

# "The Southern Cross"



## HERMANUS ASTRONOMY CLUB NEWSLETTER

MARCH 2009

Welcome to the latest newsletter which, we hope, you will enjoy reading. In addition to the monthly meetings, a number of other activities are now being undertaken within the club. To keep members informed, summaries will be included in the newsletter in a new 'Activities' section.

Another new feature is an attachment, with the newsletter, of an article relevant to astronomy and cosmology from the New Scientist, selected, with publisher's permission, by Steve Kleyn. We welcome feedback on whether you would like this to become an on-going process, or not.

Recent fine weather has afforded clear views of the stars, with the almost equilateral 'summer triangle' being prominent overhead. It is made up of Betelgeuse (the right shoulder of upside-down Orion) forming the lower left point, Sirius (right of Orion, in line with the three stars forming the belt) at the apex, and Procyon in Canis Minor forming the lower right corner.

### CLUB MEETING - 26 FEBRUARY

The story, spanning centuries, of the discovery and measurement of the characteristics of the star Proxima Centauri was the focus of the informative and interesting presentation given by Dr Ian Glass of the South African Astronomical Observatory in Cape Town. His presentation described the technical challenges experienced by astronomers, in accurately measuring variables like parallax and proper motion, which are important when describing stellar position and motion. It also identified the central role of

astronomers based in South Africa in contributing to this knowledge as part of their work on describing Proxima Centauri.

### FUTURE CLUB EVENINGS 2009

The monthly Thursday meetings will be held at 7 pm on on the following days:

26 March (details below)	20 August
30 April	24 September
28 May	22 October
25 June	19 November
23 July	17 December

The topic for March's meeting is Astro-photography, with the presentation being given by Pierre de Villiers and Steve Kleyn. Please bring your cameras so that, weather permitting, you will be able to apply your new skills.

### ACTIVITIES

**Interest groups** The Cosmology and Telescope skills interest groups had their inaugural meetings on 23 February and 6 March, respectively. The Astronomy for absolute beginners group is scheduled to hold its first meeting on 17 March.

**Radio broadcasts** Discussion of 'matters astronomical' involving Steve Kleyn, Billy Robertson (both club members) and Pieter Schoombie can be heard weekly on local WhaleCoastRadio on Tuesday mornings from 7.30 - 8.00 am on 96FM. The discussion includes mention of interesting features presently visible in the night sky. On Friday mornings between 7.30 and 8.00 am the studio phones Steve for any more news.

**Cedarberg observatory visit** Sixteen people, including 10 club members plus, husbands, wives and friends, went for a weekend trip to the Cedarberg Observatory from 27 February to 1 March. Following a fascinating walk to Cedar Rock, including sights of San cave paintings, on the Saturday morning, the visitors were shown the 4 telescopes at the observatory by 2 ASSA members. On the Saturday evening, they returned to see the night sky, along with at least a hundred members of the general public. Despite the crowd, most did get a chance to see Comet Lulin as it moved quickly across the heavens between Saturn and the star Regulus. Another future visit is planned, hopefully with a private viewing opportunity for club members.

**Sidewalk astronomy** Club member Johan Retief ran a very successful inaugural sidewalk astronomy show in Fisherhaven on 20 February. 24 people responded to the open invitation to hear Johan talk about planets, stars, clusters and constellations and view features through binoculars and telescopes. The show was reported on p.7 of the 6 March issue of the Hermanus Times.

**School astronomy** On 5 March, Pierre de Villiers, with Frans Marais and John Saunders, gave a talk and demonstration on astronomy to learners at Hermanus High School. They used the club's portable telescope.

**Lighting** On 13 February, Pierre de Villiers, Steve Kleyn and John Saunders were invited by Werner Sybrantz, Hermanus Town Manager, to attend a presentation by BEKA (Pty) Ltd - Africa's leading manufacturer of street lighting. The presentation was made with strict consideration of the recommendations made by Cliff Turk during his presentation on light pollution at our club's November meeting, which Werner Sybrantz had also attended. The municipality is planning to replace the existing street lighting in the Town Square by the Old Harbour, and it is the ideas and suggestions made by Cliff Turk which will shape the final decision on using the type of lighting that is not intrusive to viewing the night sky.

### OBSERVATORY COMMITTEE REPORT.

On 23 February, John Saunders, Pierre de Villiers and Steve Kleyn presented the Observatory Project to Theo Beyleveldt, Mayor of Hermanus, and Councillor Mike Walters. The Mayor recognised that a strong case had been made, but identified that obtaining funding from the Municipality was not going to be easy. He advised, however, that they would give our application due consideration. More positively, the proposed site at the top of Rotary Drive received a favourable response.

A grant application has also been submitted to the South African Agency for Science and Technology Advancement (SAASTA) for a grant to cover the cost of the observatory's cupola, i.e. the actual dome. In recognition of the International Year of Astronomy the SAASTA has set aside some government funding for such projects as ours. The decision form SAASTA is expected soon.

A meeting has also been arranged with the management of the Whale Festival Media and Marketing Company to discuss ideas and possible events that would

help towards further funding. Any other ideas or leads for the funding of our observatory from club members will be most welcome.

### ASTRONOMY NEWS FROM STEVE KLEYN

**1. HOW heavy can a pair of black holes be and still tango?** Try 1 billion solar masses - the combined might of two black holes circling each other at the heart of a quasar 5 billion light years away. A quasar is a galaxy with a super-massive black hole at its centre. Some quasars form when two galaxies merge, so should have two black holes at their cores. However, these binary systems are not easy to find. Todd Boroson and Tod Lauer of the National Optical Astronomy Observatory in Tucson, Arizona, stumbled upon one when they were sifting through a catalogue of 17,500 quasars found by the Sloan Digital Sky Survey.

They found two sets of broad hydrogen spectral lines in the light coming from J1536+0441, a quasar in the direction of the constellation Serpens Caput. Such signatures are caused by gas swirling into two black holes. The black holes weigh about 107.3 and 108.9 solar masses, are separated by about 0.3 light years, and have an orbital period of nearly 100 years.

**2. An asteroid** about the size of the one that levelled the forest in Tunguska, Siberia in 1908 flew past Earth on Monday 2nd March 2009 - well within the Moon's orbit. The risk of a future impact with the object is not yet known. The asteroid, 2009 DD45, whizzed just 72,000 kilometres above the Earth's surface, less than a fifth of the distance to the Moon and just twice the distance to geosynchronous satellites.

The object was first reported on Saturday 28th Feb, by members of the Siding Spring Survey, a near-Earth object search programme based in Australia. Based on its brightness, the asteroid was between 20 and 50 metres across, said Timothy Spahr of the International Astronomical Union's Minor Planet Center. The asteroid which slammed into Tunguska is estimated to have been as small as 30 metres, created a powerful blast that levelled 2000 square kilometres of forest.

In October 2008, astronomers spotted the first space rock on a certain collision course with Earth. Pieces of the asteroid, which probably no more than 5 metres across, were recently recovered in Sudan. The closest

observed asteroid to pass Earth so far has been 2004 FU162, a 5- to 10-metre rock that skimmed by Earth in 2004, flying just 6500 kilometres above the surface.

**3. The discovery of meteorites from the asteroid** that exploded over Sudan in October 2008 completed an astronomical triple. For the first time, scientists detected a space rock ahead of a collision with Earth, watched it streak through the atmosphere, and recovered pieces of it. Analysis of the meteorites could shed light on conditions in the early solar system more than 4 billion years ago.

When the asteroid, called 2008 TC3, was discovered on 6 October, it was just 20 hours away from hitting Earth. Though the warning period was short, it was the first time a space rock had been found before it impacted the planet. Orbital calculations predicted the object would plunge into the atmosphere above Sudan at 0246 GMT on 7 October, and it arrived right on time. Observations suggested it was approx. 5 metres across, too small to survive intact to the ground and cause damage.

**4. OUR galaxy may still be reeling** from a massive collision with another galaxy 2 billion years ago. Some groups of stars near our solar system move with unusually high velocities compared with others in the galactic disc. Ivan Minchev of the University of Strasbourg, France, said their pattern and velocity can be explained if they were thrown by the shock of a past smash.

#### [DID YOU KNOW?](#)

The 'blue giant' **Neptune**, named after the god of water and the sea, is the focus of our monthly journey through the solar system.



Discovered in 1846 by two German astronomers, Neptune is the eighth planet from the sun. It is the fourth and outermost of the gas giant planets, and also has rings. Its atmosphere is mostly methane, the reason for its blue colour. Not much was known about Neptune until the Voyager 2 spacecraft flew by in 1989. Neptune has an average distance from the Sun of 4.5 billion

kms and it takes almost 165 Earth years to orbit the Sun. Its distance makes it visible only through a telescope.

Like the other giant planets, Neptune consists of an outer layer of hydrogen and helium, an inner layer of water, methane and ammonia, and a central rocky core. The very thin ring system consists of just two main rings. It has the strongest winds of any of the planets - up to 2,100 kph. The famous **Great dark spot** was about half the size of Jupiter's Red spot, but it has disappeared since it was first identified by Voyager in 1989.

#### **Vital statistics:**

- **Mass:** 17.15 Earth-masses
- **Number of known satellites:** 13
- **Length of Year:** 164.8 Earth-years
- **Mean Distance from the Sun:** 4,500 million kilometers
- **Mean Orbital Velocity:** 5.4 kilometers per second
- **Length of Day:** 16.11 hours, 0.67 Earth-day

**Moons.** Neptune has 13 known moons, 8 of which have been named: Triton, Thalassa, Naiad, Despina, Galatea, Larissa, Proteus and Nereid. **Triton** has the coldest temperatures in the solar system. Voyager observed ice lakes and icy volcanic geysers on its surface. By far the largest moon, it has a diameter 2,707 km and a distance of 354,760 km. It is bigger than Pluto and has a pink hue. **Larissa** is 73.45 km's from the planet. It has an irregular shape with a total length of 216km. **Proteus** is 117,647km from Neptune and is 440 km long. **Nereid** is 5.5 million kms from Neptune and has a diameter of 340 km's.

**Reference:** [www.aerospaceguide.net](http://www.aerospaceguide.net)

#### COMMITTEE MEMBERS.

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