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BOOK REVIEW

N. R. Sen: Life and Science

Rajinder Singh and Suprakash C. Roy

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Nikhil Ranjan Sen (NRS) is, to some extent, an unsung hero of modern Indian mathematics. In spite of his pioneering work in various branches of Applied Mathematics and pure physics, this person did not receive due recognition in his lifetime and has remained largely obscured in common parlance. It is unfortunate that except publication of some articles on him, none came forward to write an authentic biography of NRS covering his life and scientific contributions. At last, the recently published book *N. R. Sen: Life and Science* by Dr. Rajinder Singh of Oldenberg University, Germany and Suprakash C. Roy, Retired Professor as well as Editor-in-Chief of *Science and Culture*, will fulfill that long felt need. Both Dr. Singh and Prof. Roy are experienced researchers in History of Science and they have several publications, both single and joint. In the book under review, they have unearthed a number of new information about NRS using primary sources. Apart from Introduction, the book contains eight chapters and an Appendix. Of these, six chapters are devoted to discussion of scientific contributions of NRS and his associates.

In **Chapter** 1, family background of NRS, his academic life and connections with various institutions and learned societies like Calcutta Mathematical Society, Indian Statistical Institute, National Institute of Sciences (presently INSA), Indian Science Congress Association etc. have been discussed. The legacy of mathematics culture inherited by NRS and his close relatives has been also demonstrated. It is interesting to note that NRS was a staunch supporter of the opinion that vernacular should be the medium of instruction up to graduate level. **Chapter** 2 deals with early research career and attainment of D.Sc. degree of NRS. The title and examiners of his thesis and usual application seeking permission for submission of the same etc. have been

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discussed in detail. In **Chapter** 3, background of NRS's interest in relativity and his research in Germany under the supervision of two towering figures of physics have been discussed. Doctorate degree conferred on NRS in Germany, the title of his thesis and names of its examiners have also been presented in detail. Research of NRS in relativity after returning to India is also discussed. Cosmological work of NRS, viz. work on de Sitter's universe, Friedmann model, Milne's cosmological view, expansion of nebula etc. are the topics covered in **Chapter** 4.

In **Chapter** 5, investigations done by NRS and his associates on mass, density, radius, temperature, pressure, composition, stability etc. of stars on the basis of Bethe's law of energy generation and Cowling model are presented including work on red giant stars. Study of turbulence and research in fluid dynamics are the major subject matters of **Chapter** 6. In this connection, a summary of the book *The Modern Theory of Turbulence*, written by NRS has been discussed also. In **Chapter** 7, work of NRS and his associates in defence research, viz. work on ballistics including the history of inclusion of the study of ballistics in M. Sc. course and supervision of work on ballistics by NRS are discussed. Works of NRS in wave mechanics, quantum mechanics, glowing metals etc. are also included in this chapter. Some of the posthumous recognitions bestowed on Prof. N. R. Sen and his scientific contributions mentioned by some recent authors have been narrated in **Chapter** 8. In the Appendix, an improved list of papers and books written by NRS has been provided.

A salient feature of the book is that before discussing the contributions of NRS, basic ideas and historical background of the field in which NRS worked have been very lucidly explained along with previous works done in that line of research. This will help the readers to grasp the essence and importance of NRS's work in that particular area. The book contains a number of rare and historical photographs which have enhanced its importance. Moreover, as mentioned by the authors, there still remain some unanswered questions about NRS. So, this book may trigger further research on The Father of Applied Mathematics in India. Finally, it should be mentioned that this book is a must read for the researchers in History of Science as well as common readers interested about the development of mathematics in modern India.