



Academy News

Challenges in Higher Education and Research & Development - Highlights

India faces enormous social challenges as well as opportunities for rapid development in the new millennium. The present juncture is critical for Indian science: major positive steps would enable it to flower and play a key role in taking India to a leading position in the future, but inaction or sub-optimal action would accelerate the national decline. Keeping this in view, the Indian National Science Academy (New Delhi) and the Indian Academy of Sciences (Bangalore), are strongly of the opinion that concrete action needs to be taken urgently in science-based higher education and research and jointly prepared a set of proposals and recommendations for the XI Five-Year Plan.

The main thrust of the recommendations is to facilitate development of human resource that is capable of utilizing available knowledge to create wealth and of generating new knowledge and innovations. This is sought to be done by improving the higher education and research profiles of universities and institutes. The document containing the recommendations have been forwarded to the Planning Commission, Ministry of Human Resources, Ministry of Science & Technology and Earth Science, University Grants Commission in addition to the President and Prime Minister of India. Details can be seen on INSA website www.insaindia.org

INSA Science Education Panel

The Academy in its August Council Meeting has constituted a Science Education Panel with Professors SC Lakhota (Convener), Alok Bhattacharya, Alok K Gupta, M Lakshmanan, T Padmanabhan and Ashok K Singhvi. The first meeting of the panel was held on 9th September 2006. Professor Deepak Pental was specially invited and Professor NS Sathyamurthy represented the Indian Academy of Sciences, Bangalore. The panel recommended to initiate the following three programmes jointly with the Indian Academy of Sciences, Bangalore.

- a) Summer Fellowship for students and teachers
- b) Refresher Courses for teachers
- c) Special Programmes (through INSA Local Chapters)
 - i) Inviting School and College students from local area and organize workshop on specific topics *and*
 - ii) Local Fellows and other experts to go to schools/colleges in their area and conduct special lecture series

International Activities

A Brief Report of Dr. H K Gupta, FNA for his Lecture Programme in USA as Jawaharlal Nehru Birth Centenary Visiting Fellow (2003)

Dr. Harsh K Gupta FNA, Raja Ramanna Fellow, National Geophysical Research Institute, Hyderabad visited USA during 5-13, June 2006. A brief report of the visit is summarized as under:

Triggered earthquakes occur due to anthropogenic intervention in region stressed close to critical. During the visit to USA, Dr. Gupta had interactions on the problem of triggered earthquakes, primarily triggered

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due to impoundment of artificial water reservoirs. The phenomenon of artificial water reservoir triggered earthquakes came to light after such earthquakes were identified at Lake Mead near Colorado, USA during 1930's. In India, triggered earthquakes have been occurring in the vicinity of Shivaji Sagar Lake created by the construction of Koyna Dam in 1960's. They have carried out studies on triggered earthquake sequences globally and delineated some of the common characteristics of the triggered earthquake sequences that discriminate triggered earthquakes from the normal earthquakes in the concerned regions. These criteria are now globally used to identify earthquake sequences induced by artificial water reservoirs. NGRI has been operating a dedicated network of seismic stations in the Koyna region to study seismicity. A number of other observations such as continuous Radon emission measurements, GPS, repeat gravimetric, electrical and MT measurements are also conducted to analyze signals that may be precursors to earthquakes occurring in Koyna region. Additionally, pore fluid pressures are measured in a number of bore holes drilled and instrumented for the purpose. So, we have one of the best sites, globally, to study the triggered earthquakes. In USA, detailed studies have been taken up at a number of sites of artificial water reservoirs as well as sites of water injection in deep bore wells. Among the most prominent sites of such work are Lake Jocassee and Montecillo Reservoirs in South Carolina in the US. The University of South Carolina, Columbia was responsible for undertaking pioneering studies on triggered earthquakes in South Carolina.

During his visit to the US, Dr. Gupta had several academic activities as given below:

(a) Detailed discussions on problems of triggered earthquakes with the faculty and students at the University of South Carolina, Columbia. As a matter of fact, it was a very opportune time to be with this group. Just before leaving for the USA, he had seen some precursors that indicated that an M 4 earthquake may occur in the Koyna region over the next 15 days time. This forecast was made on May 14, 2006. An earthquake of M 4.2 occurred on May 21, 2006 within the specified parameters. This provided Dr. Gupta an excellent opportunity to discuss earthquake precursory studies with faculty at South Carolina University. One of the important issues was to start a few more studies in

the Koyna region, such as T_p/T_s variations preceding significant Koyna earthquakes, monitor the spread of seismic activity before M_4 earthquakes etc.

- (b) Dr. Gupta delivered a talk on "Indian Initiative to Mitigate Tsunamis and Storm Surges in the Indian Ocean".
- (c) He participated in the group discussion for the feasibility studies for creating an artificial water lake for Virgil C. Summer Nuclear Station, and to estimate the maximum credible earthquake in the region as well as to estimate the potential of triggered earthquakes as a consequence of filling up of this reservoir

Discussions also took place with the faculty at the University of South Carolina are very useful in furthering their work of monitoring earthquakes in the Koyna region and enhance our efforts in studying the precursors. The study of T_p/T_s anomaly associated with the earthquakes was considered to be a very important precursor during the 1970's. As a matter of fact, the first scientifically accepted earthquake forecast in the Blue Mountain region in 1973, near New York was based on T_p/T_s anomaly. However failure of the Park Field earthquake prediction by the USGS has led to a belief in USA, among a large number of seismologists, that earthquake forecast may not be feasible. A fresh look at this precursor would be extremely useful. The work that he is currently undertaking after the visit to the US does show that T_p/T_s anomaly may be preceding earthquakes in the Koyna region. He advised that it would be important for the Academy to keep the area of "Study of Earthquake Precursors" in mind when developing collaborative programs with the US counterparts.

FASAS Council Meeting

Council 2006 of the Federation of Asian Scientific Academies and Societies (FASAS) held on September 11-12, 2006 was hosted by the Singapore National Academy of Sciences, Singapore in conjunction with the Workshop on "The Role of Science Academies in Science Promotion and Science Education : Perspective from Asia". Prof. Anupam Varma, FNA, (Vice-President) and Prof. N Mukunda, FNA, represented INSA in the Council of FASAS. Prof. Mukunda also made a presentation on "Science Academies of India-

Science Promotion and Education Activities” highlighting the activities of all the three Academies in India for the promotion of Science and Educational activities in India. The FASAS Council elected Council for 2007-09 and also decided to extend the term of Prof. Omar Abdul Rahman as its President till 2009.

INSA-HAS Joint Workshop on ‘Biology of Biotic and Abiotic Stress in Higher Plants’

A six-member INSA Delegation led by Professor S K Sopory, Vice-President, INSA comprising Professors A N Lahiri Majumder, AK Tyagi, AK Apte, BB Chattoo, K Veluthambi visited Hungary and participated in the INSA-HAS joint workshop on ‘Biology of Biotic and Abiotic Stress in Higher Plants’ held at Biological Research Centre of HAS, Szeged, Hungary from 27-28 September 2006 hosted by Hungarian Academy of Sciences (HAS) as a part of the 25th Year Celebration of INSA-HAS Scientific Cooperation. Fourteen key-note presentations (6 by Indian scientists and 8 by Hungarian scientists) were



Group photo of INSA Delegation at INSA-HAS Joint Workshop at Hungary

made highlighting the role of the biology of biotic and abiotic stress in higher plants, which is an important branch of science, representing interfacial discipline with strong links with plant biology. At the end, both sides felt the need of holding such workshops on ‘plant biology’ regularly in India and Hungary every 2 years. The delegation in addition to their participation in the workshop also visited Cereal Research Non-Profit Company at Szeged and Agricultural Research Institute of HAS at Martonvasar and had scientific discussions and interaction with the scientists in their endeavour to plan the future cooperation.

International Award Instituted in the Memory of Late Prof. GN Ramachandran

The Academy has instituted *GN Ramachandran Memorial Lecture* - an International Award in the memory of Late Prof. G N Ramachandran under the aegis of International Union of Pure and Applied Biophysics (IUPAB). The Memorial Lecture will be delivered in the plenary session of the IUPAB General Assembly. Selection of the Awardee will be made by the IUPAB. This will be operational from 2007 onwards and lecture will be delivered by an Internationally renowned Biophysicists. Council of Scientific and Industrial Research (CSIR) has offered an endowment of Rs.30 Lakhs to the Academy for operating this award.

Medal/Memorial Lectures under Local Chapters

Bal Dattatraya Tilak Memorial Lecture

Professor Anil K Gupta, Kasturbhai Lalbhai Chair in Entrepreneurship, Indian Institute of Management, Ahmedabad delivered the INSA *Bal Dattatraya Tilak Lecture (2005)* on “From ‘Sink’ to ‘Source’: Can Modern Science Learn from Grassroots Innovators and Traditional Knowledge Holders?” on 7th August 2006 during the General Body Meeting of the Academy. Excerpts of the lecture is given below:

Science justifiably favours the skepticism. But when doubt gives way to prejudice, the dialogue becomes asymmetrical. The first condition of a viable null hypothesis is violated. Instead of proving the opposite of what we believe in, we start arguing in favour of our preferred position. Science suffers. In his talk, Dr. Gupta discussed the possibilities that peoples’ knowledge, innovations and practices offer for extending the frontiers of science in some cases and making science more effective in other cases. The effectiveness here implies the ability of a scientific concept to translate into technology applicable in the diverse user contexts. In the passing remarks, he added that historically the evolution of science took place differently. The technology came first and the science later. We knew how to build house before we developed the science of architecture. Likewise, we designed the levers, wheels and numerous other technological devices before we had abstracted the



underlying principles and the parameters. Today there is a need for giving grassroots technologies a similar look to develop next round of scientific breakthroughs.

Dr Gupta presented examples from atmospheric sciences, phyto chemistry, chemistry of organic gels, mechanical engineering, agriculture and various other disciplines. Dr Gupta's attempt would be to invite the scientists whose motivation of engagement with a problem or a subject is governed primarily (and rightly so) by the challenge it poses. Dr. Gupta narrated the examples where young technology students can come out with breakthrough solutions when confronted with longstanding unsolved social problems. His final contention was that our ability to live for decades and centuries with large scale drudgery, inefficiency in technical activities at grassroots level and frozen technologies is not only creating stress for the poor people, but also impeding the growth of science. It is in one's own scientific or disciplinary interest that one should engage with social knowledge base. If something good comes out of it, there is no harm.

Indian aspiration for becoming a knowledge society, can be fulfilled only by building bridges between the excellence in institutional science and in the informal sector at community as well as individual level. Honey Bee Network has tried to forge such links over the years. We seek the opportunity of evolving more creative, collaborative, compassionate and coordinated platforms for dialogue to take place between formal and informal knowledge systems.

PC Mahalanobis Medal Lecture

Professor A Sridharan, FNA delivered the *PC Mahalanobis Medal Lecture (2005)* on 26 July 2006 at the Indian Institute of Science, Bangalore on "*Engineering Behaviour of Clays: Influence of Mineralogy*" under the aegis of Bangalore Local Chapter of the Academy. Highlights of the lecture are as under:

The great variety and complexity observed in the engineering behaviour of clayey soils are mainly attributed to their mineral and pore fluid constituents. Clay particles are characterized by their specific surface and charges on them leading to diffuse double layer induced repulsive forces and van der Waals' forces as well as Coulombic attractive forces. While the Gouy-



Prof. A Sridharan, FNA is seen with PC Mahalanobis Medal

Chapman theory of electrical diffuse double layer enables a qualitative prediction of the repulsive pressure, the factors affecting the electrical attractive forces among clay particles are complex and their individual effects cannot be readily separated. The nature of the inter-particle contact is not well understood.

The liquid limit, sediment volume, compressibility and un-drained shear strength behaviour of kaolinitic and montmorillonitic clays as influenced by pore medium composition is quite opposite and the mechanism controlling their behaviour could be entirely different. Broadly it may be concluded that the diffuse double layer repulsion has a dominant influence on montmorillonitic clays and for kaolinitic clays, the electrical attractive forces and fabric play a prominent role.

Natural clays consist of different clay minerals in an area in different proportions. The pore medium constituents are also not simple and well defined. However, a dominating mechanism can be identified by simple tests and the behaviour of natural clays can be qualitatively predicted.

Golden Jubilee Commemoration Medal Lecture

Professor Veronica Rodrigues, Department of Biological Sciences, TIFR, Mumbai delivered the *Golden Jubilee Commemoration Medal for Biological Sciences (2004)* on

27th July 2006 at the National Institute of Oceanography, Goa on “*Making Sense of Scents - Does Every Rose Really Smell so Sweet?*” under the aegis of Pune Local Chapter of the Academy.

In her lecture, Professor Rodrigues, gave a brief history about scientists, writers and philosophers since Lucretius have wondered how our sense of smell works. How can we tell apart the aroma of roasting coffee from the stench of rotting carrion? Why is it that smell can act as a “potent wizard that transports you across thousands of miles and all the years you have lived”. Over the past few years, researchers have come closer to fully understanding this evocative sense that ever before. We realize that this sense is valuable for the survival of most animal species and plays an important role in their life style. The complex way in which nervous systems compute information about smell is remarkably conserved across evolution. It may be humbling to see that and our sophisticated brain circuits are not very different from those of flies and worms. Some of the recent findings, in the context of her research were also discussed.

INSA Srinivasa Ramanujan Medal Lecture

Professor R Parimala, FNA, School of Mathematics, TIFR, Mumbai delivered *INSA Srinivasa Ramanujan Medal Lecture (2006)* at the Chennai Mathematical Institute, Chennai on 27th July 2006 on “*Some Open Questions Concerning Rational Points on Homogeneous Space*”. Prof. C S Seshadri, Director, Chennai Mathematical Institute read out the citation and



Prof. R Parimala, FNA receiving the Srinivasa Ramanujan Medal from Prof. C S Seshadri, Director, Chennai Mathematical Institute, Chennai

presented the citation and the medal to Professor Parimala. The lecture was well attended by mathematicians/academicians from CMI and neighbouring institutions. A summary of the lecture is given below:

Study of homogeneous spaces under linear algebraic groups is rich both from the perspective of arithmetic and geometry. The arithmetic aspect includes classification of interesting algebraic structures like quadratic and hermitian forms, division algebras, octonion and Albert algebras. Some aspects of this study in the arithmetic context have mainly been discussed.

Rich arithmetic techniques lead to a good understanding of homogeneous spaces defined over number fields. For instance, one can classify quadratic forms over number fields in terms of the invariants- dimension, discriminant, Clifford invariant and the signatures. Several questions concerning homogeneous spaces have been posed in more general contexts. One longstanding open question is whether the existence of zero cycles of degree one on principal homogeneous spaces under connected linear algebraic groups implies the existence of rational points. Similar questions were also posed more generally for projective homogeneous varieties. These questions have an affirmative answer for number fields.

She further elaborated how a conjecture of Serre on principle homogeneous spaces under semisimple simply connected linear algebraic groups over fields of co-homological dimension 2 and its generalization to a conjecture on Hasse principle due to Colliot Thelene over fields of virtual cohomological dimension 2 lead to an affirmative answer to the question concerning existence of zero cycles of degree one versus existence of rational points for principle homogeneous spaces defined over fields of virtual cohomological dimension 2. She further explained with some examples to show how the corresponding question for projective homogeneous varieties has a negative answer in general.

Professor K P Bhargava Memorial Medal Lecture

Dr. Sudhanshu Vрати, National Institute of Immunology, New Delhi delivered *Professor K P Bhargava Memorial Medal (2005) Lecture* on 16th September 2006 at the Department of Zoology,



Banaras Hindu University, Varanasi under the aegis of Varanasi Local Chapter of INSA on the title “*Japanese Encephalitis Vaccine: Moving Away From Mouse Brain*”. Dr. Vrati spoke on the various types of vaccines developed in his laboratory against Japanese encephalitis and their differential efficacy against this order, using mouse as a model. The summary of the lecture is as under:

Japanese encephalitis (JE), commonly known as brain fever is caused by a flavivirus named Japanese encephalitis virus, which is transmitted to human beings by mosquitoes. The disease appears mostly in the epidemic form that is being reported regularly from various parts of India. A mouse brain-derived, formalin-inactivated JEV vaccine is commercially available which induces protective immunity of uncertain duration in the recipients. Besides, the vaccine has certain side effects and is expensive. They have developed a number of JE vaccine candidates that are at various stages of development. Technology for a tissue culture derived JE vaccine has been transferred to industry. A recombinant adenovirus based JE vaccine has shown great potential in mice and soon they plan to test its efficacy in human. Results of these studies and others were presented in the talk.

Following the Lecture, Dr. Rajiva Raman, Convener of the Local Chapter read the citation of Dr. Vrati. Professor M S Kanungo, FNA, Emeritus Scientist, BHU presided over the function of the lecture and handed over the citation, medal and the cheque of Rs.10,000/- to Dr. Sudhanshu Vrati. The lecture was well attended by the faculty and students, largely from Biology Department of BHU.

Jawaharlal Nehru Birth Centenary Lecture (2005)

Dr. J Gowrishankar, FNA, Director, Laboratory of Bacterial Genetics, Centre for DNA Fingerprinting & Diagnostics, Hyderabad has delivered the *Jawaharlal Nehru Birth Centenary Lecture (2005)* on 20th September 2006 at the Department of Zoology, Banaras Hindu University, Varanasi. The Lecture on “*The Enemy Within: Transcription and the Occurrence of Toxic Chromosomal R-Loops in Bacteria*” was delivered under the aegis of Varanasi Local Chapter of INSA. The summary of the lecture is as under:

The landmark discovery more than fifty years ago of the structure of DNA (with its two strands of complementary sequence intimately inter wound in an eternal embrace) was fairly quickly followed up by the establishment of the “central dogma” of molecular biology. The central dogma states that the information encoded in DNA is “transcribed” into RNA (based on the same complementarity principles that underlie the mechanism of faithful DNA replication), and then “translated” into the primary structures of proteins.

That translation occurs co-transcriptionally in bacteria is well known, but it is only in the last few years has the understanding emerged why this should be so. There are at least two direct consequences of the uncoupling of translation from bacterial transcription. First, the exposed transcript region is prone to be cleaved by the endonuclease RNase E. Second, the Rho protein binds the nascent transcript and, in association with factors such as NusG, “catches up” with the elongating RNA polymerase in *cis* to mediate premature termination of transcription.

They have obtained evidence to suggest that in *E. coli* mutants deficient in Rho or NusG, there is an increased occurrence of deleterious R-loops (that is, RNA-DNA hybrids) in the chromosome. Each of the R-loops is generated presumably by re-annealing of a nascent untranslated transcript with the template DNA strand in the negatively supercoiled domain upstream of the transcription elongation complex. Furthermore, RNase E acts to potentiate R-loop formation in the *rho* and *nusG* mutants. The R-loops are toxic because of their effects on transcription and replication.

In eukaryotes, the steps of mRNA processing (capping, splicing, polyadenylation) and of mRNA export are now known to occur co-transcriptionally. Recent reports indicate that interference with these processes also leads to the generation of deleterious R-loops, in both yeast and vertebrate cells.

Following the Lecture, Dr. Rajiva Raman, Convener, Local Chapter read out the citation of Dr. Gowrishankar. Professor T V Ramakrishnan, former Vice-President of INSA presided over the function and presented the citation and a cheque of Rs.5000/- to Dr. Gowrishankar.

Awards and Honours

UGC-Hari Om Ashram Trust National Awards-2004

Prof DD Sharma, FNA - Sir CV Raman Award for Research in Physical Sciences

Prof N Balakrishnan, FNA - Homi J Bhabha Award for Applied Sciences

Prof Rahul Pandit, FNA and Dr Maithili Sharan, FNA - Meghanand Saha Award in Theoretical Sciences

Prof MRN Murthy, FNA - Jagdish Chandra Bose Award for Life Sciences

UGC-Swami Pranavananda Saraswati National Awards-2004

Prof R Sukumar, FNA - for Environmental Science & Ecology

Prof. CNR Rao, FNA, Hony. President, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore has been conferred the Honorary Fellowship of the Institute of Physics, London alongwith Prof. Ginsburg. Professor Rao has also received Honorary Doctorates from the University of Stellenbosch (S. Africa) and UP Technical University

Prof. AS Raghavendra, Dean, School of Life Sciences, has been elected as a Fellow of TWAS on 4th September, 2006 during the 17th General Meeting of TWAS held in Brazil in recognition of his outstanding contribution in the area of Systems Biology, related to Plant Science.

Correction:

Prof RC Mahajan has been honoured with UC Chaturvedi Life Time Achievement Award of Microbiology 2006 given by Indian Association of Medical Microbiologists.

Appointments



Dr Thirumalachari Ramasami, FNA, former Director, Central Leather Research Institute (CSIR), Chennai has joined as Secretary Department of Science & Technology on 25th May 2006. He holds Masters Degree in Leather Technology from the University of Madras

and Doctor of Philosophy in Chemistry from the University of Leeds, UK. He has made significant contributions to the fundamental understanding and some relevant applications of the chemistry of chromium. His work has led to gaining of mechanistic insight into the chromium induced apoptosis processes and host guest interactions associated with biomolecular systems on the one hand and greening of chromium based industrial practices on the other. Dr. Ramasami has enabled Indian Leather sector to avert what could have been a major industrial catastrophe by leading the implementation of viable technological solution to environmental problems and simultaneously enabled India in gaining global leadership in fashion forecasting of leather colours. He has won several awards including Shanthi Swarup Bhatnagar Prize in Chemical Sciences and Padma Sri for his contributions to Science and Engineering. He is a

Fellow of many National and International academies including Indian Academy of Sciences and Indian National Science Academy. He has published over 220 research papers in peer valued journals, chapters in books and also has filed more than 30 patents.



Dr. Subramaniam Nagarajan, FNA, took over as Chairperson of Protection of Plant Varieties and Farmers' Rights, Department of Agriculture, Government of India. He was Director of Indian Agricultural Research Institute, New Delhi. Dr. Nagarajan has done extensive research and

proved that the urediospores of Pgt survive during the hot summer months in the Nilgiri and Palni hills on the off-season crop/grasses. He has also done extensive research that lead to the understanding of lifecycle of the causal agent of Karnal bunt disease of wheat. His research enabled India sustain the wheat exports. He received several national and international awards and prizes for his contributions to agriculture sciences. He is a Fellow of National Academy of Sciences (Allahabad), National Academy of Agricultural Sciences (New Delhi) and elected to the Fellowship of the Academy in 2006.



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Obituaries
Professor Somesh Das Gupta

(B: 3 September 1935; D: 29 April 2006)



Professor Somesh Das Gupta was born in Kolkata. He completed his B.Sc in Mathematics and M.Sc. in Statistics from Calcutta University. He then completed his Ph.D in Statistics from the University of North Carolina, USA in 1962 and joined the faculty of Columbia University and returned to India in 1964 and

joined the Indian Statistical Institute, Kolkata. In 1967, he joined the University of Minnesota, USA and continued on the faculty of the School of Statistics as an Associate Professor during 1967-70 and Professor during 1970-86. In 1982, he again joined the ISI, Kolkata and continued on the faculty of the Division of Theoretical Statistics and Mathematics until his retirement 1995. He was Emeritus INSA Senior Scientist during 1996-2000.

Prof. Das Gupta served on the editorial board of *Sankhya (The Indian Journal of Statistics)* and as Editor during 1993-2001. He was also in the Editorial Boards of the *Journal of Multivariate Analysis* (1976-83) and *Indian Journal of Pure and Applied Mathematics* (1995-97). He was also Fellow of American Statistical Association and the Institute of Mathematical Statistics and elected as member of the International Statistical Institute in 1979; founder fellow of the West Bengal Academy of Sciences & Technology. He was also President of the Statistics Section of Indian National Science Congress in 1994-95.

Prof. Das Gupta made important contributions to the areas of Multivariate Inference and Distribution, Classification and Discrimination, Probability Inequalities, Stochastic Majorization and Gini Analysis and published over 60 research papers and given several lectures in national and international forums.

Prof. Das Gupta was elected to the Fellowship of Indian National Science Academy in 1992.

— Contributed by his son Dr Abhijit Dasgupta

Prof. Amiya Bikash Chowdhury

(B: 25 November 1923; D: 27 June 2006)



Prof. Amiya Bikash Chowdhury was born in Chittagong, Bangladesh. Prof. Chowdhury obtained his MBBS degree in 1947 and Ph.D. in 1956 from University of Calcutta. He worked at Cornell University Medical College, New York, USA from 1957-1958 as a visiting lecturer.

He started his career as Lecturer, Dept. of Helminthology, School of Tropical Medicine in 1954 and was elevated to the post of Prof. & Head in 1959. He also served as Prof. and Chairman, Dept. of Parasitology, School of Tropical Medicine from 1964-1981. Prof. Chowdhury became the Director of School of Tropical Medicine in 1972 and retired in 1981. He also worked as Principal Investigator, Collaborative Research Programme with John Hopkins University, USA and Chairman, Centre for Study of Man and Environment.

Prof. Chowdhury was an outstanding parasitologist, investigated host-parasite relationship, immune response in parasitic infections, their modalities, modulations and impact on clinical expression and drug action. He had done pioneering studies on microchemical constituents of parasites and their functional significance. Studied population biology and transmission dynamics of parasitic infections. Identified factors regulating natural abundance of parasitic pathogens. Arrested the development of human hookworms as adaptation to unfavourable external environment. He was Fellow of National Academy of Medical Sciences (India), Royal Society of Tropical Medicine and Hygiene (UK), Indian Society for Parasitology and West Bengal Academy of Science & Technology.

He published more than 400 papers in both national and international journals and was on the Editorial Board of several journals of repute. He was credited with original research work in parasitic and helminthic diseases.

He was the recipient of several awards such as Goswami Memorial Medal, 1971 of Indian Medical



Association, Sir Nilratan Sarkar Memorial Oration, 1975, Warner Oration, 1974 of Indian Association of Gastroenterology, Laschimpat Oration, 1974 of National Academy of Medical Sciences, Khantimani Nagendra oration, 1977 and Basanta oration, 1981 of Calcutta University.

Prof. Chowdhury held many responsible positions including Member, Scientific Advisory Board, Haffkine Institute, Bombay; Member, Research Council, Central Drug Research Institute, Lucknow; Member, Armed Forces Medical Research Committee; Member, Council and Governing Body, Indian Statistical Institute, Kolkata; Member, Governing Body, Scientific Advisory Board, ICMR; Member, Scientific Advisory Committee, Cholera Research Centre, Kolkata and Tuberculosis Research Centre, Chennai; Member, Scientific Advisory Committee for S S Bhatnagar Award, Chairman, Scientific Advisory Committee, Rajendra Memorial Research Institute, Patna and Chairman, Committee on Schistosomiasis, Dept. of Science and Technology, Govt. of India.

In his death, Scientific World has lost one of the most distinguished Parasitologist with amicable personality. He was not only a distinguished teacher and researcher, but was a good human being. Those who came in contact with him knew his remarkable ability as an orator and he always encouraged young scientists to excel in research. He was friend, philosopher and guide to many young researchers.

Amiya Bikash Chowdhury was elected to the Fellowship of Indian National Science Academy in 1972 and served as a Member of its Council (1994-96).

— *Contributed by Dr. Sujit Kumar Bhattacharya, FNA*

Professor Vishnu Ganesh Bhide

(*B*: 8 August, 1925; *D*: 25 June, 2006)

Professor Vishnu Ganesh Bhide was born in Daryapur, Maharashtra. He did his Ph.D. from Nagpur University in 1954 and from University of London, UK in 1955 specializing in Solid-State Physics and Materials Science. He had served as Director, Inter-University Consortium for DAE Facilities, Vice-Chancellor, University of



Poona (1984-85) and Scientist (Director's Grade), National Physical Laboratory (1975-82).

Professor Bhide had developed a new method on multiple beam interference technique to delineate ferroelectric domains and to study domain dynamics. His work on audio frequency and radio frequency electroluminescence in ferroelectrics demonstrated domain switching and the existence of a very thin layer of low dielectric constant on the surface of ferroelectric BaTiO₃ crystals. Bhide pioneered research work on Mossbauer spectroscopy in the country, using Mossbauer spectrometer he himself made. Using this technique, he brought out the existence of temperature-dependent soft mode which disappears at about the Curie temperature and causes ferroelectric phase transition. Along with his students, he developed know-how for making liquid crystals displays He also contributed to the development of amorphous silicon solar cells. He was recipient of Padma Shri from Govt. of India; K Rangadharma Rao Memorial Lecture (1985), Daulat Singh Kothari Memorial Lecture (1999) and Indira Gandhi Prize for Popularization of Science (2002) of INSA.

Professor Bhide was a towering figure in the Pune educational scene for the past several decades and helped in establishing many institutions including the National Centre for Radio Astrophysics (NCRA) of TIFR within the Pune University Campus. His exploratory programme was very original in concept and enabled children of different ages to partake and learn the exciting aspects of sciences and a very large number of children benefited from it.

Vishnu Ganesh Bhide was elected to the Fellowship of Indian National Science Academy in 1968 and served as a Member of its Council (1975-77), Secretary (1971-74) and Treasurer (1981-84).

Professor Basanti Dulal Nag Chaudhuri

(*B*: 6 September, 1917; *D*: 26 June, 2006)



Professor Basanti Dulal Nag Chaudhuri was born in Kolkata (West Bengal) and did his Ph.D. from University of California, Berkeley, USA in 1940 and D.Sc. (*h.c.*) from Andhra and Kanpur Universities specializing in Nuclear Physics. He was the Senior Scientific Adviser to

UNEP, and Director, Saha Institute of Nuclear Physics, Kolkata.

Nag Chaudhuri made noteworthy contributions to nuclear isomerism, artificial radioactivity, Cerenkov phenomenon and low-temperature plasma. In 1960 he was appointed as Palit Professor of Physics. In 1956, Dr Nag Chaudhuri was deputed by the Calcutta University to work as Director in the newly founded Saha Institute of Nuclear Physics in addition to his duties as Palit Professor of Physics at Calcutta University. During his research career he made notable contributions in the field of nuclear isomerism, artificial radioactivity and low temperature physics. He had served as Member (Science) Planning Commission where, in addition to Science and Scientific Research, he was Incharge of education, health, social welfare, housing and urban development. He had also been Chairman of the Cabinet Committee on S&T and also Scientific Adviser to the Raksha Mantri and Director-General of Defence Research and Development Organization. He was also associated with the IIT, Delhi as Chairman of Board of Governor and Vice- Chancellor, Jawaharlal Nehru University, New Delhi. He was the recipient of Padma Vibhusan from Govt. of India.

Basanti Dulal Nag Chaudhuri was elected to the Fellowship of Indian National Science Academy in 1964 and served as its Secretary (1969-70), Vice-President (1971-72), Foreign Secretary (1973-76) and Additional Member (1978).

Professor Charles Herbert Brown

(B: May 22, 1912; D: December 20, 2004)

Professor Charles Herbert Brown was born in London, UK and did his Ph.D. in 1938, D.Sc. (*h.c.*) in 1968 from the University of Chicago, U.S.A. specializing in Organoborane Chemistry. He was the R.B. Wetherill Emeritus Research Professor.

Brown explored reduction of carbonyl groups by diborane – first reduction by a hydride reagent; co-discovered alkali metal borohydrides; discovered the alkali metal hydride route to diborane; developed the complex hydrides as preferred reagents for organic reductions; discovered the hydroboration reaction and explored it; hydroborated α -pinene with borane

Indar Jit Dewan

(B: 15 August, 1912; D: 22 July, 2006)



Indar Jit Dewan was born in Village Purain, District Ludhiana. He did his MBBS in 1935 in Anatomy and Ph.D. in 1951 from London University. He was a teacher of Anatomy since 1944. He had published over 96 original papers and 4 case reports in national and international journals of repute and made over 90 communication at conferences. Even at the age of 90 years he continued to regularly work publish original research papers. He had worked on various positions in different institutions such as Professor of Anatomy, Medical College, Amritsar, Principal & Professor of Anatomy, Medical College, Rohtak and Professor of Anatomy and Forensic Medicine, PGI, Chandigarh. He was Founder Fellow, National Academy of Medical Sciences, Member and Past-President, Anatomical Society of India and Senior Member Anatomical Society of Great Britain and Ireland. He was recipient of B.C. Roy National Award, Professor Shamer Singh Award Anatomical Society of India and MAH Sadiqui Oration of KE Medical College, Lucknow.

Prof Indar Jit Dewan was elected to the Fellowship of Indian National Science Academy in 2002.

Foreign Fellow

complexes to produced diisopinocampheylborane, an asymmetric hydroboration reagent; achieved the hydroboration-oxidation of *cis*-2 butene to form optically active 2-butanol in 98% enantiometric excess, the first efficient asymmetric synthesis not performed by an enzyme. He was Member of American Chemical Society and Fellow of US National Academy of Sciences, American Academy of Arts and Sciences and Honorary Fellow, Chemical Society, London. He was recipient of Nobel Prize in Chemistry (1979) and number of various national/international awards.

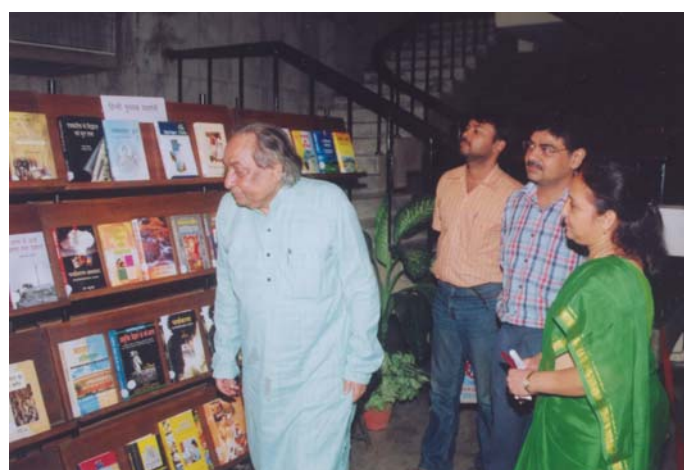
Professor Herbert Charles Brown, NL was elected to the Fellowship of Indian National Science Academy in 1978.



News about the Secretariat

Hindi Week Celebrated

A Hindi Week was observed in the Academy during 14-20 September, 2006 to promote official language. During the week various programmes such as Hindi Dictation, Hindi Essay Competition, Hindi Sulekh and Hindi Quiz Competition were arranged. Staff Members in large numbers, participated in these programmes with great enthusiasm. A lecture on "Hindi and Science" was delivered by Dr RD Sharma, and awardee of Indira Gandhi Prize for Popularization



Dr. RD Sharma inaugurating the books during Hindi Week function

of Science on 14th September, 2006 on Hindi Diwas. Dr Sharma also inaugurated an exhibition of Hindi books. Prizes were presented on 20th September, 2006 to the staff members. A lecture on "Satellite Cloud Imaginary Imaging" was also delivered by Shri Brij Bhushan, Dy Director General, India Meteorology Department, New Delhi. This Lecture was devoted to apprising common man as well as scientific community about instruments on board a Meteorological satellite such as INSAT, scanning of clouds by INSAT, inferences from a satellite cloud picture, the additional information one can derive from a satellite imagery data etc. During the prize presentation an appeal was made by the Executive Secretary, Shri Sahni to the staff members to maximize the secretariat work in official language.

Retirement

Shri Dinesh Chandra, Assistant Executive Secretary I, superannuated on 30th September 2006 from the services of the Academy. He joined the Academy on 16th August 1974. During his tenure, he worked for Council, International, Administration and supervised Estate and House keeping affairs of the Academy.



Shri Dinesh Chandra receiving memento and bouquet from Shri J M Gupta, AES (Admn)

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