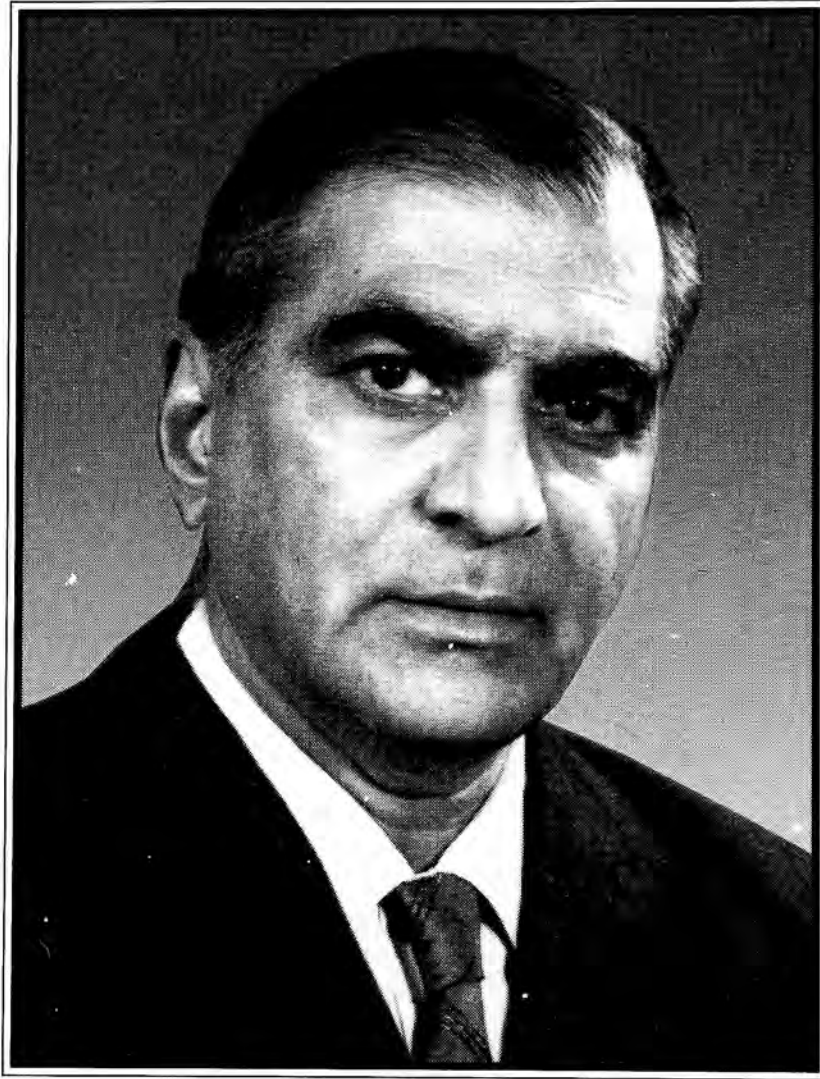


# **ANEKAL RAMASWAMIENGAR GOPALA AYENGAR**

**(1 January 1909 – 09 September 1992)**

*Biog. Mem. Fell. INSA, N. Delhi* **30** 17-27 (2006)





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# ANEKAL RAMASWAMIENGAR GOPALA AYENGAR

(1909-1992)

Elected Fellow 1968

## EARLY LIFE AND EDUCATION

**A**NEKAL RAMASWAMIENGAR GOPALA AYENGAR was born on 1st January 1909 in Vanavasi, Salem District of Tamil Nadu. He completed his B.Sc with a first class from Mysore University in 1929 and his M.Sc with distinction in 1933. Subsequently, he took his MA from the University of Toronto (Canada) in 1941 and his Ph.D in 1942. He also received D.Sc (Hons.) from the University of Hanover, Germany. He was conferred an honorary doctorate from the University of Mysore in 1970.

## CAREER

Professor ARG started his career as a Lecturer in Botany from the University of Mysore in the year 1933. He shifted to Canada in 1938. He was a Vincent Massey Fellow with the University of Toronto between 1938 and 1939, Teaching and Research Fellow between 1939 and 1941 and a Senior Instructor and Research Associate between 1941 and 45. He was for a short time an Invitation Lecturer in the Association Canadienne Avancement des Sciences in Montreal. He shifted to the US and worked as Kettering Research Fellow at the Cancer Hospital, Washington University, St Louis between 1945 and 1947.

He returned to India in 1947. This was the starting point of his career in Industrial Research. He worked for the next four years as Chief Research Cytologist at the Tata Memorial Hospital, Bombay. He worked as the Head of AEC Unit on Cell Biology, Tata Memorial Hospital, Bombay between 1948 and 1951. He accepted the position of Assistant Director of Biological Division, Department of Atomic Energy, Government of India in 1952. He was promoted subsequently as Deputy Chief Scientific Officer, Chief Scientific Officer and finally, as Director, Biology Group of Atomic Energy Establishment, Trombay in 1962. He was working as Director, Biomedical Engineering Group, BARC till 1969. His stint in BARC for nearly 17 years left an indelible mark on the Biological Research output at the BARC. After retirement from BARC, he worked as an Honorary Professor of Cell Biology in Madurai Kamaraj University from 1969.



## VISITING ASSIGNMENTS

In recognition of his outstanding contribution to research, Prof. ARG was invited as a distinguished Visiting Scientist / Professor for short- and long-terms from several Universities, Argonne National Lab, Illinois, USA, Harwell MRC Unit of Radio Biology, UK, University of California, Berkeley, USA, Chester Baaty Research Institute, Royal Cancer Hospital, London, UK, Institute of Radio Biology, University of Zurich, Switzerland, Czechoslovak Academy of Sciences, Hanford Laboratory, Richland, USA and the University of Hanover, Germany.

## RESEARCH CONTRIBUTIONS

Prof. ARG's fields of interest were Cytology, Cytochemistry, Cytogenetics, radiation genetics, mutation, breeding, radiobiology, radiation biophysics, cancer research, molecular biology and phycology, radiation medicine besides various aspects of training and education in biomedical field. His lines of investigation were along gene duplication and chromosome synthesis in biological systems, chromosome breakage by radiation, and radionimetic substances. Properties of malignant systems, mutation studies with plants of economic importance, problems of food preservation, and insect sterilization by ionizing radiation, human chromosome studies, genetical and biological investigations in high background radiation and application of radioisotopes in nuclear medicine. He has published over 70 papers on fundamental and applied aspects of cytology, cytogenetics, cytochemistry, cancer research, radiation biology, mutation research of economically important crops and radiation effect with respect to man.

## INTERNATIONAL AND NATIONAL ORGANISATIONS

Professor ARG has been the President of the following: Indian Society of Genetics and Plant Breeding 1963-64; Commission on Radiation Biophysics, IUPAB; 1965-69, Biological Action of Radiation, 9th International Congress of Radiology, Munich 1959. He has been the Chairman of the following: UN Scientific Committee on Radiation 1966-67; International Congress of Radiation Research, France 1970; Plenary Session 2nd International Congress of Radiation Research, England 1959, IAEA Symposium on Ionizing Radiation, Czechoslovakia 1962; Indian National Committee on Biophysics 1962-66, on Biological Sciences 1965-67. Besides, he has served as a member of the following committees for varying periods of time: Indian National Commission for Cooperation with UNESCO, Biological Research Committee of CSIR, Executive Committee of Indian Institute of Experimental Medicine, Committee of Indian Cancer Society, Commission on Radiation Biophysics IUPAB, UN Scientific Committee on Atomic Radiation, SCIBP, Executive Councils of IRPA, Experimental Studies of IUCC, ICRO, ICRP, IARR,



Committee on Epidemiological Studies on Human Radiology FAO Coordination of Research on the use of Neutrons.

## **EDITORIAL BOARDS**

Professor Gopala Ayengar has been with the Editorial Boards of several reputed journals such as--- Radiation Botany, Mutation Research, Nuclear Medicine and Biology, Quarterly Reviews of Biophysics, Current Index in Life Sciences and Health Physics.

## **AWARDS AND HONOURS**

For his outstanding contributions, Professor ARG has received the following recognitions:

Elizabeth Ann Wintercorby Award Toronto University, 1941; HJ Bhabha Prize, Outstanding Scientist (1948); Fellow of the Indian National Science Academy 1968, Fellow of the Indian Academy of Sciences; Padma Shri of Government of India in 1967.

## **ARG AS A PERSON**

Dr. TS Iyengar who retired from Health Physics Division, BARC writes, "Dr. A R Gopal-Ayengar was particular about this spelling. In 1969, The Indian Association for Radiation Protection (IARP) was formed with Dr. Ayengar as the Founder President. He was later President Emeritus till his death. Dr. TS Iyengar was at various times the Secretary, Executive Committee Member, Editor of the IARP Bulletin etc. and so knew him well. The IARP is affiliated to the International Radiation Protection Association (IRPA) and Dr. Ayengar was the Executive Committee Member of the IRPA. He was a democrat in IARP General Body Meetings and any query could be raised.

In the Second Annual Conference of IRPA held at Brighton, UK, they wanted to collect 1.5 US Dollars from every IRPA Member as affiliation fee to IRPA. It was a big sum for us since we had a huge membership and Dr. Ayengar argued at that IRPA meeting "Do you want money or professional support". Thereafter, a way was found to reduce the fees.

Dr. Ayengar lived in his own bungalow at Mysore Colony, near Chembur Colony. He had only one son Ram Gopal who died in the late sixties in a train accident in Mumbai at the age of 24. His wife Rajalakshmi died on 2nd Feb, 2002. Thus there is no immediate family member surviving him. It seems the ownership of the bungalow is under dispute now.

Dr. Ayengar was very supportive of the scientific staff. Once TS Iyengar invited me to Lawrence Livermore Lab. California ten days in advance for a conference due to a



typing error. He was asked to come on 01 Feb instead of 10 Feb, 1970. Those days Scientists got US Dollars eight per day and this man did not know what to do. He went to the Indian Embassy and rang up BARC. Dr. Ayengar took the phone and arranged with HN Sethna that TS Iyengar got 70 dollars per day, an unimaginable sum. He also made sure that TS Iyengar visited the Berkeley Laboratories during those free days.

On another occasion, TS Iyengar went to Australia on a bilateral mission in 1965 where he fractured a foot. In bilateral arrangements medical aid was not covered. Ayengar made sure that all later bilateral agreements took care of medical expenses, that is the host country took care of the visiting scientist's medical needs.

On one other occasion, two scientists from Helsinki were in BARC, Ms. Solenan and Mr. Miecenen. The lady felt a severe food problem. Dr. Ayengar made sure with the Taj Hotel that she got proper Finnish food.

He was very particular about many things. He was a member of the committee appointed by Dr. Bhabha regarding the building of Modular Laboratories. He ensured that all toilets had automatic door closers. He was particular that scientists display good manners while abroad and probably taught a few about the various table manners. He was fond of Indian classical dance, particularly that of Chitra Sundaram. He also was a connoisseur of good wine and liked Nouveau Boujelais. As a scientist he started the study on radiation effects due to the Monazite beach sands of Kerala. One Mr. George was his Chief Collaborator. He was interested in studying the mutagenic effects of radiation and started the Gamma Garden in BARC. He did not believe in God.

He suffered from cancer of the prostate and there was some spread into the bones too. At that time Radio Chemical Center, Amersham, UK was advertising Strontium-89 as a palliative for bone cancer. It was administered to Dr. Ayengar by Dr. B Shankar, our surgeon in the presence of IK Oommen and Dr. T S Iyengar who was the Safety Officer. Even at that stage he was discussing some of the statistical methods regarding the Kerala sand studies with Mrs. T S Iyengar who was doing Bio-Statistics in BARC Hospital. Two of his nephews worked in BARC, have retired and moved out to Bangalore. One is Mr. Jyothi who worked in Nuclear Material Accounting (NUMAC) and then in Fuel Chemistry. The other nephew Dayanidhi worked in Nuclear Physics Division. Dr. Ayengar's brother's son Prakash still seems to be working in BARC Training School as a UDC. His PA in BARC Mrs. Vijayam Narayan lives at A3, Bassera, Deonar Farms Road, Chembur. She is retired and spends half her time in Dubai with her daughter. One of his Biology colleagues R. Bhatia lives at Rohini, Sector 9A, Navi Mumbai. There is a book "Atomic Energy in India-50 Years" authored by C V Sundaram, L V Krishnan and T S Iyengar and published by Govt. of India--Department of Atomic Energy, August 1998. It contains



one and a half page of very good write up on Dr. Ayengar with an excellent photograph of him.

Here is the write up from the Journal of Nuclear Society of India on Dr. Ayengar, Vol No 5, page 32, Apr-Sept 1992.

*"The Board of Trustees and the Executive Committee of Indian Nuclear Society and Editor and Members of the Publications Committee of Indian Nuclear Society of INS News express their deep felt condolence on the passing away of Dr. Gopala Ayengar on Sept 9, 1992 at Bombay. Dr. Gopala Ayengar, who had a brilliant academic career at Mysore, Toronto and Hanover was an Internationally known biologist who had distinguished himself with several achievements. He was honoured with several National and International Awards including Padma Shri in 1967. Dr. Ayengar was one of the founders of the Atomic Energy Establishment at Trombay along with Dr. Homi Bhabha.*

*Dr. Ayengar had held several meritorious positions in Government, National and International Organisations, Committees and learned Societies. His fields of interest encompassed a wide variety of disciplines in life sciences, viz. radiation biology, ecological biophysics, cytology, chemical mutagenesis, radiation genetics, cell biology, cancer research, environmental radio activity and radiation protection. In his passing away the country has lost an able administrator and a great scientist."*

### **Messages received in January 1989 on Ayengar's 80th birthday**

- An outstanding career in radiation studies and, at the same time, standing out like a lighthouse in the seas of scientific progress in radiation protection. – Dr. Briton Chance, Philadelphia.
- Apart from his scientific leadership, he took an important part within a most valuable community, the International Community of Scientists. – Dr. Arthur Charlesby, England.
- One of my pleasant memories of him and also of my pleasant association with him when I was a Guest of Homi Bhabha at Bombay – Dr John H Lawrence, California.
- He has contributed a great deal in the field of Radiation Biology in India, especially setting up Biomedical division in BARC. He has encouraged young Scientists. – Prof A T Natarajan, The Netherlands.
- The outstanding record of BARC Scientist in the field of Nuclear application in Biology and Agriculture are an eloquent testimony to his foresight, vision, and pioneering spirit. – Dr. Bjorn Sigurbornsson, Vienna.



- The value of human life is not counted by years, but its contents. He filled his life with admirable work. – Prof. Herman Druckrey, Germany.
- The UNSCEAR club was also poorer bereft of his witty interventions— Dr. A G Searle, Oxon.
- I cherished the conversation, his interest in the well being of mankind and his devotion to India. – Dr. Henry Eisenburg, Israel.
- Our first meeting belongs to my cherished memories, especially the intense conversation I had with him, an eminent Scientist. – Dr. U H Ehling, Nuereberg.

The author had the opportunity to interact with Prof. Ayengar in Hanover, Germany during 1977. The author was on a short visit from India when Ayengar was working as a Visiting Professor in the Technical University, Hanover. On two Sundays, Ayengar had invited him for lunch even though the author had not known him earlier in India. Both Prof. Ayengar and Mrs. Ayengar were excellent hosts and were very kind to him. One could observe that Prof. Ayengar, who hailed from a small place like Salem could gain international eminence purely by sheer hard work right from his school days.

### ACKNOWLEDGEMENT

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