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K. K. NAYAR

1920 – 1975

Professor K. K. NAYAR, who was Head of the Department of Zoology in the University of Kerala, died in harness on 26th June 1975 at the age of fifty five, after a brief illness. To the wide circle of his students, colleagues, friends and well wishers all over the world the news came as a rude shock. Although he was ailing for the last few months of his life he was attending to all his duties regularly, and his sudden demise took all his associates by surprise.

Professor NAYAR was born on June 12th, 1920 at Kottarakara, Travancore state which is now part of Kerala State. He took his B.Sc. (Hons.) and M. A. in Zoology from the University of Madras in 1941 and 1947 respectively, and his Ph.D. from the erstwhile University of Travancore, now University of Kerala. He was Lecturer in Zoology in the University of Travancore from 1945 to 1957, and with the taking over of the University College by the State Government, he worked as Professor in Government Victoria College, Palghat, Government College, Chittoor and University College, Trivandrum, all under the Collegiate Education Service of the Government of Kerala. During this period he had perhaps the most frustrating experience in his research career as very often, he and his research team had to work in institutions where even the students' microscope was a luxury. However, the urge and motivation for research burned in him incessantly and it kindled fire in those around him and led them along their chosen path of research. That stormy period of trials and tribulations came to a close in 1963 when he became Reader and Head of the newly formed Department of Zoology in the University of Kerala in 1963 at Calicut Centre. Subsequently he became Professor in the same Department. Meanwhile international recognition and funds were forthcoming for his various research projects both from the Ford Foundation and PL 480. A new Research Unit for Reproductive Biology was established at Trivandrum, to which he shifted along with his research team, but he continued as Professor and Head of the Department of Zoology at Calicut Centre as well. A separate university, the University of Calicut, was established at Calicut Centre and Professor NAYAR was appointed Head of the Department of Zoology in the University of Kerala at Trivandrum in 1968. Subsequently the Department of Zoology as well as the Reproductive Biology Research Unit shifted to the present Kariavattom Campus in the subrubs of Trivandrum city.

Professor NAYAR started his research work on gall midges. His Ph.D. thesis dealt with biology and systematics of gall midges. He had conducted a survey of these minute insects of this region, discovered some new species of gall midges and elucidated new concepts on the biology of many of these insects. Eventhough he subsequently shifted his field of research, gall midges continued to interest him till his death.

As a result of his early contacts with research workers in Copenhagen and England, especially with Professor V. B. WIGGLESWORTH who had profound influence on him and whom he almost adored, Insect Endocrinology and Neurosecretion became his

main fields of research. This interest subsequently widened and he became an active worker in the field of Comparative Endocrinology. He was undoubtedly the foremost authority in Comparative Invertebrate Endocrinology in India and was well known internationally for his work in this field. He chose the insect *Iiphita limbata* for most of his early endocrinological work and during the fifties and the early sixties made many significant contributions to the understanding of reproduction in the female of this species including oviposition and water balance. During this period he also worked on the endocrine mechanism of certain Diptera and Lepidoptera including control of metamorphosis in these animals. As a result of his outstanding contribution during this period, the Ford Foundation offered him a research grant with which he equipped the laboratory with sophisticated research instruments, including an electron microscope. It also enabled him to establish a good departmental library and to train students in the field of Reproductive Biology of Insects. This financial help was further supplemented by PL 480 grant for the study of crustacean biology and smaller grants from the Atomic Energy Department of India for the study of the effects of natural radiation of the sandy shore of Kerala on its soil microfauna, from the Tea Board of India for the study of micro-organisms inhabitating the soil of tea gardens and an ICAR grant for the study of Frog Biology. Though his chief interest was Comparative Endocrinology of invertebrates, he also supervised research projects in endocrinology of other animals including various groups of vertebrates, and in such unrelated fields as Comparative Oncology, Regeneration and Wound Healing, Pheromones, Ethology, Invertebrate Reproductive Biology, Chromosome Cytology, Soil Biology, Radiation Biology and in Systematics. In these fields he has a number of publications and has successfully guided seven research students. At the time of his tragic death he was guiding six research students in such diverse fields as Pheromones in Social Insects, Invertebrate Immunity, Morphogenetic action of insect hormones, Differentiation of cuticular pattern in insects, Neurosecretion in the shrew and Comparative aspects of endocrine pancreas in lower vertebrates. This is really surprising in this age of narrow specialisation. As a recognition of his contributions in these fields he was elected Fellow of the Indian National Science Academy in 1971 and of the Indian Academy of Sciences in 1974.

Professor NAYAR has travelled widely and was a familiar figure at a number of National and International symposia and conferences: he has also chaired many of the sessions and has presented papers at these scientific gatherings. The Third International Symposium on Neurosecretion held n Bristol in the year 1961, International Symposium on Invertebrate Endocrinology in Jena in 1965, International Conference on Insect Endocrines held in Brno, Czechoslovakia in 1966, International Conference on Comparative Endocrinology held in Delhi in 1967, International Symposium on Neoplasm and related disorders of Invertebrates and lower vertebrates held in Washington D. C. in 1968 and the 5th International Congress of Endocrinology held in Mexico city in 1968, were some of the conferences in which he actively participated.

During 1953–1954, Professor NAYAR was also a Guest Research Worker in the Rothamstead Experimental Station, Harpenden, Herts, England; a trainee in Neurosecretion in the Royal Veterinary College, Copenhagen and in the University of Oxford. In these institutions he worked on insect endocrines. He was elected Commonwealth Visiting Professor and worked in the School of Biological Sciences in the University of

East Anglia, Norwich, England in 1968–1969 on Comparative Oncology. He was Guest Professor in the Department of Anatomy of the Albert Einstein College of Medicine, Bronx, New York and in the Department of Zoology in the University of California, Berkeley, in 1969 for short periods. As Ford Foundation grantee he visited various endocrinological laboratories in U. S. A. and Japan in 1964. All these opportunities brought him in close contact with such top-ranking scientists abroad as Professors H. A. BERN, E. SCHARRER, B. SCHARRER, B. HANSTROM, V. B. WIGGLESWORTH and a number of others.

Professor NAYAR has also written a number of books. In his "Elements of Insect Endocrinology" (Prentice Hall, India) published in 1973, which was based on a series of lectures given by him in various Indian Universities under the U. G. C. Lecture programme, he has brought the rapidly advancing frontiers in this field within easy reach of general zoologists and it has been a boon to graduate and post graduate students in India. The release of the book "Principles of General and Applied Entomology" (co-authors: Dr. T. N. ANANTHAKRISHNAN and Dr. B.V. David, Tata McGraw Hill) has been announced while the manuscript of his work on "Invertebrate Reproduction" is in press.

Professor NAYAR was not only an eminent scientist, but a teacher and academician *par excellence*. The depth of his knowledge in various branches of Zoology was unfathomable. Zoologists in general found a discussion with him extremely stimulating and rewarding. He conveyed the most complicated ideas in extremely lucid and simple manner with heart and soul in what he said and the result was a lively class most sought after. He was very much concerned about the falling standards in Indian Universities and fought to bring curriculum in Indian Universities in tune with latest developments in science. He has organised a number of Summer Institutes at national level which brought participants from many teaching institutions in contact with leading scientists in India and abroad, and stimulated interest in research and in modern trends in Zoology, among participants. He was associated with a number of state and national committees of Science, Technology and Education and with various academic bodies and activities of many Indian Universities. He was a member of many scientific societies and the Vice-President of the Ethological Society of India. He was also on the editorial board of Journal of Animal Morphology and Physiology. During the last days of his life Professor NAYAR felt the growing need for a scientific journal to cover various aspects of Entomology. Towards this goal he called a meeting on 28th April 1975. At this meeting it was decided to form the Association for Advancement of Entomology to bring together scientists working on diverse aspects of this field and steps were initiated to publish ENTOMON to be the official organ of the Association. Professor NAYAR was unanimously elected the Editor-in-Chief of the journal, and was leading the Association and the journal when death overtook him.

Despite all his brilliant academic achievements he was unassuming and extremely kind, and encouraged other scientists, especially those of the younger generation who struggled hard for their survival. He respected the views of even the beginners just as well as those of eminent scientists. He was also an idealist who believed that scientific work should be pursued for the elucidation of truth only. He not only professed it but had the courage and tenacity to practise what he preached, even in the face of stiff adversity. He was rather quiet by nature,

but when he talked, he did it most effectively and in few words. His conversation was often full of humour. In his untimely death, India and the world lost a great Zoologist. He leaves behind him his aged mother, his wife, daughter and three sons.

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