
Annual Report for 2006

Officers and Council for 2006/2007

President: John Skinner

Vice Presidents: Margaret Avery, Tony Ribbink

General Secretary: Renfrew Christie (until August)

Foreign Secretary: Klaus Koch

Treasurer: Maciej Soltynski

Editor: John Skinner

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Susan Bourne, John Duncan, Ian Glass, John Moss, Bruce Rubidge,
Judith Sealy, Johannes van Staden, Rob Veale.

Co-opted Members:

Doug Rawlings, Luigi Nassembeni

Report of the General Secretary for 2006

SPECIAL PROJECTS

2008 CENTENARY OF THE SOCIETY

Planning is under way for the Centenary Meeting next year of the Royal Society of South Africa, which is to take place on 17 and 18 April, 2008. Invitations have been issued to potential keynote speakers.

Professor Jane Carruthers FRSSAf is preparing a detailed account of the formation and history of the Society.

2006 SCIENCE ESSAY COMPETITION

In January 2006, the entry forms for the 2006 Science Essay Competition were posted to about 550 schools across the country. Schools do the initial screening and then submit only their top three essays to the Society. The closing date for entries was 15 April 2005. In total, 94 essays were received, 18 of which had been misfiled and were marked at a later date and a further three prizes awarded.

Professor Luigi Nassimbeni FRSSAf, the Council-nominated convener of the Essay Competition, arranged for markers in UCT's Chemistry Department (Dr Hong Su, Dr Tanya le Roex and Ms Guinevere Burke) to mark the essays. The Society is indebted to all for their valued contribution.

Certificates were sent to all prizewinners. Notably, Kingsmead College in Melrose won three prizes whilst Rodean Junior School won two. Councillor Prof. Rob Veale visited these two schools to present the prizes while Prof. J.D. Skinner presented a prize at Crawford College. Prizes were given to all prizewinners of each essay category. 1st Prize – R1500; 2nd Prize – R1000; and 3rd Prize – R500. The Society received very positive comments from the pupils themselves and two letters were published in the *News Bulletin*, one pupil remarking that through his involvement with the competition, he had changed his career aspirations to a path in science.

The Society is very grateful to the Claude Leon Foundation for generously providing cash prizes and covering administration costs for the essay competition. Thanks are also due to the Hartebeesthoek Radio Astronomy Observatory (HartRAO), Ithemba Labs, MTN Sciencecentre, South African Astronomical Observatory and South African Institute for Aquatic Biodiversity

(SAIAB), for being prepared to host essay winners at their facilities, wherever the school's physical proximity permitted.

2006 RSSA Science Essay Competition Winners:

Topic: Is rapid urbanisation the best solution to human survival in Africa?

- 1st Prize: You Na Park, Grade 12, Fairmont High School, Durbanville.
- 1st Prize: Geoga Ballard, Grade 11, Kingsmead College, Melrose.
- 2nd Prize: Daniel Erasmus, Grade 12, King Edward VII School, Houghton.
- 2nd Prize: Sebastian Hendrikse, Grade 9, St. George's Grammar School, Mowbray.

Topic: My suggestions for a major, sustainable contribution towards South Africa's energy needs

- 1st Prize: Timothy Spracklen, Grade 9, St. George's Grammar School, Mowbray.
- 2nd Prize Francois Fagan, Grade 12, Westerford High School, Rondebosch.
- 2nd Prize: Mark de Veredicis, Grade 11, Crawford College, Pretoria.

Topic: What sort of science will I do when I grow up?

- 1st Prize: Alexandra Chalwin-Milton, Grade 7, Rodean Junior School, Houghton.
- 2nd Prize: Melukuhle Mtombeni, Grade 7, Sentinel Primary School, Witsieshoek.

Topic: Where would science be without women scientists?

- 2nd Prize: Marryum Kahloon, Grade 7, Rodean Junior School, Houghton.

Topic: Given that there is much poverty on planet Earth, should nations be investing in the exploration of space?

- 1st Prize: Laura Haywood, Grade 11, Kingsmead College, Melrose.
- 2nd Prize: Yi-Ning Chen, Grade 11, St. Patrick's College, CBC, Kimberley.

- 3rd Prize: Nicole Harding, Grade 11, Kimberley Girl's High School.

Topic: How do you suggest we become good neighbours to the other animals?

- 1st Prize: Ramarumo Jacob Mokoatsi, Grade 11, Tikwane Secondary School, Hoopstad.
- 2nd Prize: Katherine Potgieter, Grade 11, Kingsmead College, Melrose.
- 3rd Prize: Magenuka Mondli, Grade 11, St. Matthew's High School, Keiskammahoek.

YOUNG ROYALS

The Young Royals originated as a project of the Eastern Cape Branch in mid-2002 and was adopted as a National Project by Council in 2006. Currently the greatest number of Young Royals is in the Eastern Cape, primarily associated with Rhodes University. Membership rises as new students join at the beginning of each academic year and falls when students depart at the end, but a core of members maintain continuity from one year to the next. In its initial year the Young Royals had a membership of 22; by 2006 membership had risen to 68. A membership drive is planned for 2007 with a view to boosting numbers to 100 or more.

The Royal Society developed the Young Royals in order to encourage young scientists to become active in science from early on in their careers and to assume responsibility for developing science in Africa among students. They achieve this by making science 'fun' through the use of skits, posters, lectures and debating hot topics. They are also given responsibilities which grow them as people and as professional scientists. They have tasks on committees, in planning scientific events and in interacting with senior scientists. The Young Royals introduce and thank speakers at virtually all of the lectures held by the Eastern Cape Branch. They develop annual plans and budgets; they raise funds and become involved in altruistic teaching and training activities. Indeed, they are responsible for the furtherance of science in every context, but with a focus on students and special projects in disadvantaged schools. The Young Royals represent the only multidisciplinary academic society on campus and include among their members those from other faculties who have an interest in science or the teaching projects that the Young Royals lead.

Five Young Royals have become Student Members of the Society and it is hoped this number will grow. The Young Royals are promoting the Society in a way that never occurred in the past, such as by developing a growing pool of scientists who know about it and are likely to join in the future.

Activities in 2006, coordinated by an elected Committee, were:

- assisting the Eastern Cape Branch with seminars and prominent lectures, introducing and thanking speakers at the SciFest, Amy Jacot-Guillarmod Memorial Lecture, the Schonland Memorial Lecture and others which will be taking place during the year;
- developing a constitution to guide their activities and to provide a procedure to ensure that their Committee is balanced and active, with continuity from year to year;
- involvement in special school and conservation projects;
- organising workshops on strategic planning for scientists and setting up displays (e.g. at SciFest) to promote the Society and its activities;
- revamping the Royal Society's website, with a view to using it to advertise the Centenary Year.

The Committee for 2006 consisted of:

Ms Lucy Scott (Chairperson), Ms Amanda Northrop (Deputy Chairperson), Mr Oliver King (Secretary), Mr James Stapley (Treasurer), Prof. Martin Villet (RSSAf Liaison), Mr Peter Watt-Pringle, Mr James Barry, Mr Naill Vine, Mr Dylan McGowie

Those continuing into 2007 are:

Ms Amanda Northrop, Ms Lucy Scott, Mr James Stapley, Mr Peter Watt-Pringle and Mr James Barry. The portfolios will be determined at the first official general meeting of the Young Royals in the 2007 academic year.

CLAUDE LEON FOUNDATION SCHOLARSHIPS

The Society assisted the Claude Leon Foundation in selecting the evaluators of about 130 applications for Claude Leon Fellowships. Two members of Council and a Society Fellow assisted the trustees in the final selection of the 40 applicants to whom post-doctoral fellowships were offered.

On 14 September, the Society and Foundation co-hosted the fourth annual lecture evening in the joint lecture series. The double lecture was well attended. Two of the post-doctoral fellows, Fenton Cockerill (Department of Geological Sciences) and Dionne Shepherd (Department of Molecular and Cell Biology), both of the University of Cape Town, each presented a lecture describing their research. Their subjects were, respectively, *Integrating Biotic and Geomorphological Signatures of Landscape Evolution Across High Africa into Consilient Knowledge* and *Transgenic Resistance to Maize Streak Virus in Maize*.

PROGRESS OF THE ROYAL SOCIETY IN 2006

The Society continues to attract nominations for Fellowship from leading South African scientists, justifying its multidisciplinary approach.

The Northern Areas and KwaZulu-Natal Branches have been resuscitated with new, active Committees, while the Eastern Cape Branch continues to go from strength to strength with a greater than ever contribution to the furtherance of science during the year. In addition to their usual functions centred in Grahamstown, they extended tentacles to all the neighbouring universities and cities, which had a big impact.

Elsewhere in this report, special projects have been given prominence for the first time, e.g. the Annual National Schools Science Essay Competition, the Young Royals and the Claude Leon Fellowship Programme.

The administration of the Society started inauspiciously this year due to an unsatisfactory appointment. In August the Exco had the good fortune to secure the services of Mrs Sandra de Villiers-Soltynski. The Society's affairs are now in good order. The Special Projects have remained on track, apart from some delays (now obviated) in organising the Charter Centenary Congress.

Financially, the Society is in a comfortable position. Sponsorships were received from the Palaeontological Scientific Trust, the Claude Leon Foundation, the President's Office, Dalhousie University, Canada, and the Royal Commonwealth Society, Vancouver, Canada.

BRANCH ACTIVITIES

Eastern Cape

The Committee for 2006/2007 comprises:

Dr Tony Ribbink (Chairperson)
 Prof. Peter Vale (Deputy-Chairperson)
 Prof. Mike Davies-Coleman (Secretary)
 Dr Derek Henderson (Treasurer)

Prof. Perry Kaye (Membership)
 Prof. Martin Villet (link with Young Royals)
 Dr Alan Whitfield (Communications and publications)
 Prof. Janine Adams (NMMU Representative).

The Society hosted 18 events this year, in every case in partnership with the Academy of Science of South Africa, many with Rhodes University, and other important partners have been SciFest, University of Fort Hare and Wordfest. The Young Royals have performed well this year, also developing partnerships and building membership.

With very few exceptions each lecture was well attended, sometimes approaching 300 in the audience.

The Eastern Cape was privileged to host a visit from the President of the Society, Prof. John Skinner, which coincided with a special week-long series of lectures and associated activities to focus attention on issues of climate change. This very successful week was the brainchild of Prof. Peter Vale, who linked it to his annual 'Teach-in' in the Department of Politics, Rhodes University.

In order to develop partnerships with the Nelson Mandela Metropolitan University, Port Elizabeth, hosted by Prof. Janine Adams; at University of Fort Hare, Alice (28 people), hosted by Prof. Andy Gilbert, and in East London (some 40 attendees), hosted by Gavin Stewart. On all three occasions the lectures were given by Prof. Steve Friedman who addressed the topic *Partial Vision: Why the South African Policy Debate cannot See HIV/AIDS*. An unusual highlight this year was the lecture by Prof. Chris Mann, *Science, Art and Human Consciousness*, given in verse. This was an excellent way to support one of the Eastern Cape's primary themes, which is bridging the gap between the sciences, the arts and the humanities.

The new partnership between the RSSA and Wordfest, which is to become an annual event, is another highlight. Prof. Chris Mann invited the Eastern Cape Branch to play a role in the Wordfest in which scientific publications are presented to audiences, their language and contributions are then analysed and debated (see below).

Lectures

- March 26, **Dr Ian McCullum**, *Three Strange Angels: The Poet, The Naturalist and The Scientist in Us*. SciFest Lecture in the Guy Butler Theatre.
- March 30, **Prof. Richard Cowling** – *Beyond Borderlines. Perspectives on Conservation*. Amy Jacot-Guillarmod Memorial Lecture, Rhodes University, Eden Grove Theatre.
- August 3, **Prof. Justin Jonas** – *SKA, KAT and C-BASS: Beasts in a Radio Astronomy Reserve*. Eden Grove.
- August 9, **Prof. W. Uwe Reimold** – *Revolutions in the Earth Sciences: Of Continental Drift, Impact and other Catastrophes*. De Beers Du Toit Memorial Lecture Series, Eden Grove.
- August 17, **Prof. Chris Mann**, *Science, Art and Human Consciousness*. Rhodes Arts Major Lecture Theatre.
- September 18, **Prof. Steven Chown** – A general discussion on the *Science of Climate Change from a Layman's Perspective*. Department of Political and International Studies Annual Teach-in, Eden Grove.
- September 18, **Prof. Steve Chown** – *Climate Change, Invasion and Conservation: An Antarctic Perspective*. 2006 Annual Schonland Lecture of the Royal Society of South Africa, Eden Grove.
- September 19, **Prof. Steve Friedman**, Visiting Professor of Politics, Rhodes University – *Partial Vision: Why the South*

African Policy Debate cannot See HIV/AIDS. Department of Political and International Studies, Annual Teach-in, Eden Grove.

- September 20, **Prof. Bruce Hewitson** (UCT): *Climate Change: Myth and Mystery; Truth and Travesty*. Department of Political and International Studies Annual Teach-in, Eden Grove.
- September 21, **Dr Guy Midgley** – *Climate Change and Nature in Southern Africa – What's the Outlook?*. Department of Political and International Studies Annual Teach-in, Eden Grove.
- September 18, **Des Pyle and Dr S. Shahid**, *Climate Change, Storms, Vulnerability and Risk: Challenges Facing the Eastern Cape*. Department of Political and International Studies Annual Teach-in, Eden Grove.
- September 21, **Prof. Chris de Wet, Prof. Heila Lotz-Sisitka, Prof. William Froneman, Dr David Fryer and Des Pyle** – *Climate Change: The Challenge for Academic Disciplines*. Department of Political and International Studies Annual Teach-in, Eden Grove.
- **Prof. Steve Friedman** gave the following lecture at NMMU, at University of Fort Hare, Alice, and at the University of Fort Hare, East London – *Partial Vision: Why the South African Policy Debate cannot See HIV/AIDS*.

Wordfest

Professor Chris Mann, Convener of Wordfest at the Grahamstown Festival, invited the Royal Society of South Africa to become involved in this event. Dr Alan Whitfield was tasked with driving the Society's coordination of a presentation on *Robert's Birds of Southern Africa* by Prof. Phil Hockey.

Social functions

The annual dinner was held on March 30th as a joint function between the Academy of Science of South Africa and the Eastern Cape Branch of RSSA. The function was timed to coincide with the AGM and the Amy Jacot-Guillarmod Memorial Lecture. It was well attended, a great success and superbly organised by Christelle Hutchinson.

An informal meeting between the Senior Royals, the Academy of Science of South Africa and the Young Royals was held on May 30th.

KwaZulu-Natal

This branch has recently been re-activated and now has a Committee of three:

Brian G.A. Schaller
 Prof. S.E. Drewes
 Dr E. Elliott

A number of meetings have been arranged for the coming year.

Northern Areas

The Northern Areas branch committee met on 28 February 2006. The Committee comprised the following members:

Chairperson: Prof. Rob Veale
 Vice-chairperson: Prof. Bruce Rubidge
 Treasurer/Honorary Secretary: Prof. Mary Scholes
 Members: Professors Jo Michael, John Skinner and Rudi van Aarde, Dr Andrea Fuller
 Minutes secretary: Mrs Yolanda Copperthwaite

Professors Rob Veale, Bruce Rubidge and John Skinner represented the Branch on the National Council.

The branch hosted two presentations in 2006:

- November 8, **Prof. Vernon M. Neppe**. *The Déjà vu Phenomenon*.

- November 10 (in conjunction with the Wits School of Chemistry), **Prof. Klaus R. Koch**, *More Precious than Gold – Platinum and its Cousins – from Valueless ‘Little Silver’ to Sought-after High-Tech 21st Century Metal*.

The Committee for 2007 will be as follows:

Chairperson: Prof. Rudi van Aarde, Conservation Ecology Research Unit, U.P.

Vice-Chairperson: Prof. Jane Carruthers, Department of History, UNISA

Treasurer: Prof. Ansie Dippenaar-Schoeman, ARC-PPRI
Ex Officio Outgoing Chairperson: Prof. Rob Veale School of Molecular and Cell Biology, Wits

Members: Dr Rudolph Bigalke, Former Chief Director, Department of Agriculture; Prof. Nigel Bennett, Mammal Research Institute, UP; Dr Andrea Fuller, School of Physiology, Wits; Prof. Tim Partridge, Bernard Price Institute, Wits

Secretary: Daleen Funston

Western Cape

Meetings in the Western Cape were held at the Iziko South African Museum in Cape Town. They were co-hosted by the Academy of Science of South Africa. Attendances were in the range of 25–30 people.

The following lectures were held:

- February 13, **Maciej Soltynski**, *Technology: Its Nature, Importance and the Measuring of Trends*.
- March 15, **Prof. Mike Berger**, *Outlines of a General Epidemiology: Application to Germs, Ideas and Behaviours*.
- April 19, **Prof. Klaus Koch**, *Platinum and its Cousins, more Precious than Gold; From Valueless ‘Little Silver’ to Sought-after Hi-tech 21st Century Metal*.
- May 17, **Prof. Ed Rybicki**, *Avian Influenza and You: What if this is the Big One?*
- August 28, **Prof. Jane Carruthers**, *The Kruger National Park, Aspects of History and Science in the Early 20th Century*.
- October 18, **Prof. Phil Charles**, *Hunting for Black Holes in the Galaxy and Beyond*.
- November 9, **Dr A.J. Ribbink**, *Coelacanth Evolutionary and Ecological Enigmas*.
- November 15, **Prof. H. Klump**, *Physics in Molecular Biology: Landmarks on the Path to the Genetic Code*.

The Annual Dinner and Induction Ceremony for New Fellows was held at Kirstenbosch on 28 August 2006.

MEMBERS AND FELLOWS

FELLOWS

The following new Fellows were elected during the year:

Marion Bamford

(Senior Research Officer, Deputy Director of Bernard Price Institute for Palaeontological Research, School of Geosciences, University of the Witwatersrand)

Marion Bamford is one of only three palaeobotanists in South Africa. She is the only fossil wood expert in Africa and is the first scientist in the southern hemisphere to have established a database for fossil woods from the Carboniferous to the Holocene. She is recognised as a leading authority on fossil woods from the southern hemisphere over this very extended period. Her expertise and database has stratigraphic, dating, palaeoclimatic and biogeographic applications, for which reason her assistance

is sought by industry and a wide range of academic research teams. She is involved in field-based research programmes in South Africa, Kenya, Tanzania, Namibia, Botswana, Australia, Argentina and Brazil.

Her research falls into three main time frames, from youngest to oldest: A, Plio–Pleistocene and Holocene; B, Mesozoic and Tertiary; and C, Permo–Triassic Karoo.

A — Plio–Pleistocene and Holocene

Following work on the fossil woods and palaeoclimate of the famous fossil hominid-bearing site at Sterkfontein, Bamford was invited to analyse the woods from several important hominid sites in East Africa. Fossil wood analyses from these sites form a part of palaeoenvironmental reconstructions as well as interpretations of human evolution and behaviour. Recently Bamford has been invited to collaborate with international teams to identify charcoal samples from two archaeological sites in South Africa: Wonderwerk Cave and Ndongondwane.

B — Mesozoic and Tertiary

There are two thrusts in this field. The first is the identification and dating of woods in southern Africa for De Beers Exploration, Namdeb, Debswana and De Beers Marine in order to provide a biostratigraphic and dating framework for economic mineral exploration activities.

Secondly Bamford has initiated three international collaborative research projects investigating the early radiation and distribution of conifers and flowering plants and biogeography of the modern floras of the southern hemisphere

C — Carboniferous–Triassic Karoo

Bamford continues with sampling and identification of woods from the Karoo and revision of the flora. An international project in collaboration with the Smithsonian Institution to study the floral (wood, leaves, pollen) and insect diversity changes over the Permo–Triassic boundary is in progress.

Bamford is currently editor of *Palaeontologia africana* and was guest editor of *Quaternary International* in 2005. Apart from her listed scientific publications she also regularly reviews articles for international journals.

As Deputy Director of the Bernard Price Institute, she is responsible for curating and cataloguing specimens for the Institute’s Palaeobotany Herbarium, maintaining a computer database of the specimens in the various botanical collections. In addition, she has started a collection of extant woods, seeds and leaves to be utilised for comparative and reference purposes.

Bamford also serves on several national and international scientific bodies.

Ramashwar Bharuthram

(Dean, Faculty of Science, University of the Witwatersrand)

Ramesh Bharuthram is Dean of the Faculty of Science at the University of the Witwatersrand. He began his working career as a Laboratory Assistant in the Department of Physics at the University of Durban-Westville (UDW), studying towards his BSc through University of South Africa, which he obtained in 1970. He then read for a BSc (Honours) degree at UDW (1972), and an MSc (1975) and a PhD in Plasma Physics (1980) at the University of Natal. He spent one year as a postdoctoral fellow at the University of California, Los Angeles, working on the computer simulation of plasmas. He returned to UDW where he was promoted to Senior Lecturer (1983), an Associate Professor (1988) and a Full Professor (1992). Whilst at UDW he served as Head of the Department of Physics, Dean of the Faculty of

Science, and Acting Vice-Principal and Deputy Vice-Chancellor. In 1998 he took up the position of Director of Research at the ML Sultan Technikon, and in 2002 became Director of Research at the University of Natal and, with the mergers, at the University of KwaZulu-Natal before being appointed Dean of the Faculty of Science at Witwatersrand University in 2006.

Professor Bharuthram was elected in 1998 as a member of the Academy of Science of South Africa. He has served as a member of the Commission on Plasma Physics of the International Union of Pure and Applied Physics (IUPAP) including a term as its Vice-Chairperson. He was the recipient of an Alexander von Humboldt Fellowship and spent a year at Ruhr-Universität, Bochum, Germany in 1986. He also spent some time as a Visiting Fellow at the University of California, San Diego in 1996.

Despite his heavy administrative load, Ramashwar Bharuthram continues as a very active research scientist. He is the author of over 100 publications in peer-reviewed literature and acts as referee for many journals. He is well known in the plasma physics community and is an active researcher in the theory of waves and instabilities, and of non-linear structures such as solitons and double layers, that occur in plasmas, i.e. high temperature ionised gases. His work has application particularly in space physics and in astrophysics. Some of his papers, particularly on large amplitude non-linear electrostatic structures in plasmas including charged dust grains, are highly cited.

Judith Mary Bishop

(Professor of Computer Science, Computer Science Department, University of Pretoria)

Judith Bishop graduated with a BSc Hons in 1972 from Rhodes University. In 1974 she received her Masters degree *cum laude* from the University of Natal and she completed her PhD in 1977 at the University of Southampton in the United Kingdom. She is a Fellow of the British Computer Society, Founding Fellow of the South African Institute of Computer Scientists and was awarded the prestigious IFIP Silver Core Medal for her services to the Information Technology community. In 2005 she received the Department of Science and Technology award for Distinguished Woman Scientist of the Year for Innovation and was made an Outstanding Academic achiever by the University of Pretoria for the period 2006–2008.

Bishop began her career as a computer scientist in 1970. She has always been at the front of her field of programming languages for distributed systems. She wrote the first BASIC compiler for ICL 1900 computers in 1972 and was involved in the first Pascal compiler in 1976. Judith wrote the first Java textbook to become widely used and translated in 1997 and most recently one of the first C# textbooks. Professor Bishop is the top National Research Foundation-rated woman computer scientist in South Africa and has published over 70 journal and conference papers. Her 15 books are available in six languages and read worldwide.

Bishop has been involved with grant-awarding and grant-reviewing panels for 20 years. She has organised numerous conferences and workshops in South Africa aimed at keeping postgraduates involved in cutting edge research. She has successfully supervised 22 Masters and doctoral students in the field of Computer Science. During 2002/2003 she was appointed to the working group for the establishment of the new National Curriculum for Schools in South Africa. She has spent a sabbatical at Microsoft Research, Cambridge, TU-Berlin (on a DAAD Scholarship) and spent a period as a visiting Professor at TU-Karlsruhe in 2004. Judith was recently

editor of the British-based IEE Proceedings of Software for the period 2003–2005.

She is currently working with Microsoft Research on a pioneering system that will enable closed groups of collaborators to exchange information effectively in today's mobile world when connectivity is essential, but not always there.

Anusuya Chinsamy-Turan

(Professor of Zoology, University of Cape Town)

Anusuya Chinsamy-Turan has made significant contributions to the understanding of ontogenetic growth patterns of nonavian dinosaurs and has been instrumental in developing the field of bone microstructure of Cretaceous birds. Her publications include 37 articles in ISI rated journals and more than 10 chapters in books. Her book on *The Bone Microstructure of Dinosaurs* (Johns Hopkins University Press, 2005) has received excellent reviews.

Chinsamy-Turan has provided insight into the growth and biology of several non-mammalian synapsid taxa. In May 2006, she co-authored a paper on the first-ever study of bone microstructure of Mesozoic mammals from the Gobi Desert, which provides an assessment of the biology of these early mammals. She is also involved in research on bone tissues of various modern taxa (e.g. birds and reptiles). Recent research by Starck and Chinsamy (2002) on bone depositional rates of Japanese quail has raised pertinent questions regarding the extrapolation of bone depositional rate of extant animals to dinosaurs.

Chinsamy-Turan is highly committed to promoting Science education in South Africa. In this regard she has coordinated 5 exhibitions at the Iziko Museums of Cape Town, arranged several talks and workshops, and raised a substantial amount of money for new exhibitions. In 2004, she was elected president of the Association of South African Women in Science and Engineering (SAWISE) and Vice-President of the Academy of Science of South Africa. She has received several awards for her scientific contributions, including a President's Award of the National Research Foundation (1995); the Meiring Naude medal of the Royal Society (1998), awarded to scientists younger than 35; the Distinguished Woman Scientist award of the South African Department of Science and Technology (2005); and the 2005 Shoprite Checkers/SABC2 Woman of the Year award, both in the Science and Engineering category and as overall winner.

Simon H. Connell

(Senior Lecturer, Director: Accelerator Laboratory, Physics Department, University of the Witwatersrand)

Simon Connell's research programme concentrates on diamond physics and diamond enabled physics. The diamond physics has a particular focus on fundamental research in support of the possibility of a new major initiative in diamond electronics. The diamond-enabled physics relates to high-energy physics research opportunities. These include studying QED phenomena under conditions of strong fields and coherence using diamond radiators, QCD studies using photon initiated interactions again by diamond radiators and diamond beam optic elements for 3rd and 4th generation synchrotron radiation. Accelerators of many kinds and nuclear experimental techniques are the basis of the experimental research methodology. Connell displays a broad competence in many fields: High Energy Physics, Nuclear Physics, Atomic Physics, Materials Science (especially diamond) and also interdisciplinary physics.

A selection of research highlights in the field of diamond physics include studies of hydrogen chemistry and dynamics based on a novel 3D hydrogen quantitative mapping using an ion microprobe. These studies were complimented by use of the muonium atom as a hydrogenic analogue species. Positronium formation, chemistry and dynamics in diamond have also been studied. In the field of High Energy Physics, he has, as part of an international collaboration, produced the highest energy polarised photons ever generated in a laboratory, based on the aligned incidence of multi-hundred GeV electrons on crystals. Many effects related to new physics introduced by the Lorentz boosted local fields and coherence have been studied. Birefringence at these energies has been demonstrated, leading to novel polarimetry techniques as well as the conversion of linearly to circularly polarisation photons.

He is currently focusing the diamond physics research on studies of potential molecular dopant systems where complex systems lead to shallowing of n-type donor levels. A programme in diamond detectors supplements studies of defects and impurities with studies of charge carrier-defect interactions. The high energy photons discussed above are continuing; currently, the group is focusing on studies of the crystal undulator for MeV range photon beams. There is a new programme in high energy nuclear physics at Jefferson Lab. There is also an active programme characterizing diamond with synchrotron generated X-rays in various modalities, illuminating the issue of synthesising ultra-high quality diamond and supporting the other research programmes in diamond. Connell's research is conducted at accelerators within South Africa (at iThemba LABS) as well as several international facilities.

Anna Sophia Dippenaar-Schoeman

(Specialist Scientist and Programme Manager of the Arachnology Unit, Biosystematics Division, Agricultural Research Council – Plant Protection Research Institute, Pretoria)

Ansie Dippenaar-Schoeman is currently Specialist Scientist and Programme Manager of the Arachnology Unit, Biosystematics Division, Agricultural Research Council at the Plant Protection Research Institute in Pretoria. She is also Honorary Professor in the Department of Zoology at the University of Pretoria. She is an authority on the arachnid fauna, particularly spiders, of southern Africa and her interest in this field goes back over 30 years to when she was awarded her MSc (cum laude) by the Rand Afrikaans University (now University of Johannesburg), her thesis being an ecological study of a spider population in strawberries. This was followed four years later by a PhD from the same University which was concerned with a revision of some southern African spider genera.

Since then, Dippenaar-Schoeman has been very productive in her research on arachnids, the results of which have appeared in 169 publications, 78 of which were in peer-reviewed journals, three books, six chapters in books and two CD-ROMs, the latter dealing with *Spiders and Scorpions of Medical Importance in Southern Africa* and *A Spider Guide of Southern Africa*. She has also presented 120 papers and posters at congresses, symposia and colloquiums, has given 60 invited lectures to scientific societies and other meetings, 80 radio talks, and she has participated in 12 television programmes. She has also been active in the supervision of postgraduate students—these included three Honours, 10 Masters and two PhD candidates at six southern African universities. Dippenaar-Schoeman's contributions have not gone unnoticed internationally, and she is currently President of the International

Society of Arachnology, as well as Chairperson of the African Arachnological Society.

Michael Scurrall

(Chair of Physical Chemistry, School of Chemistry, University of the Witwatersrand)

Mike Scurrall currently holds the Chair of Physical Chemistry in the School of Chemistry at the University of the Witwatersrand. He obtained both his BSc (Hons) (1969) and PhD (1972) degrees at the University of Nottingham and in 2001 was awarded a DSc from the same institution. Throughout his career he has pursued a passionate interest in catalysis. This has led to the publication of over 110 articles in the subject, a remarkable achievement given that he has not always worked in an academic environment. He has worked in Industry in the UK (1972–1976) and as a teacher in Denmark (1976–1983). He played leadership roles at the CSIR (Divisional Head of Catalysis) and in research management at the Anglo American Research Laboratories (1994–2000) before re-joining Wits as an academic in 2000. He was instrumental in creating the Catalysis Society of South Africa in 1990 and was the Assistant Dean of Research in the Science Faculty (2002–2006) and a representative on the IUPAC and IACS bodies. His research interests are diverse and include work on polymer-supported materials, oxidation catalysts and Fischer-Tropsch catalysts that has spanned many decades. A unique feature of Scurrall's approach is the industrial knowledge that he brings to his subject material. His work has been funded by numerous industries over the years and is involved in extensive collaborations with overseas scientists.

His current research focus is mainly on gold catalysis. In the early 1990s it was reported that nano-gold particles displayed unique catalytic properties. When he returned to research at Wits in 2000 from his stint at AARL, his experience led him into the gold catalysis arena. Since then he (i) has been involved in the MINTEK project AUTEK, which is involved with commercialising gold catalysts (ii) was a key member and leader of the NRF/NSF-SA/USA project on gold catalysis (2002–2006) (iii) has a collaborative India-SA project on gold catalysis, (iv) has built up a research group on gold catalysis comprising post-doctoral fellows and postgraduate students and (v) has published extensively in the area of gold catalysis. It should be mentioned that he also carries out research in other areas of catalysis, notably (i) projects with Sasol on alkane aromatisation (ii) Fischer-Tropsch studies within the DST/NRF Centre of Excellence in Catalysis (of which he is a member) and (iii) projects in nano-materials.

Scurrall has been a Fellow of the Royal Society of Chemistry since 1981 and is a member of executive of the Gauteng branch of this body. He is currently the Chairperson of the Physical Chemistry Division of the SACI. He has organised numerous conferences for both SACI and CATSA over the years.

Judith Clare Sealy

(Associate Professor, Archaeology Department University of Cape Town)

Judith Sealy (PhD 1989, Cape Town) is Head of the Department of Archaeology. She has made substantial research contributions to the archaeology of hunter-gatherers, especially by using stable isotope chemistry and other archaeometric techniques.

Sealy's work has focused on questions of diet, directly accessible through stable isotope measurements of human remains and their potential food sources and, by inference, from

peoples' use of the landscape, their mobility, territoriality, and more. Relationship to land is the central issue in the hunter-gatherer world, so these questions lie at the heart of how these societies were organised and structured. Sealy's work has involved the development of laboratory analytical approaches, combined with archaeological fieldwork and the study of the finds. She is currently developing a new interpretation of the Late Holocene archaeology of the southern Cape. Isotopic analysis of human skeletal remains from this area is prompting a re-evaluation of our understanding of hunter-gatherer lifeways, is contributing to major debates in archaeology about the use of recent ethnography in reconstructing ancient societies, and about the extent to which it is possible to read social meaning in artefacts from the distant past. Her work is distinctly interdisciplinary: she has synthesised archaeological, biological (physical anthropological) and social anthropological perspectives into unusually holistic studies of past hunter-gatherer societies. She has communicated these results through conference presentations in 15 countries and is the author or co-author of 57 articles, mostly in international journals of high standing.

Sealy has won several awards for her scientific contributions, including the medal of the South African Association for the Advancement of Science for the best MSc thesis of 1984 at UCT; the 1992 Meiring Naude medal of the Royal Society, awarded to scientists younger than 35; and a President's Award from the National Research Foundation in 1993. She represents South Africa at the International Union of Prehistoric and Proto-historic Sciences (UNESCO); has been editor of the *South African Archaeological Bulletin* (1994–97); and is on the editorial boards of the *South African Journal of Science*, *Southern African Humanities*, *Journal of Archaeological Science* (USA and UK), and *Archaeometry* (UK).

Edward David Sturrock

(Associate Professor, Institute of Infectious Disease and Molecular Medicine, University of Cape Town)

Edward Sturrock is a Wellcome Trust Senior Research Fellow in the Institute of Infectious Diseases and Molecular Medicine at the University of Cape Town. From 1994 to 1996 he was a postdoctoral fellow in the Centre of Biochemical and Biophysical Sciences and Medicine, Harvard Medical School, where he started his pioneering work on angiotensin-converting enzyme (ACE). He determined N-linked glycosylation sites and the disulphide linkages in ACE, work published in *Journal of Biological Chemistry* and in *Biochemistry*, respectively. He developed a high protein expression system for ACE, important groundwork for the future crystallisation of ACE that he would achieve later with his group at UCT.

In 1997 Sturrock returned to Cape Town to take over the ACE group from Prof. Mario Ehlers, and continued with the characterisation and shedding of ACE. In 2003 he was awarded the Wellcome Trust International Senior Research Fellowship, and in 2004 he was appointed Associate Professor in the Institute of Infectious Disease and Molecular Medicine, University of Cape Town. Sturrock and his group, together with Prof. R. Acharya at the University of Bath, UK, were the first in the world to crystallise the C-domain of human ACE in the absence of and in the presence of currently used ACE inhibitors, the results being published in *Nature* in 2003 [Natesh R., Schwager S.L., Sturrock E.D., Acharya K.R.: Crystal structure of the human angiotensin-converting enzyme-lisinopril complex. *Nature* 421 (2003) 551–554]. This achievement is considerable as his group was obviously not the only one working on the crystallisation of ACE in search of a better ACE inhibitor. ACE has a critical role

in cardiovascular function, and ACE inhibitors are a first line of therapy for hypertension, heart failure and myocardial infarction. Notably, these inhibitors were historically developed without knowledge of the three-dimensional structure. Only after the introduction of ACE inhibitors did it become evident that somatic ACE is a complex two-domain enzyme, comprising an N- and a C-domain, each containing an active site with similar but distinct substrate specificities. The data obtained from the 3-dimensional structure of the C-domain, together with new data from the N-domain also crystallised by Prof. Sturrock's group, is currently being used to design synthesised domain-selective inhibitors. This provides hope that these can become lead compounds for the next-generation drugs with altered safety and efficacy profiles, and fewer negative side effects.

From a modest start of four members, his group gained momentum and has been able to attract students of very high calibre: four PhD and two MSc students finished their studies and currently the group has fourteen members. The group's involvement in the Structural Biology MSc programme (UWC and UCT) has led to crystal structure analysis of a mutant construct of ACE. Professor Sturrock keeps strong links with collaborators resulting in an active interchange of knowledge and transfer of new methodologies, making the group dynamic and highly attractive for new students. Different approaches to research on ACE carried out in his laboratory include molecular cloning, cell culture expression, protein analysis, synthetic chemistry, structural analysis and molecular modelling.

DECEASED FELLOW

Professor Frank Reginald Nabarro FRS, Hon FRSSAf, Professorial Research Fellow in the School of Physics, University of the Witwatersrand, died on 20 July 2006 at the age of 90.

ORDINARY MEMBERS

The total number of members (all categories) is 447.

New members

Dr Isabelle Ansorge, Department of Oceanography, University of Cape Town.

James Barry, Physics Department, Rhodes University.

Warner Lo, Head of Research, Sciences and Technology Park, Shenzhen, China.

Amanda Northrop, Department of Ichthyology and Fisheries Science, Rhodes University.

Dr Alexander Rowe, Engineer.

Dr Sooryakanth Sasidharan, Veterinary Genetics Laboratory, University of Pretoria.

Lucy Scott, African Coelacanth Ecosystem Programme, SAIAB, Rhodes University.

James Stapley, African Coelacanth Ecosystem Programme, SAIAB, Rhodes University.

Peter Watt-Pringle, Department of Ichthyology and Fisheries Science, Rhodes University.

Deceased Member

Professor C. MacFarlane, formerly of the Medical School, University of the Witwatersrand, and a resident of Parkview, Johannesburg.

MEDALS

The **John Herschel Medal** for 2006 was awarded to Prof. Johann R.S. Lutjeharms FRSSAf for distinguished multi-disciplinary work in oceanography, in its broadest sense, including physical, biological, chemical and geological oceanography, marine meteorology and climatology, clearly reflected

in subsequent publications covering a wide spectrum of ocean interests. The geographical area of his research has included the greater Agulhas Current system, the Benguela upwelling system and the Southern Ocean south of Africa.

He was the first to show the formation of Agulhas rings at the Agulhas retroreflection, he discovered and named the Natal Pulse and he elucidated a number of coastal upwelling cells in the South West Indian Ocean.

Emanating from his research have been 7 books, 22 contributions to books, 146 papers in peer-reviewed international journals and 108 reviews and popular articles.

The **Meiring Naudé Medal**: Dr Karin Jacobs, Department of Microbiology, University of Stellenbosch, has been awarded the Society's 2006 Meiring Naudé Medal for outstanding young scientists under the age of 35 years.

Dr Jacobs' main research interests are in the fields of fungal ecology and taxonomy, in which she has published 30 papers in leading international journals. She has authored a book on the identification of species of the fungal genus *Leptographium*, many of which are important tree pathogens. She has become recognised as a world authority on this genus.

PUBLICATIONS

Volume 61(1): Published electronically in April.

Volume 61(2): Festschrift to Emeritus Professor H.B.S. Cooke, FRSSAf, a pioneer in South African Geology and Palaeontology was published electronically and as hardcopy in October.

Five issues of the *News Bulletin*, compiled by John Skinner and Maciej Soltynski, were issued during 2006.

A new brochure, suitable for distribution at the Society's functions, has been drafted by Dr I.S. Glass as part of a renewed membership drive.

LIBRARY

The librarian and staff of the University of Cape Town Library

continue to maintain and catalogue the Society's Library. About 50 scientific institutions have an exchange agreement, whereby they send publications to the Society in exchange or as gifts.

COOPERATION WITH OTHER BODIES

The Society maintains contact with and has representatives on the following bodies:

- National Science and Technology Forum (NSTF), including the Scientific, Engineering & Technological Societies and Allied Professions Group of SA (SETAG) – Prof. R.L. Christie FRSSAf.
- Claud Leon Foundation – Prof. D.E. Rawlings FRSSAf.
- Frank Warren Memorial Trust Prof. B. Warner FRSSAf.
- South African Agency for Science and Technology Advancement (SAASTA) – Prof. M.N. Bruton FRSSAf.

ACKNOWLEDGEMENTS

Sandra de Villiers-Soltynski took over as Office Administrator in September 2006. She, with help and advice from Elaine Rutherford-Jones, is thanked for getting the administration of the Society back on track. We wish to thank the chairpersons and committee members of the Branches and wish the new chairpersons well for the New Year. Thanks also to organisers of lectures, the speakers and those who delivered votes of thanks at lectures, as well as to the Iziko Museums of Cape Town for hosting the public meetings, and the South African Astronomical Observatory for lending the boardroom for Council meetings. We would also like to thank the Dean and staff in the Science Faculty Office at the University of Cape Town for kindly accommodating the national office and for sharing faxing and photocopying facilities.

I.S. Glass

For General Secretary