



C.V. Raman and the Press: Science Reporting and Image Building: PART III: The Raman Research Institute Period. Rajinder Singh. Shaker Verlag, Düren, Germany. 2020. xiv + 119 pages. Price: €21.90.

Rajinder Singh, a recognized science historian of India, has researched the life and works of India's most renowned physicist, C. V. Raman using Occam's razor at his command. In the first two volumes in this series, he has written about the life of Raman in the 'Kolkatta Period at the IACS and Calcutta University (1907–33)' and the 'Indian Institute of Science (IIS) Period, Bangalore (1933–48)'. In this third volume under review, the author has covered Raman's life in the Raman Research Institute (RRI), Bengaluru between 1948 and 1970.

From the preface, we learn that even before his retirement from IIS, Raman had established the new institute, viz. RRI. From 1948 to 1949 onwards, until his death in 1970, he was the Director of RRI. Raman was an independent man of an independent nation. He followed the footsteps of the great visionary Mahendra Lal Sircar who wrote in 1869 in the *Journal of Medicine* 'that the prevailing backwardness of the country was due to backwardness of science and that the solution was in the vigorous pursuit of the sciences by original research'.

In chapter 1 of the book, Rajinder Singh mentions that Raman conceived the plan of RRI on 10 February 1943 by signing a formal agreement with the Indian Academy of Sciences (IAS) that RRI will be built on its land, but independent from its control. The author reports that a large slice of land had been donated by the Maharajah of Mysore, a grant for the main building was given by an industrialist and was also met by donations from the public. K. S. Krishnan donated Rs 1000, a huge amount in 1943. In the foreword Ajoy Ghatak writes that Raman collected money through generous donations for the building fund of the RRI.

RRI started functioning with spectroscopy, microscopy, optics and X-ray laboratories. Raman began his research here with a small group of young researchers. He and his group made significant contributions in the area of crystal physics, crystal optics and mineralogy.

Chapter 2 describes the results of Raman's experiments in the area of crystal physics. From the work carried out at RRI, Raman challenged Cauchy's elasticity theory, Peter Debye's theory of specific heat of solids and Max Born's theory of lattice dynamics. The author narrates the hot debate between Raman and Born at a meeting of Nobel Laureates held at Landau, West Germany in 1962, after Raman's presentation of his new theory based on the observation of diffuse spots in the X-ray spectrum of diamond. However, Born's theory was experimentally confirmed and Raman left the field of lattice dynamics.

After his controversial foray into the field of lattice dynamics, Raman started a new line of research – the 'physiology of vision'. He recollected his motivation for research in this area as follows: 'The aim of the studies was to obtain an insight into the subject by independent study without being influenced by ideas and beliefs inherited from the past. ... The studies have led to a new picture of the nature of vision and new interpretations of our visual experiences.' Raman was so much convinced with his new research findings that he wrote 'his later work was even grander and would have earned him a second Nobel Prize if only the academic world could comprehend it'. Raman developed his concepts about vision based on quantum theory, while earlier they were based on wave theory. However, G. Wald of Harvard University, USA, debunked Raman's findings.

Chapter 4 describes the events that took place in 1953 during the Silver Jubilee celebrations of the Raman effect. It was celebrated at a grand scale in South India and the reports were published in *The Hindu*. Raman was pleased with the publicity he got and acknowledged it in a befitting manner: 'The more I look back on my career the more I feel that it has been a long history of frustration, disappointments, struggle and every kind of tribulation. But there had been a few gleams of success. It was poverty and the poor laboratories that gave me the determination to do the very best that I could'.

Chapter 5 is devoted to the honours received by Raman. He was awarded the

highest civilian award, the Bharat Ratna, in 1954. But, for the reasons unknown, he did not receive this award in person. According to grandson of C. V. Raman, his grandfather 'smashed with a hammer the Bharat Ratna given to him by Nehru government'. On the contrary, when he was awarded the Lenin Peace Prize by the Soviet Union in 1957, he received it in person and delivered lectures in countries of the Russian Block criticizing the making of the atomic bomb and its consequences.

Rajinder Singh has done well to expose some myths surrounding Raman in chapter 6. He writes: 'Science is supposed to be rational, thus, it is quite difficult to attach "wonders" or holy powers to a scientist. However, in order to make a personality attractive and unusual, often either by the scientist himself or others, episodes are attached. Raman was not an exception.' Some of the myths exploded by the author are about the cost of equipment used by Raman to discover the Raman effect and his weeping during the Nobel Prize awarding ceremony in Sweden.

In the last two chapters, we find that Raman was a popular figure in academic circles. He was invited to address convocations in several universities and was conferred *honoris causa* degrees. He was the life-long President of IAS, and Director of RRI, which offered him opportunities to exploit power as and when necessary. The typical case is the transfer of the land of IAS to RRI. Raman did not earn his Ph.D. by writing a thesis. But he was the most decorated Indian scientist who was offered the Chair of Palit Professor of Physics by the University of Calcutta; elected as Fellow of the Royal Society, London, and won the Nobel Prize for the discovery of the Raman effect.

Rajinder Singh's concluding remarks are noteworthy: 'C.V. Raman's life is an inspiring story of a man, who lived in colonial and independent India. The story of a man who: (i) did not bow to politics, (ii) challenged scientific theories of western men of science, and (iii) did not hesitate confrontations.'

This book is recommended for students, scientists and admirers of Indian heritage in science.

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