

150TH BIRTH ANNIVERSARY

## P C Roy and Modern Science

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An appreciation of the intellectual renaissance, which occurred in India during the second half of the nineteenth century, flowing into the twentieth, is vital in order to understand the genesis of modern science in this country. It was within this renaissance that Modern Science took root and flourished to a remarkable extent in a brilliant group of scientists. Acharya Prafulla Chandra Roy (Aug 2, 1861- June 16, 1944) was one of them. Hailing from Khulna (now in Bangladesh), he attended the Hare and Albert schools and while studying in Pandit Iswarchandra Vidyasagar's (1820-1891) Metropolitan Institute, he developed a keen interest in chemistry. He won the prestigious Gilchrist Scholarship and went to study in Edinburgh University in 1882. The Gilchrist Scholarship was established in memory of Dr Berthwick Gilchrist (1759-1841) by the Gilchrist Education Trust in 1865 ...."for the benefit of advancement and propagation of education and learning in every part of the world as far as circumstances will permit".... (quoted from his will). Aghornath Chattopadhyay (1850-1915), the first D.Sc. (Edinburgh) of India was the first recipient of the Gilchrist Scholarship in India. Just to mention, Sarojoni Chattopadhyay (Naidu) (1879-1949), an eminent poet in English and first female President of the Indian National Congress in 1925 was the eldest child of Aghornath. However, for dubious reasons, the Gilchrist Scholarship was discontinued in India in 1896.

Prafulla was awarded the Doctor of Science (D.Sc.) of Edinburgh University in 1887. He presented a paper based on his D.Sc. Thesis ("On the Conjugated Sulphate of the Copper Magnesium Group") at the Royal Society of Edinburgh. The presented paper was published in the Proceedings of the Royal Society of Edinburgh (Vol. 15, pp.267-288, 1888). Returning to India, he first joined Presidency College as a Lecturer then became the Professor and Head of Chemistry. In 1916, P C Roy joined as the first Palit Professor of Chemistry, University College of Science and Technology in 1916 at the request of Sir Ashutosh Mukherjee (1864-1924), the then Vice-chancellor of the University of Calcutta. He taught and conducted research at the Science College for about twenty years (1916-1936). After retirement, he became Professor Emeritus. He was a life-long bachelor. He used to live in the Chemistry Department of Science College till his death. The room he stayed in is now a small commemorative museum.

He was a dedicated researcher in chemistry and a pioneer of research in Physical Chemistry in India. He trained a band of eminent chemical scientists. While in Presidency College, he published 101 papers. While in Science College he continued his research publications.

Nature (London), August 15, 1912, commented on one bit of his research :

"Prof P C Roy has added to his success in preparing ammonium nitrite in a tangible form, a further accomplishment in determining the vapour density of this very fugitive compound."

He was elected President of Indian Science Congress in 1920. In 1924, he founded the Indian Chemical Society and for the first four years he was the President of the Society.

P C Roy, along with his colleague the eminent scientist, Acharya Jagadish Chandra Bose (1850-1937)-taught at the Indian Association for the Cultivation of Science (IACS)-the first nationalist institution of scientific research in India. The IACS was established in 1876 by Dr Mahendra Lal Sircar (1833-1904)-an eminent physician of Calcutta. "Its objective...", Sircar

pointed out, ..." is to carry on the work with our own efforts, unaided by Government... I want freedom for the institution. I want it to be entirely under our own management and control. I want to be solely native and purely national." (*A Century : Indian Association for the Cultivation of Science*, Calcutta, 1976, p. 5-8).

IACS started very modestly at 210, Bowbazar Street, Central Calcutta, but soon it became a vibrant hub of scientific research. Chandra Sekhara Venkata Raman (1888-1970), first Afro-Asian Nobel Laureate in Physics (1930) for his "Raman Effect" first started his research work at the IACS in 1907, while still working in Indian Revenue Services in Burma. Initially, he used to do research at the IACS while on annual leave. Later, he joined the University of Calcutta as the first Palit Professor of Physics.

Today, IACS at a big campus at Jadavpur is a leading institution of research in India. P C Roy was a nationalist par excellence and later in commercial enterprise Mahendra Lal was his model. He succeeded as an entrepreneur, as Mahendra Lal did as an organizer of scientific research.

With the aim of eradicating chronic unemployment and stopping export of Indian raw material to the West, he founded the Bengal Chemical and Pharmaceutical Works in Calcutta with his own savings in 1893; it became a limited company in 1902. It is the first in India to manufacture indigenous drugs. He realized that the advancement of Indian society is impossible without industry and self-sufficiency of essential consuming products—drugs, food, chemicals, fertilizers, etc. The indigenous drugs made at Bengal Chemical were displayed at the exhibition of Indian Medical Congress held in Calcutta in 1898. Doctors from different parts of India attending the Congress were attracted to these indigenous drugs.

P C Roy, Prof Meghnad Saha (1893-1956) and other scientists founded the Indian Science News Association (ISNA) in 1935 at the Science College. The purpose was to promote diffusion of knowledge laying special stress on the progress of scientific studies in India and abroad and advocating methodical application of science to problems of national regeneration. "Science and Culture", the mouthpiece of ISNA was first published in 1935 and is being continued uninterrupted for more than seven decades. P C Roy was the founder President of ISNA and was President till his death in 1944.

He was a prolific writer. His epic creation on ancient Indian Science—"History of Hindu Chemistry" (1902) written more than a century ago. In this classic he factually elaborated the contribution of ancient Indian chemistry and other sciences to the global world of science. He also analysed the reasons of its subsequent decline, and pointed out the social causes for the decline of science in India. Major causes were the indifference and neglect of the privileged, educated upper classes towards cultivation of science. The whole spectrum of science was left to the care of the uneducated, underprivileged, powerless lower class of people, though they were good artisans and mechanics, but they were not intellectually equipped to handle this complicated and complex chapter of knowledge. Foreign occupation and colonisation of the country added salt to the injury.

He was a bilingual writer—in English and in his mother tongue, Bengali.

He also wrote (anonymously) a political book on India, while studying in Edinburgh University—"INDIA: BEFORE AND AFTER THE MUTINY" by An Indian Student. (Published by Livingstone Publishers.) It sent ripples among the colonial rulers of the day.

Acharya Prafulla Chandra Roy was not only a scientific genius and an academician par excellence; he was dedicated to ameliorate the misery of his people at the grassroots level. Like most Bengali Bhadrak (privileged educated middle class) of the day, he was not detached from the common people. His help—financial and otherwise—was generously extended to the core of the society. He was not only with them he was always one of them—understood them sincerely and genuinely. □□□