

THE ROYAL SOCIETY OF SOUTH AFRICA

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REPORT OF THE GENERAL SECRETARY FOR 2002

2002 SCIENCE ESSAY COMPETITION

As a result of the problems experienced with the 2001 Essay Competition, the competition was not held in 2002. Essentially, the competition was a victim of its own success. The nominated marker was overwhelmed with the large number of entries, but eventually managed to get through them all and then the past President graded the winning entries. The Society is most grateful for the immense effort put in by John Crawford and the late Professor Friedel Sellschop FRSSAf in this regard. The results are shown below and the winning scholars were able to partake of their prizes, (mostly consisting of visits to National Facilities) during 2002. The Council feels that the competition is a very worthwhile project for encouraging interest in science amongst the youth and has taken steps to ensure the success of the 2003 competition. The current President has organised a large team of markers, prizes have been sought and new titles set and forwarded to the Department of Education and over 450 schools nationwide.

Junior School Prizes sponsored by SAIAB (S. A. Institute for Aquatic Biodiversity)

1st, 2nd & 3rd Prizes to Kyle McGregor, Shaun Mulligan and Bradley Baxter, all Stirling Primary, East London

Junior School Certificates of Merit to Pontso Mohlatsane and Magdaline Makone, both of Western Areas Primary School, Orkney

Senior School Prizes, sponsored by the iThemba LABS (Lab for Accelerator Based Sciences) -

1st and 2nd Prizes to Kathleen Taylor and Nicola van Wilgen, both of Rhenish Girls High School, Stellenbosch

Senior School Prize, sponsored by the MTN Sciencentre

3rd Prize to Kelli Futter from Wynberg Girls High School, Cape Town

Senior School Prize, sponsored by the South African Astronomical Observatory (SAAO)

Merit award - Faseegha Adams - Wynberg Girls High School, Cape Town

Senior School Certificates of Merit to Nastassia Jaffa from Herzlia High School, Cape Town and Sharand Pyar Maharaj of Hilton College.

SA ACADEMY OF SCIENCE

Professor George Ellis represented the SA Academy at a meeting of the Inter-Academy Council in (IAC) in The Hague. He found it stimulating to meet other representatives of Academies from other countries. One of the subjects covered was "Food Security in Africa". The local Academy continued to make steady progress throughout the year. The AGM was held on 18 October 2002 in Pretoria. Since receiving the grant, the Academy has established an office with a secretarial component and has issued its first public statement. Dr. Reinhard Arndt organised workshops to discuss 'Capacity Building in SA', involving representatives of the Departments of Trade and Industry/Education/Arts, Culture, Science and Technology. This followed the publication of the report by the panel he chaired, on the study of the world-wide promotion of science and technology and global communication ("PROMOTING WORLD WIDE SCIENCE AND TECHNOLOGY FOR THE 21ST CENTURY"). The Academy also continued to arrange to take over the production of the SA Journal of Science. The DST has contracted the Academy to review SA's scientific publications and to allocate funding for selected publications. The Society intends to apply to the Academy for funding for the publication of the Transactions. The Academy has been approached by many Northern Hemisphere academies, with a link having already been set up with the Russian Academy. Professor Ellis has recommended to the Academy that it pursue links with the strongly scientific Indian and Brazilian Academies as well as with other African Academies (all 'Southern Hemisphere' with similar challenges). The Third World Academy of Sciences (TWAS) in conjunction with the International Council of Scientific Unions (ICSU), and the World Federation of Engineering Organisations (WFEO) supported the co-ordination of the Science Forum, which ran in parallel with the World Summit in August. Professor Thomson managed to attend the Forum whilst attending meetings of the National Advisory Council on Innovation (NACI), to which she was appointed, during the year.

CLAUDE HARRIS LEON FOUNDATION

Members of the Council helped once again to advise the trustees of the Claude Harris Leon Foundation on the most suitable candidates for post-doctoral fellowships. Eighty-five applications were received, with the result that the quality of the successful applications was excellent. For 2002, seventeen post-doctoral fellowships were awarded, amounting to R1.3 million.

PUBLIC LECTURE

Professor Chinsamy-Turan, on behalf of the Society, organised a very successful afternoon series of public lectures entitled 'NEW PERSPECTIVES ON HUMAN ORIGINS' as a tribute to Professor Phillip Tobias Hon FRSSAf. This was held on 6th July 2002 at the S A Museum and was attended by over 120 people. Three guest speakers, Prof. Richard Klein of Stanford University, USA, and Professors Julia Lee-Thorpe and Alan Morris both of the University of Cape Town, described different aspects of their research and referred to the influence of Professor Tobias in their work. The guest of honour, Professor Tobias completed the afternoon with a succinct and popular summation.

CHANGES TO THE STATUTES

Fellows and Members agreed by ballot that the statutes regarding the duties of the Editor be reworded. The changes made, now allow for the inclusion of festschriften and the newly established Editorial Board and also allow any person (not necessarily a Member or a Fellow) to submit papers directly to the Society for consideration for publication in the Transactions. Previously, manuscripts by non-members had to be communicated by a Fellow. Lastly, the section relating to the reading aloud of the titles of newly submitted papers at meetings was deleted, since this practice has fallen away.

Chapter XII, pertaining to the 'Editor and Publications' reads as follows.

1. The Editor of the *Transactions* shall be responsible to Council for the scrutinising, publication or return, and safe keeping of all manuscripts submitted for consideration for publication.
2. The Editor shall be supported by an Editorial Board of Fellows appointed by Council, to cover the different scientific disciplines and advise the Editor on the appointment of at least two referees, per paper and adjudication of their comments. In the final analysis, following due appraisal, the Editor is responsible for acceptance of typescripts for publication.
3. In the case of festschriften and other lengthy typescripts, the Editor shall consult the Treasurer about page charges and inform the author/s before proceeding with evaluating the script.
4. Each Fellow and Member of the Society, whose subscription is not in arrears, and each Fellow (Foreign), shall be entitled to a copy of each such proceedings and Transactions of the Society as shall be published during their period of membership. They shall further be entitled to purchase a limited number of the publications of the Society at such rates as Council shall from time to time decide.

BRANCH ACTIVITIES

EASTERN CAPE

Dr. Tony Ribbink, Chairman of the Eastern Cape Branch of the Royal Society of South Africa submitted the following two reports for 2002:

"This year saw the first activities of the "Young Royals". (The following report refers) In addition, the number of lectures presented under the banner of the Royal Society increased. Involvement in schools and SciFest spread the activities of the Eastern Cape Branch. A brief summary of the activities of the year is provided below. An initiative to promote the Royal Society and to develop a better understanding of its goals and activities was also launched.

The policy for lectures in 2002 was modified to reduce the number of expensive lectures so that costs incurred in promoting the "Young Royals" and schools programme could be afforded. Accordingly, the number of lectures using visitors from distant regions was reduced, though the Society remained opportunistic in order to take advantage of the visitors to the Eastern Cape.

The formal lectures given were:

March	' Ta ta ma chance - shuffling genes from the DNA deck ' - Prof Michelle Ramsay, University of Witwatersrand, gave the RSSA SciFest lecture on Genomics in the Settlers Monument.
June 6	' Freshwater requirements of estuaries and implementation of the National Water Act ' – Dr Janine Adams, Botany Department, UPE, presented the ' Amy Jacot Guillarmod Memorial Lecture ' in Grahamstown.

A set of '**Coelacanth lectures**' were presented by Dr Ribbink on a "road show" at which the role of the Royal Society in science in Southern Africa was promoted. The lectures were.

July 22	Grahamstown - ' The South African Coelacanth Conservation and Genome Resource Programme ':
July 25	Richards Bay - ' The South African Coelacanth Conservation and Genome Resource Programme ' -
July 26	Durban – ' The South African Coelacanth Conservation and Genome Resource Programme '
August 02	Maputo: ' The Coelacanth Programme: Multi disciplinary partnerships and opportunities '
August 23	East London: ' Coelacanth Programme: Building Capacity and promoting sustainability in South Africa: A tribute to Marjorie Courtenay-Latimer. '
September 03	Johannesburg - ' The Coelacanth Programme: Building Capacity and promoting sustainability in Southern Africa. '

September 10 Cape Town – ‘**The Coelacanth Programme: Building Capacity and promoting sustainability in Southern and East Africa.**’

The **Schonland Lecture** was presented by Prof Bruce Rubridge, Director of the Bernard Price Institute for Palaeontological Research at the University of the Witwatersrand and was entitled: ‘**DINOSAURS, DRAGONS AND EXTINCTIONS: The Karoo’s extraordinary fossil reptiles and their evolutionary significance.**’

Although the SciFest and Schonland lectures were very well attended, attendance of the other Grahamstown based presentations was disappointing. In the light of poor attendance of meetings it was agreed that:

- Greater care should be taken regarding timing of lectures on the campus (so that they do not fall in university vacations or examination periods).
- Major lectures should be scheduled well in advance.
- East London and Port Elizabeth members and students should be encouraged to attend and preferably travel as a group to Grahamstown.
- Advertising should be more aggressive and articles written for newspapers to save on costs.

In 2001 and 2002 it became clear that the general public attending lectures, and students and scholars receiving Royal Society prizes had virtually no idea what the Royal Society is and what it stands for. Equally they did not appreciate its objectives. Accordingly, it was decided to provide some background at each meeting and to more forcefully indicate its role in promotion of science. In addition, the issue of promoting science and the activities of the RSSA in the media was emphasised by Mr Wilmot and agreed by the committee.

Mr. Brian Wilmot, Director of SciFest, outlined the desirability for partnerships to be fostered between various bodies that are trying to promote science at all levels. He indicated that SciFest, the RSSA, SAIAB and Rhodes University could well form such partnerships. In addition he mentioned that ECSTEM was trying to do this at school level in the Eastern Cape. He suggested that the Society needs to encourage and promote school science clubs.

The Eastern Cape Branch is exploring the development of partnerships in Port Elizabeth, East London and elsewhere to add to those established in Grahamstown. Mr Brian Wilmot presented an idea to start a programme, under the umbrella of the RSSA and SciFest, of a series of popular lectures by members and fellows in other centres of the Eastern Cape and perhaps elsewhere. His suggestion was the SciFest would pay S&T costs and at these events SciFest and the RSSA would be promoted. In addition, to promote the vision of a better public understanding of science, it was suggested that if any member gave any other public lecture, some mention of the RSSA and what it stood for should be made. To start this off it was proposed that Dr Ribbink present the "Coelacanth Project" road show beginning in Grahamstown. Mr Wilmot made a contribution to meeting the costs of the road-show as did WWF-SA.

The Royal Society was invited by SciFest to support an annual exhibit at the festival. The exhibition can be from any of the RSSA branches, but facilitated by the Eastern Cape Branch. In 2003 the "Young Royals" would hold the exhibition and an interactive programme with children to promote science and the role of the Royal Society in science.

Dr Heather Davies-Coleman presented to the Eastern Cape Committee of the Royal Society an overview of the "Expo for Young Scientists" which is regionally based. The RSSA has sponsored a small second prize in the past. The Eastern Cape Branch of RSSA had decided to increase the value of its prize, but simultaneously Rhodes University increased its sponsorship substantially to include Scholarships to Rhodes University for the first three places. It was clear that the RSSA would have to re-evaluate its sponsorship. In 2001 a new category of entrants in the "Development Schools" was introduced to the Expo for Young Scientists. The RSSA committee decided that it should support the Development Schools by providing recognition in the following ways:

- a. Best "Development School" project – prize of R200 plus an illuminated certificate.
- b. Certificates also to be presented to the 2nd and 3rd projects.
- c. Certificate presented to the best Science teacher.

There were only two entries in the inaugural year both from the Nathaniel Nyaluza High School in Grahamstown. Accordingly, only two prizes were awarded on the 6th August 2002.

First prize to Nomoyi Siyabulel and Faku Lonwambo for a project on pollution.

Second prize to Mngncongong Sonwabo and Petros Sakheluxolu for a project entitled "floor alarm".

A certificate was awarded to the **teacher** involved in guiding the children who won first prize, Mrs Rejoice Batyi.

A large number of schools entered the RSSA Essay Competition, but remarkably all three winners at the junior level were from Stirling Primary school in East London. Mr Andre Vos, a previous springbok rugby captain (2001) presented the certificates on behalf of the Royal Society. The three winners visited the South African Institute for Aquatic Biodiversity in October and were taken on a field excursion to Tsitsikamma National Park.

Brian Wilmot and Gill Boltz proposed that an award should be made to a deserving person for their contribution in the promotion of "The public understanding of science", rather like the Faraday award in the UK. This recommendation was taken to the Council Meeting in Cape Town where it was recommended that the Eastern Cape Branch should provide a written recommendation for consideration.

The Eastern Cape Branch had several meetings concerning the involvement of "Young Royals". Initially only the committee members were in attendance, but later meetings included postgraduate and undergraduate students as well as Brian Wilmot (Director of SciFest), Heather Davies-Coleman (Director of Expos for Young Scientists) and Margot Collett (Communications and Environmental Education Manager of SAIAB). A number of ideas and recommendations and some unanswered questions regarding membership, activities, recognition and reward for active "Young Royals" were presented to the Council. Council recommended that the Eastern Cape Branch should run with the idea, and then bring recommendations to the Council Meeting in August/September 2003.

Towards the end of 2002 committee for the "Young Royals" was elected. The committee organized a debate and began to formulate plans for 2003. Initially the debate was to be between Rhodes University students

and students of University of Port Elizabeth. However, the timing was such that the two universities could not meet in 2002. Therefore, two groups of Rhodes University students debated whether Ivory should be sold to support conservation efforts. Dr Anne Whitehouse (of Cape Town), who has been researching the Addo Elephants, presided and acted as an adjudicator. In addition the Rhodes University Debating Society facilitated and guided the process. The Young Royal Report (provided below) highlights some of the successes of the debate.

The Eastern Cape Branch will remain in budget in 2002. The Treasurer, Dr W. de Klerk will provide the full report at the end of the financial year. We thank the RSSA Cape Town for its continuing support of the Eastern Cape Branch. Additional support in 2002 was gratefully received from Rhodes University and SciFest. Both are sincerely thanked.

The committee for 2001/2002 was composed of:

Chairman	Dr A J Ribbink
Vice-Chairman	Mrs G Bolt
Treasurer/Secretary	Dr W de Klerk
Committee Members	Prof M. Brown FRSSA Prof J Jonas Prof T Wooldridge representing Port Elizabeth initially, Dr J Adams later

Election of Office Bearers (Senior) for 2002/2003 :

Chairman	Dr Tony Ribbink
Vice-Chairman	Mrs Gill Bolt
Secretary/Treasurer	Dr Billy de Klerk
Committee Members	Dr Janine Adams (Port Elizabeth) Prof Justin Jonas Prof Mike Brown Mr Len Victor

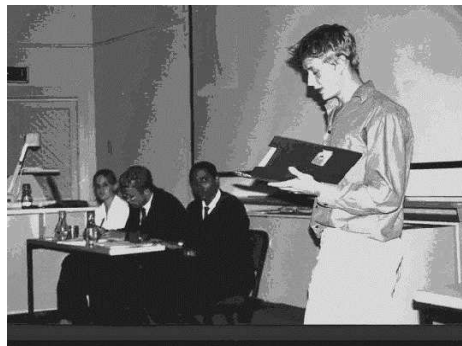
“REPORT OF THE YOUNG ROYALS: EASTERN CAPE 2002/3

The Eastern Cape branch of the Royal Society of South Africa increased its membership and activities to include a group of “Young Royals”. The group was established in mid 2002. The objective of the “Young Royals” is to communicate and promote an interest in science amongst both students and scholars. The society hopes to achieve this by making science “fun” through the use of skits, posters, lectures and debates. A Young Royal Committee for 2002-2003 was elected, comprising of Chairperson Jonathan Freeman, Vice- Chairperson, Cordelia Leggitt and ordinary committee members Tarryn Martin, Shafick Hoosain, Sarah Holderness, Luke Strugnell, Luke Brown and Andrew White

The main event in 2002 was a debate between the second and third year Environmental Science. The topic for the debate was the ivory trade, as this is a very controversial issue facing Africa. The debate was a great success as it was both enjoyable and informative. Associated with the debate, the Young Royals were approached by the Rhodes radio station (RMR) to do a half-hour show on the ivory trade. This gave the Young Royals a good opportunity to promote science and the royal society through the use of media. An article was written on the debate and the Young Royals and was published in Activate (Rhodes’ Independent Student Newspaper). As a whole, in 2002, the Young Royals were very active despite being a very new society.

The Elephant Tusk debate was splendidly organised by Jonathan Freeman and Cordelia Leggitt of the Young Royals and the topic was “Ban the ivory trade”. Anna Whitehouse, an expert on elephants and debating, provided the content in an introductory lecture. Adjudicators Sara Templar, Sarah Holderness, Kevin Roussel from the Rhodes Debating Society did an excellent job of judging the presentation and content. Students Bronwyn Palmer, Luke Brown and Shafick Hoossen from Environmental science 202 argued for ban on commercial exploitation whilst those from Environmental science 302, Bret Green, Pat Forbes and Bryce Kennard argued for lifting the ban and permitting communities and conservation to benefit. The Adjudicators decided that Pat Forbes Enviro- Science 302 (3rd year) was the best speaker and that Enviro- Science two won the debate. Anna Whitehouse wrapped up the proceedings and then there followed a braai organized by the students.

Right: The successful Environmental science 202 team of Bronwyn Palmer, Luke Brown and Shafick Hoossen, who argued for a ban on commercial exploitation, listen carefully to Bret Green giving the opening statement of the opposing team Environmental science 302, who argued the case for lifting the ban on Ivory Trade and permitting communities and conservation to benefit.



The next upcoming event that the Young Royals are involved with will be SciFest, which is an educationally based festival held annually. Its aim is to promote the public understanding of science and encourage the youth of South Africa to enter the sciences. The Young Royals will have a stand aimed at promoting an interest in science amongst scholars. Later in the year, the Young Royals will be hosting a debate between Rhodes University and the University of Port Elizabeth (UPE). An outreach programme is also planned to run for the duration of the year

The progress achieved over the year most certainly shows the promise of the Young Royals in promoting science and giving the RSSA new life.”

KWAZULU/NATAL

Regrettably, no branch activities were organised in Kwazulu Natal in the year under review.

NORTHERN AREAS

Professor John Skinner FRSSAf, Chairman of the Northern Areas Branch of the Royal Society of South Africa, submitted the following report for 2002:

"The first meeting of the Branch Committee was convened by the acting chairperson, Prof. T. McCarthy, on 8 March 2002. A new Committee was formed, composed of:

Chairperson - John Skinner (only for 2002)

Vice chair - Jo Michael (only for 2002 - to succeed Skinner in 2003 for 2 years as defined in the Branch statutes).

Treasurer - Mary Scholes

Secretary - Yolanda Copperthwaite who succeeded Lucinda Backwell in May when Lucinda resigned.

Members - Spike McCarthy (ex officio for 1 year), Rob Veale, Neil Coville, Graham Baker.

Friedel Sellschop attended Branch Committee meetings by invitation.

John Skinner and Jo Michael represented the Branch on the National Council.

The following Seminars were held in 2002.

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|--------------|--|
| March 27 | lunchtime - "Learn to Sleep with the Best" by Ms Alison Reid, Wits Medical School Sleep Research Unit – (Senate House Basement, attendance 80) |
| April 18 | lunchtime - "Volcanoes under ice" - Dr. Phil Marren, Geology Department, Wits, (Senate House Basement, attendance 60) |
| April 30 | lunchtime - "Voyages into the Temporal Lobe and Beyond" Prof. Vernon Neppe, Neuropsychiatric Institute, Seattle USA, (Senate House Basement, attendance 40) |
| May 21 | evening "Survival in the heat - new insights into free living mammals" - Dr. Andrea Fuller, Physiology Department, Wits Medical School, (Transvaal Museum, Pretoria, attendance 40) |
| July 16 | lunchtime - "Government crimes and cover-ups" - Dr. David Klatzow, Wits (Senate House Basement, attendance 38) |
| September 18 | lunchtime - "The other fynbos - Wanderings in the Mediterranean" - Dr. Malcolm Coe, St. Peter's College, Oxford, U.K. (SANLAM Auditorium, University of Pretoria, attendance 26) |

All Branch members are now on an email list for electronic distribution of notices.

2001 School Essay Competition - Dr. John Crawford carried out the enormous task of sorting the 235 essays received and Professor Friedel Sellschop did the final adjudication on the basis of merit."

WESTERN CAPE

Meetings in the Western Cape were held regularly at the SA Museum and twice at the MTN Sciencentre. Attendance was usually between 25 and 45, but a few of the lectures proved to be very popular and attracted larger audiences of about 70. The following lectures were held:

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|-------------|--|
| February 20 | 'What you need to know about Genetically Modified Food in South Africa' - Prof. Jennifer Thomson, Dept of Molecular & Cellular Biology, UCT |
| March 20 | 'How Important is it that the Mind Evolved?' - Prof. Don Ross, Dept. of Economics, UCT. |
| April 17 | 'Is it worthwhile thinking about the future - and if so, what should we be thinking about?' - Andre Le Roux, Director of Inst for Futures Research, University of Stellenbosch. |
| May 22 | 'The Plague that doesn't exist: HIV, AIDS, Denialism, and the search for a vaccine' – Assoc. Prof. Ed Rybicki, Plant-Based Vaccines Group, Dept Molecular & Cell Biology and Institute of Infectious Disease and Molecular Medicine, UCT. |
| June 19 | 'Biology has had 200 years of Experimentation with 10 years of Bioinformatics, now they say Biology is an Information Science. Is this for real or what?' - Winston Hide, Director, South African National Bioinformatics Institute (SANBI), Univ. of the Western Cape. |
| August 14 | 'SALT' - David Buckley, South African Astronomical Observatory and Project Scientist of the Southern African Large Telescope (SALT) construction project |
| September 9 | 'From Rockets via a Time Warp to Reactors and Beyond' – Prof Diane Hildebrandt, School of Process and Materials Engineering Univ of Witwatersrand. |
| October 23 | 'The Frog Atlas Project' - James Harrison, ADU, UCT. |
| November 20 | 'Therocephalia Redux: Mining the Anatomy of the Beast Heads' – Dr. Jurie van den Heever Department of Zoology, University of Stellenbosch. |
| December 11 | 'Helioseismology: Probing the Depths of the Sun' . Prof. Douglas Gough, Director of the Institute of Astronomy, University of Cambridge. |

FELLOWS (FOREIGN), FELLOWS AND MEMBERS

HONORARY FELLOW (FOREIGN):

The Society deeply regrets to report the death of Professor J D Clark, Hon FRSSAf (Foreign) of Berkley. During the year, Professor Ted D White of Berkley and Professor John Field FRS OBE, of Cavendish Laboratory, Cambridge University, each accepted the invitation to become an Honorary Fellow (Foreign) of the Society. Professor White, a colleague of Professor Clarke, is Professor of Integrative Biology at the Museum of Vertebrate Zoology, University of California at Berkley and has had links with Africa for a long time. Professor Field is a specialist in the fields of fracture and high speed photography, and has links with South Africa in the field of Diamond Physics.

HONORARY FELLOWS

The Society also deeply regrets to report the death of Professor Stanley Percival Jackson.

FELLOWS (FOREIGN):

At the beginning of the year, Dr. Raymond Pollard, an Oceanographer at Southampton Oceanography Centre in the UK and Prof. Will De Ruijter of the Institute for Marine & Atmospheric Research, Utrecht University, The Netherlands, each accepted a special invitation by Council, to become a Fellow (Foreign).

FELLOWS:

The Society deeply regrets to report the deaths of the following Fellows, E.M van Zinderen Bakker, G. W. Perold, J. P. F. Sellschop and R. C. Bigalke. There are 40 Honorary Fellows (Foreign), 2 Honorary Fellows [Northern Branch], 4 Fellows (Foreign) and 174 Fellows; comprising 10 in the Eastern Cape, 18 in Kwa Zulu/Natal, 65 in the Northern Branch, 59 in the Western Cape and 22 overseas. The following New Fellows were elected during the year:

NIGEL CHARLES BENNETT (Professor, Dept of Zoology & Entomology, University of Pretoria)

Professor Bennett is a NRF B-rated scientist who has risen rapidly through the academic ranks to hold the position of full Professor of Zoology at the University of Pretoria. He is one of the most productive members of that University, having published some 80 research papers (mostly in top international journals) and chapters in books over a 14-year period. He has worked with leading scientists in his field, both locally and abroad, and has been instrumental in bringing top researchers out to work with him in South Africa. Professor Bennett has consistently focused his attention on the mole-rats of southern Africa and has studied many aspects of their biology in a meticulous and often innovative fashion. He has studied their behaviour, nutrition, thermoregulation, metabolism, growth, social structure, reproductive biology, dispersal patterns and other features. However, his most significant contributions have been in the field of reproductive suppression and the neurological factors involved in this suppression. All his work is of an extremely high standard and has advanced our knowledge of this most interesting group of mammals to a significant degree. His status is confirmed by his joint authorship of chapters in books, which have been very favourably reviewed internationally. Professor Bennett is a dedicated, single-minded enthusiast, who does credit to his former teachers, the University, of which he is a senior member, and to South African science.

RONALD J. CLARKE (Research Officer and Director in Anthropology, School of Anatomical Sciences, WITS)

Dr. Clarke has made numerous important contributions to palaeo-anthropology in South Africa since 1973 and especially since 1991 to the present. Apart from field operations at Taung and Makapansgat, his greatest sustained contribution has been through his directing of the intensive and continuous excavation of the Sterkfontein fossil hominid site from 1991 to the present. He assumed this role following the death of the late Mr. A.R. Hughes. Dr. Clarke has greatly increased our understanding of the stratigraphy, chronology and fossil contents of the six members making up the Sterkfontein Formation. He first drew attention to the possibility of more than one hominid species being represented in the rich Member 4 from which we now have over six hundred hominid specimens. He was responsible for the discovery of arguably the most important fossil hominid specimen ever brought to light in the 20th Century, namely the virtually complete skeleton of a 3.33 million years old australopithecine, its bones lying in virtually anatomical position and extending from the toe and foot bones of both feet up to an almost perfectly preserved cranium and mandible with a full set of erupted permanent teeth. The specimen constituted the oldest signs of a hominid ever found in southern Africa. While Clarke continues to exhume the individual bones of the skeleton, he and his team at Sterkfontein have discovered from another part of the cave deposit, some hominid remains, dating even before the above-mentioned skeleton. These most ancient remains at 3.6 million, are of an australopithecine but have not yet been specifically *described* or identified. These contributions maintain South Africa's very high role in international palaeo-anthropology and Clarke's reputation has extended far beyond our shores. He has been in demand by Americans working in Tanzania, formerly by Louis and Mary Leakey working at Olduvai and Laetoli. Following his work with Italians in Eritrea and Italy, he was requested to make a new reconstruction of the famous *Oreopithecus* from Tuscany and another of Italy's oldest hominid, the 800 000 year old Ceprano skull. He has been involved also in reconstructing and studying a Middle Pleistocene skull from Eritrea. Earlier, he had worked as assistant to L.S.B. Leakey in Nairobi. Thus he had nearly seven years of wide and rich experience at many important East African sites with remains dating from the Miocene, Pliocene and Pleistocene, and artifacts from many deposits. His experience in the field and his laboratory research in reconstructing and moulding fossil specimens, equipped him admirably for his subsequent work in South Africa. Apart from his work on australopithecine deposits since the 1970s, he conducted an intensive excavation at the Florisbad site near Bloemfontein. His publications reflect mainly his work in South Africa although the work in East Africa, North Africa and Italy features also in his published works. He is an outstanding scholar, he has now returned full-time to the staff of the Sterkfontein Research Unit in the School of Anatomical Sciences, Witwatersrand University .

JOHN STAINER FIELD (Professor, School of Chemical and Physical Sciences, University of Natal.)

Professor Field has distinguished himself over the past twenty five years, both as a researcher in the field of inorganic chemistry and in the teaching and supervision of undergraduate and postgraduate students. Upon completion of his Doctorate at the University of Cambridge, UK, he held successive post-doctoral fellowships at the Simon Fraser University, Vancouver, Canada and at the University of Natal, Pietermaritzburg. He was appointed Lecturer in Chemistry at the University of Witwatersrand in 1976. Four years later he joined the University of Natal, Pietermaritzburg. Professor Field has published ca 100 articles in prestigious journals and supervised or co-supervised 15 MSc and 8 PhD students. He has also delivered research lectures at universities in Brazil, Europe and the USA. His research achievements, particularly in the area of structural platinum coordination chemistry, have been influential worldwide, and in top-ranking international research institutions such as Caltech (USA) and the University of Hong Kong. His research team is recognized as one of two world leaders in the area of structure-

property correlations involving luminescent platinum (II) systems. According to one of his referees: "Field has made major contributions to the development of transition metal coordination chemistry, especially where two or more metal atoms are involved, and there are no practitioners in this increasingly important area who have not been influenced by his work". Another states: "Through his students, Professor Field has had a significant influence upon the quality and standards of research being carried out in the Diamond and Superhard Abrasive industry". He has received several research fellowships, including the prestigious Alexander von Humboldt Fellowship to the University of Freiburg, Germany. On a national level, he serves on several professional bodies. He has also served on various Faculty and University Committees.

ANDREW KNOX GALWEY (Retired. Ex Vice Chairman of School of Chemistry and Head of Teaching, Queen's University, Belfast.)

Dr. Galway retired in 1995 as Reader in Physical Chemistry in the Chemistry Department of the Queen's University of Belfast, Northern Ireland, after a career spanning nearly 40 years in the University. He was Vice-Chairman of the School of Chemistry (1986-1989) and Head of Teaching (1990-1992). He has been a visiting lecturer in the University of Leeds (1969), the University of Florence, Italy (1977) and, very importantly, at Rhodes University (1995). He has served on the Councils of the Royal Institute of Chemistry, the Royal Society of Chemistry and the Faraday Division of the RSC. Since his retirement, Dr. Galway has remained very active in writing reviews and refereeing for international journals. Most of his research has been concerned with kinetic and mechanistic investigations of reactions involving solids and he is particularly noted for his imaginative use of electron microscopy. He has hosted and shared his expertise with numerous researchers from around the world, including South Africa. A Special Issue of the *Journal of Thermal Analysis* contained over 30 papers from colleagues on the occasion of Dr. Galway's 60th birthday. He is the author of several books and numerous research papers, many in collaboration with Prof. M. E. Brown of Rhodes University. This very productive collaboration is to be uniquely honoured by a forthcoming Special Issue of *Thermochimica Acta*.

KLAUS ROBERT KOCH (Professor of Chemistry, Dept of Chemistry, University of Stellenbosch)

Professor Koch holds the chair of Analytical Chemistry at the University of Stellenbosch. He has had a distinguished career which started at UCT, where he obtained a 1st class Honours degree in Chemistry in 1976, followed by a PhD in 1979 in the field of NMR spectroscopy of inorganic coordination compounds. Professor Koch has published more than 70 papers in excellent international journals such as *Inorganic Chemistry*, *J. Chem Soc. Dalton Transactions*, *Spectrochimica Acta*, *Talanta*, and *Coordination Chemistry Reviews*. He has specialised in the Chemistry of Platinum Group Metals, and has synthesised and characterised a variety of suitable ligands which can be used in selective metal extraction. This work has direct industrial applications and his ideas have been employed for the efficient extraction of Palladium and Rhodium from industrial effluents. Professor Koch is a highly successful teacher, both at the undergraduate and post-graduate level. To date he has supervised 16 MSc and 8 PhD students and he currently heads a research group of nine post-graduate students working in the field of metal extraction and Coordination Chemistry. Professor Koch has presented his findings at many conferences, either as posters or invited lectures, both within South Africa and abroad. He has been a visiting scientist at a number of prestigious institutions, including Merton College, Oxford; University of Paderborn, Germany; the University Chemistry Laboratory, Cambridge (where he was a visiting fellow of Robinson College); the Universities of Munich and Leipzig, Germany and a visiting Professor at the Gerhard Mercator University of Duisberg, Germany. Professor Koch is active in a number of scientific bodies, including the South African Chemical Institute, the Royal Society of Chemistry (committee member Western Cape branch) and was invited to give the Barker Lecture in 1998 (Rhodes University) and the Paul Daniel Hahn Memorial Lecture in 2000 (UCT). He has been involved in the organisation of various national and international conferences and is going to chair the 37th International Coordination Conference to be held in Cape Town in 2006. In summary, Professor Koch is an outstanding teacher and researcher who is deeply involved in the promotion of Science at many levels.

HELEN LABURN (Professor and Head of School of Physiology, University of the Witwatersrand)

Professor Laburn is a physiologist of more than 25 years' international standing, with 60 peer-reviewed papers in thermal physiology to her credit. Though papers emanating from her PhD, or the neurochemistry of fever, still are being cited, her special research niche is the thermal physiology of the foetus. Her experimental approach to measuring the temperature of the foetus of free-living animals, without interfering with the pregnancy or birth, has changed fundamentally the scope of the research field. She has been the author of every review and book chapter on foetal thermal physiology published in English since 1994, and regularly gives invited keynote lectures on the topic. She continues, as well, to conduct research on other aspects of thermal physiology, and especially in her long-standing interest of the physiological basis of fever. Her contribution to physiology has been recognised by her appointment for two terms, to the Thermal Physiology Commission of the International Union of Physiological Sciences. Professor Laburn currently is head of what is probably the largest physiology department in Africa, and certainly the most productive in research. She has been a member of the Royal Society of South Africa for many years, and Treasurer and Vice-Chairman of the Northern Branch.

STEPHEN JOHN LENNON (Executive Director (Resources & Strategy), Eskom)

Throughout his career, Dr Lennon has made many fine contributions to the furtherance of Science in South Africa. As Chairman of the National Science and Technology Forum, he started the Annual NSTF awards in 1999, aimed at recognising the contribution of South Africans to Science and Technology in South Africa and also commissioned a study into Growth and Innovation in South Africa – a definitive study now used to promote the role of Science and Technology in the South African economy. In 2000, he initiated a project to address the problems in Maths and Science Education in South Africa, which culminated in the adoption of a National Strategy for Mathematics and Science teaching by the National Department of Education in 2001. He also initiated a project aimed at the creation of a National Committee for Ethics in Science and Technology. As Chairman of the National Board of the International Council of Science (ICSU), Dr Lennon initiated capacity building performance

characteristics for all national committees, creating an environment for collective effort to achieve equity and redress in the South African scientific community. Major progress has been made in both maximising the value of ICSU membership to South Africa as well as the development of black and women scientists across a wide spectrum of disciplines. In his position at Eskom, he has achieved an increase in Eskom's R&D funding from 0.01% of revenue to 0.6% of revenue over a 10 year period. The South African Power Utility Research Advisory Board was created during this period to advise on R&D of national interest. Further, a variety of demonstration and pilot plant projects have been developed – most notably the PBMR and renewable energy pilots, including wind and solar technologies. Dr Lennon drove the modification of Eskom's sponsorship focus to Science and technology. In addition he managed the transformation of Eskom's technology skills base into a commercial business, Technology Services International. TSI is currently a major role player in driving Eskom's thrust into Africa. As a member of the National Advisory Council for Innovation, (advisory function to Minister of Arts, Culture Science and Technology), Dr Lennon has also participated as an advisor to Government on a variety of review panels – the National Facilities, NRF and system wide review. He initiated the Power Institute for East and Southern Africa (PIESA) to effect co-operation in utility wide R&D, standardisation and capacity building in Southern and eastern Africa. Besides being an external examiner for several universities – final year examinations as well as postgraduate dissertations and theses, he has contributed to developing and sustaining South Africa's skills base through programmes such as the Tertiary Education Support Programme (part of original design team). Dr Lennon has been an initiator and/or contributor to several key publications such as *The Hidden Edge*, *Climate Change in South Africa* and the IPCC Third Assessment Report. He is currently working on the consolidation of the civil society component of the national Science system – through the amalgamation of the NSTF and FEDSET

JOHN NDEGWA MAINA (Professor and Chair of Dept of Anatomical Sciences, University of the Witwatersrand)

Professor Maina is a distinguished international authority on the functional morphology of the vertebrate respiratory organs. Professor Maina's research interests and activities are in the broad field of comparative pulmonary morphology. The evolution and design of gas exchangers of invertebrate and vertebrate animals, taxa at different phylogenetic levels of development and subsisting under different environment conditions have been investigated. The respiratory strategies adopted by "extreme animals", i.e. those animals that have adapted to life in severe ecological settings, have received particular interest. He applies the highly versatile morphometric and stereo logical methods to quantify the structural components of gas exchangers, features that set their diffusing capacities for oxygen. Correlations between structure and function are established to explain the basis of the various evolutionary and design stratagems that have been elected by different animal taxa. Latex casting, transmission electron microscopy, scanning electron microscopy, confocal microscopy, 3-dimensional computer reconstruction, image analysis, molecular biological techniques, and mathematical modelling have been applied to establish and substantiate the differences and similarities that exist between the different evolved gas exchangers. As reflected in Professor Maina's publications, his work falls between anatomy (morphology) and physiology (function), fields that complement each other very well. He has published 94 original research papers. The major findings have been summarised in 8 invited review papers, 5 book chapters, and 3 books, namely "The gas exchangers: structure, function, and evolution of the respiratory processes", "Fundamental structural aspects in the bioengineering of the gas exchangers: comparative perspectives" and "Functional morphology of the vertebrate respiratory organs". These books and reviews have received good comments by reviewers and colleagues. Professor Maina has held prestigious study/research fellowships from the Leverhulme Trust, the Fulbright Program, the Royal Society, the British Council, the Canadian International Development Agency, the National Scientific and Engineering Research Council of Canada, the Japanese Academy of Sciences, and the National Research Foundation. He has served as a Visiting Professor to various well known universities.

VERNON M NEPPE (Director of Pacific Neuropsychiatric Institute, Seattle, WA, USA; Adjunct Professor of Psychiatry and Human Behaviour, St Louis University School of Medicine, St Louis, MO)

Professor Neppe is recognised as a distinguished psychiatrist in various fields of research and clinical applications. He has been an active contributor to neuropsychiatric and psychopharmacological literature for more than 20 years. His research interests date back to his early days of training at the University of Witwatersrand and have been recognised internationally. He is exceptionally qualified as far as academic standards are concerned with international spread including South Africa, USA and Canada. Vernon Neppe was trained at the University of Witwatersrand as undergraduate and for specialist training. He was admitted to the College of Psychiatrists of South Africa in 1977. Appointment followed to a Lecturer/Consultant post at Sterkfontein Hospital until he left for the USA in 1986. He was at this early stage in his career recognised for his research, clinical and teaching skills. After leaving South Africa to further his interests in behavioural neurology and biological psychiatry, he remained prominent in his writings and teaching. A review of his extensive publications and editorial responsibilities reveals the value and progress he has contributed to the specific and rapidly advancing fields of interest.

RICHARD NOEL PIENAAR (Deputy Vice-Chancellor (Academic: Internal), University of the Witwatersrand)

Professor Pienaar's contribution to science and to marine biology in general has been in the area of marine nanoplankton. Nanoplankton are very small planktonic organisms (2.0 -25 µm). Because of their very small size, they require specialised techniques to study them with the aid of specialised light and electron microscopes. One of Professor Pienaar's achievements has been to pioneer this work using marine in-shore and tidal pool habitats occurring off the South African coastline. He has been actively involved in this area of research for over 30 years and during this period, he has specialised in representatives of the Haptophyceae, Chrysophyceae, Dinophyceae, Rhaphidophyceae, Prasinophyceae and more recently the Cyanophyceae and the Bacillariophyceae. He and his postgraduate students have contributed greatly to our knowledge on the ultrastructure of these minute organisms and our understanding of the mechanism of scale production in those representatives that intracellularly produce minute body scales of various types. He has perfected the techniques for isolating and culturing these minute organisms and presently he curates and maintains the only reference Culture Collection of Micro-algae in Africa. He and his postgraduate students have developed techniques to investigate the ultrastructure of these micro-algae.

They have described numerous new and unusual species of nanoplankton for our local waters and have very detailed and careful studies making use of serial sections to elucidate the flagellar apparatus of these flagellates. These studies have contributed greatly to the understanding of phylogeny within certain micro-algal groups. Another major contribution has been his work on the occurrence of endosymbiosis in the dinoflagellates. This work has markedly extended our knowledge of the occurrence, diversity and ultrastructure of this endosymbiotic association. More recently he has entered into a productive partnership with Marine and Coastal management in the studying of bloom forming microalgae, both the non-toxic and the toxic varieties. The economic effect of these micro-organisms on the mariculture industry is a major thrust of this work. He is acknowledged internationally as one of the leading workers in the field of nanoplankton diversity, systematics and phylogeny. His services to Botany and the recognition of his research in this specialised area of research has been recognised by him being given Honorary Life membership of the Phycological Society of Southern Africa and more recently the awarding of the South African Association of Botanists Silver medal in recognition of his services to Botany. Professor Pienaar is also a leading academic and has recently been appointed as Deputy Vice-Chancellor (Academic: Internal) at the University of the Witwatersrand.

CALIE PISTORIUS (Vice Chancellor and Principal, University of Pretoria)

Professor Pistorius became the Vice-Chancellor and Principal of the University of Pretoria in August 2001, after having served in a variety of academic capacities at the University in the Faculty of Engineering. His academic career has been a very distinguished one focusing mainly on applications of electromagnetics, particularly radiation and scattering. He was responsible for the design and establishment of the compact antenna range at the University. His compact range designs were implemented by several organisations in the USA. As a result of a period of study at MIT, his research direction changed from electromagnetics to the management of technology. With his new focus on the management of technological innovation, competitiveness and technology policy issues, he established the Institute for Technological Innovation. During this period he was the recipient of the President's award from the NRF and a book *An introduction to the uniform geometrical theory of diffraction* (Artech House, USA) of which he was a co-author, won the Bill Venter Prize for outstanding contributions to research published in book form. He is a member of the National Advisory Council on Innovation (NACI) and has given policy advice to DST on the National Research and Technology Audit, National Research and Technology Foresight, to the Department of Trade and Industry and to the NRF on the THRIP programme. He has extensive interactions with Industry and government in his capacity as a consultant on strategy, management of technology and technological innovation. On the basis of his distinguished academic career, and his very significant contributions to the development of National Technology Policy, his election to the fellowship is a benefit to the Society.

HELMUT PRODINGER (Professor of Mathematics, School of Mathematics, University of the Witwatersrand)

Professor Prodinger has written around 180 scientific papers. He is a recipient of the Inzinger medal of the Austrian Mathematical Society and of a year 2000 gold medal of the South African Mathematical Society. Recently, he was awarded an A- rating from the NRF, as well as the 2001 Vice-Chancellor's research award from Wits University. He has solved open problems by Ramanujan and Mandelbrot. His research spans over such different subjects as combinatorial problems related to words, sum-of-digits function and exotic number systems, Fibonacci numbers, tree enumeration, modular functions in the analysis of algorithms, level number sequences of trees, approximate and probabilistic counting, q-Engel expansions, skip lists, Combinatorics of Geometrically Distributed Random Variables, distribution of runs and bijective combinatorics. In recent years he has edited a series of special issues on the Mathematical Analysis of Algorithms (one in *Theoretical Computer Science*, three in *Algorithmica*, one in *Random Structures and Algorithms*, and one in the *Journal of Algorithms*). He has had 9 Ph.D. students and 20 master's students.

ED RYBICKI (Assoc. Professor, Dept of Molecular and Cellular Biology, University of Cape Town)

Assoc. Prof. Rybicki's long term research interests have been in the diversity of southern African *Mastreviruses* (family *Geminiviridae*), the molecular determinants of pathogenicity and host range in these viruses, and especially in maize streak virus. This is the most economically significant member of a diverse group of grass-infecting virus species. His group has succeeded in devising analytical tools to group the MSV isolates into the predominantly maize-infecting isolates and three groups containing grass/wheat-infecting isolates. More recently he has become very involved in the engineering of crop plants and viruses for the expression of vaccine antigens. The long-term aim of this is to develop some edible vaccines. He sidelines in molecular phylogenetic studies on viruses (*Potyviriidae* and *Geminiviridae*, and lately also papillomaviruses and HIV). His heart is with the public awareness campaign to redirect the Governmental anti-retroviral medication policies.

MEMBERS

The Society regrets to report the deaths of the following Members: Dr R S Stobie, Mr W H Henning, Mr E A Cole, Dr G B Batchelor and Dr L Gorfinkel. There are 278 members; 62 in the Eastern Cape, 37 in KwaZulu/Natal, 53 in the Northern Area, 106 in the Western Cape and 20 overseas. The following New Members were elected during the year: Eastern Cape: William Pierre Froneman, Anthony Riordan Palmer and Carolyn Gay Palmer; Kwazulu Natal: Michael Richard Perrin; Northern Area: Maria Guiomar Agostinho Aragão, Frances Duncan, Andrea Fuller and Alison Reid; Western Cape: Andre Oelofse and Andre Swanepoel; Overseas: Alexander Leung.

MEDALS

No awards were made for the John F. W. Herschel Medal or the Meiring Naude Medal for 2002.

PUBLICATIONS

Volumes 56 (1), 2001 was dispatched late in the year. The Avian Demography Unit at UCT did the typesetting of the Transactions whilst Santino Litho printed the Volume. The assistance of Production Editor, Felicia Stoch, is gratefully acknowledged. Work on Volume 56 (2), 2001 continued fitfully during the year, but

suffered setbacks due to the sudden death of Professor Sellschop and a serious illness suffered by the Production Editor. The publication of the Transactions as a whole, fell behind in 2001 due to the unfortunate illness of the Hon. Editor, Prof Johan Lutjeharms FRSSAf, who was, as a result, forced to resign. Prof. Alec Brown FRSSAf temporarily undertook the editing until the election of a new Editor namely, John Skinner, in April 2002. Council approved the appointment of an Editorial Board to assist the Honorary Editor from volume 57 onwards, namely: Dr. C.K. Brain FRSSAf, Prof. GFR Ellis, Prof. DE Rawlings FRSSAf and Prof J Van Staden FRSSAf. Publication of our journal is back on track and it is anticipated that the backlog should be eliminated by the end of 2003.

LIBRARY

The Librarian and staff of the University of Cape Town Library continue to catalogue and maintain the Society's Library. In view of the fact that the library no longer has the space to store all the Journals we receive, the exchange list was reviewed. About 50 scientific institutions (previously 195) were selected to continue their exchange agreements, whereby they send publications to the Society on exchange or as gifts.

COOPERATION WITH OTHER BODIES

The Council reluctantly decided to withdraw its representation on the Athenaeum Trust. Thanks are due to Professor P. Spargo FRSSAf, who attended many meetings of the Trust, as the Society's representative. The Society has however, maintained contact with and has representatives on the following bodies:

The Academy of Science of South Africa (ASSAf) - Professor G. R. F. Ellis
 Federation of Scientific, Engineering & Technological Societies & Allied Professions (FEDSET) -
 Professor J. P. F. Sellschop/ Professor J. D. Skinner
 Frank Warren Memorial Trust - Professor B. Warner
 Institute for the Promotion of Science (IPS - ex FEST). - Professor M. N. Bruton
 National Science and Technology Forum (NSTF) - Professor J. D. Skinner

In December, the NSTF resolved to absorb FEDSET.

ACKNOWLEDGEMENTS

Grateful acknowledgement is made of the efficient 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 whom were very active during 2002. 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 the MTN Sciencentre for hosting public meetings. The Society is also very grateful to the South African Astronomical Observatory for hosting the Council meetings. Finally, we would 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.

D. E. RAWLINGS
 GENERAL SECRETARY