



*V. Sahasrabudhe*



# **BHUPATI MOHAN SEN**

**(1888-1978)**

**Elected Fellow 1935**

## **EARLY LIFE AND EDUCATION**

**BHUPATI MOHAN SEN** was born on 1st March, 1888 in Rajshahi (now in Bangladesh). His father Raj Mohan Sen was Professor of Mathematics and Vice-Principal of Rajshahi Government College. His mother, Nishi Tara Devi, was a very devoted and pious lady. Sen had his early education in the Rajshahi Collegiate School and Rajshahi College. He passed his B.Sc. Examination from Presidency College, Calcutta in 1908, with triple Honours, first class in Mathematics, second class in Physics and second class in Chemistry. He obtained the M.Sc. degree of Calcutta University in 1910 occupying first position in the first class in Applied Mathematics. After taking his M.Sc. degree he went to Cambridge where he was a foundation scholar of King's College for the period 1911-1915. In 1912 he took up his M.A. degree of Cambridge University obtaining the distinction of being a Senior Wrangler with the mark of distinction in special subjects. In 1914 he won Smith's prize of the same University which is a very great academic distinction. Prior to him this prize was won by renowned scientists like Herschel, Kelvin, Tait, Stokes, Crystal, Todhunter, Clark Maxwell, Ball and others. He was the first Indian to win this prize. In 1915 he returned to India and entered into Indian Educational Service. From 1915 to 1921 he was Professor of Mathematics of Dacca Government College and was Professor of Mathematics of Dacca University from 1921-1923. After this he joined Presidency College, Calcutta as Professor of Mathematics and held this position from 1923-1930. During the period 1931-1933 he officiated as Principal of Presidency College and was confirmed in the post in 1934. He was Principal of the same College for the period 1934-42 and retired from Government Service in 1943. After retirement from Presidency College he was appointed Part-time Professor of Pure Mathematics, Calcutta University and held the same post till 1954 when he retired from University Service.

## **RESEARCH CONTRIBUTIONS**

Sen's research contributions may be classified in the following groups :

- (A) Differential Geometry**
- (B) Hydrodynamics and**
- (C) Modern Physics**





His contributions under Group A deal mainly with deformation of surfaces. He discussed the distinction between the applicability and deformation of a surface and its bearing on the general theory of deformation. He showed that the partial differential equation of the Monge-Ampere type on which the deformation of surfaces is supposed to depend is a necessary but not a sufficient condition.

His contributions under Group B are concerned with waves in canals and basins.

Since 1930 he engaged himself with research in Modern Physics. In 1933 he published a paper entitled 'The Neutron in Quantum Mechanics' in the journal *Nature*. In 1944 he delivered his Presidential address at the Mathematics and Statistics section of the Indian Science Congress on the topic 'The Fundamental Equations of Quantum Mechanics'. In 1947 he published a booklet in which he advanced a new theory of light and matter, claiming that this new theory is logically complete and satisfies experimental requirements. The second edition of this booklet was published by Calcutta University in 1958. In the preface to the second edition he writes as follows :

"The reception to the booklet has not been enthusiastic nor that there was any fault or defect found in the main arguments. Requests for comments and criticism to Physicists and Scientific periodicals excited no response. In these circumstances all that I can do is to embody the results obtained and leave the matter to the judgement of posterity.

My three objections to the Einstein Principle  $W = hv$  which is the basis of modern physics are still unanswered. They are:

(i) a divisible beam with an indivisible quantum of energy is a contradiction in terms.

(ii) the theory that light behaves as a particle or a wave just to suit experimental needs introduces the supernatural in the domain of natural philosophy.

(iii) the existence of the continuous spectrum implies infinite radiated energy.

These are logical defects and until they are answered modern physics can only be regarded as empirical, all its successes notwithstanding".

## HONOURS

Sen received many honours and was associated with various learned societies and associations. In 1935 he was elected Fellow of what is now known as Indian National Science Academy. He was elected President of the section of Mathematics and Statistics of the Indian Science Congress for its 31st session held at Delhi in 1944. He was President of the Indian Physical Society for the years 1934, 1935. He was





invited by the International Congress of Mathematicians at Amsterdam in 1954. Invitations were also received by him from the Seminars for Theoretical Physics in Aachen, Heidelberg, Cambridge and the University of London. A few years before his death he was honoured with the award of the title of 'Padmabibhusan'.

### PERSONAL LIFE

Sen married in 1917. His wife Mrs. Santa Sen, the third daughter of the illustrious Dr. Sir Nil Ratan Sircar, was a lady of great intelligence and strength of character. Mrs. Sen died in October 1980, about two years after the death of her husband. Prof. Sen is now survived by his two sons and a daughter.

### QUALITIES

Professor Sen was a man of quiet and undemonstrative nature which lent him a certain aspect of austerity. Those who had not the privilege of coming in close contact with him were invariably inclined to regard him as a serious-minded puritan. In fact, the core of his personality consisted of a complex of sincerity, intellectual vigour and honesty, sympathetic comprehension and modesty. Those who had the privilege of coming in close contact with him discovered in him an innate, though restrained sense of humour, a love of literature and philosophy, an appreciation of music and an understanding of the weakness of human nature. The present writer would like to mention some personal reminiscences here. The course of his future career has been to a great extent moulded by Prof. Sen. The writer wanted to take up Honours in English for his B.A. course but ultimately decided to take up Honours in Mathematics at Prof. Sen's advice. As already mentioned, Prof. Sen was a Professor in the Department of Pure Mathematics during the period 1945-1954. As the writer joined the Department of Pure Mathematics as a lecturer during this period he had the good fortune of working as a colleague of Prof. Sen.

A man of high moral standing and humanistic outlook, Prof. Sen's memory will be cherished by his friends, colleagues and students not only for his academic eminence but also for his devoted and conscientious services for the development of Science in our country.

### ACKNOWLEDGEMENTS

The present writer wishes to acknowledge with thanks the help rendered by Mr. Monishi Mohan Sen, I.C.S. (Retd.), the eldest son of Prof. Sen, in supplying me with some material for writing this biographical memoir. The writer wishes also to express his thanks to Prof. M. Mitra, Officiating Principal of Presidency College, Calcutta, for his help in securing a good photograph and a specimen signature of Prof. Sen from the college.





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