrive from 18h30 onwards.

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Last month's meeting - by Johan Smit

I acted as chairperson in the place of Percy Jacobs who was unable to attend due to work commitments. It seems that I only get this duty when Percy is unavailable. Anyway, about 35 people, including many visitors, attended. The normal welcome speech was done and notices read.

Upcoming events noted were:

26 September – West Rand Club event at the Botanical Gardens
28 September – Outreach event at the University of Pretoria (Tukkies)
October 9 to 23 – Great worldwide star count. See the web site: http://www.windows.ucar.edu/citizen_science/starcount/ for the details.
October 22 to 24: IYA 2009: Galilean Nights.

As usually happens when I do chairman duty something will test my skills. Our "Beginner's Corner" speaker got stuck in traffic so we changed the programme sequence and started with "What's Up?", which was presented by Johan Smit.

Noteworthy events highlighted were:

Jupiter's moons in October:
03 Sat Io occults Europa at 20:31 and Io eclipses Europa at 22:23
10 Sat Io occults Europa at 22:48
11 Sun Io eclipses Europa at 00:46
16 Fri Ganymede occults Europa at 23:14
18 Sun Io occults Europa at 01:05
23 Fri Ganymede occults Io at 01:15

People were reminded to watch Mars approach the Beehive Cluster towards the end of October. Mars will actually move through the cluster in November.
Instead of the usual classic star names and constellations some African names of the stars and their meanings were introduced. By a quick show of hands it was determined that members would like to learn more about African star lore.

In the mean time Hein Stoltz arrived, and presented an excellent talk on methods of measuring cosmic distances. The main methods described were parallax measurements and the use of Cepheid variable stars as standard candles. These stars have a fixed relationship between their light curve period and total luminosity. By measuring these values and comparing them with apparent brightness, a good indication of distance can be determined. The use of Type 1a supernovae as standard candles was also discussed as well as comparisons between different methods to validate results. Newer methods based on stellar gravities and effective temperatures of blue supergiant stars in galaxies beyond the Local Group were introduced.

In a fascinating closing sequence Hein compared "what we measure" with "what actually happens". Because the speed of the expanding universe increases with distance, weird stuff happens to truly faraway objects! Galaxy A1689-zD1 was used as an example. This galaxy is estimated to be 13 billion light-years (13 Gly) distant. Therefore it must be **old** and its light started travelling towards us 13 billion years ago (the light is ancient). However, we see the galaxy as it was when it was still **young -** we're viewing a picture of a newborn object. When the light we are seeing left A1689-zD1, we were much closer together (the galaxy was "only" 3.35 Gly away). It does look larger than we'd expect for something so far away: The galaxy ***appears*** much closer than it is because it looks bigger! However, it is far dimmer than we'd expect an object 13 Gly away to be. Space has been stretching all the time its image travelled, dramatically red shifting and weakening the light. It now exhibits the ultra-faintness of a galaxy at the impossible distance of 263 Gly. Because of the continuous expansion of the universe this galaxy is actually 30 Gly away from us. Weird, but well done to Hein for making us think.

Our main speaker was Patricia Skelton, an MSc student at Unisa. She introduced us to her field of study, the WUMa (W Ursae Majoris) type of variable stars. She first described the classification

of eclipsing binaries, and then gave the details of her favorite field of study.
Eclipsing binaries are extrinsic variable stars i.e. variations in light are caused by the two component stars as they eclipse each other. These stars were initially classified according to observed light curves - three standard curves were identified and were designated EA, EB and EW light curves after their prototype stars. Patricia then showed how the different light curves are caused by the physical properties of the systems. These properties are called the Roche potentials, which are contour lines where the sum of the rotational and gravitational potential energy is constant. These contour lines meet at several points. The Lagrangian points, where gravitational acceleration vanishes, is also important in the classification of these systems.

The three main types of systems relating to the light curves are:
Detached Systems, where the 2 stars are separate from each other and neither touches a Roche potential surface of the other.

Semi-Detached Systems, where one of the stars is of such a size that it touches a Roche potential surface of the companion.

Over-Contact Systems where both stars touch a Roche potential surface of the other. In plain English, in these systems, it means that the two stars actually touch each other.

The WUMa type stars are of the type EW, or Over-Contact systems. Patricia showed how light curves and stellar spectra are used to see what is going on in the systems under study. Two subclasses of WUMa stars are identified by the spectra. One is Type A, where the more massive component has a higher temperature, and the other is Type W where the smaller component has the higher temperature. Variations on the light curves were shown and possible causes were mentioned, including magnetic activity or spots on the star's surface.

We were introduced to two surveys that supply data for the research. There is ASAS — the "All Sky Automated Survey", at Las Campanas Observatory, Chile. This survey uses a 7 cm aperture telescope which has to date discovered more than 50,000 variable stars. The data is freely available to the public, and Centre members may be interested in getting some data of variable stars from the ASAS database : http://www.astrouw.edu.pl/asas/ ..

The other survey is SuperWASP. This survey primarily monitors the sky for planetary transits using two robotic telescopes : "SuperWASP North" at La Palma (Canary Islands) and "SuperWASP South": at Sutherland at SAAO.

Patricia showed us samples of reduced data on phase-magnitude diagrams and showed how the information relates to physical properties. Finally she showed us deviations from the "normal" that she has discovered and well giving us some unanswered questions.

Patricia is obviously totally in love with her work and her enthusiasm was evident in her presentation. She is also an excellent speaker and I rate her talk as one of the best we have ever heard. It was truly a privilege to be entertained by such a beautiful and talented person, and we look forward to inviting Patricia again in the future and wish her everything of the best in her career.
The meeting ended with the usual refreshments and more lively discussions than usual. Unfortunately we have to go home eventually and Patricia was reluctantly allowed to go home.

Found: Best site in the world for an astronomical observatory

The search for the best observatory site in the world has lead to the discovery of what is thought to be the coldest, driest, calmest place on Earth — a place where no human is thought to have ever set foot. To search for the perfect site to take pictures of the heavens, a U.S.-Australian research team combined data from satellites, ground stations and climate models in a study to assess the many factors that affect astronomy — cloud cover, temperature, sky-brightness, water vapor, wind speeds and atmospheric turbulence. The researchers pinpointed a site, known simply as Ridge A, that is 4,053 meters high up on the Antarctic plateau.

http://www.livescience.com/environment/090831-coldest-driest.html

http://www.livescience.com/topic/antarctica

Last moth's Observing Evening - by Johan Smit, Percy Jacobs, Michael Poll

After weeks of haze and dust, which had rendered even the Southern Cross and Pointers almost invisible, a cold front passed over at 3.00 p.m. in the afternoon of our observing evening, and the sky cleared as if by magic. About 20 -30 people came, including a number of first time visitors, and there were about half a dozen telescopes. In spite of light pollution, many constellations which have not been naked-eye-visible for some time were easily seen – in the north, the five brightest stars of Lyra were visible, and Cygnus was very clear. We even saw Delphinus and Sagitta, and overhead the principal shape of Capricornus was outlined, and not just the brightes stars Alpha, Beta, Gamma, and Delta. To the south Grus and Pavo were easy, and we could see other stars of Pisces Austrinus and not just Fomalhaut. Later on the whole of the Square of Pegasus was visible in the north east.

Telescopically, Jupiter was the first attraction. It was nicely placed and all four moons were aligned on one side of the planet. Among other objects observed were many favourites – in the north, there was Albireo (Beta Cygni), the Coathanger Cluster, the Double Double (Epsiolon Lyrae), M15, a globular cluster in Pegasus, and even M57 (the Ring Nebula), which was quite easily seen in a number of telescopes.

Scorpius is beginning to head down into the sunset in the evening sky now, but there were still good views of M7 and M6. Sagittarius was directly over head on this evening, it was neckachingly high to get much telescopic attention, but the "Teapot" shape was pointed out to a number of newcomers. The Southern Cross is getting a bit too low to see much there, but we did have a look at the double star in Centaurus, Alpha Centauri. This pair will close up over the next few years, so it will be interesting to notice if (or when) they become difficult to split.

Johan brought a computerised Meade LX200 GPS 10 inch Schmidt-Cassegrain telescope for testing, after the declination drive had been fixed. Omega Centauri and the Jewel Box were targeted first to show the many visitors these showpieces. Also visited was Alpha Crucis, the brightest star in the Southern Cross - it is a tighter double than Alpha Centauri.

The go-to capabilities of this telescope were very well used to locate the somewhat more difficult-to-find targets in the light polluted sky - we went on a tour of globular clusters and saw M4, M22, M13, M15, 47 Tucanae, NGC6752 (Bennett 121 or Caldwell 93), a splendid cluster in Pavo - some sources list the latter as the 3rd best globular cluster after Omega Centauri and 47 Tucanae. We did try the Swan Nebula, but it was a bit washed out. Later we found M30, a globular cluster in Capricornus, which Michael knew about but could not remember seeing. We also managed to find the Saturn Nebula (NGC7009), a planetary nebula in Aquarius, but it is rather difficult to find because there are not many close-by stars to guide the observer. We stayed on Jupiter for quite some time to give all the visitors a good look at the planet. Later on we also managed to find Uranus and Neptune. Despite not being as impressive as Jupiter it still felt good to be able to see the outer planets.

Needless to say, the telescope passed the test and will be missed once returned to its owner. However, Johan noted that the people seemed to spent much more time at the manual telescopes. They only came to the automatic one to have a look at what was on offer and then went back to the more sociable activities of chatting and finding stuff manually.

Meanwhile, one of the most useful aspects of our observing evenings was illustrated – Percy advised one couple about telescope purchasing and telescope making. They were considering spending money on a telescope and wanted to know more about what was available. Fortunately, we had a good variety of scopes on the evening which gave the people a good example of what is available to suit their needs. We wish them well & enjoyment on their telescope purchase. Also on the evening, we had a brother & sister, who came to us via Hunters Association Viewing Evening the night before, who were shown how to find their way around the night sky by making use the simple sky-map printed off the web site "SkyMaps". Why the need for expensive "auto go-to" electronics to find Jupiter??? After a few practices themselves, they were nearly as

efficient as an "auto go-to".

Later on in the evening the effects of the cold front were felt on the ground – a keen breeze with an icy tinge was blowing from the south west, and consequently, we did not stay much past 10.00 pm. out too late. One must always take warm clothes for observing, whatever the date on the calendar says!

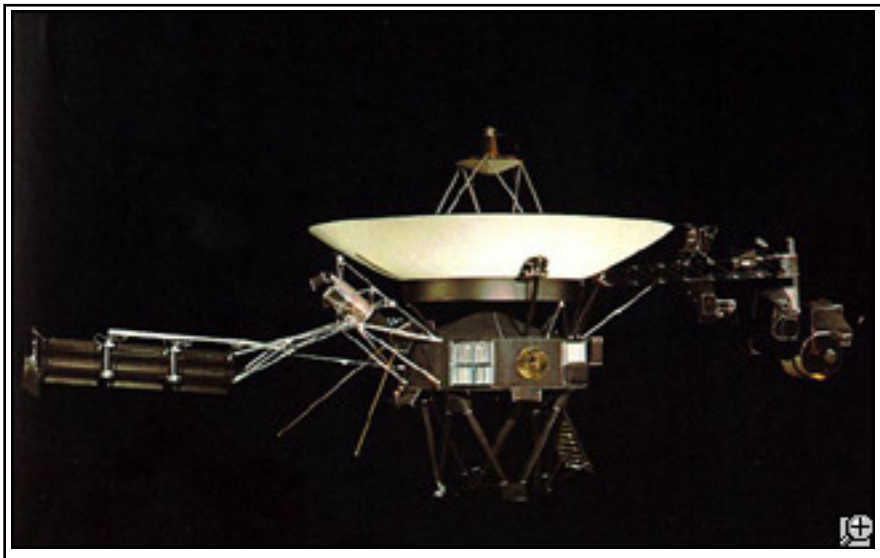
The next observing evening will be on October 23rd 2009. This observing session has been registered as a Galilean Nights Project, an IYA initiative that runs from October 22nd – October 24th 2009. See the following websites:

www.galileannights.org

http://www.galileannights.org/events/event_country_southafrica.html

Observers are also reminded about the Great World Wide Star count, which is a project to monitor light pollution by estimating how many stars in Sagittarius are visible to the naked eye. See

http://www.windows.ucar.edu/citizen_science/starcount/



Solar system not round

Millions of textbooks depicting our solar system as spherical have got it all wrong, according to studies of data sent back from deep space by NASA's venerable probe, Voyager 2. It was launched in 1977 on an historical trek of the outer planets.

The Sun's zone of influence is called the heliosphere. It comprises space dominated by the solar wind, or particles blasted out by the Sun. It goes way beyond the orbit of Pluto. The turbulent boundary of the heliosphere is known as the "termination shock," where it yields to interstellar space.

Voyager 2 has now crossed the termination shock. The heliosphere turns out to be seriously asymmetrical. It is not even close to perfectly round, but is oblong, like an egg.

The image shows Voyager 2.

http://dsc.discovery.com/news/2008/07/02/dented-solar-system.html

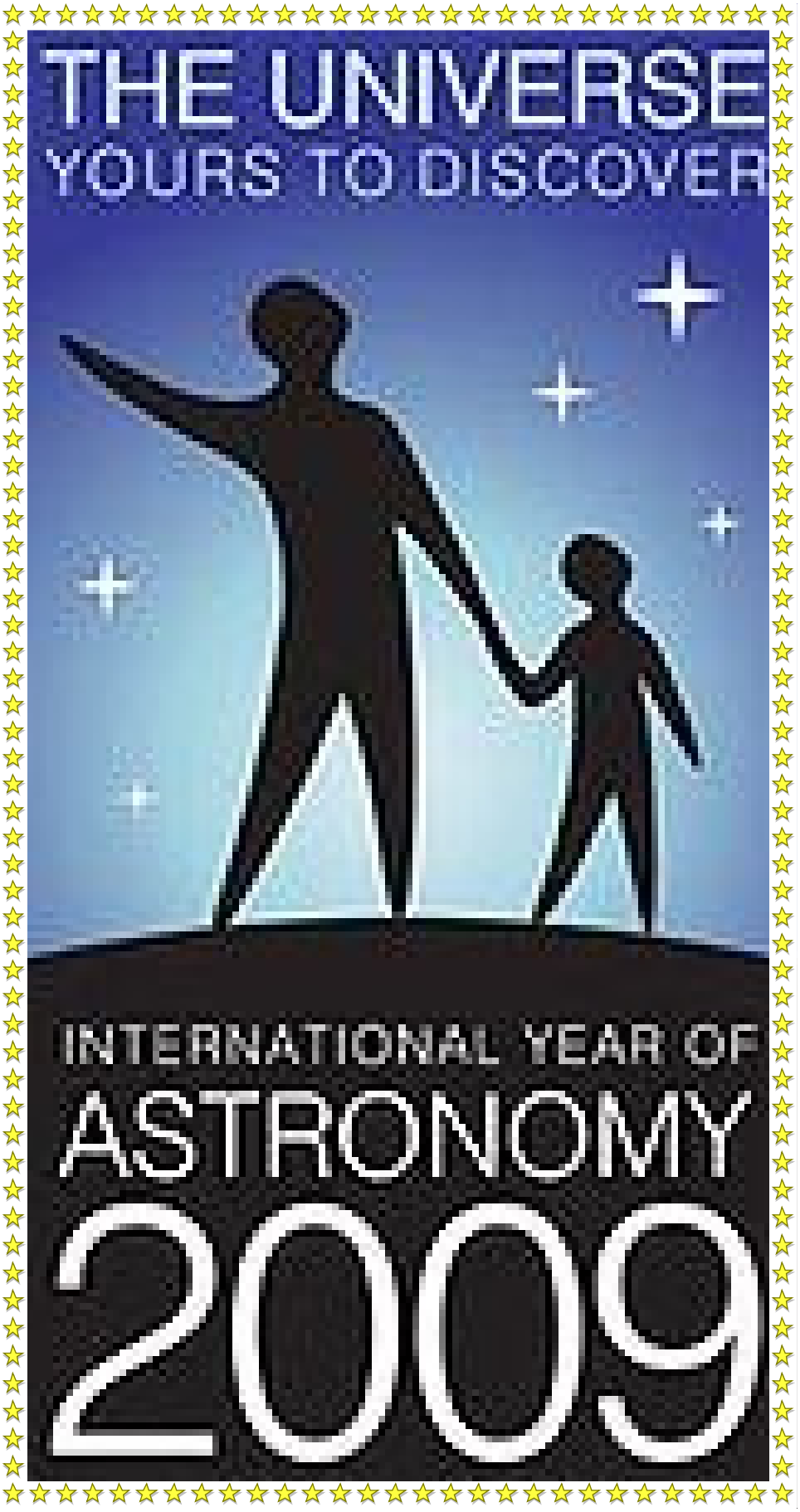
Some black holes are 'closet eaters'

Black holes that are devouring their surroundings are among the brightest objects in the universe, shining like beacons from billions of light years away. But astronomers have found a strange new class of these objects that behave completely differently - 'closet eaters' that emit virtually no detectable radiation as they wolf down nearby matter.

The research may shed light on why the colossal black holes at the centres of some galaxies are gluttons, while others, such as the one inside the Milky Way, fast most of the time. Until now, the enthusiastic eaters - known as active galactic nuclei, or AGN - were all thought to share the same essential structure. In this 'unified model', a doughnut-like disc of gas and dust, or torus, surrounds the super massive black hole.

One theory is that a 'closet eater' is surrounded by such a torus, but the torus-black hole combination is embedded in a huge cloud of dust and gas that absorbs most wavelengths of light.

http://www.newscientist.com/article/dn12386



The universe is full of magical things, patiently waiting for our wits to grow sharper.

Web links to IYA2009: astronomy 2009.org astronomy2009.org.za

Do you want to do solar system measurements?

The following e-mail message was received :

Von: "John Clark" <john.clark@johnclarkastronomy.co.uk>
Datum: 3. Oktober 2009 14:53:32 GMT+02:00
An: <assa@saao.ac.za>
Betreff: Measuring the Astronomical unit by parallax measurement on Mars
Antwort an: <john.clark@johnclarkastronomy.co.uk>

Dear Sir,

I am a UK-based amateur astronomer with an interest in solar system measurements. I have spent some time over the last few months estimating the length of the astronomical unit by timing eclipses of Jupiter's moon Io, essentially reversing an observation by Roemer who discovered the finite speed of light by timing such eclipses. I measured the speed of light in a university laboratory, and back-calculated the AU from my own observations of Io over a couple of years.

This method worked, but it is difficult to get an accurate value. My value was 20% low compared to the accepted value.

My impression is that the method of Cassini and Richer (1672) is likely to be more accurate, but it requires simultaneously measuring and comparing the position of Mars from two faraway locations on Earth. This measurement would have to be done to within at least one second of arc. This is not as hard as it sounds, but it obviously isn't trivial.

I wondered if there is anyone in South Africa who is interested/crazy enough to collaborate with me to try this measurement during the forthcoming opposition of Mars?* It would then be at its closest to Earth, so that the parallax would maximise.

Based on a rough estimate, it is about 10,000 km from the UK to SA over the Earth's surface, so the chord length (straight line distance) is about 9,000 km. Mars will be at about 100,000,000 km away at its closest approach, so we are looking for a parallax of 9,000 parts in 100,000,000 or about 18.6 arc seconds. A measurement good to 1 arc second would therefore have an error of 1 in 18.6 or 5.4%. Obviously a measurement good to 0.5 arc sec would have half that error. With good amateur equipment that should be feasible.

I can help with the maths needed to post-process the photos.

Yours sincerely,

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PE30 3AX +44 1553 679378

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http://www.springer.com/astronomy/book/978-0-387-89560-4

* The next opposition of Mars is in January 2010.

Summary of "What's Up in the Sky?" for the month of November to be presented on 28 October 2009 by Pat Kühn

Moon:

Full	02 Nov	Rises 18h20	Sets 04h36
Last Quarter	09 Nov	Rises 00h07	Sets 11h23
New Moon	16 Nov	Rises 04h30	Sets 18h29
First Quarter	24 Nov	Rises 11h26	Sets midnight

Dark sky:

8th to 23rd November

Planets:

Mercury (mag -1.3) is an evening object all month, setting with the sun on 1 November and 1 hour after sunset by month end.
Venus (mag -3.9) is still a morning object, but only visible shortly before sunrise
Mars (mag -0.4) is visible in the constellation of Cancer from 01h00 at the beginning of November, and from about 23h00 at month end.
Jupiter (mag-2.5), located on the border between Capricorn and Aquarius, is still a fine sight all month, but is setting earlier now at around 01h00 (beginning November) and 23h00 (at month end).
Saturn (mag 1.0) is well visible in the early hours as it rises in Virgo at around 03h30 at the beginning of the month and at just after 01h00 at month end.
Uranus (mag 5.8) is visible under favourable conditions close to the circlet of Pisces, from evening till about 03h00 on the 1st and 01h00 at the end of November.
Neptune (mag 7.9) is located quite close to Jupiter for the whole month and sets at around midnight.

Meteor Showers in November (only those with good conditions shown):

Northern Taurids (12th); Leonids (17th): & Alpha Monocerotids (21st)

Constellations:

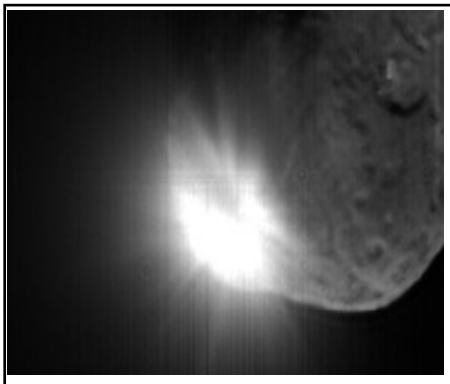
Scorpius and the winter constellations being replaced by the summer constellations. In the evening sky Orion, Canis Major and Taurus rise in the East. Cetus, Sculptor, Aquarius and Capricorn are overhead. Pegasus and Andromeda are to the North and the Magellanic clouds in the South, with Carina, Puppis and Vela rising later in the night.

Deepsky:

Orion, Taurus, Canis Major region:, M42, sigma Ori, Rigel, lambda Ori, eta Ori, M1, M45, Hyades, M41, NGC2362, CMa 145/HP35210.
Carina – Vela - Crux region: Gamma Velorum, Eta Carina, Southern Pleiades, NGC2516, 47 Tuc, Tarantula nebula.
Sculptor – Aquarius region: Sculptor Group of galaxies e.g. NGC253/Silver Coin.

Special Events:

Several interesting groupings of the Moon, Regulus, Mars and Saturn in the early morning hours up to 13 November.
Transits of Jupiter's moons with at least one multiple transit (Io & Ganymede on 13th).



Deep Impact's top 10 comet crash images

Comets will never look the same now that NASA's Deep Impact spacecraft has successfully slammed into one of the icy wanderers in full view of orbital observatories, ground-based telescopes and sky watchers around the world.

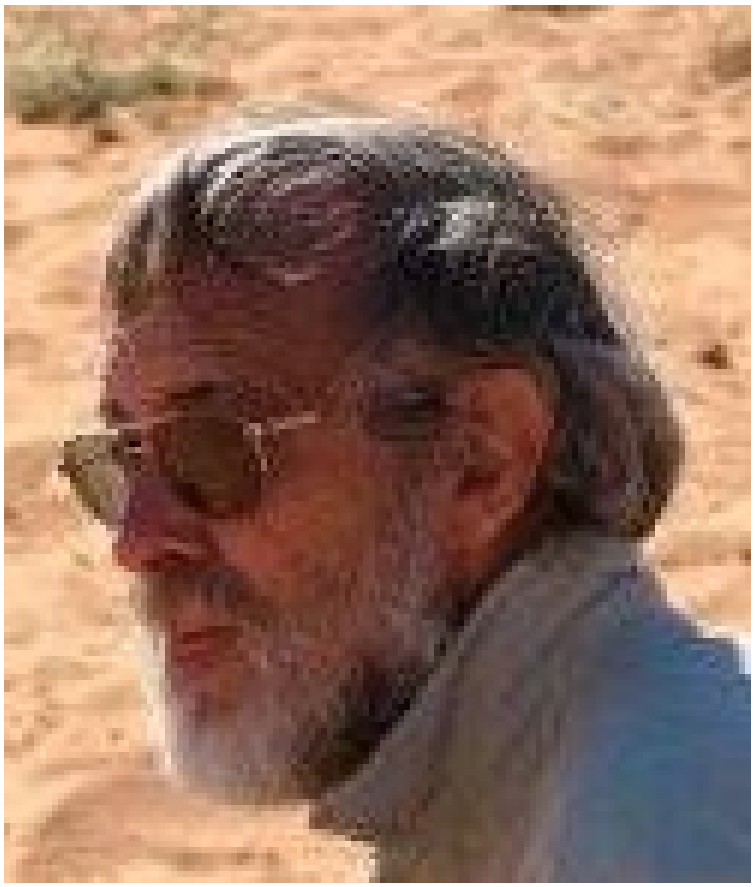
Deep Impact's Impactor probe crashed into Comet Tempel 1 at 05:52 GMT on July 4, 2005 while its flyby mother ship observed the event. A wealth of images were then made.

In the image, Deep Impact's flyby spacecraft imaged the flash that occurred when comet Tempel 1 ran over the spacecraft's probe. It was taken by the flyby craft's high-resolution camera over a period of about 40 seconds. The image has been digitally processed to enhance the view of the comet's nucleus.

http://www.space.com/scienceastronomy/050705_scitues_deepimpact.html

LOUIS BARENDSE – A Profile by Neville Young - 2001

(This article was originally written in 2000 by astronomy colleague Neville Young following an interview with Louis. It was published in the monthly newsletter of the Pretoria branch of the Astronomical Society of Southern Africa. It has been adapted on the occasion of Louis' death on the 5th October 2009.)



PROFILE – LOUIS BARENDSE

In this continuing series profiling members of the Pretoria Centre Astronomy Society, we learn more about a man who has arguably had more influence on the development of the club than any other member in the 40 years of its existence.

Astronomical Society of South Africa

Louis John Barendse became a member of the Pretoria Centre in 1987. For the previous two years, he had repeatedly been mislaying a scrap of paper on which was written the centre contact details. His Dad had found them somewhere and given them to him.

While the paper scrap lay in a drawer, Louis was not idle. This was the Comet Halley era and Louis had been photographing the comet from his Queenswood home backyard. One of his photos was published in the Pretoria News and thus came to notice of the Smithsonian Institute in Washington, USA. A framed print with a credit to Mr LJ Barendse of Pretoria, South Africa is still on display in the Smithsonian - check it out next time you visit that fascinating museum. In between building telescopes and photographing the sky, Louis came across that scrap of paper once again and phoned me in early 1987 to enquire about joining the club. I was then secretary and membership database manager of the society and Louis' contact details joined those of the other approximately 40 then members.

Thus began a passionate and committed involvement with the Pretoria astronomy group. Centre members in the past 15 years will have gotten to know Louis' astronomy persona, not knowing very much about the previous 42 years of his life. For instance, that Louis was born in 1945 on the 19th of November not very far away from the area in which he has lived ever since. While living in a tiny suburb called Deerness (yes, it is still on the Pretoria map) he attended Rietondale Primary School which you have surely ridden past many times on Soutpansberg Road. He high-schooled at Clapham High further down the road. Though he played wing at rugby and was the goal kicker, he broke his arm once too often. His main interest was science and maths and he earned the nickname "Professor". As a skinny schoolboy he was also known as "Bones".

Astronomy

As a boy, Louis had been taught that the stars do not move relative to each other. No one had mentioned planets to him and he soon noticed that some of the bright objects in the night sky changed position from night to night against the other objects. He wanted to know why and was introduced to a neighbour who explained what was happening. Louis had been watching Jupiter and Saturn low on the eastern horizon. Louis does not remember this man's name, but that was certainly the start of Louis' interest in astronomy.

Career

The space race had started with the launch of Sputnik in 1957 and the 12 year old had been hooked on space. His first employer put him through technical college where he trained as an electronics technician. He used his skills in the Deep Space Instrument Facility for 2 years and then at the low satellite facility for another 3 years. This was a fascinating period to work in. The tracking station was used by NASA as the conduit for much of the information from its satellites and planetary mission craft.

Mariner IV Photographs of Mars

In 1965, Mariner IV was the first craft to fly by Mars and Louis was manning the controls of the receiving equipment as the very first close-up photographs of the cratered surface trickled back to Earth. Along with his four colleagues, this makes Louis one of the first five human beings ever to view these images of another planet! The technology was primitive. The pixel data was arriving so slowly that Louis had the time to shade in the pixels on a sheet of graph paper and build up his own image before the electronic image appeared! The 22 images which Mariner IV transmitted home took a week to transmit. They are mankind's first images taken by a planetary spacecraft and have great historical value. Not only did Louis receive the photographs, but he was also involved in the relaying of commands to Mariner which made it land successfully and carry out its daily program.

First Close Lunar Photographs

Another first was surface pictures of the Moon taken by Surveyors 1 to 7 in the period 1966 to 1968. This was the peak of the space race between the USSR and the USA and there was much secrecy and intrigue. The pictures were scheduled to appear slowly on a small monitor and there was a discussion the day before whether to view the pictures as the pixels scanned across the screen or to mount a polaroid camera in front of the screen to record each image after it had been completed. (The data was also being recorded on magnetic tape for later playback.) The polaroid option was decided upon and every 2 minutes a new polaroid photograph was peeled away to be passed around the crowd of technicians and NASA officials present. A deathly hush settled over the room as more people noticed what appeared to be "writing" in the lunar sand next to the footpod of the Surveyor. It was not clearly legible or recognisable and each new photograph showed these strange characters. Were the Russians already on the Moon and playing a nasty practical joke on the Americans? As each image was photographed, subtle changes began to be detected in the "text". Was this a higher intelligence trying to make contact with humankind? For 10 minutes no one breathed until it was discovered that the photographer was writing details on the back of each polaroid sheet while it developed and the pen pressure was subtly affecting the chemical process to superimpose vague, text imprints on the lunar sand!

The Apollo Program

HARTRAO's space involvement during the Apollo program was not as direct because NASA had set up a manned spacecraft tracking station near Bapsfontein. However, housekeeping data from the spacecraft did come in through the 26 meter HARTRAO dish. The dish was most certainly pointed at the spacecraft or at the Moon itself, so Louis has no doubt that the Moon landing was real and not faked in some Nevada desert. (The quartz retroreflectors left behind by the astronauts have no reason to deteriorate and and have been succesfully aimed at by lasers from Earth.

The Movie Industry

Louis then decided he needed a career change. His interest in photography led him to try out as a camera man in the movie industry but he soon discovered he was amongst a surfeit of aspirant cameramen and diverted to movie sound engineering instead. This kept him busy for two and a half years during which time he was involved in movies such as King Street's War, Three Bullets for a Long Gun and The Weekend. He also did some of the lighting in Katrina.

Ever wondered what Louis looks like behind his beard? Well, so does his wife Marianne, because it was during this period that Louis grew his full beard, never to be shaved off again.

A Career in Technology

In the early seventies, most technically minded South African young men became involved in the booming defence research program. This was one of the only avenues for satisfying a technological career and Louis began work at the National Institute for Defence Research in 1972. His recreation was to swim at the CSIR swimming pool during lunch times. In 1989 Louis left the military industry and took up employment at UNIROSS, a battery company where he acted as a scientific advisor, advising customers and salesman colleagues on battery and charging issues. This lasted two years until the optics division at the CSIR made use of Louis' technical abilities and optical knowledge in designing optical systems. This work complemented his ever growing involvement in astronomy. He was designing stepper motor driving units for the optical systems and was picking the brains of his colleagues who were deeply involved in the design of lenses. Louis thus has a good understanding of the light paths and theory which makes an astronomical telescope work.

The then general scaling down of the CSIR led to the closure of the optics department and Louis was retrenched after 4 years there. For the next few years Louis was unemployed, but with his wide ranging knowledge, he did odd jobs and developed his astronomical education interest to the point where he was the regular astronomy teacher at veld schools around Pretoria. Astronomy had now become Louis' full time occupation.

Back to HARTRAO

In 1999, NASA remembered its association with HARTRAO and decided to place a laser ranging system at this southern African location to extend its array of satellite tracking sites around the world. NASA needs to accurately track satellite orbits so that they can be adjusted when necessary and so Louis was called on be the technical expert. This involved an extensive training period of 6 months at NASA in Washington, USA where Louis was able to wander down to the Smithsonian on Sunday afternoons to check that his Halley photograph was still there. He returned to South Africa with a container full of laser ranging equipment which he installed in April 2000. The laser ranging system not only tracks satellites, but - conversely - tracks it's own location at Hartbeeshoek. This data is used in an international geodetic research programme which measures crustal deformation in Southern Africa. Information about the way in which Earth's continents move relative to each other is extracted from this data.

His Heroes

People who Louis admired for their contribution to science are Leonarda da Vinci and Albert Einstein. The parallels between da Vinci and Louis are obvious - both inveterate and practical tinkerers who have a strong desire to find out more about and to get practically involved in their interests. Leonardo made his pictures and so did Louis in another sense during his time in the movie industry. Louis was always ready with a new and unique idea or a technical solution to a problem - so was Einstein. Those of you who have had the opportunity to see Louis' home workshop, will understand the tinkering side of Louis' nature. You would find several telescopes in fully or semi-assembled state; old photocopy machines (sources of lenses, mirrors and stepper motors); cameras; scientific instruments waiting to be scavenged or modified; a 2 meter satelite dish pointing skyward and much else.

Louis was a member of the Pretoria Centre for 15 years and was chairman from 1993 until he resigned in 2002 to pursue his passion as an astronomy speaker and radio personality on the weekly Sterre en Planete program every Thursday evening.

Louis Barendse died on 5th October 2009.

Webskakels vir Suid-Afrika se twee satelliete

Sunsat: http://research.ee.sun.ac.za/sunsat/index.html

SumbandilaSat: www.sunspace.co.za

Invitation to a lecture on astronomy

The Deputy Vice-Chancellor (Academic & Partnerships), Professor R. Moore, warmly invites you to attend a public lecture:

Title: Dark Matter in Galaxies
Lecturer: Professor KC Freeman, FRS, "father" of dark matter in our Universe.
Date: Thursday, 29th October, 2009
Time: 18h00
Venue: SENATE ROOM, 2nd floor, Senate House, Jorissen Street (on the WITS campus).

Abstract: About 90% of the mass of galaxies is INVISIBLE. We know it is there from its gravitational field - but we do not yet know what it is.

Numerical simulations on computers make definite predictions about the properties of dark matter in galaxies, but many of these predictions appear to be at odds with what we actually observe. He will talk about what we know about the mysterious dark matter in galaxies, and describe some of the observational and conceptual problems which astronomers face.

Freeman, one of the world's most highly cited scientists, wll deliver a public lecture at the invitation of two Deputy Vice-Chancellors on Thursday, Oct 29, as per details above. Professor Freeman's research has concentrated on the formation, dynamics, and evolution of globular clusters and galaxies, including the Milky Way galaxy. His ground-breaking work on spiral galaxies has spawned an industry trying to understand how these galaxies acquire their mass. His observational work on the components of our own Milky Way galaxy is of fundamental importance to theoretical models for its formation.

He has also led significant efforts trying to measure the dark halo content in galaxies of all masses. Freeman was one of the first astronomers to point out that spiral galaxies are rich in dark matter. By synthesizing results over all galaxy types, Professor Freeman places himself in a unique position to make advances into one of the most important problems of our times: the nature of dark matter. He is clearly one of the most important figures in astronomy, advancing understanding of how galaxies form and evolve. His publications total more than 400 and are very frequently cited. The Information Sciences Institute (ISI) named him as one of Australia's most cited scientist from all surveyed sciences. The ISI lists him in their list of 250 most highly-cited researchers in the space sciences.

Freeman will be a guest of Professor David Block, with whom he has collaborated over many years.

Parking: Secure parking will be available in the basement of Senate House.
There is no entry fee.

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