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mnassa

monthly notes of the astronomical society of southern africa
Vol 69 Nos 3 & 4

April 2010



LCOGT

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monthly notes of the astronomical society of southern africa

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Cover picture: LCOGT network 16-inch telescopes

16-inch (0.4m) telescopes being assembled in the Las Cumbres Observatory's workshops in Santa Barbara, California. Four of these as well as two 1.0m telescopes will be deployed in Sutherland later this year as part of the Las Cumbres Observatory Global Telescope (LCOGT) network consisting of six such stations around the globe.

Picture: Phil Charles



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assa news

New members

At Council meetings held on 2 February 2010 at SAAO, Cape Town, the following new members were approved. *MNASSA* hereby would like to welcome them all.

Mr WJ Beaton, Bristol, UK
Mr G Els, Mondeor, Johannesburg
Mr BD Fincham, Claremont, Cape Town
Mr AR Kuijpers, Milnerton, Cape Town
Mr LS McDermot, Parkwood, Johannesburg
Mr D Middleton, Claremont, Cape Town
Mr M Mohr, Bramley, Johannesburg
Mrs C Overbeek, Edenvale, Johannesburg
Mr DA Overbeek, Edenvale, Johannesburg

Karoo Star-party 2010

The ASSA Pretoria Centre will hold its second National Karoo Star-party during the weekend of 6 to 9 August 2010 about 20 km north of Britstown in the Karoo, next to the N12 at the Kambro Padstal. The reason for this locality, apart from the fabulous Karoo skies, is that it is almost exactly halfway between Gauteng and the Cape Town area, making the distance to the site about the same for all. The first event of this type was held during April 2009 and proved to be a big success. The Karoo lived up to its reputation and provided magnificent views to those lucky enough to be present (see *MNASSA* 68, 5&6, June 2009, 103).

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Danie Barnardo, cellphone: 084 588 6668, e-mail: danieb@pretoria-astronomy.co.za

To book, please contact Wilma Strauss, the Manager of Kambro, directly at: Cellphone: 083 305 6668 or e-mail: kambro@worldonline.co.za

For info about Kambro Padstal, including a report on the 2009 star party, please visit: <http://www.kambroaccom.co.za/> ☆

ASSA Resolutions in connection with Prof Charles's suspension

ASSA has issued two resolutions concerning the suspension of SAAO Director, Prof Phil Charles. See *News Note* on p.48 for more information.

South African Astronomical Observatory (SAAO), on charges brought against him by the National Research Foundation (NRF).

2 February 2010:

"The Council of the Astronomical Society of Southern Africa wishes to express its support for Professor Phil Charles in his positive direction of the SAAO and also expresses its concern at the manner in which the matter of his suspension has been handled by the National Research Foundation. A speedy resolution of this matter is suggested, both in the interests of SA astronomy, and so as to minimize damage to SA's image and reputation in the international scientific community."

"South African astronomy has a high profile internationally, not only because it is a partner in, and host to, an international consortium operating the Southern African Large Telescope (SALT), and is one of only two remaining contenders for the R15 billion Square Kilometre Array (SKA) radio telescope, but also because of the high calibre and world-class reputation of our astronomers. Any unwarranted negative publicity regarding the governance and administration of science in South Africa can obviously affect the position of our scientists, negatively impact on the funding of scientific projects and significantly reduce South Africa's chances of winning the SKA.

18 March 2010:

"Regarding the suspension and disciplinary hearing of Professor Phil Charles (Director SAAO) by the National Research Foundation (NRF)"

"The Astronomical Society of Southern Africa (ASSA), representing both amateur and professional astronomers, has noted with grave concern the precipitate suspension and subsequent disciplinary hearing of Professor Phil Charles, Director of the

"Suspension from duties pending a disciplinary hearing is an extremely heavy-handed and insensitive manner of dealing with Professor Charles, considering that he is a senior scientist with an international reputation. While, according to the NRF, 'The Chairperson found Prof Charles to be

not guilty on all charges', the whole affair raises a number of questions and issues which the science establishment in South Africa needs to address: Why was the announcement of the suspension and disciplinary hearing made in so public a way as to cause concern in both the local and international scientific community, while the nature of the charges was kept secret as 'an internal matter'?

"Why did the NRF persist with a lengthy hearing of three and a half days spread over a number of weeks, when there was a request from the Minister of Science and Technology to address the matter in ways that might better allow for an amicable and speedy resolution of the dispute? The Minister even took the very unusual step of expressing her concerns regarding the attitude of the NRF in a letter to the press. A speedy resolution would have been in the best interests of all. This position was supported both by ASSA in a formal statement to the President and CEO of the NRF and by the Royal Society of South Africa in a public statement.

"The press release (12 March 2010) from the NRF regarding the outcome of the disciplinary hearing contains the following that shows that the NRF does not accept the verdict of its own hearing: 'However, the NRF executive is studying the content of the report with a view to dealing with any issues requiring further attention. It must be noted that the NRF had initiated this process with an intention of correcting perceived transgressions in the manage-

ment and governance processes within SAAO. The NRF believes that the issues that gave rise to these proceedings may still exist and that they still require be dealt with'. Furthermore, in a letter to the staff of the SAAO (15 March 2010), the President and CEO of the NRF labels the suspension and disciplinary hearing of Professor Charles as 'corrective processes'.

"If Professor Charles is not guilty of whatever he was charged with (as the pre-eminent scientific journal *Nature* noted 'Not guilty: South African astronomer cleared of - something') why then does the NRF still insist that there is something wrong at the SAAO? ASSA calls for the charges against Prof Charles, and the record of his disciplinary hearing, to be made public, so that the scientific community and taxpayers can judge the merits of the affair for themselves. Furthermore, ASSA calls for an urgent and public inquiry into the ongoing undesirable situation between the NRF and the SAAO so that South Africa's reputation in the international scientific community can be re-established, and to ensure that measures are put in place to ensure that all role-players in the South African scientific system of governance operate in an open and accountable manner in future.

"Issued by the Astronomical Society of Southern Africa
Maciej Soltynski
Council Member ASSA
18 March 2010"



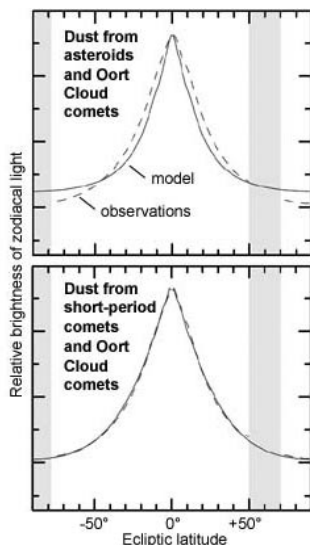
Zodiacal Light mystery probed

One of the things people attempt to see when visiting an ultra-dark site is to look for the eerie and elusive zodiacal light, a feeble nebulous cone based on the horizon and extending upwards along the ecliptic. It originates from sunlight scattered off countless tiny flecks of dust in the inner Solar System.

The origin of this dust has been the subject of numerous theories. Since the glow is brightest along the ecliptic, it is logical to assume that asteroids play a major role in its formation. This was what theorists believed in the mid-1990s. More recently, however, they have come to realize that cometary dust must play a role, though their exact contribution has been largely guesswork.

Last year a five-member team of dynamicists, led by David Nesvorný (Southwest Research Institute) decided to tackle the zodiacal light's origin from first principles. They modelled what would happen to dust released from various sources — asteroid collisions, comets arriving on random orbits from the Oort Cloud, and especially “Jupiter-family comets” (orbital periods of less than 20 years) — and kept track of what went where. They tweaked their model until it matched the zodiacal light's true appearance, taking into account spacecraft measurements of the infrared signature of the dust lying outside the Earth's orbit.

Their model provided a surprising answer. It suggests that virtually all the dust must be coming from short-period comets, with a very small contribution from Oort Cloud members and only about 10% from the asteroid belt. Moreover, the Jupiter-family comets tend to release their debris in repeated pulses as they break up, rather than spreading it uniformly along their paths. They estimate that there must be some 20 trillion tons of dust in the zodiacal cloud (twice the mass of the Martian moon Phobos), and that 100 000 tons of the stuff falls to Earth every year! ☆



When comparing their model's predictions (solid line) to what is observed (dotted line), the fit is perfect for short-period comets (bottom panel) which is not so in the case of asteroids (top panel). *Nesvorný et al*

The SAO-NASA Data System — a valuable resource for all

The editors would like to draw members' attention to the fact that articles in *MNASSA* are among those included in the SAO-NASA data system. This is a free service that offers copies of almost all astronomical papers published, though sometimes with a delay when these are proprietary. It is easy to use and it enables people even in remote places and those not affiliated with institutions to have access to the literature.

The arXiv e-prints (mentioned below) are versions of papers that normally have already been accepted for later publication in the journals. It is voluntary: not everybody sends their new work to this channel.

Quoting from the SAO/NASA website: "The SAO/NASA Astrophysics Data System (ADS) is a Digital Library portal for researchers in Astronomy and

Physics, operated by the Smithsonian Astrophysical Observatory (SAO) under a NASA grant. The ADS maintains three bibliographic databases containing more than 8.2 million records: Astronomy and Astrophysics, Physics, and arXiv e-prints. The main body of data in the ADS consists of bibliographic records, which are searchable through highly customizable query forms, and full-text scans of much of the astronomical literature which can be browsed or searched via our full-text search interface. Integrated in its databases, the ADS provides access and pointers to a wealth of external resources, including electronic articles, data catalogs and archives. We currently have links to over 8.2 million records maintained by our collaborators."

To use the service, go to http://adsabs.harvard.edu/abstract_service.html ☆

'Name Our Asteroid' Competition

As part of the International Year of Astronomy, towards the end of last year, SAAO/SALT conducted an asteroid naming competition, exclusively targeted at the young of South Africa. This was the initiative of SALT Astronomer Dr Amanda Gulbis, who offered the

SAAO IYA2009 organising committee the opportunity to name one of the asteroids that she discovered as part of her involvement in the Deep Ecliptic Survey. This survey was designed to discover and determine the orbits of hundreds of Kuiper Belt Objects (KBOs) in order to

better understand the outer Solar System. In addition to discovering KBOs, the survey images allowed the discovery of many new asteroids.

A total of 111 names were suggested by young people all over South Africa. Entrants were invited to motivate their suggested names as much as they wanted to. Motivations varied from as little as “because I like this name” to a full page essay. A number of abbreviations, forming interesting words, were also submitted. One such an example (which turned out quite popular in the judging) was *Dagafos*, which stands for “Doctor Amanda Gulbis’ Asteroid From Outer Space”. However, this name is in violation of the IAU rules which state that an asteroid is not allowed to be named after its discoverer. The list of suggested names with accompanied motivations was distributed to SAAO staff during the annual Year-End Function on 15 December 2009 at Nuy Valley, Worcester, where every participant could vote for up to five asteroid names. A total of 86 people voted, yielding a short list of five: *Ubuntu* (28 votes), *Jabulani* (18 votes), *Mzansi* (15 votes), *ILITYE* and *Isiqobo* (both 12 votes).

The motivations for these were names as follows (some shortened):

Ubuntu – Ubuntu is an ethic or humanist philosophy focusing on people’s allegiances and relations with each other. The word has its origin in the Bantu

languages of southern Africa. Ubuntu is seen as a classical African concept and as one of the founding principles of the new South Africa, connected to the idea of an African Renaissance. The concept of ubuntu is used to emphasize the need for unity, as well as the need for humanitarian ethic. It defines us in so many ways, and is found in many of Africa’s different cultures.

In many ways this asteroid represents South African individuals. Like us, the asteroid depends on the universe, gravity and so many other things and “co-exists” in space, highlighting one of the key factors of ubuntu: “I am because we are”.

Jabulani – It is connected to the soccer world cup and is an African name, meaning happiness and celebration.

Mzansi – Mzansi means “THE SOUTH”. I can’t imagine a more appropriate name at this time. The movement of the asteroid coincides with an event that will have all the eyes of the world roving over the SOUTHERN part of our beautiful continent AFRICA.

ILITYE – The word means “lump of rock”.

Isiqobo – Isiqobo means “hard object”. We don’t have a Xhosa thing in science so it would be nice if we could name it. [A] Lot of people would enjoy [it] and Xhosa people would be excited.

These top five names were then presented to the general public by means of a website to elect a winner. It may have been the lure of a lucky draw prize of a SAAO/SALT gift hamper that attracted no fewer than 388 votes. On 1 February 2010, with 207 votes, Nabeela Kajee from Pinelands High School was announced the winner with her entry of *Ubuntu*. Amanda subsequently forwarded it to the International Astronomical Union (IAU) for ratification. Nabeela received a certificate and a prize telescope for her winning entry, presented to her in person by Amanda. ☆



Nabeela Kajee (centre), winner the asteroid naming competition, receiving her prize telescope from Dr Amanda Gulbis (right), discoverer of the asteroid and Dr Nicola Loaring (left) of the competition organising committee. At the back is Mr Tony Reeler, Pinelands High School principal. (Picture: Deborah Torrington)

CAP2010 conference

by Kechil Kirkham (also published in the *Cape Observer*)

For the entire week 15-19 March, 150 delegates gathered at the Ritz hotel in Sea Point for the *Communicating Astronomy with the Public 2010* conference. See it IS possible for something other than football to happen in '2010' (but please don't report me to FIFA)! It was a showcase for the IYA2009, and a meeting place for the international cognoscenti in the field of astronomy education.

Although most of the delegates were academic there was a proportion from other walks of life. At least two came

from the voluntary sector, there were journalists, and managers of planetaria and science centres. The aim was to communicate experiences of engaging the public in astronomy, and relate the results of the IYA2009.

Most of the presentations were jaw-droppingly enviable in terms of their reports of the technology and concepts used during IYA2009, and the sheer size of the public contingent. There was a presentation from France about an "auto-stereoscopic imaging" technique – an ultra 3-D effect, where visitors to

a planetarium enjoy a hair-raising and mind-blowing technological whizz-bang experience of the universe. There were fantastic photographs of city-centre exhibitions, most employing real artists and visionaries to communicate astronomy to the public. Massive multimedia concerts with a cosmic theme roamed Spain, and Australians toured their exhibition of aboriginal cosmic art. One of my favourites was a Spanish planetarium programme for the visually impaired involving each participant handling a ball covered in Braille constellations. Mexico appeared especially active, aiming to break the Guinness World Record for star-gazing. The scale of the Chinese programme was, as you'd expect, vast. What struck everybody was the diversity of approaches and the energy put into the hundreds of projects.

I was slightly disappointed not to see reports from areas other than our local patch in South Africa. And naturally our projects looked quite small besides the massive funding and participation you would expect from larger countries such as Brazil. It would also have been worthwhile if there had been a few minutes from each presenter relaying some basic stats, just to get an idea of their country's scope of involvement in IYA2009 – such as population, GDP, total spend on IYA, and government donated budget. It wouldn't have been possible to compare projects across countries with

such effervescent diversity but at least basic stats could have given us some analytics to chew over.

But it wasn't all about the IYA. A Ghanaian had built a planetarium from scratch, with private funding, using whatever materials and labour were to hand. There were many projects championing darker skies, the best being a sparkling and well-documented talk from Hong Kong about their efforts to get sky scrapers and advertisers to switch off – at least for an hour now and then.

It was a real treat to attend the conference and meet people from all over the world interested in the same stuff. But I have to say my number one slot goes to our own Case Rijdsijk, who blew all those techno-junkies away with a down-to-earth presentation of tactile modelling to teach science. Appropriate technology, getting kids to think. That really is communicating astronomy to the public.

Well Done SAAO for organising a superb conference with great social events and Astro 101 school beforehand. Thanks to all the ASSA volunteers who turned up with telescopes to demonstrate how to use them to the delegates, some of whom had never seen Saturn! Once again I was reminded what a privileged position we are in here in South Africa with our dark skies and plentiful opportunities to enjoy astronomy. ☆

Disappearance of Lacaille Plaque

While on foot in the Cape Town CBD on the morning of 16 March 2010, our Treasurer, Cliff Turk, discovered to his horror that the historical century-old plaque commemorating de Lacaille's monumental contribution to astronomy during a two-year stay in Cape Town more than 250 years ago had disappeared. On a previous occasion Cliff explained its significance to the owner of the shop next to the plaque, who showed great interest in its history. When Cliff enquired of her about its disappearance, she was equally stunned. She had shown it to someone about two weeks before so it had to have disappeared quite recently. A smaller plaque that was below it is still there.

The plaque memorialised a truly remarkable man. The Abbé Nicolas-Louis de Lacaille was the most famous French observer of his time. It was said that during his short working career (he died at age 49), he made more observations and calculations than all of his contemporaries put together. He is probably best remembered for the 14 new constellations he named during his short stay in Cape Town, between 1751 and 1753. In particular, he named one of them *Mons Mensa*, the Latin name of Table Mountain, making it the only constellation named after a geographic feature. Surveyors remember him for his major geodetic survey in the Swartland whose purpose was to check if the Earth has the same radius in the south as it has in the north, where a



The Abbé Nicolas-Louis de Lacaille.
(Source: *The Astronomy of Southern Africa* by Patric Moore and Pete Collins & courtesy of South African Library.)

similar measurement had already been made. Because of the gravitational effect of nearby mountains, his verticals were faulty and he concluded that the Earth was pear-shaped. The error was not corrected until about a century later. Navigators applauded him for the positions and brightness estimates he determined for nearly 10 000 southern stars, all done in a single year using very modest instruments. He also determined the approximate longitude of Cape Town, using Jupiter's moons, and surveyed Hout Bay for the Dutch Government. But Lacaille did even more work than this. He catalogued southern nebulae and made observations of the Moon and Mars which enabled him to determine some of the



Old houses in Strand Street, Cape Town (now demolished). Lacaille resided in the house on the right. (Source: *The Astronomy of Southern Africa* by Patric Moore and Pete Collins & courtesy of South African Library.)

most accurate distances to the Sun and Moon of the day. He kept daily records of the weather and the tides, made regular magnetic observations, determined gravity from pendulum observations, studied astronomical refraction, measured the height of Table Mountain, and so on. It is no wonder that Sir David Gill regarded Lacaille's visit as "one of the most remarkable, successful and useful scientific expeditions ever undertaken".

Lacaille's observatory was located in a house at 3 Strand Street. Near to this spot, in 1903, the South African Philosophical Society (now the Royal Society of South Africa) erected the now missing plaque. It was designed by the famous architect Sir Herbert Baker and affixed to the wall of a building in Strand Street, opposite the then Grand Hotel. Before this building was demolished in 1973, the plaque was removed (*MNASSA* 32,

10&12, Dec 1973, Centrepiece). In a special unveiling ceremony held on 21 June 1977, it was displayed in the Old Mutual Centre, Strand Street, to be visible again to the public. Dr M.W. Feast, then director of SAAO, gave a short address on Lacaille (*MNASSA* 37, 1&2, Feb 1978, p12-14). The unveiling was performed by Mrs Hazel Tyers, Mayoress of Cape Town and Madame Cécile Fevrier, wife of the French Consul (*MNASSA* 36, 9&10, Oct 1977, 109). The surviving smaller plaque below

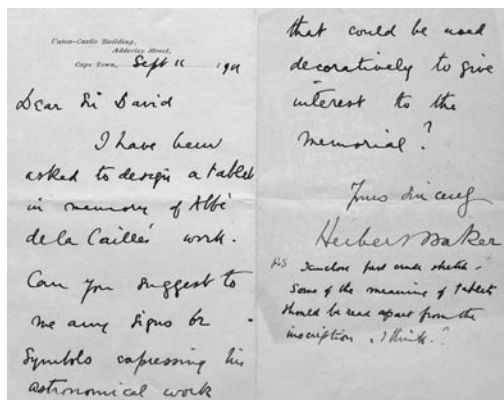
the original describes this event. (Due to subsequent building alterations, the plaques were again relocated, high up on the facade of the building on the corner of the former St Georges and Waterkant streets – both pedestrian walkways today – from where it disappeared.)

Historian and author, Prof Brian Warner (UCT), was equally disappointed by the disappearance of this special plaque. By pure chance, he came across the original sketch of Sir Herbert Baker's first draft design some years ago. While doing research for a book, he was leafing through all the books in the SAAO library that had been there since Fallows's time, looking for annotations. In a book of no particular relevance to the plaque or Lacaille he found this 'treasure', seemingly used as a bookmark, complete with an accompanying letter from Baker to Gill. He handed it to the librarian for safekeeping.



The original Herbert Baker sketch that Brian Warner found by accident in a book in the SAAO library. It was the first draft design of the plaque by Baker which he sent to Gill for input. Note that this was about 20 years before Hitler and his Nazi party were to attribute a negative connection to the Swastika which was used by many cultures throughout the previous 3 000 years to represent life, sun, power, strength and good luck. (Source: SAAO library)

After his disturbing discovery, Cliff contacted the Cape Town City Council to try to determine if the plaque had perhaps been removed for cleaning or because of building activities going on in the area. Unfortunately this was not the case. It has to be assumed that it was stolen for scrap, being made of bronze. Ian Glass, who was also notified of the loss, contacted Pieter van Dalen of the 'Copperheads',



This note by Herbert Baker to David Gill asking his input on the draft plaque design, was found by Brian Warner, with the sketch (left) folded inside of it. It reads:

Union-Castle Building,
Adderley Street,
Cape Town, Sept 11, 1901

Dear Sir David,

I have been asked to design a tablet in memory of Abbé de la Cailles' work. Can you suggest to me any signs or symbols expressing his astronomical work that could be used decoratively to give interest to the memorial?

Yours sincerely
Herbert Baker

p.s. I enclose first rough sketch - some of the meaning of tablet should be read apart from the inscription, I think. (Source: SAAO library)

a police unit specialising in the theft of metal objects and sent them a picture of the missing item. Unfortunately too much time had elapsed since its disappearance and they could not find anything.

Ian arranged for a newspaper article which appeared in the Cape Times of 18 March 2010. In reaction to this, the Simon van der Stel Foundation contacted Cliff. They



offered to add the Lacaille memorial to their “Blue Plaque” programme. This programme unfortunately does not replace stolen plaques with facsimiles, but with standard ceramic plaques similar to those seen all over London. Their standard appearance helps to draw the attention of visitors and others. It is however felt by many that, due to the uniqueness of the design, particularly being one by Baker, that it should ideally be recreated in durable resin or similar material without second-hand value. ☆

This is what the plaque that disappeared looked like. It is just as well that the Swastikas got replaced by symbols representing Lacaille’s work here in South Africa. The significance of Table Mountain is probably related to *Mons Mensa*, the constellation he named it after. (Source: *The Astronomy of Southern Africa* by Patric Moore and Pete Collins & courtesy of South African Library.)

The Charles Affair

compiled by I.S. Glass

In this news article we give a brief account of the suspension of Prof Phil Charles, the Director of SAAO, and subsequent events up to the time of going to press.

The Events

On 25 January 2010, Dr Gatsha Mazithulela, Vice-President of the National Research Foundation (NRF) in charge of National

Facilities, flew to Cape Town where he, summarily and without warning, informed Prof Phil Charles, Director of the SAAO, that he was suspended with immediate effect. At a meeting later the same day, the staff of SAAO were told by the President and Chief Executive Officer of the NRF, Dr Albert van Jaarsveld, that Prof Charles was to be subjected to a disciplinary enquiry and that he had been suspended pending

its result. A neutral person was to be appointed to chair the hearing.

When asked about the reason for this precipitate action Dr van Jaarsveld said only that it was a purely disciplinary affair and that it had to do with management of communication within the organization.

While the formal charges have as yet not been revealed, it has become evident that Prof Charles was accused of leaking internal policy documents to outsiders. The charges concerned two issues, viz. (1) that National Facilities such as the SAAO would from 1 April 2010 be managed by a scientist-administrator, to whom their Chief Scientists would be subordinated and, (2), that the Minister had been asked to announce that the operations centre of the MeerKAT radio observatory would be located on a portion of the Ysterplaat aerodrome, near the Canal Walk shopping centre.

The NRF, however, on 9 February, denied that the location of the operations centre had been an issue and Dr van Jaarsveld re-iterated this denial on 24 February. Bernie Fanaroff, the director of the SKA project, asked the British journal *Nature* to retract a news story on the subject for that same reason.

Hearings were duly held before an advocate appointed by the NRF, beginning 11 February, but the process could not be completed and required 3 additional days spread over the subsequent 3 weeks. His judgment, announced on 12 March, was



The debacle attracted lots of media attention, as can be seen here in the lamp-post headline held by Prof Charles. (Picture: Anne Charles)

that Prof Charles was not guilty on any of the charges (whatever they precisely were). An intransigent press statement was issued that day by Mr Patrick Thompson, Group Executive: HR and Stakeholder Relations, NRF, containing the following:

“The Chairperson found Prof Charles to be not guilty on all charges. However, the NRF executive is studying the content of the report with a view to dealing with any issues requiring further attention.

“It must be noted that the NRF had initiated this process with an intention of correcting perceived transgressions in the management and governance processes within SAAO. The NRF believes that the issues that gave rise to these proceedings may still exist and that they still require be dealt with.”

In other words, they did not consider the matter to be over.

On 17 March, a spokesperson for the NRF told *Nature* that “the circulated documents contained many issues, including the site of the MeerKAT control centre. The charges, however, amongst others, relate to the unauthorized circulation of documents and not about the merits of the site decision”.

The Charges

Prof Charles and the SAAO staff member who was allowed to accompany him to the hearing are constrained by an agreement that all employees of the NRF have to sign which does not permit them to make statements to the press.

However, on the evening before the first day of the hearing, Prof MW Feast, a former director of SAAO, was suddenly asked to be an observer on behalf of the astronomical community at the proceedings. Not being an employee of the NRF, he was the only astronomer present not obliged to keep silent. It is through a letter that he wrote to the *Cape Times* (18 March, aptly entitled *Unjustified inuendo*) that some of the details of the charges have become public knowledge.

Prof Feast wrote (in part):

“The matter has its basis in an e-mail and attachments sent by the vice-president (facilities) of the NRF to Charles. This contained the information that the site for the MeerKAT (radio astronomy)

control centre had been approved and the minister had been asked to announce this [which Prof van Jaarsveld had denied]. It also contained details of a restructuring of national facilities (including SAAO). Among other things, this restructuring involved a change in the nature of the directorship of SAAO from that of an internationally respected research astronomer to a more managerial position. This too was presented as a firm decision of the NRF to be implemented in early 2010.

“Charles recognised that these decisions had wide implications, not only for SAAO but for its national and international stakeholders, particularly astronomers and their students at South African universities and the SALT international consortium, with which SAAO has contractual obligations. It was clear that immediate action was necessary in order to avoid embarrassment to the minister if she made an announcement which might then be questioned by members of the scientific community. Charles therefore sent this e-mail to senior people at UCT and to the chairperson of the SALT board, Prof Ted Williams of Rutgers University, US.

“It is the dissemination of this information and criticism of it which is at the basis of the charges. The hearing found him not guilty of the charges. Evidently he was within his rights and responsibilities to both SAAO and to its users and partners in acting in the manner he did.”

In reference to Thomson's press release of 12 March, Feast concluded: "There are indeed issues that remain to be solved but these relate to the operation of the NRF executive, including its attempt to force through changes without proper consultation of the community which it is supposed to serve."

Most in the scientific community are of the opinion that to have suspended the director of a National Facility and put him through some six weeks of anxiety was an extreme course of action and uncalled for, given the presumed charges. Such treatment is usually reserved for alleged theft or sexual misconduct. As the formal charges have still not been published, many onlookers may possibly have doubts in their minds as to how serious his "crimes" might actually have been. Prof Charles has very reasonably called upon the NRF to publish the accusations it made against him, but this request has fallen on deaf ears.

Outsider Reactions

The astronomical communities at home and overseas continue to be seriously perturbed by the manner in which this affair has been handled, and have made known their concern by protesting to the officials concerned and their superiors in the Department of Science and Technology. The executive of the NRF, particularly its President and its Vice-President in charge of National Facilities, who seem to have been at the epicentre of the affair, were asked by several individuals and learned

societies to handle the issue, whatever it was, more discreetly and in a manner that all could see was fair. However, these representations were invariably met with statements from the NRF that the affair is purely an "internal one".

As the scandal became more public through newspaper reports and items in overseas media such as the British scientific journal *Nature*, it became obvious that it was reflecting badly on the ability of South Africa to administer its science in a proper fashion, and that in particular its bid to host the Square Kilometre Array was likely to be in jeopardy.

The Royal Society of South Africa put forward the following statement after Prof Charles's acquittal had been announced. It summarises the feelings of many scientists about the matter:

"Professor Phil Charles (Director of the South African Astronomical Observatory) has been cleared of all the charges laid against him at a disciplinary hearing initiated by the Corporate Executive of the National Research Foundation (NRF). The major charge he faced was that he had shared 'secret information' with colleagues regarding decisions the NRF had taken in connection with the future of astronomical facilities in South Africa. However, this was information that these very colleagues should have been given by the NRF, and indeed, because they are stakeholders, they should also have been party to the process that led to these

decisions. We are also concerned that the NRF acted against Professor Charles despite the request of the Minister of Science and Technology not to do so.

“The action taken against Professor Charles has disturbed the international scientific community and placed a grave question mark against South Africa’s international scientific reputation. Corporate governance would appear to be lacking and clear policy direction ignored.

“In broader perspective, we would like to raise our concern that our national scientific facilities may become subject to a form of totalitarian control. Since 1994 we have enjoyed policies based on democratic consultation, open processes and freedom of information. We would strongly support an open and public enquiry into this damaging incident and the implementation of mechanisms to prevent anything similar occurring in the future. Unless such a process takes place, we fear that the international scientific community will lose confidence in entering into collaborative agreements with the South African scientific establishment.

“Professor John Skinner (President of the Royal Society of SA), 16 March 2010”

Involvement of the Department of Science and Technology

The National Research Foundation falls under the Department of Science and

Technology (DST). The Department has allocated R2.3 billion up to 2013 towards MeerKAT, the SKA bid and the associated Human Capital Development programme. So far SA has spent R258 million (since 2003) on securing the project. According to the DST, R23 million was spent on universities, R155 million on road construction to the site and another R11.5 million on building accommodation.

Since the ministry is so keen on the SKA project and has invested so much money and effort in it, they were extremely anxious for the affair to be handled properly and went so far as to request that the disciplinary hearing be dropped. However, the minister was in effect told by the NRF to mind her own business: they considered it to be an internal affair and they were handling it as they thought fit (letter from Minister’s PA to the *Cape Times*, 19 February 2010).

Prof Charles’s point of view

At a private event to thank those who supported him following his “acquittal”, Prof Charles talked of the pressure he and his wife had been under during the hearing. People had asked him why he had put up with the whole affair and he explained that he felt he had to take a stand on the way in which the NRF was attempting to govern the scientific community. He went on to say that he had never been treated as badly as on this occasion in any of the previous positions he had held.

He thanked in particular Dr Darragh O'Donoghue (and his assistant, Kevin Govender) for defending him at the hearing and those who had been witnesses on his behalf, including Prof Ted Williams of the SALT Board (who had come over specially from the US), Prof Roy Booth of HartRAO, Prof David Aschman, Prof René Kraan-Korteweg and Prof George Ellis (UCT), Prof Patricia Whitelock and Dr Thebe Medupe (UCT/SAAO) and Dr David Buckley (SAAO).

Recent developments

Now, in the latest twist to the affair, DST Minister Pandor has intervened to pour oil on troubled waters (press release of 19 March from the Ministry). The implied threat in Patrick Thompson's statement of 12 March is now described as "unintended". The Minister further states that the chairman of the board of the NRF, Prof Belinda Bozzoli, will personally intervene to patch up relations between the NRF and the SAAO. Whether this can be accomplished satisfactorily considering all that has happened is open to question. As Chairperson of the NRF Board, Prof Bozzoli cannot be regarded as independent.

ASSA and the Royal Society of South Africa have called for a public inquiry into the conflict between the NRF and the SAAO so that South Africa's reputation in the international scientific community can be re-established and to ensure that measures are put in place to ensure that all role-players in the South African scientific

system of governance operate in an open and accountable manner in future.

The scientists involved have no desire to turn the Charles Affair into a political issue but inevitably it has come to the attention of the Official Opposition. In an article entitled *Veil of secrecy not in SA science's interests in Business Day* of 26 March, Marian Shinn, MP and Democratic Alliance shadow minister of science and technology, suggests that the incident "may prove to be the tipping point in its relationship with local scientists and international scientific partners". She mentions the fury of the science community that has been unleashed on the NRF and how they ... "want NRF heads to roll and comprehensive change in the governance of the institution to make sure it is scientists — not bureaucrats — who call the shots about how science is managed." She also makes reference how ... "Science and Technology Minister Naledi Pandor, who went public about her concerns over the hearing, has had meetings with top NRF people, as well as representations from scientific organisations. Discussions are under way about calling in top international scientists to independently assess what went wrong at the NRF and how it can best be corrected in the interest of SA's scientific endeavours." She further echoes how ... "the wider international science community has joined the clamour for answers and transparency. Scientists are demanding the charges be made public to clear Charles from any innuendo and for the

NRF to be interrogated about the reasons and processes that informed its decision to secretly charge him.” Finally she raises her concern on the immense damage that this incident has done to SA’s standing in the international scientific community.

As of 9 April it appears that some officials in the NRF and the Department of Science and Technology are attempting to encourage the view that the matter is settled and closed when clearly it is not. No form of apology to Prof Charles has been issued and no heads have rolled. The NRF has shown no contrition or given any indication that they have learned anything over this matter. It may be that they will carry on with their dubious plan to reorganize their institutes as if nothing has happened. Further, there has been no sign of any investigation into the affair, which must have cost of order R1M in terms of fees for the presiding advocate, plane trips and, above all, the wasted time of several highly paid officials.

However, the cost should we lose the bid for the SKA will be much greater. If we are to have any hope of impressing potential foreign partners that we can administer science fairly and efficiently it has to be shown that something has been done about what seems to be a malicious prosecution.

Background Notes

The details of the contentious document that caused much of the trouble, *Lead-*

ership Structure of a National Facility of the NRF, by Dr Gatsha Mazithulela, have now become generally known. In it, it is bluntly stated that by 1 April 2010 a new management structure was to be in place in all National Facilities. Basically, the present Directors would be pushed aside to become “Chief Scientists” and would be replaced by people who are primarily administrators.

The other supposed “leak” was, as mentioned, that it had been decided that the Operations Centre of the MeerKAT radio telescope, a demonstrator of our capability to host the SKA, would be located on a piece of the Ysterplaat Aerodrome rather than at or near the SAAO site in Observatory, in the view of many a more suitable and convenient place to put it. The Minister had been asked to promulgate this decision but fortunately had not done so before the suspension of Prof Charles.

Another document in circulation (*Memo: MeerKAT Control, Science and Engineering (CSE) Centre* by T. Cheetham) contains a number of specious reasons why the SAAO site was considered unsuitable for the Operations Centre of MeerKAT and the SKA, should South Africa win the bid for the latter. [It should be noted that the astronomical community was not so much concerned at where it was to be put, as at the undemocratic and potentially irresponsible way in which this was supposedly decided.] ☆

Cape Centre's trip to Carnarvon

Kechil Kirkham

Members of our Society come from all walks of life and some of them have quite useful day jobs. Chris de Coning, vice-chair of the Cape Centre, is a tour guide. He put his skills and resources to great effect in designing the Cape Centre's trip to SKA and SALT. It was in fact his idea in the first place. Trundling across the Karoo all day long in the height of summer is perhaps not everyone's idea of bliss, but in the vehicle that Chris hired and piloted, it was a joy. Unlike the early pioneers, we journeyed in one of the most comfortable coaches in Africa with air-conditioner and DVD capability, fridges and a loo. Reclining seats were made good use of as we ploughed on through mile after mile of Karoo landscape. We lost count of

the number of windmills, bok, isolated farmsteads and lonely birds of prey. But we did count the number of vehicles on the long road between Carnarvon and Sutherland ... two! The *lekker kos* more than made up for quirky hotel furnishings. This was one of those journeys that could be made nowhere else on earth. Our telescopes were well catered for, though the more delicate parts were allowed first class seating all of their very own.

The tour spent the first night in Carnarvon itself. Chris organised an evening's hospitality and star-gazing at a nearby farm which will form the administrative headquarters for the SKA. The next day involved a tour of the SKA site, dishes and facilities



Dishes at SKA with the tour bus and a human (Auke Slotegraaf) for scale.



(left) Group photo at the SKA site.

(below) Our back-up driver, Dylan Lock!

(preceded by a snake inspection). After lunch we drove to Sutherland and after dinner were treated to another evening's star-gazing. This time with Kevin Govender of the SAAO at the Sutherland Visitors' Observatory. The following morning we departed after a tour of the telescopes and SALT, sleepy and happy.



How many astronomy societies can boast a trip like this? We went to see not one but two centres of astronomy, containing some of the most advanced hardware in the world, incorporated two nights of unparalleled star-gazing, conducted by a professional tour guide and astronomer, accompanied by expert astronomers, and all for a tiny cost. What made the trip even more special was getting to know the Stellenbosch star-gazers, who are a doughy bunch. Ernst sold his sheep to come on this trip, and nobody thought he was mad for doing so. Many pitched

in to enrich the journey. Auke Slotegraaf entertained us with stories of the constellations, Kevin Govender gave up his weekend to show us round the Sutherland telescopes, Paul and Mary Fanner followed in their Land Rover bringing their telescope and Chris's sister kept us supplied with endless coffee, made with their unique device revealing Voortrekker ingenuity. The stars and weather behaved themselves, the Milky Way peppered the heavens and everything went according to plan. ☆

A telescope “farm” for Sutherland

Willie Koorts

There are currently 13 telescopes dotted around the Sutherland Observatory hill-top. The number will soon be increased by almost 50% by one single institute, namely the Las Cumbres Observatory from California. As part of the LCOGT (Las Cumbres Observatory Global Telescope Network), two domes each containing a 1.0m (40-inch) telescope as well as two clamshell buildings, each with two 0.4m (16-inch) telescopes – hence a total of six new fully robotic telescopes – are planned to be erected in Sutherland towards the end of this year. While the two 1.0m’s are dedicated to science, the four 0.4m’s will be part of an education programme to encourage teachers and students to engage in research-based sci-

ence education with the remainder of the time available to the public, as so-called “Citizen Science”. All this would be totally free of charge to fulfil LCOGT’s mission to (1) establish and build a durable scientific institution dedicated to time-domain astrophysics and (2) use astronomical research to inspire critical thinking and technical understanding in young people.

The Las Cumbres Observatory has their headquarters in Santa Barbara, California and is perhaps best known for their two 2.0m Faulkes Telescopes, one in Hawaii and the other in Australia. These telescopes are also available to teachers for them to use as part of their curricular

or extra-curricular activities. They are fully supported by a range of educational materials and a team of educators and professional astronomers. The envisaged installation in Sutherland is an expansion to this network and will be the second of six similar stations to be erected in the next two years all around the globe. The first installation in this



The planned site layout in Sutherland. In the foreground are two existing buildings (a storage rondawel and the IRSF dome) behind which the site will be laid out. Although three buildings of each type are shown here, only two domes and two aqawan enclosures will initially be erected. In 2013 the three best sites in the network will each get an additional 1.0m telescope. The two shipping containers are a site services building (SSB) and storeroom respectively. (Source: LCOGT)

telescope network is at Cerro Tololo in Chile. The foundations for this site were poured in February with those of Sutherland planned for May. In total, fifteen 1.0m's and twenty-two 16-inchers are

planned to be deployed in six locations. Other sites include Tenerife in the Canary Islands and Siding Spring Observatory, Australia (or Western Australia). Also being considered is San Pedro Martir in Mexico with McDonald Observatory in



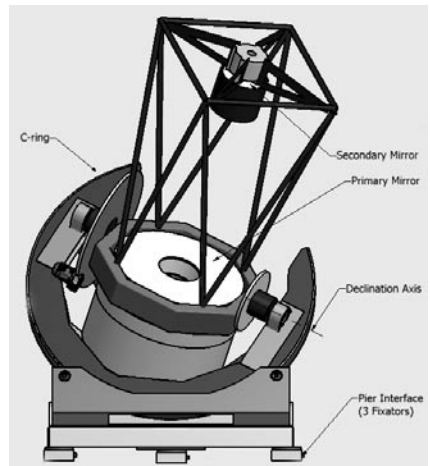
The smaller 16-inch (0.4m) telescopes use the standard Meade telescope tube and optics but is completely customised by LCOGT and mounted on their equatorial split-ring mount. (Pictures: Phil Charles)



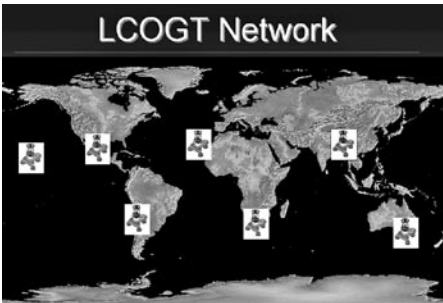
MD Wayne Rosing operating the dome opening paddle of a prototype Aqawan (an Indian word meaning 'to be dry') clamshell enclosure. The production Aqawans will be somewhat larger than this one to house two 0.4m telescopes each. (Picture: Phil Charles)



Part of the development team posing with a prototype 1.0m telescope of which 15 will be deployed in the LCOGT network. (Source: LCOGT)



A CAD drawing showing the design of the 1.0m telescope. (Source: LCOGT)



The envisaged site deployment plan of the Las Cumbres telescope network shown on a world map. (Source: LCOGT)

Texas as an alternative, depending on the political situation in Mexico. A site in Asia is also planned, possibly the Yang-BaJing cosmic ray observatory in Tibet which is at 4 300m altitude.

The telescope network is the brainchild of Wayne Rosing. During his working career Wayne was an engineer involved in the development of the Apple Lisa (the forerunner to the Mac), followed by the Sun Microsystems Spark server. He was already retired when he was approached to help develop an internet search engine – which turned out to be Google!

SAAO Director, Prof Phil Charles visited LCOGT late last year to finalise the last details of the agreement between these two parties. In discussions with Wayne Rosing, it was decided that, instead of the usual site fee, LCOGT will fund the appointment of a post-doc, based

at SAAO, Cape Town, who would support the SAAO education and public out-reach programs. Part of this person's responsibilities would be to act as a liaison between SAAO and LCOGT.

As the project coordinator in South Africa, I visited Santa Barbara in February to familiarise myself with the equipment and discuss all the various aspects of the installation with their respective project managers in view of local conditions here. I was very impressed with their setup. LCOGT headquarters is in a double-story building which contains their offices and also some very well equipped workshops, laboratories and clean rooms where the telescopes and cameras as well as their supporting equipment like the enclosures, dome control gear, etc. are developed. For testing purposes, they have set up two enclosures in their parking lot – a conventional dome for the 1.0m's and a clam-shell "Aqawan", designed to



Wayne Rosing posing at his car which displays their logo with his licence plate holder showing his Google connection. A purple flamingo that looks through a telescope has 'mysteriously' been added to their logo recently! (Picture: Willie Koorts)

house two 16-inch telescopes. “Aqawan” is a Chumash word meaning ‘to be dry’ which is very appropriate since Santa Barbara used to be occupied by a large Chumash Indian settlement many moons ago. It is also interesting that the Aqawan concept was inspired by the MONET enclosure which was designed in South Africa.

Unfortunately, during my visit, many of the parts for the 1.0m telescopes were still being fabricated, so there was not much of these telescopes to be seen except for an early prototype which had since been partially redesigned. The telescope has an open-lattice carbon-fibre truss-tube with light-weight Hextec mirrors on a split-ring horse-shoe equatorial mount. A prototype mount fitted with two smaller telescopes was installed in the test dome in their car park. It was quite impressive seeing this mount in action – it can be slewed around the sky at amazing speeds. To enable quick responses for events like gamma-ray bursts, they modified the standard Ash-dome to enable it to turn at almost twice its normal rotational speed.

For the 16-inch telescopes it was initially hoped to simply buy standard Meade telescopes and control them robotically. Unfortunately, the quality of commercial “made in China” Meades are not good enough. They then considered taking a



A full size Aqawan in the foreground with the 5.6m diameter Ash Dome behind it, seen here deployed in the LCOGT headquarters car park for testing. (Source: LCOGT)

standard Meade OTA (optical tube assembly) and mount it on their split-ring equatorial, but again the required quality was lacking. It was finally decided to buy only the optics and unpopulated carbon-fibre tubes from Meade. These tubes are then fitted with in-house developed mechanisms and electronics and mounted on a LCOGT designed horse-shoe equatorial drive to produce the final telescopes for deployment in the field.

As far as instrumentation is concerned, at first light the 1.0m’s will be equipped with science grade CCD cameras with a planned fiber-fed medium-resolution spectrograph to be added sometime in the future. The 0.4m’s will be fitted with commercial SBIG (Santa Barbara Instrument Group) CCD cameras. The SBIG factory happens to be one block away from LCOGT headquarters.

As is the trend with modern telescope projects, particularly with robotic systems, the software component is huge. During my visit, the LCOGT Science Advisory Board had a two-day meeting. I attended one of their sessions where an overview

of the software design was given. It was interesting to see how the software team already addressed almost any conceivable scenario in the design of the control software to ensure the safety of the equipment and ease of operation for the users. ☆

CCD activities at the Bronberg Observatory (CBA Pretoria) in 2009

Berto Monard

The Bronberg Observatory (25° 54' 32 S, 28° 26 18 E, alt. 1590 m) is situated 40 km south-east of Pretoria, on plot 39, Rietfontein JR 395, which is located on top of the Bronberg ridge, which stretches from Pretoria to just east of the observatory.

The Observatory, which is run by Berto Monard, is also the African participant in the global CBA (Centre for Backyard Astrophysics) network under the name of CBA Pretoria and the dedicated observing station for the microlensing follow up network (uFUN).

The observatory houses a Meade 12-inch RCX400, which is permanently mounted on a pier and polar wedge. This telescope is used with a CCD camera, SBIG ST-7XME and a focal reducer that produces an effective f/5. A filter wheel with BVRI filters is part of the system.

The main types of observation at the Bronberg Observatory / CBA Pretoria were explained in the 2002 and 2004 reports.

The following observing activities were done in 2009:

1. Timeseries Photometry (part or full night) on cataclysmic variables (CVs)

Most of the timeseries were done as participation in the CBA around the globe monitoring network and VSNET campaigns. Some were done simultaneously with satellite observations. Some were exploration targets and not even CVs. The following targets were monitored over four or more nights or part thereof. Observations were unfiltered CCD unless stated differently:

- BW Scl: Aug 24-26, 28, 29, 31, Sep 1, 5-8 // 10 nights
- HP Lib: Apr 22, 26, May 12,15, Jun 14 // 5 nights
- IM Nor: Jul 2, 8, 13, 17, 29 // 5 nights

- Nova LMC 2009: Apr 3, 24, 26-28, May 4 // 6 nights
- T Pyx: Mar 27, 29, 31, Apr 8, 17, 19 // 6 nights
- V1213 Cen (V): May 14, 17-20, 25, 27, 28, 30, 31, Jun 1, 2 // 12 nights
- V2672 Oph: Aug 18, 20-26, 29, 31 // 10 nights
- V4743 Sgr: May 30, 31, Jun 20, 22, 23, 25-28, Jul 1, 10, 14-16, 18-23, 25, Sep 19, 23, 27 // 24 nights
- VX For: Sep 15, 16, 18, 20, 21, 23, 26, 27, Oct 5-8, 14 // 13 nights
- VY Scl: Aug 9, 11, 18, 20, 21, 23 // 6 nights

Other targets with timeseries photometry were done on fewer nights. They include outbursting CVs, ‘exploration’ targets and young novae. They are listed alphabetically with the number of observed nights (or part thereof) in brackets:

CL Sco (V,1), CTCV J1300-3052 (2), FO Aqr (3), OT J102842-0819 (2), OT J223003-1458 (3), RXS J0154-5947 (1), V382 Nor (1), V1223 Sgr (3),

2. Snapshot Observations of faint CVs and X ray Transients.

The coverage was quite dense but limited to mainly unstudied stars, specifically magnetic cataclysmic binaries.

3. Supernova Searching activities yielded 18 SNe in 2009:

- SN 2009O in anon. galaxy, Type ?, discovered on Jan 15.81 at 17.1CR
- SN 2009dp in NGC 6912, Type Ic, discovered on Apr 23.10 at 17.7CR
- SN 2009em in NGC 157, Type Ic, discovered on May 5.13 at 16.6CR
- SN 2009gl in IC 900, Type ?, discovered on Jun 23.75 at 18.1CR
- SN 2009ha in MCG-01-7-24, Type Ib/c, discovered on Jul 2.15 at 16.5CR
- SN 2009hd in NGC 3627, Type II, discovered on Jul 2.69 at 15.8CR
- SN 2009hf in NGC 175, Type IIP, discovered on Jul 9.14 at 17.2CR
- SN 2009hg in NGC 4767B, Type?, discovered on Jul 9.69 at 16.9CR
- SN 2009hm in NGC 7083, Type Ib, discovered on Jul 17.86 at 15.4CR
- SN 2009hq in NGC 4152, Type ?, discovered on Jul 30.70 at 15.5CR
- SN 2009id in ESO 282-32, Type II, discovered on Aug 11.76 at 16.6CR
- SN 2009if in IC 2070, Type Ib/c, discovered on Aug 18.12 at 17.8CR
- SN 2009ik in NGC 4653, Type Ia, discovered on Aug 22.70 at 15.3CR
- SN 2009la in NGC 1572, Type Ia, co-discovered on Nov 11.88 at 16.1CR
- SN 2009lc in anon. Galaxy, Type?, discovered on Nov 14.78 at 17.7CR
- SN 2009mg in ESO 121-26, Type IIb, discovered on Dec 7.90 at 17.3CR
- SN 2009mi in IC 2151, Type Ic, discovered on Dec 12.90 at 15.4CR
- SN 2009mz in NGC 5426, Type Ia, discovered on Dec 26.09 at 15.1CR

Note: Quite a number of the listed 2009 SNe were discovered low near the horizon. This yield was made possible by the low horizon offered at the Bronberg location. More on the above SNe and their notifications in the circulars of the International Astronomical Union can be found at:

<http://www.supernovae.net/snimages/> and

<http://cfa-www.harvard.edu/cfa/ps/lists/RecentSupernovae.html>

4. Follow-up observations on alerts for Gamma Ray Bursts (GRBs)

No GRB afterglows were imaged in 2009.

5. Follow up on X ray sources

Due to increasing multi-wavelength follow-up efforts by larger telescopes there was not much reason to spend time on this project at the Bronberg observatory in 2009. Future involvement is expected to remain at a low level.

6. Observations of microlensing events

As African participant in the Microlensing Follow up Network (**MicroFUN**), many microlens events were observed in 2009.

Microlensing events detected by the OGLE or MOA groups in the galactic bulge are studied for caustic behaviour in the microlensing lightcurve to detect the presence of planets around the lens star. Such planets have been discovered thanks to the global monitoring network.

In 2009 OGLE observations were interrupted to allow for an upgrade.

For more info see: <http://www.astronomy.ohio-state.edu/~microfun/>

The following events were observed:

MOA-2009-BLG-050: May 26

MOA-2009-BLG-137: May 04

MOA-2009-BLG-146: Apr 12

MOA-2009-BLG-174: May 1

MOA-2009-BLG-227: May 19

MOA-2009-BLG-229: May 21

MOA-2009-BLG-259: Jul 1-3

MOA-2009-BLG-266: Sep 11-13, 15, 16, 18, 21-23, 26

MOA-2009-BLG-319: Jun 24

MOA-2009-BLG-346: Sep 2, 3

MOA-2009-BLG-361: Jul 11

MOA-2009-BLG-365: Jul 12
 MOA-2009-BLG-405: Jul 26
 MOA-2009-BLG-411: Aug 9
 MOA-2009-BLG-433: Aug 26-28
 MOA-2009-BLG-456: Sep 15, 16
 MOA-2009-BLG-466: Sep 6
 MOA-2009-BLG-478: Sep 9
 MOA-2009-BLG-489: Sep 20, 21

OGLE-2009-BLG-020: Mar 26-28

Some of the microlensing events turned out to be anomalous. Publications on those events usually follow within two years after the event. As can be seen in the publication list below quite a number of anomalous events were published on. The MOA-2008-BLG-310 event also led to an S&T article with special emphasis on the crucial contribution from the Bronberg Observatory.

7. Symbiotic stars monitoring

This project has continued to produce interesting information on the select group of symbiotic stars.

8. Conclusions for the Bronberg Observatory in 2009

2009 was another successful year for the Bronberg Observatory with 18 SN finds, a successful continuation of the faint CV and symbiotic star observing programmes and a valued participation in the microlens follow-up network.

9. References/publications to date

Observing data, contributed to campaigns resulted in co-authorship in publications. They are listed in the Appendix below.

IAUCs and GCNs are not included.

Appendix: List of relevant publications in 2009

Title: Survey of Period Variations of Superhumps in SU UMa-Type Dwarf Novae

Authors: Kato, Taichi; Imada, Akira; Uemura, Makoto; Nogami, Daisaku et al

Publication: Publications of the Astronomical Society of Japan, Vol.61, No.SP2, pp.S395-S616

Bibliographic Code: 2009PASJ...61S.395K

Title: Mass measurement of a single unseen star and planetary detection efficiency for OGLE 2007-BLG-050

Authors: Batista, V.; Dong, S.; Gould, A.; Beaulieu, J. P.; Cassan et al

Publication: Astronomy and Astrophysics, Volume 508, Issue 1, 2009, pp.467-478 (A&A Homepage)

Bibliographic Code: 2009A&A...508..467B

Title: Interpretation of Strong Short-Term Central Perturbations in the Light Curves of Moderate-Magnification Microlensing Events

Authors: Han, C.; Hwang, K.-H.; Kim, D.; Udalski, A. et al

Publication: The Astrophysical Journal, Volume 705, Issue 2, pp. 1116-1121 (2009)

Bibliographic Code: 2009ApJ...705.1116H

Title: Extreme Magnification Microlensing Event OGLE-2008-BLG-279: Strong Limits on Planetary Companions to the Lens Star

Authors: Yee, J. C.; Udalski, A.; Sumi, T.; Dong, Subo et al.

Publication: The Astrophysical Journal, Volume 703, Issue 2, pp. 2082-2090 (2009)

Bibliographic Code: 2009ApJ...703.2082Y

Title: Simultaneous multiwavelength observations of the second exceptional γ -ray flare of PKS 2155-304 in July 2006

Authors: Aharonian, F.; Akhperjanian, A. G.; Anton, G. et al.

Publication: Astronomy and Astrophysics, Volume 502, Issue 3, 2009, pp.749-770

Bibliographic Code: 2009A&A...502..749A

Title: The Extreme Microlensing Event OGLE-2007-BLG-224: Terrestrial Parallax Observation of a Thick-Disk Brown Dwarf

Authors: Gould, A.; Udalski, A.; Monard, B.; Horne, K. et al.

Publication: The Astrophysical Journal Letters, Volume 698, Issue 2, pp. L147-L151 (2009)

Bibliographic Code: 2009ApJ...698L.147G

Title: Microlensing Event MOA-2007-BLG-400: Exhuming the Buried Signature of a Cool, Jovian-Mass Planet

Authors: Dong, Subo; Bond, I. A.; Gould, A.; Kozłowski, Szymon et al.

Publication: The Astrophysical Journal, Volume 698, Issue 2, pp. 1826-1837 (2009).

Bibliographic Code: 2009ApJ...698.1826D

Title: The Effect of a Superoutburst on the White Dwarf and Disk of VW Hydri as Observed with FUSE

Authors: Long, Knox S.; Gänsicke, Boris T.; Knigge, Christian; Froning, Cynthia S.; Monard, Berto

Publication: The Astrophysical Journal, Volume 697, Issue 2, pp. 1512-1528 (2009).

Bibliographic Code: 2009ApJ...697.1512L

Title: The 2008 Luminous Optical Transient in the Nearby Galaxy NGC 300

Authors: Bond, Howard E.; Bedin, Luigi R.; Bonanos, Alceste Z.; Humphreys, Roberta M.; Monard, L. A. G. Berto; Prieto, José L.; Walter, Frederick M.

Publication: The Astrophysical Journal Letters, Volume 695, Issue 2, pp. L154-L158 (2009). (ApJL Homepage)

Bibliographic Code: 2009ApJ...695L.154B

Title: Photometric Studies of a WZ Sge-Type Dwarf Nova Candidate, ASAS 160048-4846.2

Authors: Soejima, Yuichi; Imada, Akira; Nogami, Daisaku; Kato, Taichi; Monard, Berto

Publication: Publications of the Astronomical Society of Japan, Vol.61, No.2, pp.395--401 (PASJ Homepage)

Bibliographic Code: 2009PASJ...61..395S

Title: Time-Series Photometry of GW Librae One Year After Outburst

Authors: Schwieterman, Edward; Wood, M. A.; Piwowar, D.; Patterson, J.; Rea, R.; Monard, B.; Krajci, T.; Bolt, G.; Roberts, G.; Foote, J.; McCormick, J.

Publication: American Astronomical Society, AAS Meeting #213, #491.15; Bulletin of the American Astronomical Society, Vol. 41, p.469

Bibliographic Code: 2009AAS...21349115S

Title: Time Series Photometry of the Cataclysmic Variable Systems VY Aquarii and V2491 Cygni

Authors: Piwowar, Dan T.; Wood, M. A.; Schwieterman, E.; Patterson, J.; Monard, B.; Rea, R.; Starkey, D.; Roberts, G.

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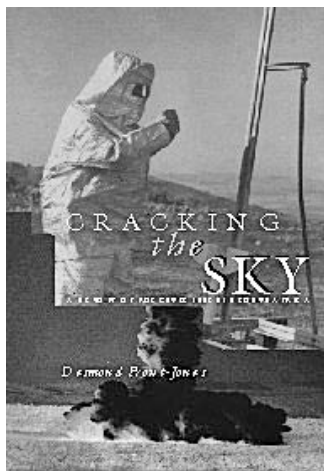
Title: The 2008 Luminous Transient in the Nearby Spiral NGC 300

Authors: Bond, Howard E.; Bedin, L.; Humphreys, R.; Monard, B.; Prieto, J.; Walter, F.; Bonanos, A.

Publication: American Astronomical Society, AAS Meeting #213, #434.14; Bulletin of the American Astronomical Society, Vol. 41, p.305

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Cracking the Sky: A history of rocket science in South Africa

by Desmond Prout-Jones

Published by: UNISA Press

Publication date: 2002

ISBN: 1-86888-203-9

Soft cover, 192 pages

Price: R79.00 or US\$11.00 including airmail from UNISA Press

This is not a newly published book. In fact, it was published in 2002. So, why publish a review eight years later? Because this book is well worth reading, and because it was not widely noticed when it was published. It presents an engaging biographical account by Desmond Prout-Jones of his rocketry activities in South Africa, spanning the years from 1947 to 1963, when those activities were stopped by the government of the day.

The story begins with an eleven-year-old Prout-Jones trying out a homemade rocket in his backyard. His account will sound familiar to anyone who has dabbled in rocketry without really understanding what they are doing and when for the first time **things go very badly wrong**. This is a watershed moment for every amateur rocketeer, the moment when the realisation dawns

that rocketry is not something to play with. Prout-Jones learnt this lesson at the age of eleven. From then on he practised and cultivated a culture of safety in all his rocketry endeavours.

In the 16 years that followed, Prout-Jones built and launched 528 rockets, an average of 36 rockets per year! Together with other enthusiasts he established the South African Rocket Research Group (SARRG) in 1959. This band of amateur enthusiasts had as their long-term objective nothing less than launching South Africa's first satellite.

Under Prout-Jones's able leadership the SARRG built and launched a series of successively more capable rockets. They achieved a number of notable successes. Among these are:

- The first mile-high rocket

- flight in South Africa;
- The first multi-stage rocket to be flown in South Africa;
- The first liquid fuel rocket motor to be tested in South Africa;
- The first flight-demonstration of thrust-vector control on an amateur rocket in South Africa.

The highest altitude attained by one of the SARRG rockets was 48 kilometres, a record that remains unbroken among amateur rocketeers in this country to this day.

The trajectory chronicled by Prout-Jones in his book mirrors that of other rocket pioneers, such as Herman Oberth, one of the founding fathers of rocketry and astronautics, and Wernher von Braun, father of the V2 rocket and the Saturn V Moon rocket, who also started their activities in the German rocket societies of the 1920s and 1930s.

In 1963 the activities of the SARRG came to an abrupt stop under an instruction from the Chief Inspector for Explosives for Prout-Jones to stop his rocket-building activities – or face prosecution. Prout-Jones had had an uneasy relationship with this official from the outset and eventually his projects became too ambitious to be tolerated.

If they had not been stopped, would the SARRG have succeeded in achieving their goal of orbiting a satellite? In

my view, probably not, for two reasons. Firstly, the reason why the German enthusiasts succeeded is that they became paid professionals, working full-time for military masters with deep pockets. The same holds true for subsequent rocket activities in the USA and the Soviet Union (which initially relied on the expertise of German rocket scientists).

The second reason is that there is a world of difference between a sub-orbital flight that reaches 150 km altitude before falling back to Earth, and an orbital flight, which has to attain a forward velocity at that altitude of around 8 kilometres per second to stay in orbit.

Nevertheless, the accomplishments of the SARRG were impressive for amateurs, even to this day. Prout-Jones went to great lengths to develop and implement safe handling procedures for his rockets and safety procedures for launching rockets. These are all well documented in the book. If you (or your children) are interested in rocketry **read this book before you build or launch any rockets.**

The book is illustrated with a number of black-and-white photographs taken by SARRG team member Jack Holloway. There is also a chapter on the history of rocketry, but this is just a cursory treatment. There are many other, more comprehensive accounts available elsewhere. For readers interested in the

technical details, Chapter 11 presents a brief overview of the terminology and some key equations. The treatment is necessarily brief and is presented in imperial units, which may be unfamiliar to the younger readers. Again, far more comprehensive treatments are available elsewhere.

The book is subtitled *A history of rocket science in South Africa*, but it does not really live up to this. The SARRG was but one of a series of rocketry-related activities in the country during the 1960s to the 1990s, some of them public and some military. That comprehensive history still needs to be written. The real contribution of

this book is Prout-Jones's story of his dreams, successes and failures. It is a story of persistence, dedication, triumph and eventual disappointment.

This book is a valuable record of a little-known chapter of South Africa's space history. It shows what a dedicated group of amateurs with an inspired leader can achieve with very limited resources. It also serves as a reminder of how a government must balance safety and security concerns against allowing talented individuals and companies to push the boundaries of technology. This is never a risk-free process, especially in the space domain.

Peter Martinez

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Chapter 2 Reaching for the elusive mile
Chapter 3 Of mice and rockets
Chapter 4 The fire that thunders
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Chapter 9 Lifted on tongues of fire
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Chapter 12 The last chapter
Epilogue: The fire is no more



A Compass Pointing South

by Magda Streicher
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Image source: Stellarium.org

Consider for a moment those early seafarers – their fearlessness, their daring and their courage to explore the mighty oceans of the world. For them the compass must have been a most indispensable aid in their brave undertakings.

First there were the Portuguese explorers. Like Ponte Vasco da Gama, born 1460 in Sines, the province of Alemtejo, Portugal. Da Gama left Lisbon on 8 July 1497 with four ships and a crew of 170 men on a quest to discover a route from Portugal to the East. Following the route taken by earlier explorers (like Bartholomew Dias in 1488) they sailed via Tenerife and the Cape Verde Islands, reaching Lüderitz (which he thought

was Cape Point) in November 1497. He finally rounded the Cape of Good Hope and went on to India. Another was Ferdinand Magellan (1480–1521), after whom the two Magellanic satellite galaxies of our Milky Way have been named. To the Portuguese navigators the Southern Cross constellation was a symbol of their faith.

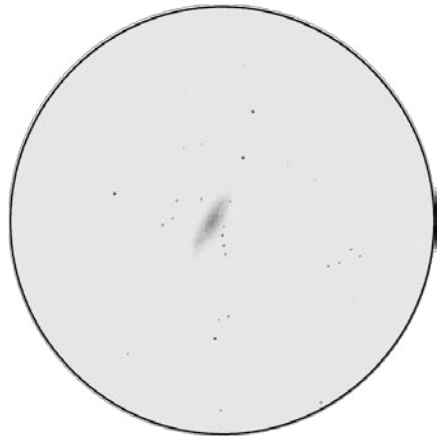
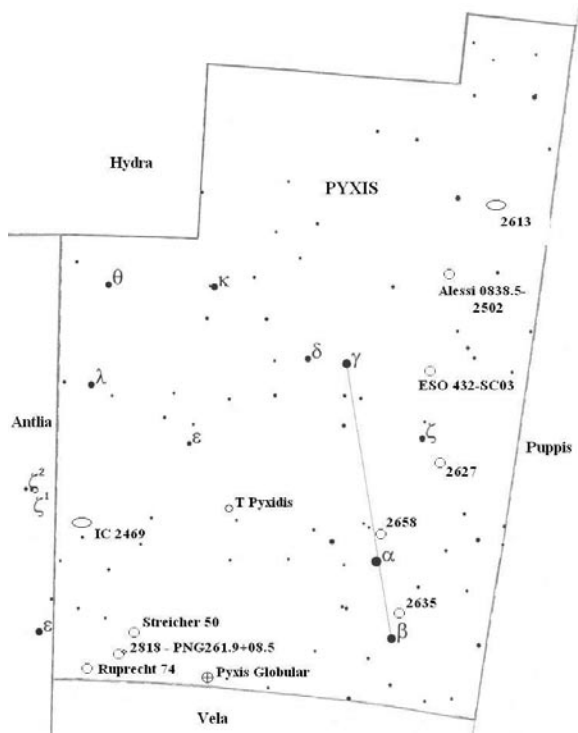
The French astronomer Nicolas-Louis de Lacaille (1713-1762) was responsible for naming some of the newer southern constellations during his stay at the Cape of Good Hope from 1750 to 1752. And of course Pyxis, the Mariner's



Vasco Da Gama's beautifully sculpted marble image at his last resting place in the Jeronimos Monastery Belem in Lisbon with a close-up of his face. (Photos: Magda Streicher)

Compass, was one of those to be accorded its place of honour against the southern night sky. The starry compass steers the stately ship of ancient times, Jason and the Argonauts' Argo Navis, accurately through the southern skies. The original constellation Argo Navis was broken down into parts by Lacaille in 1752. They are now known as Carina, Puppis and Vela. The constellation Pyxis is situated on the eastern edge of the southern Milky Way between Vela and Puppis.

A major cluster of galaxies, about 65 million light years away, known as the Puppis Concentration, spills over the Puppis border into the constellation of Pyxis. One of its members, **NGC 2613**, situated in the north-western part of Pyxis, barely one degree east of Puppis, is relatively easy to find. NGC 2613 is a barred spiral and slightly elongated in an east-south-east to west-north-west direction. The edges appear very hazy, with a brighter and longer north-western side. The relatively small, bright nucleus gives the impression of being lopsided towards the north-west. A string of very faint stars swings a quarter around the galaxy from north-west to south (see sketch). Intense deep pictures of this galaxy reveal multiple spiral arms.



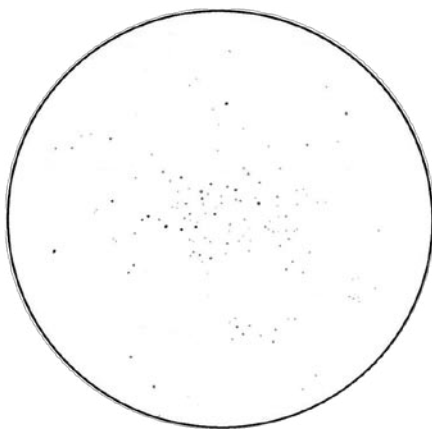
NGC 2613 sketched with my 16-inch S/C at 290x. North is up and east to the left.

A number of LBN (from B.T. Lynds' Catalog of Bright Nebulae) can be found within an area of 2 degrees east of NGC 2613. Using nebular filters make the field around this area appear quite hazy. A little asterism called **J 0838.5-2502** (*Deep Sky Hunters Catalogue*) is situated inside the western tip of nebula LBN 1073. Amateur astronomer Bruno Alessi discovered this string, in which seven outstanding stars can be seen in a curved formation. With brightness ranging between magnitude 8 and 9, they drape from north-west to south-east with a pair of coloured yellow stars claiming centre spot. Magnitude 5.2 eta Pyxidis is situated 1.2 degrees south of this little group.

The needle of the compass clearly projects through mag. 4 gamma Pyxidis and mag. 4.8 delta Pyxidis. It made me wonder whether Lacaille, in his mind's eye, saw the two beacon stars as true north and magnetic north respectively. In the starry field west of the imaginary compass needle are a few interesting star clusters.

The small group **ESO 432-SC03** is situated only 1.7 degrees west of gamma Pyxidis. This cluster displays an unusual gently curved cross-shape appearance. The group contains about a dozen stars with the brightest member at magnitude 10.6.

Further south, the star zeta Pyxidis, is a lovely double-star. It consists of a mag. 4.9 primary and mag. 9.1 companion



NGC 2627 sketched with my 16-inch S/C at 290x. North is up and east to the left.

with a separation of 52 arc seconds at position angle (PA) 61. Open cluster **NGC 2627** is situated only 40 arc minutes south of zeta Pyxidis. The cluster appears very irregular, spacious, quite large, and packed with varied-magnitude stars. The main focus of this cluster is a prominent curved string of stars from east to west, clearly dividing it in two parts. The western end of the string is nicely edged by a pair of magnitude 10 stars. The bulk of the cluster, and also the brightest part, is situated towards the north. Amongst these stars a few scattered dark patches and lanes can be detected. The smaller section of the group, with fainter stars, is concentrated towards the southern side. The remainder of the stars in this patchy cluster are situated in the far western part (see sketch). My attention was drawn to the colourful stars in this cluster, shading from white into deep yellow.

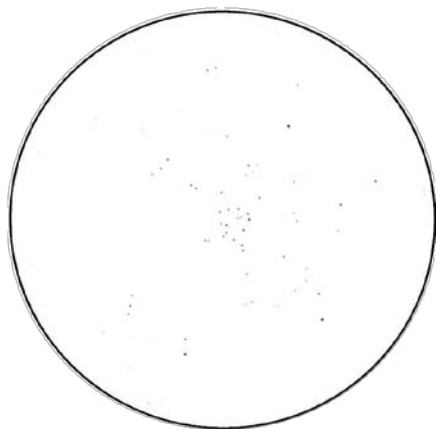
Super-white alpha Pyxidis, also a double-star, keeps our compass needle in place. It shares the surrounding field of view with the galaxy NGC 2663 to the south-east and the open cluster NGC 2658 to the north. **NGC 2658**, situated only 35 arc minutes north of alpha Pyxidis, contains about a dozen faint stars with some unresolved dust, indicating more members. Strings of faint stars can be detected in the north-eastern part of the cluster. It is an attractive cluster that stands out well against the fainter background star-field.

Another open cluster, very different, but well worth exploring, is situated 40 arc minutes north-west of the lovely but-tery-yellow beta Pyxidis, the southern tip of the compass needle. **NGC 2635** is a small, dainty grouping, consisting of only a few faint stars. It could also be seen as a typical tight, stringy asterism,

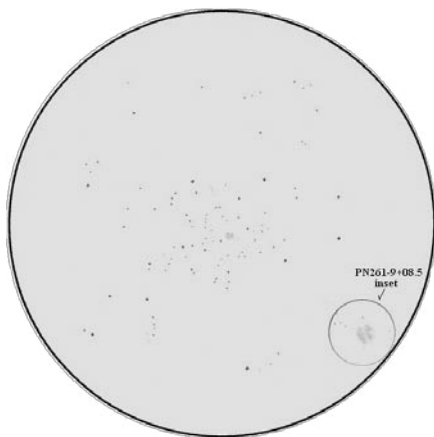
but nevertheless stakes its claim quite well. The group displays something of a V-shape in a north-western to south-eastern direction (see sketch). The area west of beta Pyxidis contains a few diffuse nebulae, making this field very interesting, although not easy to observe without the aid of filters.

The **Pyxis Globular Cluster** anchors the sails Vela against the southern border of Pyxis. This globular cluster displays an extremely faint, grainy, round haze, as described by my deep-sky friend Jenni Kay from Australia. I definitely agree with her that this cluster is not for the fainthearted. With high power it can be seen nestling inside a circle of a few very faint stars.

The compass constellation also provides a two-in-one object. Situated in the south-eastern corner, **NGC 2818** is a beautiful,



NGC 2635 sketched with my 16-inch S/C at 290x. North is up and east to the left.

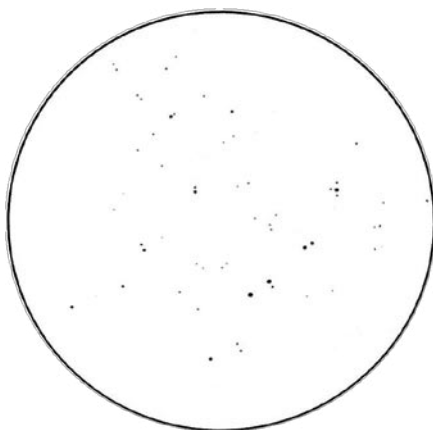


NGC 2818 sketched with my 16-inch S/C at 290x. North is up and east to the left.

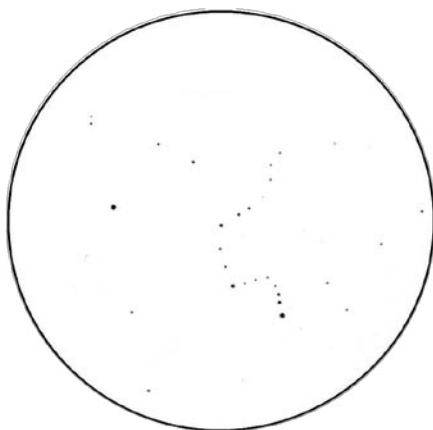
stringy cluster, appearing to form a slightly irregular oval shape from north-west to south-east. Approximately 35 members of between magnitude 12 and 13 make an outstanding impression against a sparse star-field. A few brighter stars are concentrated towards the northern part of the field. The beauty of this object is the confirmed planetary nebula situated inside and near the western edge of the cluster. Planetary nebula **PN G261.9+08.5** appears as a small round haze, easily seen embedded between the cluster stars. With really high power the planetary is divided into a pair of lobes, east and west, representing a typical dumbbell shape. The western edge of the nebula displays a small dent on the side (see sketch). Some references indicate the planetary as NGC 2818 and the cluster as NGC 2818A. SIMBAD agrees, but in the NGC-IC catalogue they are both listed as NGC 2818, without any comments.

The asterism, **Streicher 50** (*Deep Sky Hunters Catalogue*) is situated 1.2 degrees north-west of NGC 2818. No fewer than thirteen various magnitude pairs are exhibited in a 40 arc minute field of view. The centre of the field is characterized by a few magnitude 8 stars which appear as double (see sketch) - probably nothing outstanding, but still noticeably different from the rest of the star-field.

The faint open cluster **Ruprecht 74** can be seen one degree south-east of NGC 2818. A handful of faint stars form a distinctive letter 'K'. Again, I detect a



Streicher 50 sketched with my 16-inch S/C at 290x. North is up and east to the left.



The zigzag asterism sketched with my 16-inch S/C at 290x.

strange, wide zigzag string, 8 arc minutes to the north-west of Ruprecht 74 (see sketch). At first I thought it to be the cluster Ruprecht 74, but it turned out not to be. The asterism is actually much more noticeable against the background star-field than the cluster.

Not to be judged on its IC number, a fairly bright galaxy, **IC 2469**, is situated 50 arc minutes west of the border with Antlia and 4.4 degrees north of NGC 2818. IC 2469 displays a slender, elongated haze in a north-eastern to south-western direction with a small, though obvious and bright nucleus. The slender south-eastern part of the galaxy seems to be better defined and perhaps slightly brighter. A faint magnitude 12 star can be seen exposed towards the south-western tip. The galaxy was missed by John Herschel, son of William Herschel, and picked up in 1897 by Lewis Swift. Swift (1820-1913) discovered 1248 new objects, putting him second after William Herschel.

T Pyxidis is a cataclysmic variable star (also called a recurrent nova). T Pyxidis, about 6 000 light years away, is composed of a dense white dwarf with a close companion star. On five occasions – in 1890,

1902, 1920, 1944 and 1966 – it was caught in outburst when it brightened dramatically from its usual magnitude 14.7 to 6.5. These eruptions occurred at an average of just over 19 years apart. It was on 7 December 1966 that the most recent eruption was noticed by New Zealand amateur Albert Jones. It has been over 40 years since the last outburst and astronomers are now waiting patiently for T Pyxidis's next one. With the aid of a star map, on the night of 15 January 2010, I located T Pyxidis amongst its faint neighbours, and could see it only as an extremely faint ghostly flickering. One wonders why T Pyxidis has remained quiet for so long.

As the starry ship sails through the southern sky, allow the constellation of Pyxis to show you the way, and you will discover a wonder-world, just as the seafarers of old followed the shoreline to new worlds. ☆

Object	Type	RA (J2000.0) Dec		Mag	Size
NGC 2613	Galaxy	08 ^h 33.4	-22°58'	10.5	7.6'x1.9'
NGC 2627	Open Cluster	08 37.3	-29 57	8.4	11'
NGC 2635	Open Cluster	08 38.4	-34 46	11	3'
Alessi J 0838.5-2502	Asterism	08 38.5	-25 02	9	14'
ESO 432-SC03	Open Cluster	08 42.9	-27 52	8	11'
NGC 2658	Open Cluster	08 43.4	-32 39	9.2	12'
T Pyxidis	Variable star	09 04.7	-32 23	6.3-14	Per. 19y
Pyxis Globular	Globular Cluster	09 07.9	-37 14	12.9	4.0'
Streicher 50	Asterism	09 11.2	-35 58	8.3	33'
PN G261.9+08.5	Planetary	09 16.1	-36 37	11.9	58"
NGC 2818	Open Cluster	09 16.9	-36 37	8.2	9.0'
Ruprecht 74	Open Cluster	09 21.0	-36 57	13.7	2'
IC 2469	Galaxy	09 23.1	-32 30	11.3	4.7'x1.0'

Why?

Kos Coronaios, Chairman of the Soutpansberg Astronomy Club and Project Manager of the Limpopo Astronomy Outreach, collected the following comments by the public during viewing sessions throughout the IYA2009:

- *Have you stuck a picture of Saturn there?* (As a few adults looked at the actual planet through the telescope.)
- *Does it leak?* (So many holes on the lunar surface!)
- *Is that the Sun? But it's all black!* (Not quite getting a good view of the solar disk at the eyepiece.)
- *Why don't you include a BB gun with your equipment?* (Referring to taking out bright lights.)
- *My ... but its so big! Do you take it out often?* (Referring to the 10-inch reflector.)

astronomical society of southern africa

The **Astronomical Society of Southern Africa** (ASSA) was formed in 1922 by the amalgamation of the Cape Astronomical Association (founded 1912) and the Johannesburg Astronomical Association (founded 1918). It is a body consisting of both amateur and professional astronomers.

Publications: The Society publishes its own journal, the *Monthly Notes of the Astronomical Society of Southern Africa* (MNASSA) (bimonthly) and an annual astronomical handbook, *Sky Guide Africa South*.

Membership: Membership of the Society is open to all. Enquiries should be addressed to the Membership Secretary, ASSA, PO Box 9, Observatory, 7935, South Africa or to the e-mail address below. Entrance fees are R25. Full members paying R100 per annum receive *MNASSA* and the *Sky Guide*. The subscription year runs from 1 July to 30 June. Persons joining during January to June need to pay only half the annual subscription, plus the entrance fee.

Local Centres: Autonomous local Centres of the Society exist at Bloemfontein, Cape Town, Durban, Harare, Hermanus, Johannesburg, Pietermaritzburg (Natal Midlands Centre), Pretoria and Sedgfield district (Garden Route Centre). Membership of any of these Centres automatically confers Local membership of the Society.

Sky & Telescope: Both Full and Local members (proof of Centre membership required) may subscribe to *Sky & Telescope* at a significant discount. Please contact membership secretary for details.

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