

Book Review

Asutosh Mukhopadhyay: Mathematical Genius with the Magic Wand

by

Satyabachi Sar

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A versatile genius Asutosh Mukhopadhyay (1864 – 1924) has been one of our highly respected and admired national heroes for his achievements in different fields and for his various good qualities. He was a visionary person of towering personality. He not only showed keen interest and intense love for mathematics in his student life, he was a mathematical prodigy. He began his life as a research student of mathematics when research in the subject was particularly unknown in India and he wanted to be a research professor. But circumstances compelled him to leave mathematical research. He drifted into law and became a famous lawyer and eminent judge. Simultaneously, he served as Vice-Chancellor of Calcutta University. In spite of his professional responsibility and many other obligations his association with mathematical activity and love for mathematics remained for whole life. Besides, his contribution to mathematics and his endeavour for fostering mathematical research should be remembered with honour and respect. Under this back drop the author has made an attempt to highlight his mathematical talent, his contribution to mathematics and his effort for propagating study and research in mathematics. At the same time, the author has made an effort to describe his role

as jurist and judge, as great educationist and builder of Calcutta University, and as great patriot and achiever of noble deeds.

The author, who is an expert in history and pedagogy of mathematics, is still engrossed in research and popularizing mathematics in various ways. This book is one of the ten published books written by him and it is an outcome of his effort in popularizing mathematics and mathematicians. In this book he has tried to unfold mainly Sir Asutosh's mathematical talent and has described his other qualities also, especially for the young learners.

The book is divided into a few main parts like 'The Career of a Versatile Genius', 'Contribution to Mathematics', 'Different Aspects of Asutosh's life through Quotations', 'Appendices'. Again each part is further divided into a few chapters to have ideas of different phases of Asutosh's life, his contribution and other things regarding him.

The part entitled 'The Career of a Versatile Genius' consists of eight chapters, namely, *Parentage and education; Study and Involvement of law; Mathematics, Asutosh and IACS; Asutosh and Calcutta University; Involvement with different spheres; Multifaceted attributes of*

* Emeritus Professor, Department of Pure Mathematics, Calcutta University, 35, B.C. Road, Kolkata-700019.
Email: uc_de@yahoo.com

Asutosh; Quotable Quotes; Excerpts from Convocation address. Each chapter, though concisely written, provides, as far as practicable, all the information to have thorough ideas about the heading of the chapter. The author has authenticated information by giving various quotations from different sources off and on. At the end of each of the chapters the author introduces 'Notes' in which a reader can understand implicitly the source of reference and explanation of terms and personalities described in the chapter. In the next chapter on *Involvement with different spheres*, readers learn about Asutosh's involvement with various organizations, his multifarious activities and his great bibliophile nature. In *Multifaceted attributes of Asutosh*, the author has used Asutosh's diary and other materials to portray his different qualities, character and traits for which he is so highly revered and famous. The chapter on *Quotable Quotes* contains various comments of celebrated personalities regarding his versatility, personality and greatness collected from different sources. From *Excerpts from Convocation address* we understand Asutosh's philosophy of life, perception to values, inspiration and advice to the youth, his love for nation and education.

The part 'Contribution to Mathematics' needs special attention of readers. This part has been divided into the following chapters: *Research and Research Papers, Problems from Pott's Euclid, Mainardi's Problem and Asutosh, A Survey of Asutosh's work, Concern with study and research in Mathematics*. In the chapter on 'Research and Research Papers', the author has given the list of research papers of Asutosh taking information mainly from two important sources, namely *Calcutta Review*, July, 1924 and *Bulletin of Calcutta Mathematical Society*, vol. XV(4) (1924–25). It is interesting to note that though Asutosh's first research paper was published in vol.10 of *Messenger of Mathematics*, Cambridge in 1880–1881 session, it was 'discovered nearly five years

ago' by Asutosh, that is when he was about 12 years old. We also find in this chapter the list of memberships and fellowships Asutosh received on account of his research. Asutosh solved 348 problems of Pott's Euclid in his school days. We have a glimpse of a few of them in the chapter 'Problems from Pott's Euclid'. In the next chapter 'Mainardi's Problem and Asutosh', we find the history, statement of the problem of Mainardi and his solution. This led Asutosh to write two research papers. In the first one Asutosh not only gave the elegant solution of the problem, but gave the beautiful geometric interpretation of the result obtained. And in the second one Asutosh formulated a general theorem. We find a detailed discussion of these in this chapter. The following chapter is an important one. Here at the first phase the author discusses in detail the proof of Asutosh's first published paper illuminating many interested readers. Then he gives ideas, in a nutshell, about each of the remaining research papers. In the second phase, we find brief discussion about the books entitled 'An Elementary Treatise on the Geometry of Conics' and 'Arithmetic for Schools', the two very good text books written by Asutosh. In the third phase we learn that 235 problems and solutions (80 problems and 155 solutions) sent by Asutosh were published in the *Educational Times*, London. A few problems proposed by Asutosh and a few solutions given by him have been narrated here to have some ideas about mathematical acumen and genius of Sir Asutosh. In the chapter on 'Concern with study and research in Mathematics', we come to know about the background and objectives of founding of Calcutta Mathematical Society in 1908 and starting of the research journal (*Bulletin of Calcutta Mathematical Society*) in 1909 and involvement of a galaxy of mathematicians and scientists like C E Cullis, W H Young, Shyamadas Mukhopadhyay, Gurudas Banerjee, B N Seal, C V Raman, Ganesh Prasad, S N Bose, M N Saha, N R Sen, S K Mitra, and others. In this chapter the author also

reproduces a few portions of entry of Asutosh's diary to tell us about his passion and love for mathematics, as well as his concern, involvement and activity with mathematics.

The part 'Different Aspects of Asutosh's Life through Quotations' contains precisely 68 'Quotations' (8 + 13 + 7 + 26 + 8 + 6) to put more light on Asutosh's 'Boyhood, Education, Career', 'Mathematical Talent and Versatility', 'Involvement with Law', 'Involvement with University', 'Propagation of Study and Research', 'Love for Books and Language', none of these quotations being repeated earlier.

In 'Appendices', we find detailed chronology of important events of Asutosh's life for quick reference, list of different honours received by him, list of books written by him in English, Sanskrit and Bengali, and information about his addresses, lectures, etc. The author also reproduces from Asutosh's Dairy the 'List of Professors of Presidency College' when Asutosh was student of the college. 'Books mentioned in Asutosh's Dairy' have also been given so that one can understand how much importance he gave to collect and read various books on mathematics and science.

We also find many photos and documents concerning Sir Asutosh scattered here and there in the book along with a genealogical table. In the end, under the heading 'References', we find a rich list of books and papers from where the author has collected material to write the book which will benefit the readers.

Overall, the author has toiled hard and long to produce such an informative and important book on Sir Asutosh narrating many facts and anecdotes of his life and collecting significant information about mathematics of Asutosh. I think, the book will be of great interest to many people, particularly to young generation and persons interested in mathematics.

Now, a few suggestions for next edition of the book may be summarised as: (i) In the page 101 there is a typographical mistake in describing the point. This may be removed. It should be

$$X = h \cos\phi \cosh(\lambda + \phi); Y = h \sin\phi \sinh(\lambda + \phi).$$

(ii) A little more mention with more theorems, illustrations and examples may be given from the two textbooks written by Asutosh and (iii) Index of various important terms used in the book may be given.