

SUDHAMOY GHOSH

1890–1970

Elected F.N.I. 1945

SUDHAMOY GHOSH was born on January 13, 1890 at Sologhar (Vikrampur) in the district of Dacca now in Bangladesh. He was a close relation of Justice Chandra Madhab Ghosh. His father, Rashik Lal Ghosh, was a Government officer on transferable service. His mother, Kusum Kumari, was a very devoted and pious lady. He had to carry out his early school education at several places. He passed the Entrance Examination of the Calcutta University creditably from the Comilla Zilla School, and the Intermediate in Science Examination from the Comilla College. After this he was admitted to the Dacca College and had his Bachelor of Science in 1910. He had his Master of Science in chemistry of the Calcutta University in 1912. Young Sudhamoy maintained a uniformly bright academic record throughout. During this period he had considerable interest in sports and was a keen football player.

In 1913, he was awarded a scholarship for higher studies abroad in chemistry. He went to Edinburgh and worked under the guidance of Professor Sir James Walker, F.R.S., on the optical rotation of various sugars, e.g., β -L-arabinose, L-xylose, α -D-glucose, α -D-galactose, D-mannose, D-fructose, α -lactose, β -lactose, β -D-glucose, β -D-galactose, maltose, etc., His publications, while at Edinburgh, were in collaboration with J. E. Mackenzie. The work carried out by him indicated that the hydration theory of the mechanism of mutarotation is untenable. In 1915, he was awarded the degree of Doctor of Science of the Edinburgh University.

After his return to India he joined as Research Chemist under Sir Leonard Rogers, F.R.S., in the Leprosy Enquiry of the Indian Research Fund Association (now Indian Council of Medical Research) in February, 1916. He worked in the Chemical Laboratory of Calcutta Medical College on the preparation of various esters and other derivatives of the acids of chaulmoogra oil and hydnocarpus oil, which were very much in use in those days in the treatment of leprosy.

When the Calcutta School of Tropical Medicine was established as a result of the untiring efforts of Sir Leonard, he joined the school as the Professor and Head of the Department of Chemistry in December, 1921. This position he held till his retirement in November, 1947.

Contribution to Science

Though in the beginning Dr. Sudhamoy Ghosh had to pay considerable





Sudharmoy Ghosh

attention to the chaulmoogra and hydnocarpus oils and preparation of various esters of the related acids, he gradually started work on the chemical investigation of medicinal plants. In this respect he was closely associated with Col. Sir Ram Nath Chopra. Besides his main work in this field he carried out chemical investigations on a large number of Ayurvedic inorganic preparations, e.g., *lauha bhasma*, *swarna bhasma*, *samudra phenā*, etc., and did some work on the separation of cinchona alkaloids.

His investigations covered numerous medicinal plants. Notable amongst these are *Boerhaavia diffusa*, *Adhatoda vasica*, *Terminalia arjuna*, *Saussurea lappa*, *Holarrhena antidysenterica*, *Veronia anthelmintica*, *Butea frondosa*, *Iribulus terrestris*, *Psoralea corylifolia*, *Sida cordifolia*, *Aristolochia indica*, *Ephedra*, *Hyoscyamus*, *Alangium lamarckii*, *Moringa pterygosperma*, *Berberis*, *Podophyllum emodi*, *Tylophora asthmatica*, *Periploca aphylla*, *Hemidesmus indicus*, *Rauwolfia serpentina*, *Entada scandens*, *Paris polyphylla*, *Argemone mexicana*, *Pyrethrum*, *Aconitum*, *Securigera securidaca*, *Vitex peduncularis*, *Daemia extensa*, *Thevetia nerifolia*.

In those days the procedure adopted in scientific investigations was to prepare extracts of plant materials and to subject such extracts to pharmacological testing and then proceed further in the chemical examination of such plants as are found to respond properly to the pharmacological tests. A huge number of the Indian medicinal and poisonous plants were screened in this way by Chopra and Ghosh combination and in this respect a major part of his activity had to be concerned with preparation of these extracts and tinctures. Moreover, considerable stress was laid in those days on the necessity for proper investigation of the numerous inorganic preparations of Ayurvedic medicine, e.g., the *bhasmas*, as also on the analysis of the inorganic constituents of the medicinal plants, and these covered a good part of his valuable time, not to speak of the work involved in checking up of standards of medicines used in the outdoor of the School and in the attached hospital, the Carmichael Hospital for Tropical Diseases, whenever those were in doubt.

It may be pointed out in this connection that on going through the Annual Reports of the Calcutta School of Tropical Medicine from the year 1921 to date one would find that in the Annual Reports up to 1932 and from 1942 onwards he was designated as the Professor of Chemistry, whereas from 1933 to 1941 he was designated as the Professor of Chemistry and Physics. He used to deliver lectures on physics, meteorology, physical chemistry, etc. to students of D.P.H., D.T.M. and L.T.M. One of his most favourite subject was the use of a microscope.

In spite of all these multifarious duties, he did contribute substantially in the isolation of active principles of Indian medicinal plants. The earliest of these was isolation of the alkaloid punarnavine from the plant *Boerhaavia diffusa*, and this he did immediately after joining the Calcutta School of Tropical Medicine. From *Sida cordifolia* with A. T. Dutta he obtained, ephedrine amongst others. Two new alkaloids, kurchine and kurchicine, were isolated by him with N. N. Ghosh from the bark of *Holarrhena antidysenterica*.



With I. B. Bose these were properly characterised by the preparation of a number of derivatives of each and the molecular formulae were established as $C_{23}H_{38}N_2$, and $C_{20}H_{36}N_2O$. With N. R. Chatterjee and A. T. Dutta a new alkaloid, saussurine, was obtained from roots of *Saussurea lappa*. Tylophorine, a new alkaloid of *Tylophora asthmatica*, was isolated, characterised by the preparation of a number of derivatives and the molecular formula established as $C_{24}H_{27}NO_4$ by him with Chopra, N. N. Ghosh and I. B. Bose. With Chopra and A. T. Dutta, he isolated an alkaloid, moringinine, and a liquid base, which was identified later by the writer with benzyl amine. With Chopra, R. G. Chatterjee, and N. De, the alkaloid, skimmianine was obtained from *Skimmia laureola*.

With A. Dutta and Chopra, he obtained 2-hydroxy-4-methoxybenzaldehyde from the roots of *Hemidesmus indicus*. Two biologically active glycosides, paridin and paristyphnin, were isolated by him with A. Dutta, N. R. Chatterjee and Chopra from the roots of *Paris polyphylla* (*Paris quadrifolia*). In addition to these a number of products were isolated by him from various plants which were later found to be triterpenes. With N. R. Chatterjee and Chopra, he published two papers on the proteolytic and lipolytic enzymes of the seeds of *Butea frondosa*. In two other papers with N. R. Chatterjee, he presented the preparation of a large number of derivatives of hydrocupreidine.

Honours and Awards

In 1925, he was awarded Sir Rashbehari Ghosh Fellowship of the Calcutta University for a study tour abroad. On this occasion, he worked at the University of Berlin for several months and then visited many important research laboratories and factories in Europe.

He trained up a number of research workers in chemical investigation of plants. The Provincial Drug Control Laboratory (now the State Drug Control and Research Laboratory) of West Bengal had its birth at the Calcutta School of Tropical Medicine and its chemical laboratory started functioning in the care of Professor Ghosh in the Chemistry Department of the School. In 1944, he was appointed a member of the Committee for bringing out the Indian Pharmacopoeial List, which was duly published by the Government of India in 1946.

He was directly connected with a large number of scientific organisations in India and abroad. In 1915 he became a fellow of the Chemical Society, London, in 1920 a Fellow of the Royal Society of Edinburgh, and in 1926 a Fellow of the Deutsche Pharmazeutische Gesellschaft. In 1936, he was elected a Fellow of the Royal Institute of Chemistry and in 1945 a Fellow of the National Institute of Sciences of India (Indian National Science Academy). He was also a Fellow of the Indian Chemical Society and a Member of the Institution of Chemists (India). In recognition of his research contribution to medical science, he was awarded the Minto



Medal in 1931 by the Calcutta School of Tropical Medicine. In view of his life long valuable service for the cause of research at the Calcutta School of Tropical Medicine, in 1945 he was awarded M.B.E. by the British Government. Also after his retirement in November, 1947 he was appointed Emeritus Professor of Chemistry at the Calcutta School of Tropical Medicine.

Admirable Personal Qualities

Professor Ghosh was all along a serious and devoted worker, regular in his habits and very methodical in his approach. He was the only non-medical Professor among a host of his medical colleagues, but unlike many others in a similar situation, he never felt uneasy. He was admired and respected by all he came in touch with. His very straightforward character may be evident from one minor incident. Once the Assistant Director, a British medical man, in charge of Office and Store, being possibly interested to reduce the excessive consumption of alcohol in the Chemistry Department (as compared to all the other Departments), asked Professor Ghosh what he was doing with so much of alcohol. Professor Ghosh opened up a bottle of alcohol and poured the contents into the drain in his presence, and said that for his work he was doing like that. Of course, one should not think that he was not properly careful about wastage. On the other hand, the writer, who was his successor in the post of Professor of Chemistry at the Calcutta School of Tropical Medicine, had the privilege of his large collection of rare chemicals, and on the label of most of these was the date of receipt with his initials. From this collection it was quite evident that he was a thrifty person and avoided wastages.

After his retirement in 1947 he was appointed a Member of the West Bengal Public Service Commission. He served in this capacity for three years up to November, 1950. All throughout his life he was very upright and this assignment fitted him properly. In view of his increasing religious trend, however, he did not accept any other job after this.

He was well versed in German language. The book entitled "*The Chemical Investigation of Plants*" by L. Rosenthaler and S. Ghosh, an authorised translation of a book in German by L. Rosenthaler, published by G. Bell & Sons, Ltd., London, is a valuable contribution and may be seen in the book shelf of numerous libraries throughout the world. The book, "*Manual of Organic Chemistry for Medical Students*" by S. Ghosh and T. C. Boyd was published first in 1928 by Scientific Publishing Co., Calcutta. Later, this was replaced by the book "*Organic and Toxicological Chemistry*" by S. Ghosh and K. N. Bagchi, published by Scientific Publishing Co., Calcutta and later by Das Gupta & Co., Calcutta. It was a very popular book and had a number of editions. His latest book with R. N. Chopra and R. L. Badhwar was "*The Poisonous Plants of India*", Scientific Monograph No. 17 of the Indian Council of Agricultural Research, published in 1949 by the Govern-



ment of India. Besides these, he wrote a booklet, "*The Microscope*", which was published by the Calcutta School of Tropical Medicine. It had two editions.

Family Life and Last Days

Immediately after his M.Sc. in 1912 he married Nirmala, eldest daughter of Rajkumar Guha of Paikpara, a wellknown figure in those days in East Bengal. He had a very peaceful life at home as she always remained by his side and inspired him in his work. They had two daughters, Indira and Manju. Indira's husband, S. B. Dutt, B.Sc.(Econ.), F.C.A.(Eng.) is a retired Director of Saxby Farmer & Co. Manju's husband, Dr. R. N. Nag, M.B., Ph.D.(Cal.), F.R.C.O.G.(Lond.), F.A.C.S.(U.S.A.), is Senior Visiting Gynaecologist of Ramakrishna Mission Seva Pratisthan, Calcutta. Professor Ghosh's grandson, Barin Nag was his constant companion specially during the last part of his life. He was very happy to see Barin coming up in the proper way in winning an N.S.T.S. Scholarship and pass B.Sc. creditably with Honours in Physics. At present he is appearing at the B.Tech. in Radiophysics of Calcutta University. His other grandson, Bashudev Dutt is also a meritorious student.

Prof. Ghosh did not like publicity. He helped many poor people and donated to many institutions of Ramakrishna Mission. He lost his beloved and very helpful wife in 1945 and that was a great blow to him as he became very much upset. However, at this stage he came in touch with Swami Birajanda, the then President of Ramakrishna Mission, and this contact was very much helpful to him in peacefully settling down in the changed circumstances brought about by the bereavement. Religious books became his favourite and it was his routine to attend all the religious lectures at the Ramakrishna Mission Institute of Culture at Golpark, Calcutta.

While leading quite an active life, his end came very abruptly on August 15, 1970, the Independence Day. At 10-30 a.m. he had cerebral haemorrhage while at his residence and he peacefully passed away in about eight hours. His death was mourned deeply by a number of organisations, notable amongst these being the Calcutta School of Tropical Medicine where he spent his active life right from inception of this famous institution.

R. N. CHAKRAVARTI

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