

THE ROYAL SOCIETY OF SOUTH AFRICA

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REPORT OF THE GENERAL SECRETARY FOR 2004

2004 SCIENCE ESSAY COMPETITION

Entry forms for the 2004 Science Essay Competition were posted to about 500 schools across the country. On the closing date for entries, a total of 59 essays were received from 21 secondary schools, with only 5 essays were received from one primary school.

Professor Luigi Nassimbeni FRSSAf, nominated convener of the Essay Competition, arranged for markers at UCT (A/Prof Nicki Illing and Dr Kathy Denby, Dept of Molecular and Cellular Biology) to mark the essays with the first two titles. Professor Mike Bruton FRSSAf marked the essays with the third title. Professor Doug Rawlings FRSSAf and his wife verified the placing of prize winners for the first two titles. The Society is indebted to all for their valued contribution. The results were announced in August

The Society is very grateful to the sponsors listed below for hosting essay winners at their facilities and to the Claude Leon Foundation for generously donating R60 000 over three years to provide cash prizes and to cover administration costs for the essay competitions in 2004, 2005 and 2006. In 2004, twelve winning scholars were selected on the basis of merit, three for each essay topic and were able to partake of their prizes, including visits to National Facilities during the year. The essays from Ficksburg Primary School were remarkable and four additional essay writers were given special awards. Runners up were given certificates and where possible, prizes/certificates were presented by the Society's Councillors. It is felt that the competition is a very worthwhile project for encouraging interest in science amongst the youth. The Society believes that the generosity of sponsors will increase participation in the competition in 2005.

Results:

My clone & I. How can DNA research be useful to me?

Senior School:

1 st : Jessica Groenewald, Grade 12, Wynberg Girls High	R1 500	No visit - Matric.
2 nd : Johan Du Plessis, Grade 10, Stellenberg High	R1 000	MTN Sciencentre
3 rd : Tamika Doubell, Grade 10, Collegiate High	R 500	SAIAB
Merit award Astrid Lüdemann, Grade 11, Rhenish Girls High		I'themba Labs
Merit award Tracey Fleming, Grade 10, St Mary's DSG		
Special Award: Michelle Botha, Grade 7, Ficksburg Primary	R 500	

Eat your Greens! Will a salad of the future still be good for me?

Senior School:

1 st : David Kofi Asante-Darko, Grade 12, Florida Park High	R1 500	No visit - Matric
2 nd : Lisa Visser, Grade 11, Rhenish Girls High	R1 000	I'themba Labs
3 rd : Odette Grotepass, Grade 12, Crawford College	R 500	No visit - Matric
Merit awards Tessa Marais & Raelene Page, Grade 11, Rhenish Girls High		I'themba Labs
Merit award Percevarance Khuzwayo, Grade 10, Silver Heights Secondary.		
Merit award Kate Swarbreck, Grade 10, St Mary's for Girls		
Special Award: Megan le Roux, Grade 7, Ficksburg Primary	R 500	

SA Inventions & Scientific Discoveries that have made a big difference to the lives of ordinary people.

Senior School:

1 st : Shannon Stowell, Grade 9, St Anne's Diocesan College	R1 500	MTN Sciencentre
2 nd : Kirsten Patricia Drury, Grade 9 St Anne's Diocesan College	R1 000	MTN Sciencentre
3 rd : Roxanne Jans, Grade 9 St Anne's Diocesan College	R 500	MTN Sciencentre
Special Awards: Colani Johnson & Janca van Niekerk, Grade 7, Ficksburg Primary	R 500 each.	

ACADEMY OF SCIENCE OF SA (ASSAf)

Academy activities have increased markedly. The International Academy Council (IAC) report entitled "Strategy for building worldwide capacity for Science and Technology" was brought to the attention of several SA Director Generals for discussion within their departments. A lecturer representing the Council toured SA to give talks to many bodies. The Academy started a new journal called "Quest", aimed at the lay public and senior high school scholars. Two new permanent posts (CEO and Project Officer) were created. Three of the Society's Councillors (present and recent past) were elected to Academy Council during 2004. These are Professor Nassimbeni FRSSAf, Professor Thomson FRSSAf and Professor Chinsamy-Turan. The Academy Council rejected the adoption of a two-tier membership, a decision that precluded a merger with the Society at this stage.

The Academy and the Society decided however, to join forces and to pool resources so far as in presenting monthly lectures. This system was started in the Western Cape but the other branches are encouraged to implement similar proceedings in their areas. To this end, during 2004, the nine Western Cape lectures were jointly advertised, the costs were equally shared, suggestions for speakers were made on behalf of the Academy by its representatives on Council, but the Society maintained responsibility for organising the logistics of all the meetings. Efforts are in hand to arrange co-chairing of the meetings and to have an official Academy member involved in choosing speakers.

CLAUDE HARRIS LEON FOUNDATION

Three members of Council assisted the trustees of the Claude Harris Leon Foundation by evaluating and grading more than 100 applications for post-doctoral fellowships. The quality of the successful applications was excellent. For 2005/2006, 34 post-doctoral fellowships were awarded, of which 31 were accepted, amounting to R 2.79 million.

In August, the Society and Foundation co-hosted the second annual lecture evening in the new series of joint lectures. The double lecture was well-attended with two of the Fellows selected in 2003, Dr Kamili Jackson (Mechanical Engineering Department, University of Cape Town) and Dr Brigitte Eick (Zoology Department, University of Stellenbosch) each presenting a lecture describing their research. Their lectures were entitled "Mechanical Properties of Platinum Rich Jewellery Alloys" and "The Evolution of Echolocation in Bats: A Phylogenetic Perspective based on Nuclear Intron Sequences" respectively.

BRANCH ACTIVITIES

EASTERN CAPE

The Chairman reports that 2004 was 'a quiet year for the Old Royals'. The committee took an active decision to allow 2004 to be a quiet year, given that it coincided with the Rhodes University centenary. Further, the Chairman's decision to hold meetings only when there was business that required a meeting also reduced the opportunity for meetings. It is anticipated that 2005 will be more energetic and active.

The three special annual lectures of the Eastern Cape Branch were held, the last being in partnership with the Rhodes University Centenary Committee as co-hosts. The Young Royals featured in each lecture either introducing or thanking the speakers or performing both functions.

The three lectures were:

- SciFest lecture - "**Science, Complexity, and Nature of Existence**" – Prof. George Ellis FRSSAf, UCT.
- Amy-Jacot Guillomod Lecture - "**A Climate of Change.**" – Prof. Jay O'Keeffe, Director, I.W.R., Department of Zoology & Entomology, Rhodes University.
- Schonland Lecture "**Human evolution after a hundred years**" – Prof. Philip Tobias Hon FRSSAf, University of the Witwatersrand.

Attendance at these lectures was good. The SciFest and Schonland lectures were over capacity and the Amy-Jacot Guillomod lecture had a good turn out, but did not reach 200. For the Schonland lecture, Philip Tobias attracted a record crowd of more than 450.

The responsibility for the Website has been assumed by the Young Royals. The Chair of the Young Royals has reported on progress.

Council of 2003 asked the Eastern Cape Branch to run with and develop its proposed concept for the Award for the Public Understanding of Science. Gill Boltt had suggested that there should be two awards: under 35 years and over 35 years of age. A detailed draft of how these awards should be managed and sponsored is still pending.

It was noted that not one person was inducted from the East Cape as a Fellow and no one from the East Cape Branch was nominated for an award. It seems that as the second most active centre after the headquarters in the Western Cape, the problem lies not in the inadequacy of the scientists of Grahamstown, Port Elizabeth, Alice and East London, but simply because they have not been nominated. Nominations need to be brought to the attention of Prof Kaye on the committee.

An Eastern Cape student is one of the winners of the National RSSA Schools Science Essay Competition again this year on the national front, but the Chairman would like to recommend that the committee of 2005 looks into the manner in which the competition is run, because it might be preferable to have a regional promotion either in addition to the national system, or independently of it.

Regarding the SA Academy of Science and RSSA, at the August Council meeting it was agreed that a trial partnership should be evaluated over a period of time. There shall be:

- joint advertising of lectures
- cost sharing of lectures
- joint decisions on who might give lectures
- co-chairing of lectures
- but RSSA will maintain its responsibility in making all the arrangements for lectures.

Branches need to draw up budgets for lectures so that the Academy knows what its share of the costs is to be. The Society Office will let the branches know who in each province represents the Academy (The Eastern Cape Branch has not yet heard whom they should contact).

The progress of the Young Royals in developing their constitution and programmes is under close scrutiny and currently enjoys very favourable support of the RSSA. The earlier recommendation from a Council Member that Young Royals pay a student rate for membership has been replaced by the Eastern Cape stance that the Young Royals should be supported by the Society and viewed as a project which constitutes a long-term investment by the Society.

THE YOUNG ROYAL SOCIETY

The society only started holding regular meetings in June, and the focus for the rest of 2004 was on strategic planning for the society and business planning for the various portfolios. There are eight committee members and a number of portfolios.

Lucy - Chairman
Andrew - Vice Chairman
Niall - Treasurer
Cordelia- Secretary
Kate - Schools liaison, Projects coordination, Science teaching
Oliver - Website, Media liaison,
James - Student liaison, Fundraising, SciFest
Dylan - Roots and Shoots
Andrew - Constitution, Strategic planning, Centenary

Noel Pearse is very enthusiastic about helping with strategic planning for the society, and will be assisting in planning a workshop for January that will be held as soon as Rhodes opens again. He will be helping with the aims, vision, strategy, fundraising, leadership and management of the society.

The Young Royals have already been discussing some ideas, including how to develop the society as the hub for science based societies on campus and how to facilitate their interaction with schools and the wider Grahamstown community.

- Integrate strategic planning with other societies
- Canvassing of new members - though 1st year starter pack, activities during registration, orientation week and societies evening. These are dependent on the relationship with Rhodes.

Three-year business plans have been called for from all committee members. Three have been completed. They will be combined in a single document and developed in the strategic planning process.

The Royal Society Constitution and others have been reviewed and discussed at a meeting, and a further meeting was held on the 4th November to finalise the Young Royals' own constitution.

A mailing list, address lists and a website have been set up and are working, although in draft form at the moment, and will have more content once the constitution has been developed and people have submitted photographs.

Regarding planning for the SciFest, James has enquired about a stand and a space has been booked in the programme. This will be a motivational stand with speakers to get young people interested in studying science. The theme 'Research to Reality' will be used to show how science and maths are used in interesting careers, with examples such as Mark Shuttleworth.

Other projects and activities include: Roots and Shoots: Dylan is coordinating; progress is good. Centenary tree planting: coordinated by Shafick; trees have been planted. Science teaching and courses for schools: coordinated by Kate, who has drawn up a business plan. Cordelia gave the vote of thanks at the Prof Tobias lecture. Martin and Niall gave some assistance with the judging of the Science Expo

KWAZULU/NATAL

The Branch representative on Council, Professor Henda Swart FRSSAf, reports that throughout the year Academics were still heavily involved with meetings regarding the amalgamation of the Universities and Technikons of Natal, Durban Westville and Pietermaritzburg into the single University of Kwazulu-Natal. Despite this, branch activities were reintroduced in 2004. A George Campbell meeting, the first joint meeting of Fellows of the Royal Society and of the former universities of Durban-Westville and Natal, was held on October 8 on the Howard College Campus of the University of KwaZulu-Natal. The purpose of the meeting, which was also open to the public, was to celebrate the selection of Professor Pat Berjak FRSSAf as South Africa's 'Woman in Science', to strengthen bonds among the Fellows, to plan future activities and to hear a lecture by Pat Berjak entitled "**The case of the obstinately disobedient seeds - a microscopical detective story**".

NORTHERN AREAS

Meetings of the Northern Areas branch committee were held on 15 June 2004 and 2 November 2004. The Committee, approved at the meeting of 4 March 2003, served for two years as stipulated in the Branch statutes, and comprised the following members:

Chairman:	Professor Jo Michael FRSSAf
Vice-chairman:	Professor Rob Veale
Treasurer/Hon. Secretary:	Professor Mary Scholes FRSSAf
Members:	Professors Jan Boeyens FRSSAf, Neil Coville FRSSAf, Valerie Mizrahi FRSSAf and John Skinner FRSSAf (ex officio)
Secretary:	Mrs Yolanda Copperthwaite

(Jo Michael, John Skinner and Rob Veale represented the Branch on the National Council.)

The main activity of the Branch is the organisation or joint hosting of seminars and lectures in Johannesburg and Pretoria. Branch members are notified of the events by e-mail, and talks held at Wits are also announced in the "Wits Newsclips" and publicised on notice boards around campus. However, the programme for 2004 proved to be disappointing. No fewer than three planned events had to be cancelled because prospective speakers withdrew, owing to other commitments. A fourth event (a panel discussion entitled "Future of the Northern Flagship Museum, with particular reference to the Transvaal Museum", scheduled after much effort for 3 March 2004) had to be cancelled on short notice when the Chairperson of the Board of the Museum discovered a conflict with other arrangements. Professor Skinner is thanked for his many attempts to arrange the Pretoria meetings.

The following Seminars were held during the period covered by this report.

April 21	"The Herschels at the Cape: 1834 – 1838" - Professor Brian Warner FRSSAf, University of Cape Town - late afternoon lecture, University of Pretoria: (UP Conference Centre; attendance 38).
August 19	"How do antimalarials work?" - Professor Helder Marques FRSSAf, School of Chemistry, University of the Witwatersrand - lunchtime talk at Wits (Senate House Basement, Wits; attendance 45).
November 11	Joint mini-symposium with the School of Chemistry, University of the Witwatersrand, and iThemba Pharmaceuticals (Pty) Ltd (Openheimer Life Sciences Building, Wits; attendance 95):

The Treasurer's report, prepared by Professor Mary Scholes, is available from the Society Office in Cape Town.

An important event planned for 2005 will be the presentation of a festschrift to Professor Frank Nabarro, FRS, Hon FRSSAf in recognition of his contributions to Physics. The festschrift takes the form of a special issue of the Transactions of the Royal Society of South Africa, and contains articles contributed by colleagues and associates of Professor Nabarro. Professor Loyiso Nongxa, Vice-Chancellor and Principal of the University of the Witwatersrand, has kindly agreed to host a function on 17 March 2005, at which the Festschrift will be formally presented.

No additional nominations having been received for the incoming Committee for 2005/2006, the following members have been appointed:

Chairman:	Professor Rob Veale (Wits)
Vice-chair:	Professor Bruce Rubidge FRSSAf (Wits)
Treasurer/Hon. Secretary:	Professor Mary Scholes FRSSAf (Wits)
Members:	Professor Jo Michael FRSSAf (ex officio, Wits), Professors John Skinner FRSSAf and Rudi van Aarde FRSSAf (University of Pretoria)
Secretary:	Mrs Yolanda Copperthwaite

WESTERN CAPE

Meetings in the Western Cape were held regularly at the Iziko Museums of Cape Town's SA Museum in Queen Victoria St, with two meetings held in the Kramer Building at UCT's Middle Campus. Attendance was between 20 and 50. The following lectures were held:

February 11	'Global Health Ethics' - Professor Solly Benatar FRSSAf, Dept of Medicine, UCT. (Kramer building – attendance 31)
March 17	'New Insights into the tuberculosis (TB) & HIV epidemic' - Professor Nulda Beyers, Centre for TB Research & Education, University of Stellenbosch. (Attendance 30)
April 21	'The role of chemistry in nanotechnology' - Professor RD Sanderson, UNESCO Associated Centre for Macromolecules and Materials, Division of Polymer Science, Department of Chemistry, University of Stellenbosch. (Attendance 25).
May 19	'Sex, Hormones and Drugs: A Molecular View' - Professor Janet Hapgood, Department of Biochemistry, University of Stellenbosch. (Attendance 29)

- June 23 **'The Romantic World of Legumes and Rhizobia. What's in the Kitty for Us?'** - Professor Felix Dakora, Dean of Research Development, Cape Technikon, Cape Town. (Attendance 29)
- August 16 **"A LEGEND IN OUR TIME – James Kitching and the development of Karoo Palaeontology and Geology"** - Professor Bruce Rubidge FRSSAf, Director of the Bernard Price Institute of Palaeontological Research (Pure), University of the Witwatersrand. (Attendance 51)
- September 22 **"Conservation Genetics - how the laboratory can influence management of African Wildlife"** - Professor Eric Harley, Division of Chemical Pathology, Dept. of Clinical Laboratory Sciences, UCT. (Attendance 27)
- October 20 **'Computational Mechanics'** - Professor B. D. Reddy FRSSAf, Dean, Faculty of Science, Director, Centre for Research in Computational and Applied Mechanics, University of Cape Town. (Attendance 40)
- Nov 17 **'Biological effects of continuous exposure to low doses of ionising radiation: lessons from bats'** - Dr Kathleen Meehan (Ass Prof), Dept of Health Sciences, Cape Technikon. (Attendance 20)

HONORARY FELLOWS (FOREIGN), FELLOWS (FOREIGN), FELLOWS AND MEMBERS

FELLOWS:

The Society deeply regrets to report the deaths of Dr. Stanley Evans FRSSAf, Professor Gideon Louw FRSSAf and Dr Isaac Schapera FRSSAf during 2004.

There are 39 Honorary Fellows (Foreign); 2 Honorary Fellows (Northern Branch); 5 Fellows (Foreign) and 188 Fellows; comprising 9 in the Eastern Cape, 19 in Kwazulu/Natal, 22 overseas, 69 in the Western Cape and 69 in the Northern Branch. The following New Fellows were elected during the year:

ROY GORDON BENGIS (State Veterinarian, Kruger National Park)

Roy Bengis is Africa's and South Africa's leading wildlife disease epidemiologist, a superb naturalist and zoologist, and a Veterinarian of great distinction. He entered Onderstepoort in 1968, graduating BVSc 1971. To his contemporaries it was clear that he was an exceptional clinician and he deservedly won the Clinical Medal. But it was also clear that his greater interest was in wildlife biology.

After graduating he went to the USA to take a PhD in Physiology under the great Arthur Guyton, intending to study the physiology of wild animals. Along the way he also took a degree in Pharmacology and retained his interest in wildlife by working in Zoos. On his return to South Africa he was appointed State Veterinarian in the Kruger National Park, a post he has occupied with distinction for nearly 30 years.

His task as State Veterinarian is disease surveillance and the absence of diseases like Foot and Mouth and Rinderpest in South Africa that might enter from countries to the North and East, is testimony to his effectiveness. However he has also become intricately involved with the operation of the Kruger Park, where he is a highly sought after clinician and game capture and transport expert. He has broadened his duties to include research, and is one of a handful of South African Veterinarians who have made significant research contributions. His research has been in the epidemiology of African wildlife diseases, and given the facts that his post is not an academic one, and that his normal duties are onerous, his publication of over 70 refereed articles in international journals is truly exceptional. He is also frequently invited to give keynote addresses all over the world. He has been Africa representative on the Organization Internationale Epizooties (OIE) for many years and in 2003, was appointed Chairman of its Wildlife Working Group. He serves on the Transfrontier Park Conservation Committee and on its Veterinary Committee. He has been involved in the transport of White and Black Rhino to Zambia, Botswana, Australia and the USA. His current research is TB in the KNP, and in the Disease Free Buffalo Breeding programme.

In electing Roy Gordon Bengis to Fellowship, the Society recognises his outstanding contribution to the life sciences and superb achievements in the fields of Veterinary Science, Epidemiology and Wildlife Biology.

PETER BARRINGTON BEST (Research Associate, Iziko Museums of Cape Town)

Peter Best has had a long and distinguished career as a cetacean biologist, dealing with the biology, assessment and management of whales. Without a doubt, he is South Africa's leading biologist in this field, and is internationally known and respected for his research.

He has been a member of the Scientific Committee for the International Whaling Commission (IWC) from 1971 to the present date, and chaired a series of subcommittees dealing with protected species, humpback whales and Minke whales. Since 1971, he has also been a member of IUCN specialist groups dealing with whales, seals and cetaceans in general. He has also been the representative for Marine and Coastal Management who makes recommendations to the Minister of Environmental Affairs and Tourism on South Africa policy relation to whaling and conservation of whales.

There is not a single reputable international body dealing with cetacean management and research that does not involve Peter Best as their prime source of information and advice on southern African cetaceans. In particular, one has to single out his sustained documentation of the remarkable recovery of southern right whales around our coasts - an inspirational story of conservation success that was achieved in the face of great difficulties.

Peter Best's publication list best attests to his standing as a scientist. He has published 144 papers in the primary literature, but has also been active in promoting general appreciation of his work by writing 24 popular articles and three books. In 1998, Peter Best was awarded the Gold Medal of the Zoological Society of Southern Africa in recognition of his research and his contributions to zoology. Peter Best is richly deserving of a Fellowship of the Royal Society

RUDOLPH DANIEL BIGALKE (Retired: Retired as Deputy Director-General of the Dept of Agriculture. Formerly Director of the Onderstepoort Veterinary Research Inst. of the Department of Agricultural Technical Services.)

Dr Rudolph Bigalke has made an outstanding contribution to veterinary science, both as an excellent researcher in Protozoology and as a distinguished leader with visionary foresight. The young Bigalke took his Bachelor's degree in Veterinary Science cum laude in 1953. He went into private practice for a time and then joined the Onderstepoort Veterinary Research Institute in 1956. He honed his skills further in Zoology and then took a London Diploma in Applied Parasitology and Entomology in 1964. His doctorate followed at Pretoria University in 1969.

Dr Bigalke tackled and solved the problem of besnoitiosis, the "elephant skin disease" in cattle. This plague had had severe economic implications, before Dr Bigalke discovered that the parasite was transmitted by blood sucking flies. He found that it could be cultured in wildebeeste, so as to produce an effective vaccine. This gained him world recognition. He went on to publish 42 papers in refereed scientific journals, and 9 book chapters, dealing with a wide range of important animal diseases. He took care to popularize science by also publishing plain language articles in more accessible media.

With maturity came a switch from actual research to scientific leadership. He rose steadily through the ranks to become Director at Onderstepoort in 1980. As Director he combined diplomacy and insight so as to transform the Institute significantly. He recruited, supported and promoted young scientists of world calibre in new disciplines like molecular biology.

It was a short step from there to Chief Director for Animal Production in the Department of Agriculture, where he again distinguished himself as a progressive innovator. The country's Stud Book was computerized and technical committees found themselves opened up to world thinking. Outstanding managerial and leadership abilities took him to his present post of Deputy Director General in the Department of Agriculture, which he has filled with distinction for over ten years.

Dr Bigalke has served on editorial boards of significant scientific journals for more than thirty years, both nationally and internationally, and has been President of several specialist scientific societies. Dr Bigalke has consistently applied modern science to the diseases of farm animals, always having a panoptic approach to lessons from similar diseases in the wild. As a leader and manager he has repeatedly opened South Africa to new and excellent science. Accordingly, for his outstanding contribution to the cause of science in South Africa, he has been elected to Fellowship of the Royal Society of South Africa.

LEONARD JOSEPH VICTOR COMPAGNO (Curator and Head, Shark Research Centre, Iziko Museums of Cape Town)

Leonard Compagno obtained his Ph.D. at Stanford University with his thesis on 'Carcharhinoid sharks: morphology, systematics and phylogeny'. He is currently the top NRF-rated scientist at the Iziko South African Museum and the Head of the Shark Research Centre, which focuses local and international efforts to promote shark research and conservation.

Dr Compagno's research covers all aspects of cartilaginous fishes on which he is a world authority. He is regularly consulted by the FAO and other international bodies, and has provided multiple assessments for the Red Data Lists. Leonard Compagno has greatly expanded national collections of offshore demersal fishes. His contributions to Science Education and Technology include being scientific advisor for international films (e.g. the BBC Natural History Unit's Great White Shark and Survival Anglia's Jurassic Shark) and developing a major shark exhibition at the Iziko Museum.

Dr Compagno is a leading shark conservationist, ensuring the rational management of cartilaginous fishes at regional and international levels. He has been regional vice-chair of the IUCN Shark Specialist Group and consultant to numerous bodies and was influential in persuading the South African government to protect the Great White shark.

Dr Compagno has published a prodigious number of papers, including global-scale reviews, about shark taxonomy, morphology, biogeography and conservation. Many of these reshape the way we view shark phylogeny. His "Sharks of the World" is a classic that will remain a standard text for decades. Similarly, his 1999 "Sharks" in the FAO species identification guide and his overview of chondrichthyan systematics in southern Africa (Compagno 2000) are major outputs. His contributions to the FAG "Species Identification Guide for Fisheries Purposes" and to the FAG "Species Catalogue for Fisheries Purposes" are substantial - probably greater than anyone else in the world, when it comes to elasmobranch fishes. No serious book on sharks would be complete without a Compagno contribution, reflecting his international recognition.

HENDRIK BELSAZAR GEYER (Professor of Theoretical Physics, Dept of Physics, Univ of Stellenbosch)

Professor Geyer is held in high esteem for his personal and scientific qualities. His research output is of very high standard. There is the obvious evidence such as the top quality of research journals where he

publishes, and the international recognition as shown by invitations and collaboration with leading scientists in his field. Personal contacts with him through collaboration and discussions or attendance of seminars have always convinced his colleagues of the depth and breadth of his work. Out of his primary field of specialisation (bosonisation), where he appears to be acknowledged internationally as an expert, further substantial contributions of note have been made in related fields like the Skyrme model or general many body techniques. His impact, nationally, is clearly seen at his University where he has attracted some of the best students for higher degrees.

Internationally, his appreciation by colleagues in Europe and USA is based solely on his publications. By and large, his publications are characterised by imagination paired with a solid mastery of high level technical and mathematical skills. His citations only confirm the considerable impact of his work.

What is found particularly attractive is Professor Geyer's undiminished drive to broaden the scope of his activities. It was he who suggested first the theme of the Summer school 2001, that is, *Quantum Computing*, he also accepted a Master student to conduct a literature study in this field new to him, which turned out to be a genuine success. In general terms, he lives up to his philosophy to be rather broad than overspecialised, an attitude deserving particular acclaim.

Despite his administrative duties, for instance a few terms as Head of Department, the research output is rather remarkable, in number and even more so in the quality and reputation of the journals where his work appears. The same applies to the number of research students; most of them turned out to be successful researchers or experts in various activities, locally and abroad.

Professor Geyer is playing an active role in fostering the aims of theoretical physics in South Africa. He is Chairman of the Organisation of Theoretical Physicists of the SAIP. A few times he has been member and/or chairman of the organising committee of the Chris Engelbrecht Summer schools of Theoretical Physics. In his younger years he was the recipient of the Silver Jubilee Medal of the South African Institute of Physics. Twice he was awarded an Alexander von Humboldt fellowship. The Royal Society of South Africa is proud to have a man of the calibre of Professor Geyer within the ranks of its fellows.

JULIA ANN LEE-THORP (Archaeologist, Isotope Chemist, Dept of Archaeology, UCT

Julia Ann Lee-Thorp is an Associate Professor in the Department of Archaeology at the University of Cape Town. She is a founding member and current director of the Quaternary Research Centre and has been very active on the Committee for South African Women in Science and Engineering.

Her research in the reconstruction of ancient diets and environments by means of light stable isotope measurements has won her international recognition. She is particularly well known for developing the theory and methods by which the diets of fossil animals can be assessed through measurement of stable carbon isotopes in tooth enamel. These procedures have been applied on an international scale by researchers in the earth and life sciences, addressing such problems as the global warming event at the end of the Permian (from tooth enamel of mammal-like reptiles of the Karoo); the global expansion of savanna grasslands between 8 and 7 million years ago (from the tooth enamel of equids); and the diets of early hominids of South and East Africa.

A/Prof Lee-Thorp's own research applications have focused on the diets of early hominids of South Africa and the dietary adaptations of fauna in savanna ecosystems, ancient and modern. She has closely coupled interests in palaeo-oceanography and in the production of detailed climate records for segments of the southern African past, from the isotopic archives in speleothems.

HELDER MARTINHO MARQUES (Professor of Bioinorganic Chemistry, School of Chemistry, Univ of Witwatersrand)

Helder Marques is Professor of Bio-inorganic Chemistry and Head of the School of Chemistry at the University of the Witwatersrand. After graduating with both an Honours degree in Chemistry and a Higher Diploma in Education from the University of the Witwatersrand, he spent two years as a high-school teacher before returning to his alma mater to complete a PhD degree, which was awarded in 1986. His doctoral research on the thermodynamic and kinetic properties of model complexes for metalloproteins laid the foundation for an abiding interest in phenomena at the interface between inorganic chemistry and biology. After spending a year as a post-doctoral fellow at the University of Texas at Arlington, he was appointed in 1987 to a lectureship at the University of the Witwatersrand.

A spectacular combination of talents as a teacher, researcher and administrator resulted in his appointment to a Personal Chair, Headship of the School of Chemistry and Deputy Deanship in the Faculty of Science, all within the space of a dozen years. His achievements as a teacher were acknowledged when he received both the Convocation Distinguished Teachers' Award in the Faculty of Science and the Vice-Chancellor's Award for Teaching in 1992. The South African Chemical Institute recognised his research potential by the award of its Raikes Medal (awarded to an outstanding chemist under the age of 35) in 1989. In the same year he won the Vice-Chancellor's Research Award from the University of the Witwatersrand, which also rewarded him in 1993 with a Council Overseas Fellowship to spend a sabbatical year as a Visiting Professor at the University of Mississippi. It is worth noting that Professor Marques was the first person to achieve the "double" of the Vice-Chancellor's Teaching and Research Awards at the University of the Witwatersrand.

His current research focuses on exploring the relationships between structure and function in biologically important compounds containing metal ions, for example, corrinoids such as vitamin B12, and porphyrins such as haemoglobin and related heme proteins; and he has become internationally known for his use of computational methods to model and predict such relationships. Both national and international collaborations have seen him applying these methods to problems as diverse as defining parameters for molecular mechanics calculations on metalloporphyrins, and the interaction of antimalarial drugs with haemoglobin.

Professor Marques' impressive *curriculum vitae* includes over 90 publications in journals of international repute (including several in *J Am. Chem. Soc.*, regarded by some as the *ne plus ultra* for publications in chemistry), several book chapters, a host of invited or keynote lectures at local and international conferences, frequent invitations to act as referee for prestigious international journals, and supervision of many MSc and PhD students. He has served on numerous committees of the NRF and its predecessor, the FRD, and was convenor of the Chemistry Evaluation Panel in 1997 and 1998.

RUDOLPH JOHANNES VAN AARDE (Professor, Dept of Zoology and Entomology, Univ of Pretoria)

Rudi van Aarde holds the Chair of Conservation Ecology at the University of Pretoria, and is Director of the Conservation Ecology Research Unit there. He has spent his entire academic career at UP beginning when he obtained a BSc in 1973. He has been a member of the teaching staff and/or the Mammal Research Institute for nearly 30 years.

Rudolph van Aarde is a versatile scientist. He commenced his career as a research assistant to Professor John Skinner FRSSAf in the Mammal Research Institute (MRI) studying predator:prey relationships between feral domestic cats and seabirds on Marion Island, the results of which became his MSc and led to a programme to exterminate the cats, thus ensuring the survival of several species of birds. He also published on predation by killer whales on elephant seals around the Island. On his return to the mainland he registered for a PhD in the MRI studying reproduction in the porcupine *Hystrix africaeaustralis*. During this period he broadened his research interests into endocrinology and spent sabbaticals with Prof Eric Lamming at Nottingham University and Prof Sir Brian Heap at Cambridge, UK. Many publications resulted from this work, but the techniques required to remain competitive in endocrinology could not be supported and his interests turned to interaction between mammals and their environment. He was rapidly promoted to Senior Lecturer, Associate Professor and in 1995 to Full Professor *ad hominem* in the Department of Zoology at the University of Pretoria, for his achievements.

His new research direction led into ecology and particularly restoration ecology. His special expertise and contribution in this area has been in the restoration of disturbed habitats and the reintroduction of displaced species into them. His notable achievements include the post-mining restoration of the coastal dunes near Richards Bay, the re-establishment of elephants in Caotada, and the restoration of the Maputoland elephant population. Elephant conservation has in turn become a major research focus for him starting with studies of their reproduction with a view to establishing if a contraceptive could be developed to control population growth. He has shown that, although an attractive idea, contraception as a way of controlling population growth in elephants is as unrealizable as it is in humans. Latterly he has been developing a major research programme with Prof Stuart Pimm of Duke University, USA, studying elephant movements in 6 countries of the South African Development Community. This research holds tremendous promise for finding another way of controlling populations.

GERHARD VON GRUENEWALDT (Vice-President, National Research Foundation)

Gerhard von Gruenewaldt took an M.Sc degree cum laude in 1967 and his D.Sc in 1972, both from the University of Pretoria. He won a prestigious von Humboldt Research Fellowship to Munich in 1974. At the age of 33 he was created a full Professor in the University of Pretoria and Director of the Institute for Geological Research on the Bushveld Complex. In 1985 he won a B rating from the Foundation for Research Development, followed by an A rating as an international research leader in his field in 1989. His science had significant economic implications for South Africa, not least in platinum mining. He played an important role in specialist scientific committees nationally and internationally, visiting platinum deposits in Russia in 1990 at the invitation of the Moscow Academy of Sciences. He successfully supervised 25 masters and 7 doctoral theses; he was on the editorial boards of several scientific journals; he served as external examiner as far afield as Holland, India and Australia; and he published over sixty peer reviewed scientific articles and chapters, some of them being of major international significance.

This outstanding career as a scientific geologist was recognized by the award of the Draper Memorial Medal for contributions to Geology in 1990. By itself, it is an excellent achievement, of which many a prestigious scientist might well be envious.

Yet Dr Gerhard von Gruenewaldt is no ordinary man. Appointed Vice President of the Foundation for Research Development in 1992, he re-tooled as a leader of science more generally in South Africa. His vision contributed dramatically to the transformation of FRD into the National Research Foundation, under the leadership of its President, Dr Khotso Mokhele. As NRF Vice President and Managing Director of its Research Support Agency, Dr von Gruenewaldt has been an international model of the hands-on, driving science developer. No system is too big, no detail too small, and no problem too intractable for his determined energy. He became famous for unrelenting persistence in attempting to increase the science vote granted by

Parliament. Equally his backbone was ramrod straight with regard to the evaluation and rating of South African scientists and their products, benchmarked to the highest international standards. Where others counted publications like sheep, Dr von Gruenewaldt's systems at the NRF weighed only a scientist's best few publications, using the judgements of the author's peers. Where others were content to say, "no black people or women applied for the post", Dr von Gruenewaldt spent huge time, effort and cash in developing people who had been previously excluded, so that they became excellent scientists. At a time when the NRF budget was severely stretched, he found a pleasing balance between funding excellence in the old universities and paying for the development of good science in the young institutions.

Under the leadership of the NRF President, Dr Khotso Mokhele, Dr Gerhard von Gruenewaldt has made an outstanding contribution to the furtherance of science in South Africa. This follows on his earlier excellence as a specialist research scientist and in recognition of all these achievements, he has been elected to Fellowship.

MEMBERS

The Society regrets to report the death of Member Prof P de V Booyesen. There are 240 members; 54 in the Eastern Cape, 33 in KwaZulu/Natal, 48 in the Northern Area, 85 in the Western Cape and 20 overseas. The following New Members were elected during the year: Northern Branch: Mr Izak Smit (Student); Western Cape: Dr Solomon Lison and Mr Young Carr.

MEDALS

No awards were made for the John F. W. Herschel Medal or the Meiring Naude Medal for 2004.

PUBLICATIONS

Volume 58 (1), 2003 of the *Transactions* was dispatched early in the year. Due to technical difficulties and the complexity of the content, Volume 58 (2), 2003 (a festschrift to Prof F R N Nabarro Hon FRSSAf, containing papers invited from physicists all over the world), was however, only published and dispatched in September. The publication of the journal had fallen behind but is catching up now that it is published electronically. Volume 59 (1), 2004 was published electronically in November. Part 2 is in progress. Production Editors, Felicia Stoch and Marja Wren-Sargent of the Avian Demography Unit at UCT did the typesetting of Volume 58 (1) whilst Melanie Fick of MartinGraphix did the typesetting for 58 (2) and 59 (1). Sancino Litho printed both parts of Volume 58. The contribution of all the above is gratefully acknowledged. The Editor Professor J D Skinner FRSSAf, with the assistance of the Editorial Board (Dr. C.K. Brain FRSSAf, Prof. G.F.R. Ellis, Prof. D.E. Rawlings FRSSAf and Prof J. Van Staden FRSSAf) continues to evaluate papers received for future volumes.

The Council wishes to acknowledge, with great appreciation, the efforts of the Editor to maintain the high standard of the Society's journal and to bring the publication of the *Transactions* up to date.

LIBRARY

The Librarian and staff of the University of Cape Town Library continue to catalogue and maintain the Society's Library. About 50 scientific institutions have an exchange agreement, whereby they send publications to the Society on exchange or as gifts.

COOPERATION WITH OTHER BODIES

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

- Academy of Science of South Africa (ASSAf) - Professor L R Nassimbeni FRSSAf
- Frank Warren Memorial Trust - Professor B. Warner FRSSAf
- National Science & Technology Forum (NSTF), including the Scientific, Engineering & Technological Societies and Allied Professions Group of SA (SETAG) - Professor J. D. Skinner FRSSAf
- South African Agency for Science and Technology Advancement (SAASTA) - Professor M. N. Bruton FRSSAf

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Grateful acknowledgement is made of the valuable assistance of Elaine Rutherford-Jones in the running of the national office of the Society. We wish to thank the chairs and committee members of the branches of the Society, some of who were very active during 2004. We wish the new chairmen of the Branch committees 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 and UCT for hosting the public meetings. The Society is also very grateful to 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 UCT, for kindly accommodating the national office and for sharing faxing and photocopying facilities.

R. L. CHRISTIE
GENERAL SECRETARY