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The Chemist Who Dreamt of a Self-Reliant India

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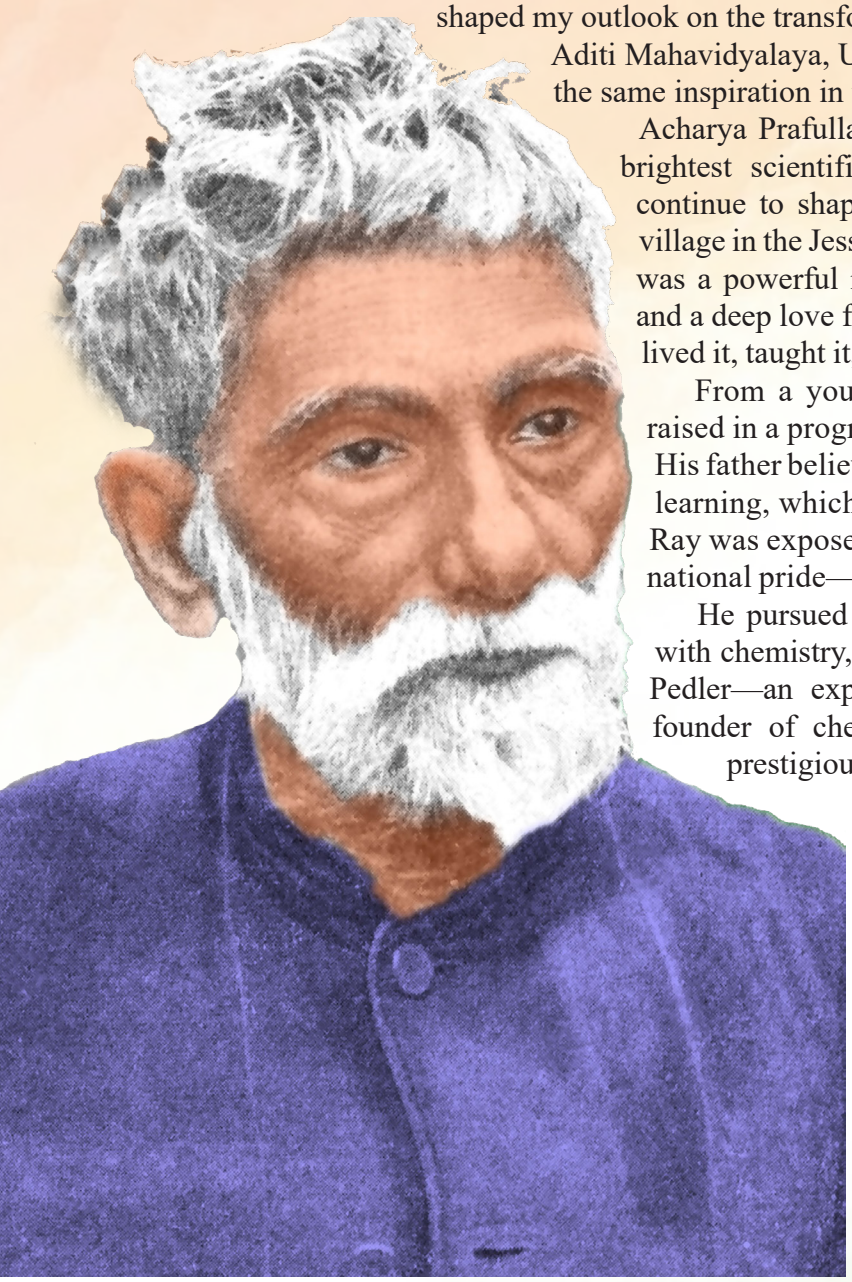
As a Chemistry student in my younger days, I often found myself leafing through pages of textbooks and wondering if any Indian scientist had made it big during the colonial era—when our resources were looted and our voices often silenced. That is when I came across the story of Acharya Prafulla Chandra Ray. Reading about him did more than fill me with pride—it sparked a lifelong admiration and shaped my outlook on the transformative power of science. Today, as Principal of Aditi Mahavidyalaya, University of Delhi, I find his journey still ignites the same inspiration in the hearts of our students.



Acharya Prafulla Chandra Ray (1861–1944) was one of India's brightest scientific minds, a true pioneer whose contributions continue to shape our country's identity even today. Born in a village in the Jessore district of present-day Bangladesh, Ray's life was a powerful mix of scientific brilliance, social commitment, and a deep love for the nation. He didn't just study chemistry—he lived it, taught it, and used it as a tool to serve the people of India.

From a young age, Ray showed signs of genius. He was raised in a progressive family that valued education and reform. His father believed in modern education and supported women's learning, which was a bold step during those times. As a child, Ray was exposed to the ideals of equality, rational thinking, and national pride—values that would guide him throughout his life.

He pursued his education in Calcutta and soon fell in love with chemistry, thanks to an inspiring teacher named Alexander Pedler—an experimental chemist and widely considered the founder of chemistry education in India. After winning the prestigious Gilchrist Prize Scholarship, Ray went to study in Britain at the University of Edinburgh. There, he earned his BSc in 1885 and later a DSc in 1887 for his pioneering research on conjugated sulphates of the copper-magnesium group. His doctoral thesis was a study of isomorphous mixtures and molecular combinations. During this period, he was elected Vice President of the Chemical Society of Edinburgh University.

He also made a name for himself as a writer of socio-political essays such as "India Before and After the Mutiny" and "Essay on India," which drew significant attention in Britain, even earning responses from British

parliamentarians. His scientific career was already soaring, especially after the discovery of mercurous nitrite in 1896—a compound that earned him global acclaim and featured in the Encyclopedic Treatise on Inorganic Chemistry.

Ray returned to India and began teaching chemistry at Presidency College in Calcutta. Later, he became the first Palit Professor of Chemistry at the University College of Science (popularly known as Rajabazar Science College). He was also affiliated with the Indian Association for the Cultivation of Science (IACS), a centre for advanced scientific research.

In 1892, Ray's desire to serve the nation through science led to the founding of Bengal Chemical Works (later Bengal Chemical & Pharmaceutical Works Ltd), India's first pharmaceutical company. Starting with a modest sum of ₹700, he worked after hours in his home lab to develop products such as sulfuric acid, sodium carbonate (*sajimati*), and a host of medicinal formulations—both allopathic and traditional. Initially, these faced resistance in a market dominated by British imports. But with support from *Swadeshi*-minded medical practitioners like Dr Nilratan Sarkar and Dr Mahendralal Sarkar, BCPW gradually earned the trust of Indian consumers.

The enterprise eventually expanded to cities like Kolkata, Bombay, Panihati, and Kanpur. In 1980, BCPW was nationalised and became India's first government-owned pharmaceutical company. Acharya Ray's entrepreneurial venture marked the birth of India's indigenous chemical industry and demonstrated how scientific knowledge could empower national self-reliance.

He was a mentor to many Swadeshi entrepreneurs in Bengal. His students and collaborators went on to start successful ventures in pottery, waterproof goods, chemicals, and publishing. Some prominent enterprises of the era included Bengal Waterproof Works (makers of Duckback), Bengal Lamps, Bengal Potteries Ltd, and Calcutta Chemical Company. These initiatives laid the early foundations of what we now call 'Make in India' and '*Aatmanirbhar Bharat*.'

Acharya Ray is also attributed to different Swadeshi activisms during his lifetime. He was closely associated with freedom fighters

in Bengal and supported the preparation of chemical bombs and explosives for revolutionary activities. He promoted Gandhian ideals of *khadi* and *charkha* and served as a Patron of Swadeshi ventures like BangaSree Cotton Mills. His advocacy for indigenous industries was unwavering, and he played a key role in promoting enterprises that later inspired generations of entrepreneurs.

Among his most enduring scholarly contributions is the two-volume masterpiece, "A History of Hindu Chemistry," published in 1902 and 1909. This pioneering work traces India's chemical heritage from Vedic times to the 16th century. Ray meticulously examined ancient Sanskrit texts, translating and commenting on their content, and showcasing India's scientific acumen in metallurgy, pharmacy, and chemical theory. He argued convincingly that the foundations of chemistry in India were laid long before the Western world embraced modern science. In these volumes, one finds insightful discussions on alkalis, salts, mineral drugs, and early atomic theories from the *Nyaya-Vaisheshika* schools. He boldly contested Eurocentric views, establishing that India had a rational and vibrant scientific tradition.

Acharya Ray also founded the Indian School of Chemistry at Presidency College, nurturing a new generation of Indian scientists. Some of his students included stalwarts like Nilratan Dhar, Jnanendra Chandra Ghosh, Jnanendra Nath Mukherjee, Satyendranath Bose, and Priyadaranjan Ray. In 1924, he founded the Indian Chemical Society and served as its first president. His School and Society together set the groundwork for modern chemical education and research in India.

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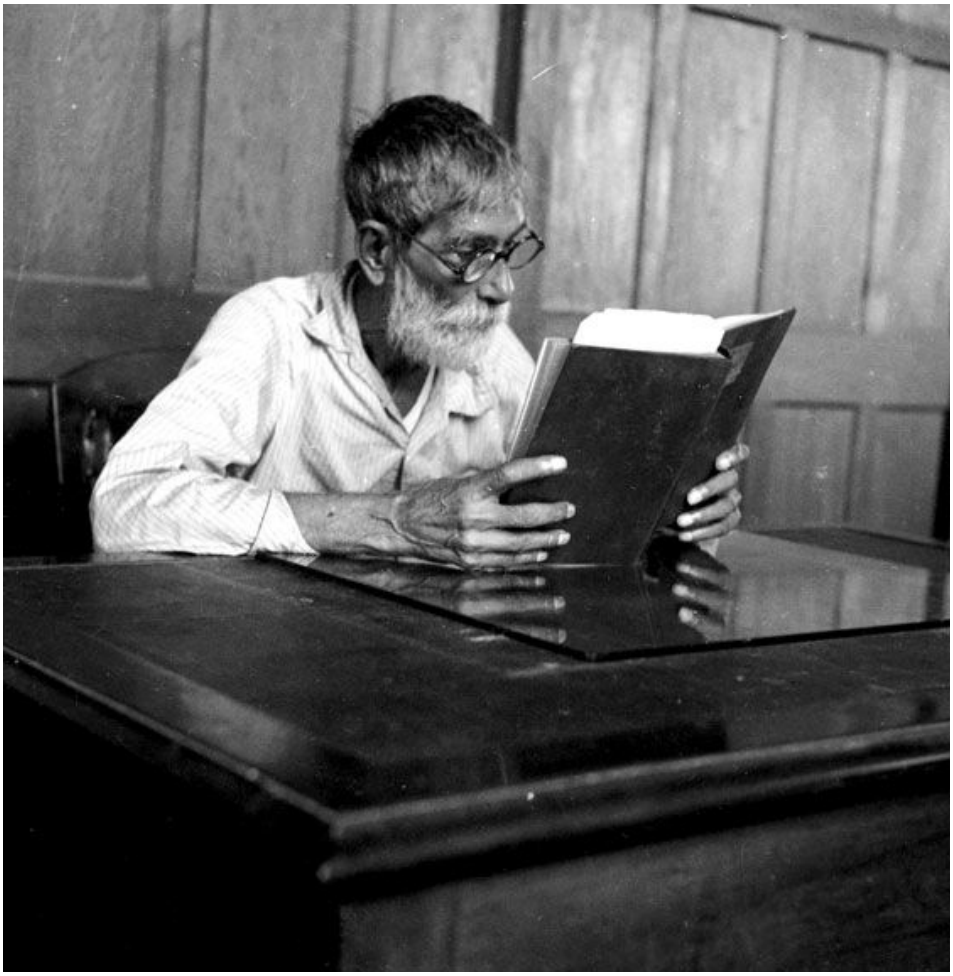

Throughout his life, Ray remained a selfless visionary. He donated his earnings to research and social causes, supported women's education, and remained committed to building a self-reliant India. As a university professor under the leadership of Sir Ashutosh Mukherjee, he championed vigorous science education. He lived simply and mentored tirelessly. In many ways, he was a precursor to the ideal of the entrepreneurial academic—combining rigorous teaching with real-world applications, much like the model now popularised by institutions like MIT.

As a Chemistry student myself, I have often looked up to Acharya P.C. Ray as a beacon of inspiration. His life demonstrates how deeply rooted science is in India's intellectual tradition. His dedication to reviving India's lost scientific glory during one of its most difficult political periods is truly moving. More than just a chemist, he was a visionary who wanted India to rise on the strength of its own people, its own knowledge systems, and its own industries. At a time when colonial forces worked to suppress native capabilities, Ray boldly envisioned an India that would one day be self-reliant and globally respected.

Today, as India marches toward becoming a developed nation, the legacy of Acharya P.C. Ray stands tall. His principles align closely with the dream of Aatmanirbhar Bharat. His life is a reminder that making in India is not just an economic policy—it is a cultural ethos deeply rooted in our history. His efforts to empower youth, build indigenous industries, and promote scientific thinking remain as relevant today as they were a hundred years ago.

While Acharya Ray established India's first pharma-ceutical company, he may not have foreseen that India would emerge within a century as the 'Pharmacy of the World'—producing and supplying the bulk of generic medicines and vaccines globally. His 'Make-in-India' mantra remains timeless, resonating with today's start-up ecosystem and young entrepreneurs committed to self-reliance.

Acharya P.C. Ray showed us that one person's dedication can spark a movement. He turned his knowledge into action, and action into transformation. In doing so, he not only changed the course of Indian science but also helped shape the soul of a nation. ◆

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