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## SIR ASHUTOSH MUKHERJEE : A BRILLIANT MATHEMATICIAN AND EDUCATOR OF THE FUTURE MINDS

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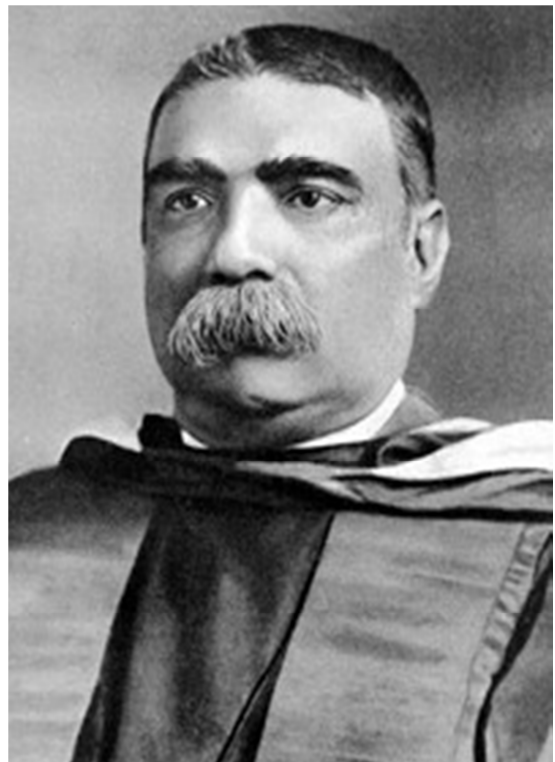
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Tribute

*"Men are always rare in all countries through whom the aspiration of their people can hope to find its fulfillment, who have the thundering voice to say that what is needed shall be done: Ashutosh had the courage to dream because he had the power to fight and the confidence to win - his will itself was the path to the goal."*

*- Rabindranath Tagore*



## 1. Introduction

The 19<sup>th</sup>-century undivided Bengal had seen ushering in of many stalwarts in the field of literature, art, science, and philosophy so much so that this glimmering period in the 19<sup>th</sup> and early 20<sup>th</sup> centuries is referred to as the 'Bengal Renaissance'. Ashutosh Mukherjee (29 June 1864, Bhawanipur, Calcutta, India – 25 May 1924, Patna, India) was one among them. It may be noted that the period from 1860 to 1865 was most remarkable for the number of great men who were born in India, namely, Rabindranath Tagore, Swami Vivekananda, Pandit Motilal Nehru, and of course, Ashutosh Mukherjee. Furthermore, many notable persons like Netaji Subhas Chandra Bose (one of the frontline Freedom Fighters of British India, founder of Forward Bloc and the Indian National Army), Deshbandhu Chittaranjan Das (renowned barrister and president of Swaraj Party), Premendra Mitra (author and poet), Satyajit Ray (world renowned film-maker, composer, and author), and number of other great personalities were born in the same Bhawanipur area of Kolkata, where Sir Ashutosh Mukherjee was born.

Born to Jagattarini Devi and Ganga Prasad Mukherjee (himself a well-known doctor who founded the South Suburban School in Calcutta), Ashutosh Mukherjee was brought up in an atmosphere of science and literature at home. Regarding the family background, Professor D. P. Sen Gupta of Indian Institute of Science, Bangalore, wrote: *"His father Ganga Prasad Mukhopadhyay was a well-known physician and his mother Jagattarini Devi is known to be a woman of courage and considerable strength of character. It is believed that the great Krittibas who wrote the first Bengali version of the Ramayana was the ancestor of Asutosh. So was Ramachandra Tarkalankar who was appointed by Warren Hastings to the Chair of Nyaya in the newly founded Sanskrit college."* (Sen Gupta, 2000a)

## 2. Early Life

For formal education, budding Ashutosh was admitted in 1869 to the Sishu Vidyalaya at Chakraberia, Bhowanipore, Calcutta, where he showed an early aptitude for mathematics. Later he was shifted to South Suburban School, founded by his own father Ganga Prasad Mukherjee, from where, in 1879, at the age of 15, he passed the Matriculation Examination of Calcutta University in which he stood second and received a first grade scholarship. He then took admission at the Presidency College (now Presidency University) in Kolkata where he met Prafulla Chandra Roy and Narendranath Dutta (who would later become famous as Swami Vivekananda). When he was still young, Ashutosh met Pandit Ishwar Chandra Vidyasagar who was a source of major inspiration for him and had a significant influence on him.

He passed

- **FA** (First Arts) Examination in 1881 from the Presidency College securing the 3<sup>rd</sup> place;
- **BA** Examination in 1884 standing first in the University winning the **Harishchandra Prize** and obtained **Ishan** and **Vizianagram scholarships**;
- **MA** Examination 1885 in **Mathematics** securing first position;
- **MA** Examination in 1886 in **Physical Science**; and
- In the same year (1886) he qualified in the special competitive examination for the award of **Premchand Roychand Fellowship**.

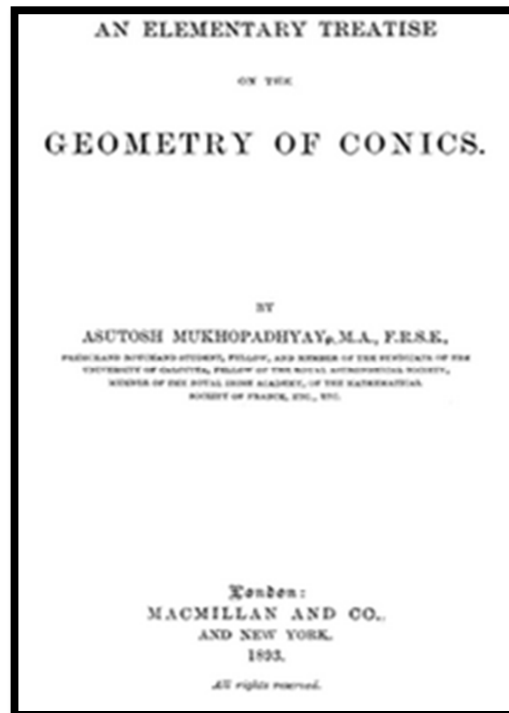
Ashutosh became the first student to be awarded a dual degree (MA in Mathematics and Physics) from Calcutta University and received the prestigious Premchand-Roychand scholarship. In the same year he was married to Jogomaya Devi — Ganga Prasad got him married in 1886 to Yogamaya, daughter of Pandit Ramnarayan Bhattacharya of Krishnanagar, a poor Brahmin girl, without any dowry — another noble feature indeed.

**Remark:** It may be mentioned here that the pressing demand for women's education in South Calcutta led the authorities of Ashutosh College to open a separate Women's Section in 1932. In 1957, on completion of its 25<sup>th</sup> year of existence, this section of the College was converted to a women's college affiliated to Calcutta University (1958) as Ashutosh College for Women with a separate establishment of its own. Subsequently it was renamed Jogamaya Devi College, in the hallowed memory of Jogomaya Devi, wife of Sir Ashutosh Mukherjee. Jogamaya Devi College is housed in the same building where Ashutosh College is located. Initially, Sir Ashutosh, as the Vice-Chancellor of Calcutta University, had founded the South Suburban College in 1916, which was later renamed as Ashutosh College after his death in 1924.

It is not widely known that, on invitation from Dr. Mahendra Lal Sarkar, the founder of Indian Association for the Cultivation of Science (IACS), Calcutta, Ashutosh Mukherjee began his intellectual career as a Lecturer in Mathematics and Mathematical Physics at IACS, from 1887 to 1889, where he delivered lectures on physical optics, mathematical physics, and pure mathematics. His lectures were of exceptional high standard. (Sen Gupta, 2000b)

Ashutosh Mukherjee was a multidimensional personality having mastery over diverse fields like mathematics, law, and educational administration. Although he is highly recognized for his contribution as an educational administrator, but by heart he was a great mathematician — a mathematician par excellence and a distinguished mathematician of his time.

He published about 20 research papers on mathematics in national and international journals between 1880 and 1890. In 1893, he published a textbook on mathematics titled *An Elementary Treatise on the Geometry of Conics*. The book was well received by students in those days and several editions were published subsequently. He pursued his mathematical studies and research even when he was busy as a lawyer at the court.



Ashutosh Mukherjee is considered as the first Indian Mathematician after Bhaskara [also known as Bhaskara II or Bhaskara Acharya ('Bhaskara the teacher')] to enter the field of mathematical research. One of India's pioneer mathematical researchers, Ashutosh Mukherjee had introduced research in geometry at a time, when research in any area of mathematics was practically an unknown entity in India. His 'diary' gives some idea about the evolution period of his mathematical creativity. His mathematical investigations formally began in 1881 with no formal guide to help him. He identified some great celebrities of mathematics, like Joseph Luis Lagrange (CE 1736, Turin, Italy – 1813, Paris, France), Andre-Marie Legendre (CE 1752, Paris, France – 1833, Paris, France), Pierce Simon Laplace (CE 1749, Beaumont-en-Auge, France -1827, Paris, France), Gaspard Monge (CE 1746, Beaune, France – 1818, Paris, France), Carl Frederick Gauss (CE 1777, Braunschweig, Germany – 1855, Göttingen, Germany), and so on, who incidentally formed the upper crust of the European mathematical community.

Asutosh read their memoirs and treatises and his fascination for geometrical studies was inclined more towards French mathematics. The crucial influence of Gaspard Monge on Ashutosh Mukherjee was perhaps most responsible for the latter's extraordinary contributions in the field of Geometry.

In the mathematical theory of partial differential equations, the *Monge equation*, named after Gaspard Monge, is a first-order partial differential equation for an unknown function  $u$  in the independent variables  $x_1, \dots, x_n$

$$F(u, x_1, x_2, \dots, x_n, \frac{\partial u}{\partial x_1}, \dots, \frac{\partial u}{\partial x_n}) = 0$$

which is a polynomial in the partial derivatives of  $u$ . Any *Monge equation* has a *Monge cone*. Classically, putting  $u = x_0$ , a *Monge equation* of degree  $k$  is written in the form

$$\sum_{i_0+\dots+i_n=k} P_{i_0\dots i_n}(x_0, x_1, \dots, x_n) dx_0^{i_0} dx_1^{i_1} \dots dx_n^{i_n} = 0$$

which expresses a relation between the differentials  $dx_k$ . The *Monge cone* at a given point  $(x_0, \dots, x_n)$  is the zero locus of the equation in the tangent space at the point. He also published papers on differential equation of trajectory, bicircular quartic, and on plane analytical geometry.

It may be noted that the French mathematician Adrien-Marie Legendre was the author of a masterly text on *Elements de Geometries*, which dealt with the essentials of *Eucladian geometry*. Influenced by such works, Ashutosh too gave a new elegant proof of the 25<sup>th</sup> proposition of the first book (Book I) of Euclid's *Elements*. It appeared in the mathematical journal of Cambridge, *Messenger of Mathematics*, 1881, 10, 122-123. Ashutosh was then a mere boy of seventeen — a student of the FA class. (Mukherji and Bhattacharjee, 2011; Mukhopadhyay, 2014) In 1883-84, still an undergraduate student, Ashutosh published his second paper titled *Extension of the Theorem of Salmon*, which appeared again in the *Messenger of Mathematics*, 1881, 13, 157-160. While he was in his MA class, he published his third paper titled *A Note on Elliptic Functions*, which was considered by the great British mathematician Arthur Cayley (of the University of Cambridge) as a contribution of 'outstanding merit'.

A dedicated geometer, Ashutosh Mukherjee continued systematizing the applications of differential equations to different types of relevant conics. The following papers are notable in this connection: (Sen, 1964; Sen Gupta, 2000a)

1. *A Note on Elliptic Functions*, Quarterly Journal of Pure and Applied Mathematics, 1886, 21, 212-217. (In this paper, he proved some addition theorem in the theory of elliptic functions by a new elegant method on the properties of the ellipse. In his book *Elliptische Funktionen*, the German mathematician Alfred Enneper has referred to this paper by Asutosh.)
2. *On the Differential Equation of a Trajectory*, Journal of the Asiatic Society of Bengal, 1887, 56, 117-120. (In this paper, Ahsutosh gave a simple method of solution of the differential equation of oblique trajectory of confocal ellipses. This was a far better method as compared to the one given earlier by the Italian mathematician Gaspare Mainardi. In his book *Differential Equations*, the British mathematician Andrew Russell Forsyth FRS has referred to Asutosh's treatment.)

Fascinated by Lagrange's works, Ashutosh identified elliptic functions as one of his own areas of research. Being further encouraged by Monge's works, he began doing research by coupling geometry and calculus, which resulted in several very important publications: (Sen, 1964; Sen Gupta, 2000a)

1. *On Monge's Differential Equations to all Conics*, Journal of the Asiatic Society of Bengal, 1887, 56, 117-120.
2. *A Memoir on Plane Analytical Geometry*, Journal of the Asiatic Society of Bengal, 1887, 56, 288-349.
3. *A General Theorem on the Differential Equations of Trajectories*, Journal of the Asiatic Society of Bengal, 1888, 57, 72-99.
4. *Remarks on Monge's Differential Equation to all Conics*, Proceedings of the Asiatic Society of Bengal, February, 1888.
5. *The Geometric Interpretation of Monge's Differential Equation to all Conics*, Journal of Asiatic Society, Bengal, 1889, 58, 181-185.
6. *On the Differential Equation of all Parabolas*, Journal of the Asiatic Society of Bengal, 1888, 57, 316-332.
7. *In a Curve of Aberrancy*, Journal of the Asiatic Society of Bengal, 1890, 59, 61-63.

It is worth noting that Ashutosh Mukherjee successfully gave geometrical interpretation of Monge's differential equations to all conics without any guidance from anywhere, depending exclusively on his own brilliant mind. He interpreted that "the radius of curvature of the aberrancy curve vanishes at every point of every conic." And this unique contribution of Ashutosh has been referred to in Joseph Edwards' textbook *Differential Calculus for Beginners* (Macmillan, 1896). Another work of Ashutosh on differential equations of trajectories, based on works of Monge and M. Roberts was cited by British mathematician Andrew Russell Forsyth FRS in his book *Differential Equations*. Following are some other papers published by Ashutosh Mukherjee: (Sen, 1964; Sen Gupta, 2000a)

1. *On Poisson's Integral*, Journal of Asiatic Society, Bengal, 1888, 57, 100-106.
2. *Some Applications of Elliptic Functions to Problems of Mean Values*, Journal of Asiatic Society, Bengal, 1889, 58, 199-213.
3. *Some Applications of Elliptic Functions to Problems of Mean Values*, Journal of Asiatic Society, Bengal, 1889, 58, 213-231.
4. *On Clebsch's Transformation of the Hydrokinetic Equations*, Journal of Asiatic Society, Bengal, 1890, 59, 56-59.
5. *Note on Stoke's Theorem and Hydrokinetic Circulation*, Journal of Asiatic Society, Bengal, 1890, 59, 59-61.
6. *Mathematical Notes (Questions and solutions)*, Educational Times, London, 1891, 44, 144-182.
7. *Mathematical Notes (Questions and solutions)*, Educational Times, London, 1892, 45, 146-168.

A trendsetter in the field of geometrical research in India, Ashutosh Mukherjee inculcated the spirit of enquiry in the minds of younger mathematicians. The first major piece of research work in Mathematics in recent times in India was that by the great educationist, Advocate, and Judge Sir Ashutosh Mukherjee. (Mukherjee, 1886) It was published in the Quarterly Journal of Pure and Applied Mathematics titled *A Note on Elliptic Functions* and contains a proof of the *Addition Theorem of Elliptic Integrals of the first kind*. Mukherjee, who had just come out of college, derived the theorem from two formulas well known in confocal conics concerning the line element on a tangent to one of the conics expressed in confocal coordinates. This leads to an elliptic integral. Arthur Cayley, who himself had given six proofs of the addition theorem, was attracted by Mukherjee's paper.

At the end of the paper is a note by Cayley which contains the following interesting remarks: "It is remarkable how in the foregoing investigation a real result is obtained by the consideration of an imaginary point." The variables  $\phi$  and  $\psi$  of Mukherjee's paper may be real, but the point  $(x, y)$ , where  $x^2 = c^2 \sin^2 \phi \sin^2 \psi$ ,  $y^2 = -c^2 \cos^2 \phi \cos^2 \psi$ , must be an imaginary point, the intersection of two hyperbolas confocal with the given ellipse and the consecutive point on the imaginary tangent drawn from this to the ellipse. Mukherjee must have studied the classical treatises of the 19<sup>th</sup> century on elliptic functions, including the works of Briot and Bouquet (1875) (in French) and Enneper (1875) (in German). Later Ramanujan has also given the addition theorem of elliptic integrals in his second notebook.

It may be noted that Ashutosh Mukherjee's research papers roused a lot of interest among a section of mathematicians. In his letter to Ashutosh Mukherjee from the University of Cambridge, dated the 14<sup>th</sup> September 1887, Arthur Cayley in a way supported Ashutosh Mukherjee's criticism of James Joseph Sylvester's interpretation of the Mongian equation and wrote, "it is of course all perfectly right." Col. Cunnigham wrote, "Professor Asutosh Mukhopadhyay has proposed a really excellent mode of geometric interpretation of differential equation in general...."

When he became Vice-Chancellor of Calcutta University, Sir Ashutosh Mukherjee brought in Syamadas Mukhopadhyay (1866-1937), a brilliant mathematician, who joined the newly formed Department of Pure Mathematics of the University of Calcutta as a Lecturer in 1911. Greatly encouraged and influenced by Sir Ashutosh Mukherjee (apparently his idol), Syamadas took up research in various branches of geometry and made remarkable contributions. In fact, in one of his papers *On Rates of Variation of the Osculating Conic*, (Mukhopadhyay, 1909) Syamadas referred to a paper by Asutosh Mukherjee entitled *The Geometric Interpretation of Monge's Differential Equation to all Conics*, (Mukherjee, 1889) and commented that "Professor A. Mukhopadhyay has based an elegant interpretation of the differential equation of the general conic." (Mukherji and Bhattacharjee, 2011)

Ashutosh's mathematical works have earned global recognition, particularly in the context of contributions made by the Italian mathematician Gaspare Mainardi, the French mathematician Gaspard Monge, the English mathematician George Boole, and others. For his outstanding contribution in mathematics, was elected Fellow of the Royal Society of Edinburgh (1886), of the Royal Astronomical Society (1985), of the Socete de Physique of France, of the Mathematical Society of Palermo, Italy (1890), and of the Royal Irish Academy; and Members of the Mathematical Society of London, Paris, Palermo, and New York. (Chittabrata and Das, 2010)



## Mathematics

As mentioned earlier, according to some researchers, Ashutosh Mukherjee is considered as the first Indian mathematician after Bhaskara II to enter the field of mathematical research in true sense. But, his brilliance in mathematics could not get nurtured to the desired extent primarily due to lack of support from the colonial regime. Destiny made him pursue a career in law. (Ghosh, 2014) In his article *Educationist, Leader and Institution-Builder*, D. P. Sen Gupta wrote: (Sen Gupta, 2000a) "Asutosh could become a mathematician of world rank if he had chosen to confine himself to the pursuit of mathematics alone. However, despite all his preoccupation, Asutosh founded the Calcutta Mathematical Society in 1908 and as President guided its activities until his death. He was luminary in legal profession but he decided to serve his country in a manner he thought was the best, to take the best out of Western education and Indian heritage and set up a university of great distinction to stimulate the minds of young Indians." Ashutosh served as the Founder President of Calcutta Mathematical Society from 1908 to 1923.

## 4. Law / Judiciary

Asutosh Mukherjee obtained Bachelor of Laws (BL) degree in 1888 and the same year he started practicing law at the Calcutta High Court where his senior was Sir Rashbehari Ghosh (1845-1921), a legal stalwart at that time; he studied Law in the City College and stood first in all the three examinations in Law. Based on a thesis, he got his Doctorate of Law (DL) in 1894, and in 1897 he was elected as the Tagore Professor of Law in the University of Calcutta. Soon he built up an extensive practice and created a name for himself. He had then published a book, *The Law of Perpetuities in British India* (1898). One of his great achievements was the establishment of the University Law College in Kolkata in 1909.

A highly successful advocate, Sir Ashutosh was one of the most eminent legal luminaries of pre-independent India. The then Viceroy Lord Curzon invited him to become a judge of the Calcutta High Court, which he accepted after taking consent of his mother to whom he was fondly devoted and assumed his charge on 04 June 1904—he never went against the wishes of his mother. It may be mentioned here that Asutosh Mukherjee was personally nominated by Lord Curzon as the representative of the citizens of Calcutta to attend the coronation of King Edward VII. But, since his mother did not want her son to go abroad, he declined the offer. (Pai, 2014) He remained a judge of the Calcutta High court from 1904 till his retirement from judgeship in 1923, officiating for a few months as Chief Justice of Bengal in 1920. After his retirement from judgeship in 1923, he resumed practice at the bar. As judge of the Calcutta High Court he passed judgment in nearly 20000 cases many of which are still quoted as masterpieces of judgments.

Sir Ashutosh Mukherjee was a prolific educator whose long association with the Calcutta University started in 1889 as a Fellow. The same year he became a member of the Syndicate of the university at the age of 25. He was a member of the Senate and Syndicate for 16 years. He served as the President of the Board of Studies in Mathematics for 11 years. In 1906, he was invited by Lord Minto, the Viceroy, to be the Vice-Chancellor of Calcutta University. He joined as the second Indian Vice-Chancellor of the University of Calcutta and remained at the post for four consecutive two-year terms (1906-1914) and a fifth two-year term (1921-23). Justice Gooroodas Banerjee became the first Indian Vice-Chancellor of the University of Calcutta in the year 1890. Ashutosh Mukherjee believed that to free the society from racism and discrimination of the British rule it was necessary to spread the light of knowledge from grass root to higher level of education. And he resolved to create a modern university out of his Alma Mater, the Calcutta University. Under his able guidance, the University of Calcutta got transformed from a merely examining body to one of the greatest teaching universities of the East.

Mukherjee had an innovative vision about the kind of education the youth needed and he had the insight, tenacity, and grit to wrest the requisite resources from his colonial masters. A student of Mathematics, Physics, and Law, Sir Ashutosh Mukherjee brought in a diversity of disciplines to the University by introducing graduate courses in Comparative Literature, Anthropology, Applied Psychology, Industrial Chemistry, Ancient Indian History and Culture, and Islamic Culture. He also made arrangements for postgraduate teaching and research in Bengali, Hindi, Pali, and Sanskrit. The diverse range of subjects offered by Calcutta University today is evidently the harnessing of his concerted efforts. Scholars from all over India, irrespective of race, caste, and gender, came to study and teach in the university. Using his vast network of scholars and friends, he brought in accomplished professors to the University, both from India and abroad. He even persuaded European scholars to teach at his university.

Within a short time of his becoming Vice-Chancellor, Ashutosh Mukherjee collected a large sum of money .....

As Vice-Chancellor, however, his first priority was to establish post-graduate studies and research in the university, both in science and arts, which was strongly opposed by the government and did not get any financial support for his move. But, he achieved his goal against all odds. He could do it because of the spontaneous support from Sir Taraknath Palit (a lawyer and philanthropist, who was associated with the Swadeshi Movement during the partition of Bengal) and Sir Rash Behari Ghosh (a politician, lawyer, social worker, and philanthropist).

Taraknath Palit made an initial donation of Rs. 13.66 lakhs to the University for two Professors' posts, one each in physics and chemistry. Later Palit also donated to the university a plot of land and a residential building. The first Palit Professorship of chemistry was offered to Acharya Prafulla Chandra Roy, who took up the assignment in 1916 after his retirement from the Presidency College. Sir Ashutosh invited Chandrasekhar Venkata Raman to become the first Palit Professor of physics, which he accepted in 1917. In 1914, Sir Rash Behari Ghosh made an initial donation of Rs. 10.46 lakhs, out of which four posts of Professors were created, one each in applied mathematics, physics, chemistry, and botany. The first incumbents to these Ghosh professorships were, respectively, Ganesh Prasad, D. M. Bose, P. C. Mitter, and S. P. Agharkar. During 1919-1921, Rash Behari Ghosh made another donation of Rs. 14 lakhs, out of which the Technology Faculty with a department each in physics and chemistry was established. Commenting on Sir Ashutosh' ability to collect fund, B. V. Subbarayappa, a noted chemist turned philosopher and historian of science, wrote: "It was Asutosh Mukherjee, the distinguished mathematician and Vice-Chancellor of Calcutta University, who succeeded in rousing public philanthropy and succeeded in raising funds for creating Chairs in physics and chemistry. The University College of Science at Calcutta played a pivotal role in providing scientific leaders of eminence and generating as well as fortifying research in several parts of the country even in colonial ambience." Asutosh Mukherjee appointed Meghnad Saha, S. N. Bose, and S. K. Mitra as Lecturers in the Department of Physics; J. C. Ghosh, J. N. Mukherjee, and P. C. Ray in Chemistry; and S. K. Banerjee in Applied Mathematics. Saha and Bose were first appointed in the Department of Applied Mathematics but they were later transferred to the Physics department at the instance of Asutosh Mukhopadhyay. Among the Professors were P.C. Roy, Ganesh Prasad, P. C. Mitter, Brojendranath Seal, and C.V. Raman. Lord Lytton, who was Governor of Bengal, said, "Asutosh, in the eyes of his countrymen and in the eyes of the world, represented the university so completely that for many years Asutosh was in fact the university and the university Asutosh."

He was responsible for introducing Bengali as a separate subject in the MA programme of the university, which in those days was a difficult thing to achieve. Marathi scholar D.D. Kosambi (father of famous mathematician-turned historian D.D. Kosambi) was appointed for teaching Pali language. Mukherjee is mostly known for his pioneering role in broadening the scope of higher education in the country. He changed the very direction of Calcutta University integrating teaching and research at the university level for the first time in India. He strived hard to establish a synthesis of the best of Western and Indian education and culture.

Himself a visionary, Ashutosh Mukherjee wanted the students of Calcutta University to be exposed to the works of great personalities of the academic world .....

He once said, "We cannot sit on the lovely snow-capped peaks of the Himalayas absorbed in contemplation of our glorious past. We cannot waste precious time and strength in defence of theories and systems which have been swept away by the irresistible avalanche of world-wide changes.... We can live neither in nor by our defeated past and if we would live in the conquering future, we must dedicate our whole strength to shape its course.... let us raise emphatic protest against all suicidal policy of isolation and stagnation."

A few books that are available on Sir Ashutosh Mukherjee and also the materials available in electronic searches help us understand him better. It is a fact that Sir Chandrasekhara Venkata Raman (without an advanced degree then) would not have emerged with his world class research but for Sir Ashutosh Mukherjee's bold decision to let him do research. Our readings show as to how many more persons like Meghnad Saha benefited due to his early encouragement and practical support.

In his interesting book *Nucleus and Nation: Scientists, International Networks, and Power in India*, Robert S. Anderson provides a number of references to Sir Ashutosh Mookherjee and a brief note on his life. (Anderson, 2010, p. 584-585) All references to him are very positive. It would suffice to quote one sentence from the book: "No greater friend to young scientists could have been in the Vice-Chancellor's office than Mookherjee, and this continued even when he left that office to become justice of Calcutta High court in 1920 until his death in 1924." He wanted to prepare all of them to excel by international standards that were emerging then.

Sir Ashutosh Mukherjee was responsible for the foundation of the Bengal Technical Institute in 1906 and the College of Science of the Calcutta University in 1914. The Bengal Technical Institute continued to function under all odds, thanks to the donations received from eminent personalities like Sir Tarak Nath Palit and Dr. Nilratan Sarkar, and in 1928, it was renamed as the College of Engineering and Technology.

A genius of rare distinction, Sir Ashutosh was connected with almost all the learned bodies of his time in Bengal. He was elected President of the Asiatic Society four times, establishing a record in the annals of the Society up to his time. It may be recalled that he was admitted into the membership of the Asiatic Society at the age of 21.

During his tenure as Vice-Chancellor of Calcutta University, Sir Ashutosh Mukherjee also became the General President of the first Indian Science Congress. The Indian Science Congress was established with the initiatives undertaken by P. S. MacMohan and J. L. Simonsen, who worked jointly as Honorary General Secretaries of the Congress till 1921, when MacMohan was succeeded by Sir C. V. Raman. As General President, Sir Ashutosh presided over the first session of the Indian Science Congress which was held in 1914 during 15-17 January at Calcutta in the premises of the Asiatic Society of Bengal. In his inaugural address, Mukherjee said:

“It is now more than two years ago that Professor MacMohan of the Canning College at Lucknow, and Professor Simonsen of the Presidency College at Madras, brought forward a proposal for the foundation of an Indian Association for the Advancement of Science. The object and scope of the proposed Institution were stated to be the similar to those of the British Association for the Advancement of Science, namely to give a stronger impulse and a more systematic direction to scientific enquiry, to promote the intercourse of societies and individuals interested in science in different parts of the country, to obtain a more general attention to the objects of Pure and Applied Science and the removal of any disadvantages of a public kind which may impede its progress. This proposal was widely circulated amongst persons of culture interested in the spread and development of science in this country, and the fundamental idea, as might easily have been anticipated, met with favourable reception.... But it was felt by many men of experience that the pressure of heavy official duties under which many investigators here carry on their scientific work, the climatic conditions which prevail in this country, and the long distances which have to be traversed, constitute practical difficulties of no mean order in the way of the immediate formation of a peripatetic association, designed to meet periodically, in turn, in all the different centres of scientific activity.... As the result of a full discussion of the situation, the view ultimately prevailed that the desired object could be attained if a science congress was held in the first instance in Calcutta, under the leadership of the Asiatic Society....”

In October 1918, he delivered the first convocation address of the Mysore University and on the first January 1924, at the University of Lucknow.

Ashutosh Mukherjee was knighted in 1911 in recognition of his contributions to education in India. And of all the ‘Sirs’ in the Indo-British pantheon, Sir Ashutosh Mukherjee was least respectful for the British Imperialism.

He was often called 'Banglar Bagh' (meaning the 'Tiger of Bengal') for his high self-esteem, courage, academic integrity, and a general intransigent attitude towards the British Government. Perhaps the most emphatic figure of Indian education, Sir Asutosh was a man of great personality, high self-respect, courage, and towering administrative ability. He was fiercely independent and never compromised with his principles. There were moments of intense tension, when Netaji Subhas Chandra Bose, then a student of Presidency College, reportedly assaulted Professor E. F. Oaten, an Englishman, in 1916, which he did after reading so many incidents about the exploitation/abusing of the fellow Indians by the British, Subhash decided to take revenge. As a result, he was expelled from the Presidency College. There was immense pressure on Sir Ashutosh, the Vice-Chancellor; to rusticate Subhas from the University. But he could not allow the academic life of a brilliant student to be nipped in the bud for standing up against injustice. Instead, he arranged for young Subhas to continue studies at the Scottish Church Missionary College, from where he graduated with a first class in philosophy in 1919.

In the early stages of Calcutta University, it was a very tough task to convince or attract young people to the campus to join different courses of education offered by it. Because, those people simply thought that education through a foreign language was an impossible proposition. By continuous efforts and persuasion, the impasse was gradually removed. In this matter the role played by a few intellectuals of Bengal was very commendable. Their conviction was that the future of India hinged upon the modern Western education. Sir Ashutosh Mukherjee had taken special initiative to tell the people that without modern Western education, Indian nation will not be able to progress. While propagating this, he had never forgotten his roots. National values and ethos were high in his mind. Hence he wanted a perfect blending of two important things, i.e., ancient Indian culture and heritage with the modern concepts in all aspects of life.

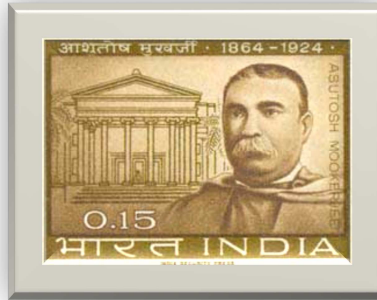
Ashutosh Mukherjee had extraordinary knack to pick talents. His eye for detecting young talent is part of folklore even today in the lofty stratosphere of academics. He was instrumental in discovering the talents of Dr. Chandrasekhara Venkata Raman, who was virtually an unknown officer of the Indian Accounts Service spending his evenings in research in the Indian Association for Cultivation of Science, in Bowbazar, Calcutta. Ashutosh Mukherjee, much against opposition, offered the prestigious Palit Chair in Physics to Raman since he was fully aware of the excellence of Raman's publications and the recognition he had already received abroad. (Raman, 1917) Raman accepted the offer and the rest of the story is too well known to be recounted.

In 1921, Sir Ashutosh found another gem. He persuaded budding philosopher Sarvepalli Radhakrishnan – the future President of India – to join Calcutta University. Sarvepalli Radhakrishnan, a relatively unknown Lecturer at Mysore University, was offered a professorship by Ashutosh Mukherjee and brought to Calcutta University. He coaxed C.V. Raman to teach Physics and Radhakrishnan to teach Philosophy and put Calcutta University on the world map of academics. More such stories abound. A number of persons who were handpicked by Ashutosh in various positions in the science and arts faculties of the Calcutta University earned international fame for the university and Calcutta University came to be known as a centre of excellence. In fact, when an impoverished mathematician in Madras – Srinivasa Ramanujan – was trying in vain to publish his theories, Sir Ashutosh was one of the first persons to recognize his genius and tried to bolster his cause in academics.

He was influential in the University affairs throughout his life, being appointed the Vice-Chancellor from 1906 to 1914 and again from 1921 to 1923. Let us understand, for example, whom Sir Ashutosh Mukherjee found for the Science College that he created as an affiliate to the University – none other than the young physicist Chandrasekhara Venkata Raman. And this he did despite the two not-inconsiderable hurdles. Firstly, Raman was working in the government's Finance Department and they were understandably reluctant to give him away. Secondly, the terms of the endowment professorship that Raman was to adorn disqualified him. Ashutosh managed to stitch up both snags and C.V. Raman joined as Palit Professor of Physics, at a much lower salary than his government job. Raman was given a free hand with no compulsion to take classes, but to augment fundamental research. Raman, however, loved teaching and conducted classes along with research projects.

During Sir Ashutosh Mukherjee's time, Calcutta University became a buzzing hive of academic and intellectual pursuits. Luminaries such as Acharya P. C. Roy, widely known as the father of chemistry in modern India, and historian and epigraphist D. R. Bhandarkar accentuated the scholarly milieu. On quiet afternoons, students and teachers alike would gather to attend guest lectures by Rabindranath Tagore.

For his contribution to education, the Government of India issued a stamp in his honour in 1964 to commemorate his contribution to education. His resting place has been named Ashutosh Mookerjee Road in Kolkata.



Sir Ashutosh Mukherjee died suddenly in 1924 at Patna, soon after losing a fiercely contested Hindu inheritance / succession law case to Syed Hasan Imam, a leading barrister-cum-politician of Patna. Ashutosh had four sons and three daughters. The eldest daughter, Kamala Debi (1895-1923) was married, when she was nine, to the son of Rishi Bankim Chandra Chatlerjee's daughter. But unfortunately the husband died of typhoid within a year. Ashutosh Mukherjee decided to give his daughter in marriage for a second time, upholding the cause of widow-remarriage which social reformers like the stalwart Ishwar Chandra Vidyasagar had initiated. This met with a tremendous opposition from all quarters, including Kamala's mother-in-law who went to Court. Ashutosh was threatened with social ostracism; dirty pamphlets were circulated (a favourite exercise of perverted and sick minds). But Ashutosh Mukherjee stood his ground like a rock. Kamala was married a second time in 1908; she was then thirteen. But as ill luck would have this time too; she became a widow within a year! This hapless lady who was the cynosure of the family passed away in 1923, after a brief illness, at the age of 28— causing a severe setback to Ashutosh's life. The reformer father, Sir Ashutosh Mukherjee, passed away the next year.

The epitaph beneath his marble bust at the Ashutosh Museum of Arts at the University of Calcutta reads, "His noblest achievement, surest of them all — A place for his mother tongue — in his stepmother's hall." French scholar Sylvan Levi's observation makes fitting conclusion, "Had this Bengal Tiger been born in France, he would have exceeded even Georges Clemenceau, the French Tiger."

Sir Ashutosh was very fond of books and often bought books in large numbers from the very well-known College Street in Calcutta which had to be later carried by porters to his house. He was an ardent booklover and had acquired a collection of over 86,000 books and it remains even today as the largest book collection by a single individual.



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In 1949, his heirs donated this entire collection to the National Library of India at Kolkata. *Notitia Vtraqve...* (in Latin) (1553) is the oldest printed book in this collection. The specialty of the Ashutosh Collection is that it has multiple editions of many titles. There are about 30 editions of *The Rubaiyat*, 30 of *The Arabian Nights*, 25 of *The Holy Bible*, and 4 of the *Encyclopaedia Britannica*. Another feature of the collections is the limited editions from the last decades of the 19<sup>th</sup> century and the early decades of the 20<sup>th</sup> century.

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