

Salutations to Prof. C. R. Rao F. R. S.

It was recently announced that the 2023 International Prize in Statistics will be awarded to one of India's most famous scientists, Prof. C. R. Rao in July, 2023 at the Biennial World Statistics Congress to be held in Ottawa, Ontario, Canada.

This is undoubtedly a momentous achievement for Prof. Rao and a great occasion for all Indians to feel proud for one of our best known statisticians the world over. It is a specially joyous news for West Bengal, because of Prof. Rao's long and unforgettable connections with this state through the University of Calcutta and the Indian Statistical Institute, Calcutta.

To elucidate the statement, a brief biographical sketch of Calyampudi Radhakrishna Rao (C. R. Rao) is necessary.

C. R. Rao was born on the 10th September, 1920 in a small town of the present day state of Karnataka. His father C. N. Naidu was an official in the CID Department of Madras Presidency in British ruled India. His mother A. Lakshmikanthamma was a dutiful and hard working housewife. Right from his childhood, C. R. Rao had a special aptitude for Mathematics. His father was aware of this and encouraged him to study the subject seriously and carry out research in Mathematics. Starting from his school days, C. R. Rao had a uniformly brilliant academic career. In 1940 he obtained M. A. Degree in Mathematics from the Andhra University (Waltair), Vishakapatnam standing First with a First Class.

Because of the ongoing World War II jobs were scarce in India. In order to appear for an interview C. R. Rao was travelling from his hometown to Calcutta by train. On the way, he casually learnt from a co-passenger about the Indian Statistical Institute (ISI) in Calcutta and



about their training programme in Statistics. While in Calcutta, C. R. Rao went to ISI to gather more and accurate information about the courses and met the vibrant group of researchers who were working and teaching there under the dynamic leadership of the legendary Prof. P. C. Mahalanobis. He was so impressed that with minimum financial help that his middle class parents could afford, C. R. Rao joined ISI, Calcutta on the 1st January, 1941. That was perhaps the most important milestone in his chequered career.

That same year, after long persuasion by Prof. P. C. Mahalanobis, Calcutta University became the first University in India to start a Post-Graduate course in Statistics. At the suggestion of Prof. Mahalanobis, C. R. Rao joined as a student in the first batch of this programme. In 1943 he passed his M. A. Examination in Statistics with flying colours standing First with a First Class. He obtained 83% of the total marks in the said examination, a record which stands unbroken 'till date'. Thus C. R. Rao is an outstanding alumnus of the University of Calcutta.

The same year, C. R. Rao joined ISI, Calcutta and started working there. Shortly after that once again Prof. Mahalanobis, the lifelong mentor of C. R. Rao became instrumental and arranged to send his favourite pupil to the University of Cambridge in UK and opened up another avenue

for him. In 1946 C. R. Rao went to England and started working at the Anthropological Museum at the University of Cambridge as an assistant to J. C. Trevor. At the same time, C. R. Rao enrolled at the King's College, Cambridge to carry out research under the guidance of Prof. R. A. Fisher FRS (1890 – 1962). Prof. Fisher is considered as one of the path-breaking, pioneer statisticians of all times. In 1948, C. R. Rao obtained his Ph.D. from the University of Cambridge for his thesis entitled “Statistical Problems of Biological Classification”. His two supervisors were Prof. R. A. Fisher and Prof. P. C. Mahalanobis. They remained C. R. Rao's mentors as long as they lived.

On his return to ISI, Calcutta in August 1948, Prof. Mahalanobis immediately recruited him as a Professor at ISI and also made him the Head of their famed ‘Research and Training School’. From then till 1979, Prof. C. R. Rao served the ISI with steadfast loyalty and adorned various prestigious positions such as Head and later as Director of the ‘Training School’. After the sad demise of Prof. P. C. Mahalanobis in 1972, Prof. C. R. Rao took over as Secretary of the Indian Statistical Institute and served till 1979. The dynamic vision of Prof. P. C. Mahalanobis and the diligent hard work of Prof. C. R. Rao have made the ISI an internationally reputed Centre of Excellence in both theoretical and applied Statistics. After 1979, he went over to the USA and served as eminent Professor in various Universities there.

As regards research contributions in Statistics and Mathematics, Prof. C. R. Rao has worked on diverse areas both theoretical as well as practical. The important areas of his research comprise Estimation Theory, Multivariate Analysis, Combinatorial Design, Orthogonal Arrays, Biometry, Statistical Genetics, Generalized Matrix Inverses and Functional Equation. It will be prudent to point out that most of his path-breaking research works in these areas were done

by him during his long tenure at ISI, Calcutta. This is a matter of great pride for the Indians in general and the ISI fraternity in particular.

Prof. C. R. Rao is a much awarded scientist. He was felicitated with honorary doctorate degrees from more than 20 Universities (both Indian as well as foreign). He obtained the Sc.D. from the University of Cambridge, UK for his outstanding contributions in Statistics. He was elected a Fellow of the Royal Society, London way back in 1967. He was the recipient of many prestigious awards such as the Guy Silver Medal from the Royal Statistical Society of London, the ‘Padma Vibhushan’ by the Government of India, the J. C. Bose Gold Medal, the S. K. Wilks Medal of the American Statistical Association etc.

In Hyderabad, an advanced centre for studies and research in Statistical and Mathematical Sciences is named after him. It is called the “C. R. Rao Advanced Institute of Mathematics, Statistics and Computer Sciences”. Until recently, Prof. Rao made annual visits to this Institute and also spent some time in ISI, Calcutta.

The present award namely the ‘International Prize in Statistics’ should have been awarded to him long back. But probably it is ‘better late than never’. He is a man whose knowledge in mathematical foundations as well statistical methodology is enviable. This unique combination makes him a top ranking mathematician as well as statistician. He has supervised dozens of research scholars and they too have become world renowned in their respective fields. This protégé of Prof. Mahalanobis and Prof. Fisher is a pioneer in his own right. It is commonly accepted that along with such giants as Fisher, Neyman, Pearson, Mahalanobis, Hotelling, Ward and Cramer, Prof. C. R. Rao has brought Statistical theories to maturity.

Along with the rest of the world, India pays her tribute to one of her brightest sons, who has brought laurels after laurels to make the motherland proud.

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