



Royal Society of South Africa

Report of the General Secretary 2016

Officers and Council

President: Francis Thackeray

Vice Presidents: David Richardson and Margaret Avery

General Secretary: Judy Mann

Treasurer: Pierre Janssens

Transactions Editor: Bert Klumperman

General Members of Council: Janine Adams, Graham Avery, Kelly Chibale, Don Cowan ((Past President, ex officio), Mike Davies-Coleman, Cesareo Dominguez, Llewellyn Foxcroft, Marilize le Roes-Hill.

Co-opted: Edward Sturrock

Special Projects

1. 2016 SCIENCE ESSAY COMPETITION

In January about 860 forms were posted to schools throughout the country.

The Markers were: Dr Margaret Avery, Dr Heather Davies-Coleman, Dr Llewellyn Foxcroft and Case Rijdsijk (Hon.Member). Professor Ed Sturrock continued as Convenor for 2016

The following results were announced:

‘What advances in robotics and artificial intelligence could impact on youth employment in South Africa?’

First Prize: Michael Noyce, Grade 12, Hilton College, Hilton*

Second Prize: Meg Anderton, Grade 12, Wynberg Girls High, Cape Town

Third Prize: Kwangbem Ko, Grade 11, Bishops, Cape Town

Merit Prizes: Grace Zhao, Grade 12, St Stithians Girls’ College, Gauteng

Alisha Govender, Grade 11, Trinity House, Randpark Ridge

‘Discuss how indigenous knowledge in South Africa has led to the development of valuable new products and services used internationally.’

First Prize: Andiswa Ngwenya, Grade 11, St Stithians Girls’ College, Randburg

Second Prize: Taryn Goulding, Grade 10, Danville Park Girls High School, Durban

Third Prize: Sibulele Gando, Grade 12 St Dominics Catholic School for Girls, Boxburg

‘How can South Africa address the challenges of water conservation?’

First Prize: Chelsea Terry, Grade 12, Wynberg Girls High, Cape Town

Second Prize: Alexandra Keogh, Grade 11, St Stithians Girls’ College, Gauteng

Third Prize: Aa’isha Dout, Grade 12, Wynberg Girls High, Cape Town

Merit Prizes: Sanglia Nayagar Grade 11, St Dominics Catholic School for Girls, Boxburg and Ethan Fischer, Grade 9 St John’s College, Houghton, Gauteng

Junior Prizes: Caitlin Pfister, Grade 7, Bryandale Primary School, Sandton and Malaika Muleya, Grade 7, Bryandale Primary School, Sandton

‘Given the recent palaeontological discoveries in South Africa, why is it important for us to study and understand human origins?’

First Prize: Chloe van Niekerk , Grade 12, Wynberg Girls High, Cape Town*

Second Prize: Bonga Mbande, Grade 10, St Anne’s Diocesan College, Hilton

Third Prize: Gabriella Fedetto, Grade 11, St Stithians Girls’ College, Gauteng

Merit Prizes: Nicole Chineka, Grade 12, Wynberg Girls High, Cape Town and Julian Yeates, Grade 11, St Dominics Catholic School for Girls, Boxburg

* Top essays for publication in the Transactions of the Royal Society of SA

Two essays were selected for publishing in the *Transactions of the Royal Society* to be published in early 2017 and two new trophies were presented – one to Hilton College and the other to Wynberg Girls’ High School. Prizes were presented at Wynberg Girls’ High by Professor Thomas Scriba, at St Annes Diocesan College by Dr Edith Elliott, at Danville Park Girls School by Judy Mann, at Hilton by Professors Theresa Coetzer and Dean Golding of the KZN Branch and at St Stithians by Dr Robin Lyle of the RSSAf Northern Branch.

Prize Presentations http://www.royalsocietysa.org.za/?page_id=2087

Other Projects

1. Science Bursary for the University of Cape Town (UCT) : The Society has established a Royal Society of SA Bursary for students requiring support in their Honours year. UCT’s Department of Post Graduate Studies will be administering the Bursary and selecting candidates on behalf of the Society. The award will be made to the student who had the most improved marks over the course of his or her undergraduate degree. UCT was chosen as the institution of study as they are and have been providing an office for the Society on campus for many years.

2. Open access geological data base: the Society has undertaken to support a project to create a new website dedicated to optical-microscopic analysis of rock thin sections. The website will be open-access: no cost (if feasible), no restrictions, Interactive, with simple navigation; Comprehensive image archive and data coverage; Dynamic; open to expansion and updating of database. More details will be supplied once the project is up and running.

3. In this year, the Society supported the efforts of Dr Loftie-Eaton’s African Adventure: This Society Member undertook a self-supported cycle tour through six African countries in six months to raise awareness towards the urgent need for antimicrobial stewardship and to support Champions in Africa, i.e African researchers working hard at understanding, surveying and preventing antimicrobial resistance on the continent. He requested support from the Society via its media structures.

4. Award for Em. Professor H. Basil S. Cooke: a special certificate was designed for his 100th birthday and couriered to him. It was reported that he was delighted that he had been remembered. Basil has been a Fellow for 60 years.

Annual Dinner

The Society’s Annual Dinner, Induction of Fellows and Medal Awards was held on the evening of Tuesday, 27th September from 19h15 in the Trafalgar Room at the Royal Natal Yacht Club, Yacht Mole, Durban. It was attended by 38 people including a number of Fellows of long standing,

Professors Manfred Hellberg (1992), Peter Leach (1998), Tony Ford (1998) and Salim Abdool Karim (2003) MC Dr Graham Avery (Councillor) warmly welcomed all those present and noted special guests : Professor Albert van Jaarsveld FRSSAf, Vice Chancellor of the University of KwaZulu-Natal and Professor Salim Abdool Karim FRSSAf, Director of Caprisa and Pro Vice-Chancellor (Research) of the University of KwaZulu-Natal. The following Fellows were inducted by Vice President, Dr Margaret Avery and Councillor Em. Professor Cesareo Dominguez :

Emeritus Professor Norman W Pammenter (2011), School of Biological & Conservation Sciences, University of Kwazulu-Natal ; Christopher C Appleton (2015), Emeritus Professor, School of Life Sciences, University of KwaZulu-Natal ; Lynn Morris (2015), Professor and Chief Specialist Scientist, National Institute for Communicable Diseases (NICD) and Lyn Wadley (2014), Honorary Professor, Department of Archaeology, Institute for Human Evolution and Centre of Excellence in Palaeosciences, Evolutionary Studies Institute, University of the Witwatersrand.

After the main course the John FW Herschel Medal for 2016 was presented to Professor Robert Millar FRSSAf, Director: Mammal Research Institute, University of Pretoria by Professor Albert van Jaarsveld.

Hon. Treasurer Pierre Janssens introduced the post-prandial speaker, Professor Francis Thackeray FRSSAf of the Evolutionary Studies Institute at the University of the Witwatersrand and current President of the Society. Francis gave a very entertaining talk entitled "*Reflections on matters concerning human evolution: Wow, How, When, What?*" in which he revealed that the famous Mrs Ples had been recently discovered to be instead a Mr Ples!

The evening ended with Toasts to the Society and the Country by General Secretary Judy Mann and Councillor Dr Llewellyn Foxcroft. Thank you to KZN Chair and Councillor, Dr Edith Elliott for taking photographs and to all the other guests for making the evening such a success.

Statutes Revision

On 21 November 2016, proposed changes to the Statutes, as below, were circulated to the membership for comment and approval. The support from the membership was unanimous:

CHAPTER II

ELECTION AND ADMISSION OF FELLOWS

(removal of the Statute below, as per discussion reported in 9.4 of Council Minutes of 27th September 2016).

6. No member of Council shall propose or second any Candidate for Fellowship except in cases where Council is of the opinion that it is desirable that persons be elected Fellows of the Society on the grounds of distinguished and conspicuous service to the cause of Science in South Africa in addition to their publication record. No more than three such recommendations shall be made in any one year.

CHAPTER VII

SUBSCRIPTIONS PAYABLE BY FELLOWS, MEMBERS AND STUDENT MEMBERS

6. Fellows and Members who have paid subscriptions continuously for a period of 30 years shall be entitled to a waiver in fees thereafter.

CHAPTER IX

MEDALS

3. The Marloth Medal shall be awarded to an individual deemed to have had a highly distinguished career and to have made a significant contribution to advancing his or her discipline through writings, service to science, nurturing younger professionals and fostering the public understanding of science.

CHAPTER XII

THE TREASURER

3. The Treasurer shall submit to Council for approval an annual account prepared by an independent firm of accountants summarising the financial affairs of the Society for the previous financial year. Thereafter, the approved account shall be presented at the Anniversary Meeting.

Branch Activities

WESTERN CAPE REPORT 2016

The Western Cape Branch Committee comprises Drs Graham Avery (Convenor), Marla Tuffin, Marilize Le Roes-Hill and Stephen Craven. Monthly lectures are arranged jointly with the Academy of Science of South Africa. Willing assistance in arranging Royal Society lectures was received from Sandra de Villiers-Soltynski. The following talks were hosted at the S.A. Astronomical Observatory in Observatory during this period.

Feb 17th : Em. Prof Solly R Benatar FRSSAf of Department of Medicine at UCT on “The Crisis of Global Health: Elusive Progress”

Mar 16th : Dr Roger Stewart on Lichtenstein and the management of amoebic dysentery and smallpox at the Cape

April 20th : Prof. Tandi Matsha, Faculty of Health Science, Cape Peninsula University of Technology on ‘Diabetes with a focus on the phenomenon of expanding waistlines’

May 18th : Prof. Emile Van Zyl FRSSAf of Dept of Microbiology at Stellenbosch on “The potential role of modern bioenergy (biomass/biogas, etc) towards a sustainable southern Africa”

June 1st : SPECIAL LECTURE by visiting scientist Professor Paul Davies, Arizona State University, physicist, cosmologist and best-selling author on “Are we alone – the search for extra-terrestrial intelligence”

June 22nd : Prof. Priscilla Baker Department of Chemistry, University of the Western Cape on ‘Electrochemistry at nanostructured semi-conductive interfaces for real time analytical solutions’

Aug 17th : John Gribble, Manager: Maritime and Underwater Cultural Heritage Unit at South African Heritage Resources Agency on SA’s underwater cultural heritage and maritime archaeology, touching on the World War I wreck of the Mendi in 1917

Sept 21st : Em. Prof Jenny Day, Biological Sciences, University of Cape Town and Institute for Water Studies, University of the Western Cape on ‘Let there be water for all?’

Oct 19th : Dr Marilize Le Roes-Hill, Head of the Biocatalysis and Technical Biology Research Group, Institute of Biomedical and Microbial Biotechnology, Cape Peninsula University of Technology on ‘Super bugs and their super drugs – the unsung heroes found in our backyard’

Nov 16th : Prof John Moore, Senior Researcher in Grapevine Biochemistry and Biotechnology, Institute for Wine Biotechnology, Department of Viticulture and Oenology, Stellenbosch University on ‘The Art and Science of Winemaking’. *This talk was cancelled due to the ill health of the speaker.*

The Branch also organised an Excursion headed by Dr Graham Avery called “ 5 Million years and still going: a dip into our fossil neighbours” . This is a repeat of the successful excursion of two years ago visiting palaeontological and archaeological sites in the Saldanha area. The following sites were visited Hoedjiespunt and Sea Harvest; The West Coast Fossil Park and Ysterfontein

NORTHERN BRANCH REPORT 2016

Committee of the Northern Branch: Francis Thackeray as Chairperson, Lynne Schepartz as Secretary and Nico de Bruyn as Treasurer.

Francis Thackeray reported that two events had been planned, the most recent one-day seminar on ‘*The Origins of the Brain – From Mammal-like Reptiles to Humans*’ had to be postponed due to student unrest.

April 15th 2016: Science Diplomacy Workshop : A workshop exploring the notion of science diplomacy in Africa on. The workshop intends to bring together academics, policy-makers, and heads of scientific organizations in South Africa to consider how they engage and understand science diplomacy and South Africa’s role in various policy areas. Francis Thackeray reported that he and Prof Renfrew Christie had attended the Workshop representing the Society. The event had gone very well and the presentations were of a high standard. The outcomes would be published in the SAJS (SA Journal of Science) in due course.

KWAZULU-NATAL BRANCH REPORT FOR 2016

No report was submitted for this period.

EASTERN CAPE BRANCH REPORT 2016

Committee: Janine Adams, Alastair Potts, Perry Kaye, Rosie Dorrington and Adrienne Edkins

In 2016 we have managed to have four scheduled talks. Unfortunately, Graham Avery's talk at NMMU for Friday 23 September had to be cancelled because of student unrest.

The details of the other talks are given below...

23 September @ SAIAB : Amy Jacot-Guillarmod memorial Lecture (Grahamstown, SAIAB)

Biodiversity: yesterday, today and tomorrow by Dr Graham Avery (organised by Perry Kaye and SAIAB)

18 August @ NMMU : The Water Energy nexus : global conflicts and possible solutions

by Prof Gustaf Olsson, Lund University, Sweden (organised by Janine Adams and the Young Water Professionals)

22 July @ NMMU : Extirpation and Survival of Abaconian Birds Before and After Human Arrival

By David Steadman, Curator of Ornithology, Florida Museum of Natural History (organised by Alastair Potts)

Membership Report

It is with much sadness that we record the death of :

Honorary Fellows: Professor Walter Greiner , died October.

Fellows: Prof Henda C Swart (1996), Department of Mathematics, University of Kwazulu – Natal (Died February), Richard H Lemmer (1989) Emeritus Professor of Mathematical Physics, School of Physics, University of the Witwatersrand. (died July) and Andries J van der Walt (2008), Professor of Law, University of Stellenbosch (died November)

Members: Coral Epton died in April – a staunch supporter of the Cape Branch.

The Society was recently advised of the death of another two Honorary Fellows, Professor Paul Kienle died January 2013 and Professor Eric Uggerhoi who passed away in 2014.

FELLOWS

Fellows: 223

Hon. Fellows: 30

New Fellows 2016: (*see full details below*)

Resignations: Tony Ribbink

Fellowship withdrawn due to non-payment or loss of contact: Dr Rob Adams, Professors Fanie van Heerden and Margit Harting

MEMBERS

Total: 226

Members elected to Fellowship: Aletta Schutte

Resignations: J C de Villiers, G S Dieckman, W Lo, S Huddy, C Hartman, B Kramer, H S Clayton

Membership withdrawn due to non-payment or loss of contact: D Mafu, C Perry, O Ibraheem

New Members welcomed in 2016:

Pathmavathie (Pamela) Pillay, Lecturer : Clinical Anatomy, University of KwaZulu Natal

Sally Walsh, Head of Science, St Mary's DSG, Kloof.

Richard Batson, retiree from Sedgefield with an interest in Health and Management of South Africa's Estuaries and Research into the treatment of Acid Mine Drainage.

Dr Tatenda Dalu, Marine Biologist in the Zoology & Entomology Department, Rhodes University

Professor Cristina Trois - Dean of the School of Engineering, University of KwaZulu Natal

Dr Rita Louise Jacobsen, Owner of and Scientist for Waterlabs C.C - Chemical and biological analyses, Dragon Peaks, KwaZuluNatal

Dr Heirich Badenhorst : Senior Lecturer, SARCHI Chair for Carbon Materials, University of Pretoria

Tehzeen Anjarwalla : Self-employed researcher, Cape Town

STUDENT MEMBERS

Total: 29

Students who became Members in 2016: Dr Ryan R Reisinger, Dr K S B Naidu, T Dalu

New Student Members welcomed in 2016

Joseph Hulbert, PhD Student in Plant Pathology, Forestry and Agricultural Biotechnology Institute, University

of Pretoria
Zaakirah Khakie - B Pharm student at University of the North West

Medals

JOHN F. W. HERSCHEL MEDAL 2016

Professor Robert (Bob) Millar FRSSAf, Director of the Mammal Research Institute and the University of Cape Town/Medical Research Council Receptor Biology Unit, President of the International Neuroendocrinology Federation (INF). The award was made for Professor Millar's exceptional contribution to science in South Africa with a long career of world-class high-impact research across multiple fields with a very strong interdisciplinary theme.

MEIRING NAUDE MEDAL 2016

Dr Adriana Marais, Winner of the 2015 L'Oreal-UNESCO Women in Physics award. Postdoctoral Researcher, Quantum Research Group, University of KwaZulu-Natal and Special Project Coordinator for the Foundation for Space Development South Africa. The award was made to Dr Marais who, at the age of 32, has already published fundamentally important high impact research and is set to become a world leader in the field of quantum biology.

New Fellows

MARTIN PATRICK HILL

Professor of Entomology, Department of Zoology & Entomology, Rhodes University.

Nominated by A N Hodgson, P W Froneman, C D McQuaid, A K Whitfield

Two of the greatest threats to South African agriculture are insect pests, and invasive plants that are not only impacting agricultural and grazing land, but also the country's scarce water resources. His research has solved many pressing issues in South Africa and other African countries, and weeds in many African water bodies are now under control. Professor Hill has built strong research programmes that tackle all issues related to the control of entomological pests and invasive weeds. He is recognised as an international leader and is undoubtedly Africa's foremost authority on invasive aquatic weeds. This recognition is reflected in many ways including; the hosting of top international researchers from Europe and the USA, his global network of research collaborators, invitations to advise internationally on water-weed control problems, invitations to edit symposia volumes, present plenary lectures, review manuscripts for top international and local journals, and the examination of numerous M.Sc. and Ph.D. theses. He is currently President of the International Organization for Biological Control of Noxious Animals and Plants (a global working group) as well as Secretary General of the Afro Tropical subregion of this group. In 2015 he was elected President of the Entomological Society of southern Africa.

Professor Hill has an impressive publication track record that includes 145 papers in local and international peer reviewed journals, and 8 book chapters. His H-factor is currently 17. His contribution to research training includes 7 Postdoctoral Researchers, 33 M.Sc. and 17 Ph.D. students graduated, with 17 more currently working towards their degrees. Martin Hill has done much to ensure that South Africa continues to be at the forefront of research when it comes to the biocontrol of alien plants and insect pests and has received numerous awards.

CHAUDRY MASOOD KHALIQUE

Professor of Mathematics, Department of Mathematical Sciences, North-West University.

Nominated by D P Mason, F M Mahomed, D Reddy, S Maharaj, P Leach

Professor Masood Khalique obtained MSc and PhD degrees from the University of Dundee in 1976 and 1979. He was a lecturer at the University of Botswana from 1980 to 1986. In 1986 he joined North-West University as a lecturer and was promoted to full Professor in 2010, a position he currently holds.

He has contributed significantly to the development of research in Lie symmetry analysis and conservation laws for differential equations. He has published 170 research papers most of which are in this area. He has derived new and relevant solutions to the Lane-Emden equation, the Emden-Fowler equation and the Boussinesq equation. He has made significant contributions to optical solitons and solitons in plasmas and to the derivation of soliton solutions and conservation laws for the Korteweg-de Vries and nonlinear Schrodinger equations. He has worked on applications to soil water motion, non-Newtonian second and fourth grade fluids and astronomy. He is rated C2 by the NRF and has Scopus h-index 15.

He has supervised to completion 16 MSc and 5 PhD students, and has been the Director of the International Institute for Symmetry Analysis and Mathematical Modelling since 2000. He has made a major contribution to the supervision of graduate students and to research in applied mathematics. He has also contributed internationally to research through conference organisation and journal editing.

SHABIR AHMED MADHI

Executive Director, National Institute for Communicable Diseases, Professor of Vaccinology; School of Pathology, University of the Witwatersrand; Chairman: Department of Science and Technology, National Research Foundation, Vaccine Preventable Diseases; Director: University of Witwatersrand /Medical Research Council Respiratory and Meningeal Pathogens Research Unit. Nominated by K Klugman, V Mizrahi, W A Hanekom, S Abdool Karim

Professor Shabir A Madhi is a paediatrician, infectious disease epidemiologist and expert in vaccines. He is currently the Executive Director of the National Institute for Communicable Diseases in South Africa and is a recognized expert on the causes, treatment and prevention of infectious diseases in children globally.

His main research interests are on the epidemiology and prevention through vaccination, of the leading causes of morbidity and mortality in children from low and middle income countries. He completed his under-graduate medical training degree, subsequent specialisation in paediatrics and his PhD (2004) at the University of the Witwatersrand in South Africa. At that University he holds positions as Professor of Vaccinology and Director of the Medical Research Council Respiratory and Meningeal Pathogens Research Unit and Research Chair in Vaccine Preventable Diseases of the Department of Science and Technology/National Research Foundation.

Professor Madhi was awarded an A rating by the National Research Foundation in South Africa in 2011. He received the South African Medical Council for Research Life Time Award Platinum Medal in 2013. He serves on technical and advisory groups, including those of the World Health Organisation in the fields of pneumonia, paediatric HIV, diarrhoea, rotavirus vaccine, pneumococcal conjugate vaccine, influenza vaccine, respiratory syncytial virus (RSV) vaccine and Group B Streptococcus (GBS) vaccine. He is a current member of the Scientific Advisory Committee of the Bill and Melinda Gates Foundation Global Health Program. Prof Madhi has authored or co-authored 256 manuscripts. His current citation record includes a Scopus h-index of 43 and a Google h-index of 54. Professor Madhi has contributed significantly to enhancing South Africa's international standing in medical research in the field of vaccines. He continues to grow this discipline by mentoring clinical and basic scientists in their post-graduate degrees in the field, the majority of whom are from previously disadvantaged communities.

Publications

TRANSACTIONS OF THE ROYAL SOCIETY OF SOUTH AFRICA

The Society is most grateful for the services of Professor Bert Klumperman as Editor of the Society's journal. Volume 71, issues 1 – 3 were published by Taylor & Francis. Members continue to receive hard copies and have free access to all online volumes.

NEWS BULLETIN (RSSAf News)

Dr Graham Avery continued his services as the Editor.

Sponsorships and Donations

We extend a big thank-you to our Donors below and to those wishing to remain anonymous:

Mr Charles Skinner MRSSAf
Profs S and Q Abdool Karim FRSSAf
Dr R Bigalke FRSSAf
Prof Jane Carruthers FRSSAf

Prof M J Viljoen FRSSAf
Nick Starke MRSSAf
Dr Andrew Galwey FRSSAf
Mr Richard Batson MRSSAf

SPONSORSHIPS

We are very grateful to the Claude Leon Foundation for their on-going support of our National School Science Essay Competition and Horwath, Zeller & Karro, our excellent Chartered Accountants, who keep the Society on the straight financial path

Cooperation with other Bodies

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

- National Science and Technology Forum including the Scientific, Engineering and Technological Societies and Allied Professions Group of SA: Northern Branch Committee
- Academy of Science of South Africa – Prof. D.A. Cowan

Acknowledgements

We thank:

- the Office Manager, Sandra de Villiers-Soltynski, for her efficient administrative services to the Council and the membership.
- all the chairpersons and committee members of Branches for voluntarily giving of their skills and time, as well as organisers of lectures, speakers and those who delivered votes of thanks at lectures; and to UWC for allowing us to use their boardroom for Council meetings.
- the Dean, Prof. Anton le Roex, and staff in the Science Faculty Office at the University of Cape Town are thanked for kindly accommodating the national office and for sharing their facilities.
- SAAO (South African Astronomical Observatory) for accommodating Council Meetings during the year.

DR J MANN-LANG
GENERAL SECRETARY