

ROLE OF RAM BRAMHA SANYAL IN INITIATING ZOOLOGICAL RESEARCHES ON THE ANIMALS IN CAPTIVITY

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In India, men of science, though of European origin, spared no efforts in promoting scientific organisations and learned societies. In the later half of the nineteenth century, the Indians who began to work with them not only imbibed the spirit of free enquiry but also acquired experimental skills.

During these days, there came a young Bengali, R.B. Sanyal, from Berhampur (Murshidabad) to Calcutta after his early education. He entered Calcutta Zoological Gardens as a casual worker. Later, he worked under George King, a member of the Zoological Management Committee. Gradually, in connection with his work, Sanyal came into contact with John Anderson and Carl Louis Schwendler, and others. Sanyal, through his sincere and hard work along with his keen and penetrating observations, became the Superintendent of the Gardens, which position he retained up to his last day.

Ram Bramha Sanyal (1850-1908) contributed most significantly to the development of a professional identity. He was a highly successful zoologist and a remarkably innovative botanist who was marked by his work in the Zoological Gardens. Sanyal also gave a special Indian perspective to the world of science and was perhaps one of the first among modern scientists to enter in inter-disciplinary research in his field. Sanyal wrote a memorable book "*Handbook of the Management of Animals in Captivity in Lower Bengal*", Calcutta, 1892. London Zoological Society made him a Corresponding Member and he was soon elected as an Associate Member of the Asiatic Society of Bengal, Calcutta. His scientific writings in Bengali and in English were based on observations made by him in the Zoological Gardens.

An attempt has been made in this paper to underline the role of R.B. Sanyal in initiating zoological researches on animals in captivity during his long service span of 33 years.

India witnessed in the nineteenth century all-round development of a new order. Scientific institutions sprang up throughout India in a network fashion. The local people's participation and involvement created a scientific climate in the country. This was followed by the gradual establishment of learned societies, which took a deep root in a new emerging scientific atmosphere.

The first quarter of the nineteenth century witnessed progress in the field of botany mainly due to the sincere efforts of some European scientists, while in zoology the progress was a little delayed. Indians also started taking interest in both these emerging frontiers of biological sciences. The first systematic zoological study started soon after the establishment of the Calcutta Zoological Gardens in 1875.

After long deliberations and unsuccessful attempts from the first half of nineteenth century, the Calcutta Zoological Gardens took practical shape in a large site of 156 Bighas or slightly more (208773.24 sq m) near Zeerut Bridge granted¹ by the then Lieutenant Governor of Bengal, Sir Richard Temple. The Garden was formally inaugurated on 27 December 1875 by His Royal Highness, the Prince of Wales, during his visit accompanied by His Excellency, the Viceroy and the Lieutenant Governor of Bengal.

An Honorary Managing Committee was appointed by the Lieutenant Governor in November 1875, of which Lord Ulick Browne was the President, while Carl Louis Schwendler, Dr. George King and A.F. Watson were members with C.E. Buckland as Honorary Secretary.

The principal objectives of the Gardens² were:

- 1) To provide recreation, instruction and amusement for all classes of the community;
- 2) To facilitate scientific observations of the habits of animals, more especially those peculiar to tropical climates;
- 3) To encourage the acclimatization, domestication and breeding of animals and to improve the indigenous breed of cattle and farm stock;
- 4) To promote the science of zoology by the interchange, import and export of animals.

The new Zoological Gardens started with the gifts of Schwendler and also from general public having in the collection African Buffalo, Zanzibar Ram, Domestic Sheep, Four-horned Sheep, Hybrid Kashmiri goat, Indian Antelope, Indian Gazelle, Sambhar deer, Spotted deer and Hog deer.

After the initial phase of establishment, the Committee thought seriously of employing a Scientific Director to ensure proper guidance and supervision of the Gardens, but a long search for a proper scientific person from England or from within India proved fruitless. Around this time, a young Indian from Bengal, R.B. Sanyal, was recruited³ in a very junior capacity to assist Dr. George King in his general plan of landscaping and other related activities of the newly laid ground.

II

The history of the Calcutta Zoo runs centering around Sanyal (1876-1908), because in the absence of a European Director with a scientific background, ultimately the Committee had to depend solely on an Indian, R.B. Sanyal, whom they trained up according to their need.



Rama Bramha Sanyal (1850-1908)

Sanyal, after his early education⁴, had taken admission in the Calcutta Medical College⁵, probably in 1870. His studies were cut short, as his eyes started giving trouble. His teachers in the college warned him that if he persisted with his studies, he might ultimately go blind. He had to give up his studies after three years. During his student days at the Medical College, he came in contact with various teachers, among whom was Dr. George King⁶, Superintendent, Botanical Gardens, Howrah.

By the beginning of 1876, the collection of Barrackpore Park started being shifted to the newly laid Calcutta Zoological Gardens and eventually as per objective of the Gardens on 6 May 1876, it was opened to the public for viewing the limited mammals and birds which then were housed there. From the very first week when 82 visitors recorded their presence, there was a steady growth in the number of visitors during the following months. Sanyal was then at the helm of affairs for both the upkeep of zoo inmates and for attending to the growing number of visitors. By September 1876, the Committee made him Head Babu⁷ (Head Assistant at a salary of Rs 40.00 per month).

From January 1877, the Committee of Management felt that as the collection was fairly large, regular observations had to be kept for future reference and as such they decided that a 'Daily Register' containing such observations was to be maintained for mammals, birds and reptiles. The work was also entrusted to Sanyal. The work was of technical nature and was certainly not expected to be done by an ordinary worker. Sanyal was again chosen to assist Schwendler, Dr. Anderson and Dr. Cunningham in doing this work. While working with his subjects in the zoo, Sanyal quite often referred to the available scientific literature, including T.C. Jerdon's "*The Mammals of India*" and "*The Birds of India*" for gaining proper understanding of their habit and habitat and also took copious notes based on his observations. In a Committee meeting of June 1877⁸, members felt that the duties of Sanyal were too numerous for one man and that as a temporary measure the 'Babu' may be allowed to nominate a man at Rs. 30 per mensem to look after the gardening work. Soon, a new person joined and some relief was given to Sanyal. The daily discussion with various members and consultation of standard literature gave Sanyal enough confidence within a few years.

Despite the fact that Sanyal was always aspiring to be equal to the task, the Committee members on the contrary in their meeting were still in their search for an European to head the set-up. It shall not be out of place here to refer to the minutes of the Committee Meeting held on 19 July 1877, where it was recorded in no uncertain terms that 'Babu R.B. Sanyal is unfit to have the job of management of the Garden and that it is necessary to approve an European Head Keeper....'⁹. Even then, new assignments were thrust upon Sanyal and by 27 December 1877, he was asked to fill in a printed form every day showing the number of each kind of animal and the total quantity of each kind of food supplied with the total cost of the same. These forms were to be sent to the Secretary every week with other weekly reports¹⁰.

In time, the Secretary introduced yet another means to have control on the day-to-day activities and eventually the 'Secretary's Order Book' was introduced from 14 April 1878.

Zoological Gardens being one of the new attractions and a place of recreation in Calcutta, it was visited by all sections of people, including high government officials. Sir Alfred Croft, Director of Public Instruction, was one such visitor to this Garden. He often met and talked to Sanyal during his visits. Soon Sanyal got an offer from him and he submitted his resignation on 25 July 1878. At this juncture, the Committee members were planning seriously for laying out the Garden. Sanyal was not permitted by C.T. Buckland to join the Education Department service. The President said that 'R.B. Sanyal is already in the Government service'¹¹ but strangely enough his post in Zoo Gardens was not pensionable till then; pension was later granted to him.

From supervising the new constructions which were coming up, Sanyal's busy schedule included writing 'Daily Register' and also recording remarks about watching and even hand feeding the animals, for which he went round the large arena at least three times a day.

One of the principal objectives of the Gardens was to encourage the acclimatization, domestication and breeding of animals and to improve the indigenous breed of cattle and farm stock. In June 1883, the Committee resolved to start a dairy farm in the adjoining land Begumbari/Begunbari (43 bighas or 57546.59 sq m). Measures were taken to bring cattle from Australia for the improvement of native breed. In this new attempt also, Sanyal was given additional task, which too he performed creditably.

On completion of 10 years of the writing of 'Daily Register' of the Garden, the Honorary Secretary of the Management Committee requested Sanyal to write a series of articles in English on the basis of his daily observations. This work was accordingly planned and taken in hand in August 1886. A new Lieutenant Governor, Sir Steuart Colvin Bayley, arrived 1887. In the Annual Report of 1888-89, Bayley suggested¹² and desired that on the basis of old records and recollections of the Superintendent, a handbook may be produced which could help commoners and other zoo gardens having animals and birds under their captivity for better management practices. Finally, based on the findings of Sanyal, '*A Handbook of the Management of Animals in Captivity in Lower Bengal*' was published in 1892.

In 1896, he wrote his second book '*Hours with Nature*'¹³ meant for school students. With his gradual success in 'Zoo Biology', the Committee sent him to Europe in June 1898 to get first hand knowledge of various zoological gardens. He also joined the Fourth International Congress of Zoology (Cambridge)¹⁴ in August. On his return to India, he was awarded the title of Rai Bahadur on 1 January 1899 and was soon made an Associate Member of the Asiatic Society of Bengal, Calcutta. Soon, at its monthly meetings, he often placed scientific papers based on his observations, which were later published in the Society's journal. He also contributed three important scientific papers in the *Proceedings of the London Zoological Society* during 1893-95.

Around the time, in June 1902, Sanyal was made a member of the Management Committee. He was invited to Rangoon at the initiation of the Chairman of the Rangoon

Municipality in December 1902 for a short while in connection with the laying of the Memorial Zoo at Rangoon.

Due to failing health, Sanyal desired to retire by January 1906 and there started feverish search for his replacement. At the recommendation of Surgeon General of the Indian Medical Service, Dr. Bomford nominated Babu Pasupati Mitra for the post of the Superintendent. Mitra joined as an Assistant Superintendent on 20 April 1905 with a lien for six months. When Sanyal's stay was uncertain and there was every possibility of training up Mitra for future Superintendent, suddenly by 27 November 1905, he was called back by his parent department.

In such a situation, Sanyal was requested by the Committee to stay for another two years, till they got a competent man for the post. Despite his failing health, Sanyal started undertaking autopsy of dead zoo animals with the help of Pasupati Mitra and there began a new chapter in his scientific quest. Around then, he also initiated study on snake venoms and their antidote. He also prepared a long list of proposals for the acquisition of African animals by purchase, exchange or otherwise. This work was followed by a note on the subject of acquiring animals from Southern India.

III

On an appraisal it can definitely be said that R.B. Sanyal contributed most significantly to the development of zoological science in those days. Actually, Sanyal's first scientific interest had been in botany while working with Dr. George King in landscaping the garden during the early years of establishment. This was due to the nature of work for which he was influenced into zoological science by his second teacher, Dr. John Anderson. Throughout his life, he lost no opportunity in bringing zoology and botany within the reach of the people.

Sanyal's scientific observations and thinking started with writing of the 'Daily Register' and this was coupled with the shifting of animals from Barrackpore Park to the Calcutta Zoo. Naturally, for these new arrivals, their shelter, food and health were of prime importance. Sanyal was looking after this task and was reporting to the members of the Committee every morning. Around this time, Sanyal started to join the discussion of Schwendler and Anderson which made him bold enough to take the responsibility of writing the 'Daily Register'. Strictly speaking, Sanyal's one year (from January to December 1876) was rather a training period during which he was closely observed by all Committee members, including Dr. King.

Some typical examples of his observations are given below. It will be seen how Sanyal's eyes gained maturity over years.

Camel: The young female suffering from indurated tumorous growth on its neck has been tried with all kinds of palliative treatment for the last 10 months without any good result. For the last three weeks or so, I have assiduously tried nitrate of silver, but with no better result. The time has gone on increasing gradually; attending it now and

then showed signs of relief. However, it is now at a stage when it is impossible to effect a cure or arrest its growth without having recourse to surgical operation. If the Honorary Secretary will kindly agree, I am inclined to operate upon and remove the tumour altogether. To avoid any accident, I would not like to run the risk of putting the beast under chloroform, but perform the operation by providing local anaesthesia by ether spray.

If the Honorary Secretary will think it worth trying, I could make all arrangements for spray and antiseptic dressing, etc. today, so that the operation can be performed when the Honorary Secretary will be present in the Garden tomorrow morning.

With regard to other camels also I beg to ask the Honorary Secretary's approval to a measure to prevent the superficial ulcers and scratches from spreading.

I have observed that the difficulty in the way of curing these lies in the fact that no medicine can be kept on them. Either a crow will pick it off or the beasts themselves will lick it. To prevent this, I would dissolve gutta-percha in chloroform and apply it on the sore; the chloroform will immediately evaporate and leave a thick layer of gutta-percha sticking which will protect the diseased surface from all irritating influence.

23rd July '78

Sd/- Rambromho Sanyal

26th November.

Tigress donated by C.T. Buckland died.

Postmortem Examination

Heart & Lungs — healthy

Liver — slightly congested, Gallbladder — full of bile and bile hepatic duct obstructed towards its terminated intestines. There was a constriction about three inches above the sigmoid flexes and about an inch and a half above it, the intestine was thickened and on opening it, I found bits of bones in different stages of disintegration impacted in the ulcerated surfaces of the intestine.

Kidneys — abnormally large, cortex peeling off at slightest touch. On opening them longitudinally I found patches of granular deposits quite hardened all over the surface; a transverse cut presented the same condition to view.

Ureter — Right ureter about $\frac{3}{4}$ inches below the kidney was full of this deposit (Report seen by Mr. C.T. Buckland).

16th July 1886.

One spotted deer died.

It was not ill previously. Died after suffering from the same symptoms which killed some of the ruminants last year.

Comment: Please ask Dr. Scully what should be done. Any postmortem? Symptoms do not show what was the disease, which symptoms were ascertained.

27th July

The Committee might like to look at these (suffering) animals.

Sd/- C.E. Buckland
27.7.

Within a span of 10 years of observation and writing, Sanyal came very near to the members of the Committee. In March 1892, the first major publication (*A Handbook of the Management of Animals in Captivity in Lower Bengal*) appeared, which received appreciation from the new Lieutenant Governor of Bengal, Sir Alfred Charles Eliot, W.T. Blanford, Vice-President, Zoological Society, London, Dr. John Anderson, London & C.T. Buckland. The 'Nature' magazine from London reviewed Sanyal's book and praised highly his work. It said 'on the whole we must allow that this volume is a remarkable production, considering the circumstances under which it has been prepared and that its author deserves great credit for the pains bestowed on its composition and for much valuable information contained in it'¹⁵.

In general, it can be said that the book deals with the practical experience in managing health and sickness of the various animals, both indigenous and exotic which were exhibited from time to time in the Zoological Gardens. The work consists of two parts; the first part deals with the mammalia and the second with the aves. The first part deals with 241 classes of mammals and the second part with 402 birds.

Sanyal, while writing 'Daily Register', simultaneously wrote in Bengali magazines popular articles which helped in arousing interest about birds and animals in young minds. His 18 such articles (1887-1890) which appeared in 'SAKHA' must have made some dent on child readers. On the same lines he contributed an equal number of articles in 'MUKUL' (1895-1900) which were again of great interest.

In recognising Sanyal's contribution towards the advancement of zoological knowledge in India, the Zoological Society of London honoured him by electing him one of its 'Corresponding Members' in 1892. Three interesting papers were published in the *Proceedings of the Zoological Society of London*, which were as follows:

- 1) NOTE ON A HYBRID BETWEEN THE SEMNOPITHECUS PHAYREI BLYTH and S. CRISTATUS, November 1893, 615-616.
- 2) NOTES ON CYNOGALE BENNETTI, GREY, March 1894, 296-297.

3) ON THE MOULTING OF THE GREAT BIRD OF PARADISE WITH BRIEF NOTES UPON ITS HABITS IN CAPTIVITY, June 1895, 541-542.

The keenness of his observation can be seen in the second article where he could confidently with the help of his water colour sketch, opine that the external characteristics and habits of *Cynogale Bennetti* were more near to perfection for identification than what the other two contemporary scientists had tried to do in their earlier papers. He said that the sketches prepared by them 'are practically useless for the purpose of identification'. Sanyal had no degree in zoology; he, by dint of his keen observation, could achieve a unique success which prompted him to contribute the above three articles. If analysed carefully, it will be seen that the publication of his book in 1892 and his successive three scientific articles did attract the attention of the leading scientific personalities of those days.

This was followed by his visit to Victoria Gardens (Bombay) during 1894, on an invitation from the Secretary to the Bombay Municipality. Sanyal submitted a detailed report¹⁶ for its improvement. In this report, he first gave his preliminary observations and then described the particular groups of animals, viz. monkeys, carnivores, etc. to be housed there. His suggestions included introduction of aviary and aquatic birds and also of rhinoceros, elephant and hippopotamus. The idea of aquarium, reptilium and deer paddock did not escape his attention. Even he provided the sketch map of various proposals, including their measurement, probable cost and maintenance features. At the suggestion of Sanyal, J.M. Doctor, Head Animal Keeper, was deputed by the Municipal Commissioner of the City of Bombay to Calcutta for one year from November 1894 for being trained by Sanyal at Calcutta. Certainly, this was an unparalleled recognition of his knowledge and depth of understanding of the subject.

Having gained a long experience, Sanyal started attending monthly meetings of the Asiatic Society of Bengal, Calcutta, from 1897. He was eventually elected an Associate Member of the Asiatic Society in 1899. During some of the meetings, he placed his observations and they are as follows:

- a) NOTE ON THE BREEDING OF VARIOUS BIRDS (HERONS AND CORMORENTS) IN A WILD STATE IN THE ALIPUR ZOOLOGICAL GARDENS (Monthly meeting on 7 April 1897)
- b) EXHIBITED EGYPTIAN JERBOA AND MADE SOME REMARKS (Monthly meeting on 6 April 1898)
- c) EXHIBITED A LIVING SEA SNAKE AND LIVING HYBRIDS BETWEEN GUINEA FOWL AND COMMON FOWLS. MADE REMARKS ON THEM (Monthly meeting on 3 May 1899).

Even some of the articles which were read and published¹⁷ under the title 'Notes on animals kept in the Alipore Zoological Garden No. 1, ORANG OUTANG (Monthly meeting on 2 April 1902), No. 2, DOCTRINE OF TELEGENY (Monthly meeting on 7

May 1902) and No. 3, COMMON PALM SQUIRREL (Monthly meeting on 4 June 1902). NOTES ON THE DISTRIBUTION OF MACACUS ARCTOIDES, GEOFF (Monthly meeting on 6 March 1907) and PLEA FOR AN AQUARIUM IN BENGAL (Monthly meeting on 3 June 1908) were noteworthy for their findings.

After touring European countries in 1898, Sanyal submitted a detailed report¹⁸ which was unique of its kind. The report described the housing, feeding and treatment of animals mainly, but also made observations on the prevailing general administration there. The uniqueness of his observations lay in the fact that wherever he found something unique and useful in European zoos, he had in his mind the rationale and suitability of its application to Calcutta Zoo. Sanyal took pains to ascertain the reasons for the breeding success in captivity there and side by side its failures in Calcutta. What was interesting is that whenever possible Sanyal had exchanged the ideas with leading zoologists he met in the various zoo gardens and also in the International Congress of Zoology at Cambridge. This was no small an achievement.

One of Sanyal's finest contributions was working on snake venom with Dr. Cunningham¹⁹ (1895-96) in the first instance and later on his own²⁰.

The Annual Reports of the Honorary Committee for the Management of the Zoological Gardens for the years 1902-1903, 1903-1904, 1904-1905 and 1905-1906 contain a separate section as 'Superintendent's Report'. This section has been written in a masterly fashion on various aspects of animals, viz. their diseases, feeding, treatment, etc. During 1905-1906, Sanyal did as many as 23 post-mortems, which yielded interesting results. In these post-mortems and also in the pathological studies he was assisted by Pasupati Mitra, Assistant Superintendent.

On an unbiased analysis of the time, situation and availability of resources under which Sanyal worked and gained status, it can be said with no hesitation that Sanyal achieved a uniqueness unparalleled in the history of science in India. There is no denying the fact that Sanyal was at the top of the Indian scene for 30 long years and during his time, only a few selected and aspiring persons in India could think of making science as their profession.

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NOTES

1. Minute by the Lieutenant-Governor of Bengal dated the 24th September 1875.
2. Administration Report for 1876. Proceedings 7-9. February 1877.
3. 23rd January 1876 in Revenue Proceedings Volume, April 1896, 517.
4. Berhampore Collegiate School, Berhampore, District Murshidabad. Entrance Examination 1869. 2nd Division.
5. Licence in Medicine and Surgery.
6. Dr. George King was Professor of Botany in the Medical College, Calcutta.
7. Acquittance Roll Register (1875-1883). September 1876. R.B. Sanyal's name appears under Extra Establishment Section.
8. Committee Meeting. 21st June 1877. 6-30 A.M. Zoological Gardens, Calcutta.
9. As C.T. Buckland was unable to be present in 19th July meeting, R.L. Mangles acted as President and H.M. Tobin as Honorary Secretary. Regarding European Head Keeper, it was resolved that enquiries for a man be made both here and at home and that his salary should be fixed at Rs. 150 per mensem to begin with.
10. The problem arose with the Committee Members while passing the bill for the animal foods which were being supplied by some outside agency.
11. *Ibid.* Revenue Proceedings Volume, April 1896. 517.
12. Calcutta Gazette Appendix & Supplement, July-December 1899. Resolution on the Report of the Committee for the Management of the Calcutta Zoological Gardens for the years 1888-89. Revenue Department. MISC.F Darjeeling. 5th October 1899. 1905-1906.
13. First edition was published by S.K. Lahiri & Co., Calcutta with 168 pages and Second edition by City Book Society, Calcutta 1907 with 174 pages.
14. Cambridge, 22nd August to 27th August 1898. Along with Sanyal there were H.M. Phipson & R.C. Wroughton from Bombay.
15. *Nature, London*, 46:1188. 4th August 1892. 314.
16. On the proposed improvement of the Victoria Gardens with a view to the formation of a Zoological Garden. Record of the Proceedings of the Standing Committee of the Bombay Municipality 1894-95. Vol. XVII. Part II, Appendix F. 173-182.
17. *Journal of the Asiatic Society of Bengal*, 71: Part II. Item no. VIII, 92-93, Item no. XI, 132, Item no. XIV, 137-138.
18. Report of the Honorary Committee for the Management of the Zoological Garden for the year 1898-99. Appendix D. 10-19.
19. Report on the Results of experiments on the action of various reputed antidotes to snake-venom conducted during the season 1895-96 by Brigade Surgeon Colonel. D.D. Cunningham. C.I.E. F.R.S. in *Scientific Memoirs by Medical Officers of the Army of India*. Ed. Surgeon Major General J. Cleghorn. Part X 1897. 59-94.
20. Snake-poison experiments conducted during June 1899 in the Joy-Gobind Law Laboratory of the Zoological Gardens and results sent to the Inspector General Civil Hospitals Bengal by the Honorary Secretary, Management Committee. Letter No. 89 dt. 29.6.1899.