



Patrika

July 1986 No. 13 Newsletter of the Indian Academy of Sciences

52nd Annual Meeting

At the invitation of the Banaras Hindu University, the 52nd Annual Meeting of the Academy will be held at Varanasi from Friday 7 November to Monday 10 November 1986.

The tentative scientific programme for the meeting consists of scientific symposia, evening lectures and a series of lecture presentations by Fellows and Young Associates of the Academy.

The two specialized symposia are on "Crustal evolution and metallogeny in the Indian subcontinent" (Convener: Prof. R K Lal) and "X-ray crystallography of biopolymers" (Convener: Prof. M Vijayan).

The tentative scientific programme is given below:

Friday 7 November 1986

Inaugural function

Presidential address

Saturday 8 November 1986

Symposium on Crustal Evolution and Metallogeny in the Indian Subcontinent

Precambrian crustal evolution—R K Lal

Geophysical studies of the crustal structure—V K Gaur

The nature of the crust-mantle boundary and the generation of magma—A K Gupta

Radiometric dating of rocks in relation to crustal evolution—K Gopalan

Metallogenesis in relation to crustal evolution—Supriya Roy

Lecture presentations by Fellows and Young Associates

Lasers in chemistry and chemistry in lasers—J P Mittal

Dynamics of atoms and molecular clusters in complex crystals—K R Rao

Chaotic behaviour in the eigenstates of molecular systems—R Ramaswamy

Dynamics of freezing and liquid instability—B Bagchi

Business Meeting of Fellows

Evening Lecture

Sunday 9 November 1986

Symposium on X-ray Crystallography of Biopolymers

Structural variability of DNA: An X-ray diffraction study—V Sasisekharan

Anti-cancer drug Z-DNA double helix complex—structure and interactions—M A Viswamitra

Structure, transformation and interactions of proteins: An X-ray study—M Vijayan

How drugs affect enzyme function? A protein crystallographic approach—K K Kannan

Significance of high precision in enzyme structures—M Ramanadham

Structural studies on Belladonna mottle virus—M R N Murthy

Special lecture

Photomovement of Cyanobacteria—W Nultsch

Lecture presentations by Fellows and Young Associates

Vibrational spectroscopic studies on structure of liquid water and aqueous solutions—Surjit Singh

Biological implications of soil solarization—D K Arora

2D NMR: 'Crystallography' in solution—R V Hosur

Crystal engineering a solid state Diels-Alder reaction—G R Desiraju

Nitrogen loss from plant canopy—Y P Abrol

Evening lecture

Monday 10 November 1986

Lecture presentations by Fellows and Young Associates

Dynamics of homogeneous spaces and diophantine approximation—S G Dani

Corrugated wave fronts—R Nityananda

Gravitational mirages—S M Chitre

Exploration of reciprocal space of imperfect solids—S Lele

Microbial degradation of pesticides: Prospects and problems—N Sethunathan

The metallurgical synthesis of titanium alloys—D Banerjee

Laser fusion: Some studies at BARC—D D Bhawalkar

All Fellows and Young Associates attending the Annual Meeting will be paid first class return railway fare from their place of residence to Varanasi and back, in case they are unable to get travel support from other sources.

During the period of the Annual Meeting, the editorial boards and sectional committees will also meet at Varanasi.

Young Associates — 1986

H M Antia, Tata Institute of Fundamental Research, Bombay—*Solar Physics*

J Chandrasékhar, Indian Institute of Science, Bangalore—*Chemical Structure and Bonding*

A Chatterjee, Bhabha Atomic Research Centre, Bombay—*Physics of Nuclear Reactions*

P D Gupta, Bhabha Atomic Research Centre, Bombay—*Laser Plasma Interaction Studies*

S K Gupta, National Institute of Immunology, Hyderabad—*Immunology*

R Mehrotra, National Physical Laboratory, New Delhi—*Low Temperature Physics*

A K Raychaudhuri, Indian Institute of Science, Bangalore—*Physics of Glasses*

D J Saikia, TIFR Centre, Indian Institute of Science, Bangalore—*Observational Radio Astronomy*

J A Sekhar, Defence Metallurgical Research Laboratory, Hyderabad—*Metallurgy Solidification Processing*

Rakesh Tuli, Bhabha Atomic Research Centre, Bombay—*Plant Genetics*

Special Issues of Journals

April 1986 Issue of the Proceedings—*Chemical Sciences*, Vol. 96, No. 6

The Solid State and Structural Chemistry Unit of the Indian Institute of Science organized a Winter Workshop on Solid State Chemistry during 9-16 December 1985. The Workshop was sponsored by the University Grants Commission, New Delhi and the Department of Science and Technology.

The purpose of the Workshop was to focus attention on current trends in various aspects of solid state chemistry and to acquaint teachers and research workers in universities with recent developments in this area. The important topics covered were structural chemistry of oxides, computer simulation study of zeolite catalysts, structure and properties of glasses, Verwey transition in Fe_3O_4 , superconductivity in ternary compounds, solid surfaces, low-dimensional solids, electron-electron interaction in one-dimensional solids, fast ion transport in solids, dynamics of crystal growth, reactivity of solids, heavy fermions, quasicrystals and metal-insulator transitions.

The programme of the Workshop consisted of 40 invited talks and special lectures, and provided ample time for discussion. There were seven lecturers from abroad and several from within the country. The total number of participants was around 40; in addition, a large number of students and faculty members of the Indian Institute of Science took part.

This issue of the Proceedings is devoted to articles dealing with some of the topics discussed at the Workshop. Some of the topics that were presented in the Workshop but not covered in this issue are quasi-crystals, heavy fermions, superconductivity in ternary compounds and amorphous materials. The articles published in this issue, it is hoped, will be of interest not only to solid state chemists engaged in research and teaching, but also to those working in condensed matter in general.

May 1986 Issue of the *Bulletin of Materials Science*, Vol. 8 No. 2

Computer modelling has many important applications in several areas of metallurgical research and industries, e.g. on-line control of metallurgical processes, design of components, plants and furnaces, prediction of materials behaviour under conditions which

are difficult to be simulated by experiment, phase diagram calculations, simulation of radiation damage in materials, on-line data acquisition and data processing etc. Research in these areas has acquired impetus recently in our country by virtue of the increased availability of computers and due to a need to modernize the industries by utilizing the potential of digital computers. Since there was no forum where the work done in this area could be presented and discussed, a symposium was organized by the Materials Science Committee of the Board of Research in Nuclear Sciences, Department of Atomic Energy to review the state-of-art of the developments made in the field of computer utilization in metallurgy and to provide an opportunity for a close interaction between the scientists and engineers working in this field. The two-day National Symposium on Computer Modelling and Applications in Metallurgical Research and Industry, held at Bhabha Atomic Research Centre, Bombay on 14-15 March 1985, was spread over five technical sessions, dealing with computer modelling and applications in the areas of nuclear fuel element behaviour, phase diagrams and phase stability, iron and steel industry, design and performance, simulation studies, image analysis and data processing. About 200 delegates from India and abroad took part in the symposium. A panel discussion held at the close of the symposium identified several important areas for future work and made suggestions for better interaction between the scientific workers in this field. Some of the points noted during the panel discussion emphasized the need for (a) development of application-oriented computer models for on-line control of chemical and metallurgical processes, (b) development of sensors for high temperature use for the measurement of parameters such as pressure, temperature, flow rate etc. (c) holding short term courses on computer modelling techniques, (d) setting up of a National Code Centre and (e) assisting the industries in intelligent use of computers.

This special issue of the Bulletin of Materials Science was published with a view to provide a wide circulation of the technical information contained in the invited talks and contributed papers presented at the symposium. Of a total of 25 technical presentations made at the symposium, the 17 which are included in this volume, cover a wide range of applications of computer modelling in metallurgy and materials science. It is hoped that this, the first published document in our country containing a collection of papers on this topic, will be useful to the scientists and engineers working in this field.

June 1986 Issue of the Bulletin of Materials Science

Thin film techniques find wide applications not only in basic research but also in applied work in many areas such as defence, space, lasers etc. The possibility of preparing tailor-made coatings for specific requirements by controlling the deposition conditions has given a new thrust to this activity. In fact it is a frontier area of research and technology. Thin film work is now being carried out in many universities and R & D organisations in the country.

The Instrumentation and Services Unit, Indian Institute of Science, organised a National Symposium on Thin Film Science and Technology during 9-11 January 1985 as part of the Platinum Jubilee celebrations of the Institute. The objective of the symposium was to bring together scientists and engineers actively involved in the area of thin film science and technology and provide a forum for presentation of papers on various topics with an emphasis on preparation and analysis of thin film coatings and devices.

The symposium was cosponsored by the Indian Institute of Science, University Grants Commission, Department of Science and Technology, Defence Metallurgical Research Laboratory, Indian Space Research Organisation, Solid State Physics Laboratory, Committee on Science and Technology in Developing Countries, USAF European Office of Aerospace Research and Development, and the US Army Research Development and Standardisation Groups.

The three-day symposium was attended by about 250 delegates from about 60 institutions all over the country. The European Office of Aerospace Research Development was represented by Dr. Larell K. Smith and Dr. Hussain.

The technical sessions included about 75 technical papers covering areas such as photovoltaics, tribological coatings, selective coatings, amorphous films, thermal, thermoelectrical and mechanical properties, optical, electrooptical and electronic properties, thin film instrumentation, characterization and analytical techniques.

This special issue has been published in the hope that it would be useful to a wider scientific community interested in thin films.

The Twelfth Annual Meeting

The 12th Annual Meeting of the Academy was held jointly with the National Academy of Sciences, India, at Allahabad, from 26 to 28 December 1946. The session was attended by 33 Fellows and a large number of delegates from different parts of India. All the meetings and public lectures were held at the Muir Central College, Allahabad.

The proceedings commenced on Thursday, 26 December 1946 with a resolution of condolence moved by the Hon'ble Mr. Kamalakanta Verma, Chief Justice of Allahabad, placing on record the profound sense of grief of the Joint Meeting of the two Science Academies at the passing away of Pandit Madan Mohan Malaviya, the Founder of the Benares Hindu University, who rendered inestimable services to the country in all aspects of its life but more especially in the field of education and whose selfless life and devotion to scholarship would for ever remain an example for his countrymen to follow. The resolution was adopted, all those present standing. Rai Sahib Dr. P. L. Srivastava, Secretary of the Reception Committee, then read messages of sympathy received from Sir Tej Bahadur Sapru, the Hon'ble Sri C. Rajagopalachari, the Hon'ble Pandit Govind Ballabh Pant, the Hon'ble Babu Sampurnanand, Pandit Amarnath Jha, Dr. B. N. Chopra and Dr. Hamied.

Dr. Tara Chand, Chairman of the Reception Committee, on behalf of the Allahabad University and the Reception Committee, extended a warm welcome to the Fellows of the two Academies and the delegates.

The Hon'ble Mr. Kamalakanta Verma, Chief Justice, High Court of Allahabad, then delivered the opening speech.

Sir C. V. Raman next delivered the Presidential Address to the Indian Academy of Sciences on "New concepts of the crystalline state".

He was followed by Professor A. C. Banerji who delivered the Presidential Address to the National Academy of Sciences, India, on the "Age of the universe".

Professor Birbal Sahni proposed a vote of thanks to the President, to the Reception Committee and to the Allahabad University. This was seconded by Prof. S. Bhagavantam.

The Symposium on the "Statistical Methods in Plant and Animal Breeding" commenced at noon on the 26th. Dr. P. V. Sukhatme who presided over the Symposium gave a short introductory speech and Dr. V. G. Panse opened the Symposium.

A business meeting was held in the afternoon. 25 Fellows were present at the meeting. Sir C. V. Raman occupied the Chair. The Secretaries' Report for the year 1946, which had already been circulated, was taken as read. Dr. Satya Prakash moved the adoption of the Report. Dr. S. S. Joshi seconded the motion. There were no comments on the Report and it was unanimously adopted.

Professors N. S. Nagendra Nath and S. Bhagavantam were appointed scrutators for scrutinising the voting papers relating to the election of Office-bearers and Members of Council for the period 1946-49. The following were declared elected.

President :

Rajasabhabhushana Sir C. V. Raman
(Bangalore)

Vice Presidents :

Sir K. S. Krishnan (Allahabad)
Prof. Birbal Sahni (Lucknow)
Prof. T. R. Seshadri (Waltair)
Prof. M. R. Siddiqi (Hyderabad)

Secretary for Section "A"

Prof. B. S. Madhava Rao (Bangalore)

Secretary for Section "B"

Prof. L. Rama Rao (Bangalore)

Treasurer :

Principal Dr. B. Sanjiva Rao (Bangalore)

Members of Council :

Principal S. Bhagavantam (Waltair)
Principal Dr. S. S. Joshi (Benares)
Dr. K. L. Moudgill (Trivandrum)
Rajasevasakta Dr. B. K. Narayana Rao
(Bangalore)
Principal Dr. C. S. Pichamuthu (Bangalore)
Principal Dr. Mata Prasad (Bombay)
Prof. T. S. Raghavan (Annamalainagar)

Prof. S. Ramachandra Rao (Bangalore)

Diwan Bahadur Dr. K. R. Ramanathan (Delhi)

Mr. B. Rama Rao (Bangalore)

Mr. K. Ramiah (Cuttack)

Prof. Shri Ranjan (Allahabad)

Prof. T. S. Sadasivan (Madras)

Sastravaidyapravina Dr. S. Subba Rao (Bangalore)

Dr. P. V. Sukhatme (Delhi)

Professor S. S. Joshi and Dr. K. R. Ramanathan were appointed scrutators for scrutinising the voting papers relating to the election of Honorary Fellows. The following were declared as unanimously selected as Honorary Fellows :

1. Prof. V. Bjerknes, Oslo Blindern, Norway
A distinguished meteorologist who has made outstanding contributions to the subject of dynamic meteorology.
2. Prof. S. Chapman, F. R. S.,
Distinguished for his work on the kinetic theory of gases and the science of geomagnetism.
3. Prof. T. G. Halle, State Museum of Natural History, Stockholm, Sweden.
A distinguished palaeobotanist.
4. Prof. P. Karrer, University of Zurich, Switzerland.
Distinguished organic chemist and Nobel Laureate.
5. Prof. A. Krogh, For. Mem. R. S., Head of the Zoophysiological Laboratory, Copenhagen, Denmark.
Distinguished for his work on comparative physiology and Nobel Laureate in Medicine.

Dr. K. S. Gururaja Doss and Prof. T. R. Seshadri were appointed scrutators for scrutinising the voting papers relating to the election of Fellows. The following were declared elected as Fellows :-

1. Dr L. S. Dorasami, Economic Botanist, Department of Agriculture, Bangalore.
2. Mr M. V. Govindaswamy, Superintendent, Mental Hospital, Bangalore.
3. Dr V. G. Panse, Deputy Director-in-charge of Research at the Institute of Plant Industry, Indore.
4. Dr R. S. Varma, Lecturer in Mathematics, University of Lucknow, Lucknow.

There was a suggestion that the maximum number of Fellows which has now been fixed at 200 may be enhanced. The question was discussed in some detail but was finally deferred for consideration at a later meeting of the Academy.

Dr K. S. Gururaja Doss suggested that the supply of free reprints to authors be resumed, at least in the case of Fellows. The President replied stating that the matter would be considered and as soon as the conditions permitted, the needful would be done.

The Symposium on "Statistical methods in plant and animal breeding" continued in the afternoon of 26 December and the forenoon of 27 December. Mr K. Ramiah occupied the Chair. 13 speakers presented their papers and several others participated in the discussions.

Sir C. V. Raman delivered a Public Lecture on "Gems", on the 26th evening. The Hon'ble Mr Kamalakanta Verma occupied the Chair.

A Scientific Meeting in Physical, Mathematical, Geological and Chemical Groups was held jointly with the National Academy of Sciences on the morning of Friday 27 December. Prof. T. R. Seshadri presided. 38 papers in all had been communicated for the meeting. Nine papers were read and discussed.

A short symposium on "Nitrogen transformations in nature" was held in the afternoon of 27 December and presided over by Prof. N. R. Dhar; five papers were read and discussed. It was followed by another short symposium on "Stellar evolution" which was presided over by Prof. A. C. Banerji and where three papers were read and discussed.

Two public lectures were delivered in the evening on "Some war-time chemical discoveries" by Prof. T. R. Seshadri, and on "The primitive tribes of India—their racial and cultural background" by Dr B. S. Guha. Sir C. V. Raman occupied the chair.

The Scientific Meeting in the Physical, Mathematical, Geological and Chemistry Groups was continued on the morning of Saturday 28 December. Prof. T. R. Seshadri presided. Seven papers were presented and discussed. The remaining twenty-two papers were taken as read. This was followed by a brief symposium on "Theories on colour", which was presided over by Sir C. V. Raman. Two papers were presented and discussed.

There was an excursion to the Tribeni and the Naini Agricultural Institute in the afternoon.

The 12th Annual Meeting came to a close with the evening lecture on the "Chemistry of fasting" by Prof. N. R. Dhar. The Hon'ble Mr Kamalakanta Verma presided.

Obituaries

In the death of **Govind Balakrishna Deodikar** on 13 March, 1986, the Indian scientific community lost a scientist-philosopher of rare versatility.

Born on 15 November 1915 at village Deodi in the Solapur District of Maharashtra, he had his formal education at Deodi and in the nearby town of Pandharpur. He graduated from Ferguson College, Pune in 1937 and working under Prof. L. S. S. Kumar at the Agriculture College, Pune obtained his Ph.D degree from the Bombay University in 1942. He also studied Law and obtained his LL.B degree in 1941.

In 1942 he joined the Agriculture Department of the then Bombay State as Cytogeneticist and Plant Breeder, and worked on rice, wheat, papaya, oilseeds and pulses but resigned in 1950.

In 1952 he joined the Maharashtra Association for the Cultivation of Science (MACS) as Honorary Professor of Cytogenetics and Economic Botany. He initiated a number of projects on wheat, soyabean, grapes, pigeon pea, maize and oil palm with emphasis on the use of wild relatives in the improvement of crop plants and developed a strong school of basic cytogenetics.

In 1960 Deodikar took over as Director of MACS Research Institute. With his organisational abilities, scientific vision and perseverance, he built-up the Institute to what it is today. He retired in 1950 but continued to work as Professor Emeritus and was the first to occupy the Agharkar Chair, which he did till his death.

Deodikar's research interests were not restricted to genetics. As early as 1952 he prepared an integrated research programme for bee-keeping, spanning all disciplines from botany, genetics, chemistry, entomology, pathology to ethonology, and established the Apiculture laboratory at Mahabaleshwar in 1954. From 1954 to 1962 he was Honorary Director of the Bee-Keeping and Sericultural laboratories of the Maharashtra Village Industries Board, and from 1962 to 1979 served as Honorary Scientific Adviser to the Central Bee Research Institute established in 1962 at Pune. Here he established a strong school of bee botany and melittopalynology and demonstrated the beneficial uses of honey bees for crop production.

His contribution to sericulture industry in

Maharashtra is equally outstanding. Though Maharashtra had earlier been considered unfit for sericulture he started small scale rearing experiments at Mahabaleshwar in 1954 and established the Sericulture Research-cum-Extension Station at Panchgani in 1958 with financial support from the Maharashtra State Khadi and Village Industries Board. He served as Honorary Scientific Adviser to the Sericultural Laboratory from 1958-79 and was responsible for the development of improved mulberry varieties and the genetic improvement of silkworms.

Deodikar's pioneering work in crop plants, apiculture and sericulture obtained wide recognition. He was elected President of the Indian Society of Genetics and Plant Breeding in 1974-75, a Fellow of the Indian Palynological Society and was elected a Fellow of the Indian Academy of Sciences in 1974. He was a Foundation Fellow of the Maharashtra Academy of Sciences.

A modest and unassuming person, who put science above everything else, he was also deeply interested in Sanskrit literature and philosophy and Indian classical music. He is survived by his wife, five daughters and one son.

Sekharipuram Narayanaaiyer Seshadri passed away at Bombay on February 2, 1986 at the early age of 49. In his untimely death the country has lost an outstanding and indefatigable innovator and engineer.

Seshadri was born on 15 March, 1937 at Myitkyina, Burma, where his father S. S. Narayana Aiyer, was in the civil service. He had his early education at Palghat, Kerala. He had an excellent academic record at the Government Victoria College, Palghat, receiving the gold medal for the best student. He took the Bachelor's degree with honours in electrical engineering from the University of Madras in 1958 and soon after joined the Atomic Energy Department.

Seshadri's field of interest was control systems and consequently he joined the Reactor Control Division of BARC and engaged himself in the development of an analog computer, an essential tool for the design of control systems at that time. After completing this assignment, he commenced work on the development of drives for control rods which regulate the power level of nuclear reactors. This involved the design and development of a reversible magnetic amplifier for controlling the speed of linear synchronous reluctance motors.

He was deputed to the Massachusetts Institute of Technology for higher studies in 1962 where he obtained a Master's degree in electrical engineering with specialisation in control systems.

On his return to India, he began work on servomechanisms and his early projects included the development of AC demonstration servo systems, temperature control systems using second harmonic magnetic amplifiers, and certain auxiliary systems for recorder testing.

All the control consoles and panels for the Tarapur Atomic Power Station built in 1964 under a turnkey contract with the General Electric Co. were designed and constructed by Seshadri and his group. The knowhow generated during this project was the foundation on which the Power Reactor Instrumentation Division of the Electronics Corporation of India Ltd. was built by the Department of Atomic Energy.

In 1967, he took up the design, construction and commissioning of the servo control system for the first Satellite Communication Earth Station at Arvi. The 30 metre, 250 tonne fully steerable antenna having a pointing accuracy of 0.3 degree was commissioned in February 1971. Later he supplied several custom-made antenna control systems for the Department of Space for tracking satellite launch vehicles and the Indian National Satellite, INSAT.

He was also responsible for the development of motor control systems for the Indian Railways. These include thyristor based speed control systems for 3000 HP, 25 KVAC WAG-1 type locomotives and the development and demonstration of a 1500 KW, two phase thyristor chopper for the control of traction motors used in Bombay suburban trains.

The control system for PURNIMA, the first fast reactor in the country, was also built under his guidance. Because plutonium was the fuel involved, extremely fast shutdown systems were required to ensure the safety of the reactor. When the construction of a 100 MW (thermal) reactor at Trombay was approved, he was entrusted with the complete responsibility for its control and safety systems. He incorporated several special design features to achieve a very high degree of reliability. For the Fast Breeder Test Reactor at Kalpakkam he delivered the pump speed control system for the primary and secondary coolant systems. He also played a leading role in the design and installation of the control and remote operation elements of the nuclear explosion at Pokhran.

For the MHD demonstration project at Tiruchi, Seshadri's team designed and built a giant 300 tonne moving magnet capable of generating 2 Tesla field in its 0.5m x 3m airgap. For the magnet coil DC supply (3000 A, 1.6 MVA), he built a thyristor controlled supply. He also designed the total control and instrumentation for the plant and was responsible for the design, fabrication and commissioning of the control systems for the 2.3 metre Vainu Bappu telescope of the Indian Institute of Astrophysics at Kavalur. He had a wide range of technical interests. He helped in the enquiry of the 'Kanishka' crash by analysing the cockpit voice recorder after assembly of a system for this analysis. Without his efforts the analysis could not have been done in India.

He was a firm believer in the development of high technology through self-reliance and he was committed to it. For his meritorious contributions in various fields, he was awarded Padma Shri in 1975 and the S. S. Bhatnagar Prize in 1979-80. He was also the recipient of Hari Om Ashram (Sarabhai Trust) Award and posthumously of the Vasvik award for 1984, for electrical sciences and technology.

He was elected a Fellow of the Indian Academy of Sciences in 1978.

Tupil Srinivasa Raghavan's passing away on 30 January 1986 has removed an outstanding botanist from the scientific world and a popular teacher from the realm of education. To knowledge Prof. Raghavan added a rare power of imparting it. Even the most abstruse or recondite topic would become intelligible by the lucidity of his exposition.

Raghavan was born on 20 September, 1905 at Coimbatore and had his early education in the Teacher's Training College High School, Saidapet. He took his Botany Honours degree from the Presidency College, Madras and soon after joined the Department of Botany at St. Berchman's College, Changancherry, Kerala. In 1931 he joined the newly started Department of Botany of the Annamalai University as Professor. In 1937, working with Prof. R. Ruggles Gates at the University of London, he obtained his Ph. D. degree for his work in cytomorphology.

The credit for organising the post-graduate curricula in botany at the Annamalai University and developing advanced research there in cytology and genetics on a sound basis goes to Raghavan. After a short stint at the Coconut Research Station at Ceylon, he joined in 1949 as a Cane Breeding Officer at the Central

Sugarcane Breeding Institute, Coimbatore, where he played a notable role in the breeding of viable varieties of sugarcane. After his retirement in 1959, he continued as Professor Emeritus in Botany at St. Berchman's College where he started his career and later at Vallabh Vidyapeeth, Anand, Gujarat.

Prof. Raghavan was an indefatigable and prolific worker and his research treatise were marked by a refreshing breath of originality.

He was a Fellow of the Linnaean Society. In 1938 he was elected a Fellow of the Indian Academy of Sciences and served as a member of the Council from 1946-1949.

Although a stickler for punctilious observance of academic discipline, he was an intensely human and warm-hearted person, loved by both his students and colleagues.

He leaves behind his wife, three sons and a daughter.