

S₂A₃

**SOUTHERN AFRICA ASSOCIATION FOR THE
ADVANCEMENT OF SCIENCE
SUIDER-AFRIKA GENOOTSKAP VIR DIE
BEVORDERING VAN DIE WETENSKAP**

JAARLIKSE MEDALJETOEKENINGSEREMONIE

5 November 1993

ANNUAL MEDAL AWARD CEREMONY

THE SOUTH AFRICA MEDAL - GOLD



George F R Ellis was born in Johannesburg, matriculated at Michael House and took his B.Sc degree at the University of Cape Town. He then went on to the St. John's College, Cambridge where he obtained his Ph.D. in Applied Mathematics and Theoretical Physics.

Professor Ellis spent many years at Cambridge as Fellow and Lecturer, interspersing the years as visiting lecturer at the Universities of Chicago, Hamburg, at the Max Planck Institute for Astrophysics, Munich, at the University of Alberta, Canada, the University of Texas in Austin and in Italy as visitor at the Specola Vaticana in Castel Gondolfo. Professor Ellis returned to the University of Cape Town at regular intervals during these years abroad and is at present the Professor of Applied Mathematics at U.C.T.

In 1977 and again in 1979 he was the prize winner of the Gravity Research Foundation Essay competition. In 1984 he was awarded the Herschel Medal of the Royal Society of South Africa and in 1993 the Claude Harris Leon Foundation Achievement Award.

Professor Ellis has presented papers at conferences in some twenty cities all over the Western World and has attended a further thirteen international conferences. He has served as organizer and member of the committees of several of these symposia, conferences and meetings. In between, he has made time to give seminars at the Universities of Cambridge, York, Trieste, Pavia, Toronto, Rio de Janeiro and in South Africa.

He is a Fellow of the Royal Astronomical Society, of the Institute of Mathematics and its Applications, The Royal Society of South Africa, President of the International Society of Relativity and Gravitation, among others.

George Ellis is a reviewer and referee for many journals apart from writing book reviews, giving radio talks and television shows. He was and is a member of Editorial Boards of various publications. He is author and co-author of books on such diverse subjects as *The Large Scale Structure of Space Time*; *The Squatters of the Western Cape*; *Low Income Housing Policy in South Africa* and *Flat and Curved Space-Times*.

Other activities include membership of the HSRC Advisory Committee, Acting Director of the Urban Problem Research Unit in Cape Town. He is co-founder and Chairman of Friends of the Ciskei People and Chairman of the Quaker Peacework Committee and the Quaker Peace Centre Board and Quaker Community Assistance Fund.

In awarding the South Africa Medal - Gold - to Professor Ellis the S₂A₃ not only recognizes his far-ranging contribution to the sciences of Astronomy, Astrophysics and Mathematics but also his care and vital commitment to his neighbours in the truest sense of the word.

We can say: Here is a man reaching for the stars with his feet firmly on the ground.

A BRIEF SUMMARY OF THE MARLOTH MEMORIAL LECTURE

BY PROFESSOR G.F.R. ELLIS

5 November 1993

Professor Ellis gave a view on science research priorities in South Africa in the coming decades. He emphasized the interrelatedness of science, so that a basic level of research across all the major subjects had been neglected and needed emphasis in the future, in particular a developmental approach to water research, the ecology of farms and forests, and environmental studies of "homeland" areas and townships. Economically important subjects, apart from basic physics and chemistry, are materials science, and genetic engineering techniques based on molecular biology; these are well within our grasp. Information technology is another field of opportunity, particularly as regards research on issues relating to usability, as is the broad area of computational mathematics. An adequate level of research in all these areas is feasible, and should be supported by a serious commitment to research into science education at all levels.

For completeness we should maintain limited but high quality research activity in interdisciplinary areas: for example, the brain cognition, ethical issues related to science and environmental studies, and philosophical issues raised by scientific understanding.

These proposals are not meant to be definitive, but rather a basis for common discussion of the best science research policy in the future.

THE BRITISH ASSOCIATION MEDAL - SILVER



After completing his studies **Barend Mattheus Herbst** was appointed Lecturer at the University of the Orange Free State in 1977. A post which he filled until 1984 when he was promoted to Associate Professor.

During a year-long sabbatical, 1983-1984 he studied at the University of Dundee in Scotland and returned to the University of the Orange Free State where he was appointed Professor in Applied Mathematics in 1988.

In 1988-1989 and again in 1989-1990 he visited the Clarkson University in Potsdam, N.Y. and the University of Colorado, Boulder also in the U.S.A. as visiting Associate Professor in their Departments of Mathematics and Program in Applied Mathematics, respectively.

Professor Herbst has been invited to lecture at the Universities of Waterloo in Canada, Strathclyde in Glasgow, Linköping in Sweden, at Princeton in the U.S.A. and Cambridge in England. He is a regular visitor at Program in Applied Mathematics at the University of Colorado, Boulder.

Barend Herbst is an Associate Fellow of the Institute of Mathematics and its Applications, a Member of the American Mathematical and Physical Societies and a Member of the South African Society for Numerical Mathematics and he is immediate past Chairman of the South African Mathematical Society.

Apart from serving on the Foundation for Research Development Honours Bursary and the Old Mutual Mathematics Olympiad committees he has been invited to give talks at various universities in the United States, England, and Switzerland. In 1988 and again in 1989 he was invited to speak at the EXXON Corporate Research in the city of Annandale, N.J.

In spite of a heavy workload such as his research projects, Professor Herbst currently supervises the progress of two Ph.D. students. He has attended numerous local and international conferences as speaker. He is the author and co-author of 34 publications and is referee for The Physical Review, SIAM J.Appl.Physica D, Communications in Applied Numerical Methods and Reviewer for Mathematical Reviews among others.

Deservedly Professor Herbst received the President's Award for Young Scientists in 1985 and again in 1988.

His intense intellectual activities are balanced by his enjoyment of classical music, hiking, training German Shepherds and playing a hard game of squash.

The British Association Medal - Silver - is awarded annually by the S_2A_3 to an outstanding young scientist. Barend Mattheus Herbst has proved himself a worthy recipient of this honour.

MERIETESERTIFIKAAT TOEKENNING



Dr Abraham Johannes van Zyl B.Sc, B.A. Med. Universiteit van Kaapstad, Assosiaat Universiteit Londen en Ph.D. Columbia Universiteit, N.Y. is in 1911 te Clanwilliam gebore.

Van onderwyser en prinsipaal vorder Dr van Zyl tot Rektor van die Pretoria Technikon vanaf 1958-1975 met sy aftrede.

Hy dien as Voorsitter of lid op 'n groot verskeidenheid verenigings. So, by voorbeeld, is Dr van Zyl stigterslid vir die

Stigting vir Onderwys, Wetenskap en Tegnologie. Hy dien op die Raad vir Professionele Ingenieurs, Die Suid-Afrikaanse Akademie vir Wetenskap en Kuns, Ministeriële Komitee van Ondersoek na die Opleiding van Ingenieurs-tegnici in RSA, ook dien hy op 'n soortgelyke komitee vir Kultuurverspreiding en die Ontwikkelingskomitee van die Bounywerheid, die Wiskunde Vereniging van Suid-Afrika, die Drama komitee van TRUK en sit hy op die Hoofbestuur van die S.A. Onderwysunie en die Wiskunde Olimpiadekomitee van die Akademie om net 'n paar te noem.

In 1965 beywer Dr van Zyl hom om die groot Tegniese Kolleges uit te bou tot Kolleges vir Gevorderde Tegniese Onderwys met groter outonomie, soos in Engeland, Duitsland, Holland en Australië.

As afgevaardigde woon hy die Wêreld Organisasie vir Onderwys Professie in Endecott, New York by en 'n paar jaar later verteenwoordig hy Suid-Afrika by die Algemene Vergadering van UNESCO in Parys, Frankryk.

Dr. Abraham van Zyl het agt publikasies die lig laat sien. Onder andere "Mathematics at the Cross Road"; "Junior en Senior Matesis"; "Diagnostiese Rekenkundetoetse en Dril oefeninge"; "Ouer en Kind"; "Meer Tegniese Onderwys".

In 1992 dra die Raad van die Pretoria Technikon 'n Honorêre Toekening aan Dr van Zyl op. Na 'n leeftyd van toewyding aan die bevordering van die wetenskap is dit 'n eer vir die S_2A_3 om die 1993 Merietetoekening aan Dr Abraham Johannes van Zyl toe te ken.

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PRETORIA-TAK JAARVERSLAG 1992 - 1993

In haar jaarverslag het Dr Bertha van Drimmelen, Voorsitter van die Pretoria-tak haar dank aan die President van die S_2A_3 , haar komitee en lede van die vereniging vir hul steun en initiatiewe gedurende die afgelope jaar uitgespreek. Met 'n besondere woord van dank aan Professor Flip Smit, Rektor van die Universiteit van Pretoria en personelede van UP vir die gebruik van die gerieflike Senaatsaal waar die Pretoria-tak hul maandelikse byeenkomste hou.

Dr van Drimmelen het na die sprekers verwys. Dr Malan van Rensburg, Neuroradioloog, Mnr Dick Webb van die WNNR, Dr Horst Küstner wat oor die opvlam van Malaria wêreldwyd, gepraat het. Daar was Dr Marissa Rollnick van die Departement Chemie van Wits en Tiana Weyers 'n Elektroniese Ingenieur van die Departement Ingenieurswese by UP en Professor Walter Wargau, Sterrekundige van UNISA en Prof Harry Fiedelday wie lede en gaste - een en almal met hul insiggewende lesings oor 'n reeks uiteenlopende onderwerpe geboei het.

Die Voorsitter het haar verslag afgesluit met 'n uitnodiging aan belangstellendes om by die S_2A_3 in 1994 aan te sluit.

- Dr Bertha van Drimmelen

MERIT AWARD CERTIFICATE



Johannesburg-born and educated, **Marissa Rollnick** commenced her B.Sc. studies at the University of the Witwatersrand. She has, over the years, devoted her energies to the advancement of scientific teaching at school and university level - A Teachers' Teacher.

As lecturer at the William Pitcher College and as part-time lecturer at the University of Swaziland from 1975 to 1983 she organized the National Science Fair and other activities for science teachers. Dr Rollnick served on several committees

to promote and make accessible science content and teaching methods to teacher trainees and participated in in-service courses and science curriculum development.

But Marissa Rollnick is in no way the traditional blue stocking! As the flute and saxophone-player in the contemporary music group "Impandza" she toured Malaysia and Mozambique with her fellow musicians in 1984.

During these busy and highly creative years in Swaziland Marissa found time to teach and coach members of the National Swimming Association of Swaziland of which she was a founder member.

In 1984/85 she obtained her M.Sc degree at the University of East Anglia and in 1986 registered as part-time Ph.D student at Wits where she worked as course developer at the S.A. Council for Higher Education. In 1988 with her Ph.D in Science in tact she spent three months at the University of York participating in curricular development and school experience teaching and giving research seminars.

In 1990 Dr Rollnick was appointed lecturer in the Chemistry Department at Wits with special responsibilities to provide access to the Science Faculty to under-qualified and disadvantaged students.

She is the author and co-author of 39 publications and has four supervisory projects to her name.

In 1993 Dr Rollnick visited the Indiana University on a mission of teaching and the exchange of information and has since been granted a three-year FRD grant of R35,000 per annum for research into Science Education.

In awarding the Merit Certificate to Dr. Rollnick, the S_2A_3 salutes her for her indefatigable efforts in promoting scientific education in South and Southern Africa.

MERIETESERTIFIKAAT TOEKENNING



PROFESSOR KRISTO PIENAAR studeer eers aan die Universiteit van Pretoria, B.Sc. en M.Sc. en verwerf later sy doktorsgraad in sy geliefde vak - Plantkunde - aan die Universiteit van Stellenbosch.

Sy loopbaan neem 'n aanvang as Senior Tegniese Assistent in die Departement Plantkunde by die Universiteit van Pretoria. Daarna verhuis hy Krugersdorp toe waar hy vir 12 jaar Senior Biologie Onderwyser aan die Monument Hoërskool was. Met sy aanstelling, eers as Senior Lektor en later as Pro-

fessor in Plantkunde aan die Universiteit van die Wes-Kaap, woon Kristo Pienaar al sedert 1961 in die Kaap.

Tenspyte van 'n volle dagtaak het Professor Pienaar dit reggekry om al van die vyftigerjare radiopraatjies uit te saai. En in later jare het hy ewe-eens 'n bekende televisie persoonlikheid geword. Wie het nie al na sy "Hoe Verklaar U Dit" bydraes geluister of sy prag-reeks televisieprogramme: "Plant Inheems", "Plante van die Bybel" en "Veldfokus" gevolg?

Waar kry 'n besige wetenskaplike tyd om op sy stad se Raad te dien en dan nog vir vier termyn die taak van Burgermeester met al die verantwoordelikheid wat met so 'n taak gepaard gaan op sy skouers te neem! Daarbenewens is Kristo Pienaar se gereelde bydraes in koerante en tydskrifte vir 'n groot leserspubliek steeds 'n bron van kennis en raad.

Sy sewe Afrikaans- en Engels geskrewe boeke oor "Inheemse Struik", "Plante vir die Tuin", "Aldag Tuinmaak" om maar net 'n paar titels te noem, het onmisbaar vir die tuinier geword.

Die Staats President se Orde vir Voortreflike Diens (Goud) is in 1987 aan Kristo Pienaar uitgereik. Daar volg nog talle toekennings soos onder andere die Dudley D'Ewes Goue Medalje van die Botaniese Vereniging, Die Burger van die Jaar-toekenning deur die stad Bellville en die Ere-Oudstudentebaadjie van die Universiteit van Pretoria.

Met die toekenning van die S_2A_3 Merietesertifikaat onderstreep ons die waardering wat ons vereniging vir Professor Kristo Pienaar se onvermoeide bydrae tot die bevordering van die wetenskap koester.

RAADSVERSLAG VAN DIE PRESIDENT VAN DIE S_2A_3 1992 - 1993

Die Raad het viermaal vergader om uitvoering te gee aan verpligtinge. Uit die finansiële verslag sal u bemerk dat volgens die bepalings van die Craib-fonds daar R4000 aan Prof. Skinner oorbetal is vir sy navorsing ten opsigte van roofdier-prooi-interaksies. Verder kon ons danksy die noeste beheer van die finansies deur mnr den Dulk, 'n bedrag van R2500 skenk aan Expo. Mevr den Dulk het toegesien dat die Genootskap die nodige reklame ontvang, tydens die oorhandiging. 'n Versoek is ook gerig aan alle lede om, waar moontlik, Expo aktiwiteit te steun aangesien S_2A_3 een van die inisieerders van die beweging was. Verskeie Raadslede het ook tydens oorhandigings namens die Genootskap geageer en ons by susterorganisasies verteenwoordig. Ons geleedere is versterk met die volgende nuwe lede: Mej Tiana Weyers (buitelandse kontakte), dr Kok (reklame) en

Mej Bentum en Ortner (jeug). In samewerking met dr Roux het dr Korb weer eens die madaljewenners bepaal en die nodige medaljes en borgskappe bekom. Ons sekretaris het met gebruikelike bekwaamheid die administrasie hanteer en saam met die egpaar den Dulk die Raadsvergaderings gasvry gehuisves. Hartlik dank aan almal vir hulle dienste, waarsonder 'n vrywillige organisasie nie kan voortbestaan nie. Ten slotte my dank aan u die lede vir u voortgesette ondersteuning. - Professor Johan A Wolfaardt.

Met die toekenning van die medaljes het Professor Wolfaardt na die totstandkoming van die Royal Society-medalje verwys. Uit die rente van 'n nalatingskap van £100 in 1709 kry die wenner slegs 'n goue medalje "To be bestowed on the person whose experiments should be best approved, thereby creating a laudable emulation among men of genius who, in all probability may never be moved for the sake of lucre". So-ook toon Professor Wolfaardt aan dat ons met trots die tradisie van die S_2A_3 op dieselfde wyse voortsit en vertrou dat die ontvangens van die medaljes dit steeds as 'n eer sal beskou om in die geleedere van 'n Theiler, Dart, Roberts, Meiring Naude en andere gereken te word, al is daar geen "lucre" aan gekoppel nie.

MERIT AWARD CERTIFICATE

Walter Friedrich Wargau was born in Munich in 1948. He studied at the University Erlangen In Nürnberg where he gained his doctorate in Astronomy in 1980.

In 1983 he came to South Africa to join the Department of Astronomy as Senior lecturer at UNISA. His duties in his faculty includes the Development of a Curriculum for Astronomy/Astrophysics at Under-graduate level, setting up a Practical Astronomy Course and lecturing on a variety of module/papers such as Observational Astrophysics, Radiation Transport, Principles of Radio Astronomy et al.



In 1987 Dr Wargau was appointed Associate Professor. To date Professor Wargau has supervised the B.Sc and M.Sc theses of eight candidates. Although science knows no barriers the act of immigration can never be minimized. In the few years that he has been in South Africa, Professor Wargau has mastered Afrikaans to the extent of co-authoring a book on Hally's Comet and he has written many articles in magazines like "Archimedes", "Die Suid-Afrikaanse Tydskrif vir Natuurwetenskap en Tegnologie", "Die Wêreld-Spektrum Encyclopedie" and as many articles in English. The large number and the variety of research articles written in German is a tribute to Professor Wargau's serious pursuit in advancing his particular scientific discipline.

Walter Wargau is a full member of the German Astronomical Society, The International Astronomical Union, Commission 42 (Close Binary Stars), The Royal Society of South Africa and he is the President of the Astronomical Society of Southern Africa.

Over the years he has attended symposia in Israel, Spain, Germany, France and in various centres in South Africa. In 1985 and again in 1986 Professor Wargau planned and prepared exhibitions on the Comet Hally, Comets in General and Our Solar System which were displayed at the universities of Stellenbosch, Cape Town and the regional offices of UNISA in Durban and in Pretoria.

It is an honour to award Professor Walter Friedrich Wargau the S_2A_3 Merit Award 1993 Certificate.

NASIONALE RAAD 1993 - 1994

President:	Prof J A Wolfaardt	
Vise-Presidente:	Wes-Kaap:	Dr C Albrecht
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		Mev U Ortner (Tesourier)
		Mev E den Dulk
		Mnr H Ortner

DIE 1993 GENCOR- S_2A_3 BRONS MEDALJE TOEKENNINGS

Die toekenning van 'n brons medalje aan die beste magisterstudent in enige van die wetenskapdissiplines word jaarliks aan die 22 universiteite landswyd beskikbaar gestel. 'n Gesogte toekenning en 'n gewaardeerde borgskap.

- Universiteit van Stellenbosch:** Mev L Human, M.Sc. Toegepaste Wiskunde "Evaluering van Belangrike Punte in Kommunikasiegrafieke".
- University of Cape Town:** Mrs D Patterson, M.Sc. Biochemistry. "Purification and Characterisation of a Poly (dG). Poly (dC) - Binding Protein from *Parechinus Angulosus*".
- Potchefstroomse Universiteit vir CHO:** Mnr L van Rensburg, M.Sc. Plantfisiologie. "Vogstremming-geïnduseerde Veranderinge in Fotosintese en Verwante Metaboliese Prosesse in *Nicotiana Tabacum L.*".
- Rhodes University:** Miss A Coetzee, M.Sc. Chemistry - With distinction - "Thermal Decomposition of Mixed Metal Oxalates".
- University of the Orange Free State:** SJ van Niekerk, M.Sc. "An appraisal of the Problems Related to Species Identity and Species Diversity within the African Anuran Polystromatidae (Monogenea)".
- Randse Afrikaanse Universiteit:** Mevrouw Y Struwig.
- Universiteit van Port Elizabeth:** Mnr RJ Fourie, M.Ed. Didaktiek - Met Lof - "Die Ontwerp van 'n Instrument om Verandering in Houing Tussen Wit en Swart Kinders te Meet".
- University of the Witwatersrand:** Tonia Price, M.Sc.
- Universiteit van Pretoria:** Mnr LT Hildebrand, M.Ing. Elektronika - Cum Laude - "The Analysis of Microstrip Wire-Grid Antenna Arrays".
- University of Durban-Westville:** Mr PMU Schmitz, M.Sc. - Cum Laude - "The Impact of Land Use Pattern on Certain Aspects on the Hydrology of the Manzimtoti River".
- University of Natal - Pietermaritzburg:** Mr MW Steward, M.Sc. Chemistry - With Distinction - "Chemical Transformations at Unsaturated Diphosphazane-Bridged Diruthenium Centres".
- University of Natal - Durban:** Mr M W Pickering, M.Sc. Eng. Electrical - Cum Laude - "Speed Control of an Induction Motor by the Application of Field Oriented Control Using a Current Source Inverter".

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