

NIAS NEWS

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The Inaugural Issue

The news about the success story of the National Institute of Advanced Studies has reached the length and breadth of the country and beyond. There have been very often enquiries about what is the latest in NIAS, from the Participants, Associates and many others who are even remotely connected with the Institute. We thus make a beginning with issue of Newsletters commencing with the inaugural issue heralding the New Year. This will cover very briefly the growth of the Institute, its activities, future plans as well as current news, encompassing all activities till 31 December 1992. We intend bringing out NIAS NEWS once in six months and as we advance, we will make definite endeavour to make it more frequent.

ORIGIN AND GROWTH OF THE INSTITUTE

Some two decades ago an illustrious son of India, Mr. J.R.D. Tata had conceived the visionary idea that there should be an Institute to bring senior administrators both in government and private industry to work together in mutual interaction based on proper and complete information for discussion. For various reasons this enlightened concept could not be immediately implemented.

Years later, sometime in mid 1984, Mr. Tata got the proposal reviewed by a committee of experts in order to re-define the need for a new type of Institute, which would encourage the development of responsible, thoughtful, far seeing men and women capable of innovation as well as action. The committee confirmed the need for such an Institute of advanced study in India, after taking note of existing institutions in the fields of technology, management and other institutions of higher learning in the country, and made various suggestions as to how the idea could be implemented. It was during this time that Dr. Raja Ramanna, renowned nuclear physicist and former Chairman of the Indian Atomic Energy Commission, was consulted and his services were sought for building and steering the new institution. The Institute has been initially funded by the Dorabji Tata Trust. Mr. J.R.D. Tata and Dr. Raja Ramanna are the first founder Chairman and first founder Director of NIAS respectively.

The philosophy behind the work of the Institute is to provide an atmosphere of multi-disciplinary research involving both science and the humanities, among these being subjects such as Psychology, Philosophy, Sociology etc.

A course for senior Government Officers, and Managers of Public and Private sector undertakings, which was essentially for them as participants rather than as trainees and to understand one another, was initially planned for a year. But it was quickly realised that it was not possible for Managers of that level to be away from their posts for such a long period and the duration was finally reduced to about a month.

Once the mind was made up, there was no question of sitting back. The pioneers made sure that the activity commenced at the earliest, whether the infrastructural facilities were immediately available or not. Thus the first few courses on 'Integrated Approach to Knowledge and Information' were held in different places in the country. The first four courses were held in places like Pune, Dimna near Jamshedpur, Indian Institute of Science, Bangalore, and the Institute for Social and Economic Change, Nagarabhavi, Bangalore. During this time, efforts were made in getting land, and the dream became a reality. The Indian Institute of Science through the Government of India sanctioned five acres of land within its campus where we are functioning today. This provided us an atmosphere of Science and Technology around us which was our keen desire. The fifth and sixth courses were conducted in the new complex even though it was half way through its construction. NIAS was inaugurated by Mr. J.R.D. Tata in its final location on 12 March 1992. All the courses to-date, with the participation of about 15 to 20 Officers per batch, have been greatly appreciated by the sponsoring agencies including government, private and public sector undertakings.

THE FACULTY

The Faculty is headed by Dr. Raja Ramanna and consists of Dr. R.L. Kapur, Deputy Director, Maj Gen M K Paul, VSM (Retd) Contoller, Dr B. Sen, Fellow, Dr. P.K. Shetty, Agricultural Scientist, and Susmita Subramanyan and Keerti Shekar, Research Associates.

Dr. Kapur is a renowned Psychiatrist and Ph.D from Edinburgh University. He is a fellow of the Royal Society of Psychiatry, U.K., Indian Academy of Sciences and National Academy of Medical Sciences. He is also recipient of Commonwealth Medical Fellowship and the Fulbright Fellowship. After joining NIAS he has been WHO Consultant to the Sultanate of Oman and Indonesia to help the respective Governments in the field of Psychiatry. His research interests include epidemiology, cross-culture psychology and contributions of Indian Philosophy to modern Psychiatry.

One of the major responsibilities of Dr. Kapur is planning and conducting the most important annual course on "An Integrated Approach to Knowledge and Information".

He is Chief Investigator for two Major projects, "Creativity among Indian Scientists" and "Psycho-social Study of Alienation amongst Indian Youth", which is funded by the DRDO.

The first topic attempts in finding the correlates of Scientific creativity and answers to the question as to what are those psychological factors which come in the way of Indian Scientists contributing their best to the advancement of Science. The second one aims at finding out why, when faced with socio-political problems in the Country, some youth adopt violent methods of protests while others take to constructive activities.

In these projects, Dr. Kapur is assisted by Dr. Biswajit Sen, Fellow, who was a Research worker at the Institute of Psychology, London and also a WHO Consultant at Geneva. The other younger participants in these projects are Susmita Subramanyan, a Psychologist and Keerti Shekar, a Sociologist.

Department of Science and Technology (DST) requested Director NIAS to critically review certain major R & D projects which are initiated during the Seventh plan. The present study emphasises on progress made, achievements of the R & D effort, difficulties encountered, and how far the objectives of the projects have been achieved. These inputs would be useful in providing helpful guidelines to on-going projects, and subsequent projects of the Eighth plan. Dr. P.K. Shetty is an active participant in this project.

ASSOCIATES

With the experience of conducting a number of participatory courses, seminars, workshops, symposia, conferences

etc encompassing all disciplines of Sciences and over-lapping Humanities, NIAS thought it appropriate that its activities and facilities should also benefit those who are interested in our programme. In order to create the necessary atmosphere for such activities it has been decided to initiate a scheme for inviting eminent persons, professionals and research scholars to become Associates of the Institute.

Accordingly two categories of Associates of NIAS have so far been instituted. We have as on date on our roll 28 Senior Life Associates (SLA), and 97 Senior Associates for 3 years (SA-3). Participants of all NIAS courses will also be Associates.

The programme for the Associates commences on 11th January 1993 with an inaugural meeting, and a Veena Recital by Dr. V. Doreswamy Iyengar in the evening followed by a contributory dinner.

VISITING CHAIRS

Towards evolving our programme connected with Advanced Studies, we have created several visiting chairs named after very distinguished citizens.

HOMI BHABHA CHAIR

The first visiting chair to be created was in the name of Homi Bhabha, the famous Scientist and founder of the Indian Atomic Energy Programme, for work in the area of energy and environment and also aspects related to the organisation and development of Science in India. The Homi Bhabha chair was instituted by the Atomic Energy Commission, the Government of India.

This august chair is held by Professor C.V. Sundaram, a reputed Metallurgist who has specialised in extractive metallurgy of rare metals and the development of special materials for application in nuclear engineering, aero-space, electronics and defence programmes. He had made outstanding contributions to materials science programmes at the Bhabha Atomic Research Centre before taking over the responsibility of leading the Indira Gandhi Centre for Atomic Research, Kalpakkam - where his noteworthy achievement was completing the first phase of commissioning of the fast breeder test reactor. Sundaram is presently the President of the Indian Nuclear Society.

Sundaram's subject of study at the Institute relates to an assesment of the role of fast breeder reactors and thorium utilisation in the future course of the Indian Atomic Energy programme.

J.R.D. TATA CHAIR

The second important Visiting Professorship in the name of J.R.D. Tata was instituted for the study of Sociology, Demography and Psychology, with the financial assistance of the Tata group of companies.

The first occupant of the J.R.D. Tata chair is Professor M.N. Srinivas, who is the honorary Chairman, Institute for Social and Economic Change, Bangalore.

Prof. Srinivas was a University Lecturer in Indian Sociology at Oxford, and started Departments of Sociology in India, first at Baroda and subsequently in Delhi. He is one of the founding members of the Institute for Social and Economic Change, Bangalore.

Prof. Srinivas has held Professorships in Universities abroad and is the recipient of T.H. Hawksley and the W.H.R. Memorial Medal of the Royal And Hartel Society, Great Britain and Ireland. Srinivas is the Honorary Fellow of the Royal Society of London and Honorary Member of American Academy of Arts and Sciences, Boston and American Society of Philosophy.

SARVEPALLI RADHAKRISHNAN CHAIR

Yet another important chair named after Sarvepalli Radhakrishnan, the great philosopher - statesman, has been instituted with financial assistance from the Hindustan Imports and Exports Private Limited., for work on issues related to Scientific and Moral Philosophy.

Prof. B.V. Sreekantan, former Director of the Tata Institute of Fundamental Research, Bombay is the first incumbent. Sreekantan was the Indian National Science Academy Srinivasa Ramanujam Professor during 1987-92. Sreekantan has had a long research career of 44 years in fields relating to Cosmic Rays, high Energy Physics and High Energy Astrophysics. He is interested in the Philosophy of Science and various systems of eastern and western philosophies, and has lectured on these topics.

Sreekantan is currently engaged in collating all the information that is available on various aspects of "Consciousness" from different branches of science and from various systems of Philosophy, both Eastern and Western consciousness is at the root of the mind and body problem.

LECTURES/PUBLICATIONS/PRESENTATIONS BY FACULTY MEMBERS (1992)

DR. RAJA RAMANNA, DIRECTOR

A) Lectures:

1. *Limits to Science* - Address at New York in a Symposium entitled "Science and Human Values on 5 July, 1992.
2. M.Ct.M. Chidambaram Chettyar Memorial Lecture on "Security Deterrence and the Future" at the Madras University on 8 July, 1992
3. A Special Lecture on "Physical Reality" at the Symposium on "Space and Environment" at Sri Jayachamarajendra College of Engineering, Mysore - 28 August, 1992.

4. Padmapani Lecture at Tibet House, New Delhi on "Scientific Philosophy with reference to Buddhist Thought" - 21 September, 1992.
5. CSIR Foundation Day Lecture on "50 Years of Science in India" at Central Food Technological Research Institute, Mysore - 26 September, 1992.
6. Lecture on "Reflections on Philosophy of Science" at Indira Gandhi Centre for Atomic Research, Kalpakkam - 12 October, 1992.
7. Lecture at National Defence College on "India's Nuclear Option and Implications for Conventional Forces" - 3 November, 1992.
8. Lecture at the United Service Institution of India on "A Nuclear Policy for India" - 4 November, 1992.
9. Lecture on "Is there any anti-science atmosphere in the country?" at Mysore University, Manasagangothri, Mysore - 18 November, 1992.

B) Publication:

1. "National Scene in Education, Science and Technology - Some Reflections" - published by the Indian Institute of Science Alumni Association, Bangalore, 1992.

C) Under-Publication:

1. "The Structure of Music in Raga and Western System" - under publication by the Bharatiya Vidya Bhavan.

PROF. R.L. KAPUR, DEPUTY DIRECTOR

A) Lectures:

1. "Contributions of Ancient Indian Philosophy to Psychiatry" - Lecture delivered at the Indian Psychiatric Society Annual Conference held during 22- 24 January, 1992 at New Delhi.
2. "Violence in India" - Lecture delivered at the Centre for Cellular and Molecular Biology on 15 May, 1992 at Hyderabad.
3. "Priorities in Research" - Talk given on Research Methods in Psychiatry, on 30 September, 1992 at Bogor, Indonesia.

B. Publications:

1. "The Family and Schizophrenia - Priority Area for Intervention Research in India". **Indian Journal of Psychiatry**, 1992, 34(1),3-7.
2. *Psycho-Social Study of Indian Youth: A Psychological Study of Militancy in Punjab (1992)* - a report to the D.R.D.O. (with Dr. Biswajit Sen).
3. "Stress: Neurobiology and Neuroendocrinology" - A review, under publication in the *Journal of Indian Institute of Science*.

PROF. C.V. SUNDARAM, HOMI BHABHA VISITING PROFESSOR

A) Lectures/Publications:

1. "Technology Trends in the Extractive Metallurgy of Zirconium, Titanium, Tantalum and Niobium" (with Ch. Sridhar Rao, and A.K. Taneja). Mineral Processing and Extractive Metallurgy Review, U.S.A., Vol. 10 (1992), pp 239-265.
2. Lectures on Nuclear Materials and Extractive Metallurgy of Rare Metals (Department of Metallurgy, Indian Institute of Science, Bangalore, April 1992).
3. Nuclear Materials Processing - Challenges, Achievements and Prospects (Annual Meeting of the Indian Society for Advancement of Materials and Process Engineering, NAL, Bangalore, August 7, 1992).
4. "Aspects of History of Chemistry and Metallurgy in Ancient and Medieval India" (with Baldev Raj), Invited Lecture at the Indo-French Seminar on the History of Development of Science in India and France (Covelong, near Madras, October 20, 1992).
5. "Profiles in Rare Metal Metallurgy" (Founder's Day Lecture, October 30, 1992, B.A.R.C., Bombay).
6. "Realisability of Nuclear Power" (in special publication of the Indian Institute of Science Alumni Association, on Strategies for Science and Technology and Higher Education) - re-printed in the Hindu of December 2, 1992 (Science, Engineering and Technology Section).
7. History of Metallurgy, Ancient and Modern (Two lectures at the Winter School on the History of Science, Indian Institute of World Culture, Bangalore, November 24-25, 1992).
8. The Importance of Nuclear Power (Valedictory Address, The Bangalore Science Forum, National College, Bangalore, December 30, 1992).
9. Editorials for the Journal - Metals, Materials and Processes, and Indian Nuclear Society News

B. Under-Publication:

1. Chapters for a monograph on Breeder Reactors and Thorium Utilisation.

PROF. B.V. SREEKANTAN, SARVEPALLI RADHAKRISHNAN VISITING PROFESSOR

A) Lectures:

1. "Sources of Very High Energy Cosmic Rays" at Indian National Science Academy, Delhi, on 7 October, 1992.
2. "Universe as seen in High Energy Radiations" at Inter University Centre for Astronomy and Astrophysics, Pune, on 19 October, 1992.

3. "Universe in the light of Modern Physics and Astronomy" at Bangalore Science Forum, on 11 November, 1992.
4. "Astrophysics and Nuclear Science" at Indian Nuclear Society, Bombay, on 2 December, 1992.

B. Publications:

1. "Role of Fundamental Physics in Development" - under publication by the Indian Institute of Science Alumni Association, Bangalore.
2. Gamma Ray Telescope Natalya - II on Photon Mission Satellite (with S.I. Nikolsky *et al.* Advances in Space Research, 1992).
3. New Balloon-Borne Telescope System TICAL - MARK II for Hard X-ray Astronomy (with S.V. Damle *et al.* Advances in Space Research, 1992).

PROF. M.N. SRINIVAS, JRD TATA VISITING PROFESSOR

A) LECTURE:

1. Suryaprakash Memorial Lecture on "Changing Values in India Today" at the Indian Institute of World Culture, Bangalore, on 12 September, 1992.

B) PUBLICATIONS:

1. "On living a revolution and other essays" (1992), Oxford University Press, Delhi.

DR. BISWAJIT SEN, FELLOW

1. Presented a paper on "Evaluation and Research Pertaining to Training" at the National Workshop on "Rehabilitation of the Chronically Mentally Ill", on 15 November, 1992.
2. Lecture delivered on "Body and Mind" at a function organised by the Naval Foundation, on 20 December, 1992.

INFRA-STRUCTURAL BUILD-UP

For understandable reasons the infra-structural build-up had to be planned in Phases.

Phase-I consisting of living accommodation for twenty four participants, temporary Office Complex, Lecture Hall, Garage, and service facilities for water supply, electrification and first step sewerage system was completed by mid 1992.

Phase-II consisting of living accommodation for seven participants, Library and Study, Conference Room, Dining Hall and Kitchen Complex is in progress and likely to be completed by mid January 1993.

CHEMICAL PESTICIDES AND THE ENVIRONMENT

Dr. P.K. Shetty

Ever since the publication of Rachel Carson's famous book 'Silent Spring' in 1962, a vast amount of research has been conducted on the presence of pesticides and their degradative products in soil, air, and water, and on biota. Pesticides are toxic chemicals, used in plant protection, storage of food grains, public health programmes, household sprays, etc. The world wide consumption of pesticides has been increasing progressively; in 1980, it was 4,571 thousand tons and the expected consumption by 1995 is 6,445 thousand tons. Pesticides are usually aimed at target organisms within specific components of the environment. However over-dependence and improper use have led to pollution, biomagnification, destruction of beneficial organisms, resistance in target organisms and shift in ecobalance. Though pesticides have provided a temporary solution to the pest problems, these have long lasting effects on living organisms in general and the ecosystem environment. There have been many occasions when pesticides have caused serious damage. According to a recent report, there are about 5,00,000 cases of accidental human poisoning and 10,000 deaths per year attributable to pesticides. Several survey reports have indicated the presence of chemical residues in food, dairy products, vegetables, fruits, animal feeds and even breast milk.

It is true that the loss of agricultural produce due to pests and diseases amount to some Rs. 7000 crores per year in India. Pesticides have been an essential part of modern agriculture, in achieving the prime objective of minimizing such losses. But as the threat to the environment from toxic chemicals continues, there is need for an increased public awareness of the facts about these chemicals. In this context, it is also relevant to mention that many pesticides like DDT, BHC which are still used in India have been already banned in the West. Ensuring safety in use of chemicals involved in our highly industrialised culture is a dynamic challenge. Better education to the farmers on need based and judicious use of chemicals is necessary. It is obvious that the more potent the pesticide, the greater the danger to the environment. So, pesticides which are environmentally and ecologically safer should be encouraged. The concept of an integrated pest management system needs to be developed and adopted. More attention should be given to biological pest control, microbial and botanical pesticides, and even to natural farming. Although, alternatives to chemical pesticides hold promise, it requires additional research, proper support system, and educational efforts.

(The author is an Agricultural Scientist and the youngest Ph.D in NIAS. His area of interest is Microbiology and Environmental Sciences.)

GUEST SPEAKERS

The Guest Speakers who delivered lectures in the Institute on important topics during the year are:-

1. "Management of large R & D projects in Scientific Institutions in India", by Dr. P.J. Lavakare (formerly Adviser Department of Science and Technology, New Delhi; Executive Director, United States Educational Foundation in India).

Dr. Lavakare pointed out that the Science and Technology Component in the Seventh Plan outlay was only about 2.35% of the total, almost equally shared by the Central S & T agencies (including Atomic Energy, Space, DSIR and DST) and the Socio-economic Ministries. (spread over some 24 programmes including chemicals, energy, agriculture, health etc). In the Eighth plan outlay for R & D (S & T) (Rs. 8369 crores for 1985-90), the respective allocations for the S&T Depts, the Socio-economic Ministries, Extra-mural research and Defence R & D have been indicated as Rs. (in crores) 2300;2200; 606 and 3158. Dr. Lavakare observed that the funding of extramural research has been crucial for supporting and nurturing basic research in the Universities and the Institutes of higher education.

2. "Nuclear power in the U.S.A. - The present Scenario" by Dr. Govinda S Srikantiah (Scientific Adviser, Electric Power Research Institute, California, U.S.A.).

The gist of the lecture is that the nuclear share of electricity generation in the U.S.A. is over 20 per cent, though no new stations were commissioned during the eighties. With improved performance of nuclear power stations, expected simplification in licensing procedures, growing concern about environmental pollution (from the burning of fossil fuels) and the signs of favourable trends in public acceptance, Dr. Srikantiah expected that nuclear power will stage a come-back in the U.S.A., in the foreseeable future.

3. "Current Status of Cold-Fusion Research" by Dr.M. Srinivasan (Head, Neutron Physics Division, B.A.R.C., Bombay).

Cold-fusion - designating the fusion of heavy-hydrogen nuclei on the surface of a metal electrode (like palladium, titanium or nickel) in an electrolytic cell - has been the subject of extensive investigation and much controversy, since the first claims were made by two electro-chemists from the U.S.A. in March 1989. Dr. M. Srinivasan has been leading 'cold-fusion' research in BARC, ever since that first announcement, and had recently attended the Third International Conference on Cold-Fusion, at Nagoya, Japan (October 1992). He reported that there are several experimental groups in Japan who are now actively engaged in this field, that there is positive evidence of generation of excess heat through 'cold-fusion' and the Japanese Government has proposed substantial funding to support research in this promising area. Dr. Srinivasan also reported more recent results (including those of his own group), where excess heat generation has been observed even in the electrolysis of light water, using nickel electrodes and this has made the situation even more intriguing.

IMPORTANT ACTIVITIES OF THE YEAR

1. Sixth Course on "An Integrated Approach to Knowledge and Information":

This was held during January 27 to February 22, 1992 and was attended by 17 participants. Post completion inputs by the participants have been taken into account in improving the course contents of the Seventh Course.

2. Workshop on "Documentation of Performing Arts":

This was held under the auspices of National Centre for Performing Arts, Bombay and conducted under the guidance of Dr. Ashok D Ranade during 15 September - 12 October, 1992.

The Workshop focused on linking musical practices with broader cultural perspectives. The participants were mainly folklorists and musicologists, thus combining two points of view having a bearing on deeper musical studies. Our Director, Dr. Raja Ramanna, delivered a Special Lecture on "The structure of music in raga and western systems".

3. Workshop on "Legal Issues of Urban and Land Management":

This was held under the auspices of National Law School of India University, Bangalore, and sponsored by the United Nations Centre for Human Settlements (HABITAT) between 10 and 11 December, 1992.

4. Seminar on "Complementarity and Interpretation of Quantum Mechanics":

The Institute was all set to conduct the above seminar during 16th and 17th December, 1992 but the same had to be cancelled at the last moment due to uncertainty caused by the strike by pilots of the Indian Airlines, though eminent

foreign participants had already arrived in Calcutta, well in advance.

SEVENTH COURSE ON "AN INTEGRATED APPROACH TO KNOWLEDGE AND INFORMATION"

This course is scheduled from January 11 to February 6, 1993. This course has been over subscribed by six participants, thereby bringing the score of the total participants to 30. This is the most important event of 1993.

NIAS LIBRARY

The library at NIAS is both liberal and selective in its scope with an emphasis on subjects and disciplines relevant to the programmes of the Institute. It has an uncommon and rich collection of modern and current literature on sociology, psychology, history and philosophy and reviews of modern science. Special care has been taken to acquire books of an interdisciplinary character.

One of the aims has been to build a comprehensive and representative collection of books on India, its history, religion and philosophy, and society and culture. There is also an inspiring collection of biographies and writings of eminent scientists, thinkers, administrators and political personalities. There is a good reference section containing dictionaries, encyclopaedias, yearbooks etc which cater to the immediate reference requirements.

In addition to books, the Institute library subscribes to a select number of professional journals. The library also maintains a cassette section containing recordings of all the lectures from the courses and symposia conducted by the Institute.

*The NIAS wishes its readers
a Very Happy and Prosperous
New Year*