Journal of People's History and Culture
ISSN 2395-7379
pp.143-153

Vol. 12 No. 1, June, 2026
Original article

Insects, Empire, and Knowledge Systems: Institutionalising Entomology in Colonial India

Krishanu Das Chowdhury
Research Scholar of History
University of North Bengal, Darjeeling

Abstract: *This article examines the evolution of entomological knowledge in India from indigenous traditions to colonial scientific practices between the sixteenth and nineteenth centuries. It argues that while Indian knowledge of insects was rich yet socially restricted, European intervention transformed it into an institutionalised and globally connected discipline. Through the contributions of missionaries, naturalists, and organisations such as the Asiatic Society of Bengal, entomology developed via exploration, classification, and documentation. By analysing key figures and texts, the study highlights the interaction between local knowledge and European taxonomy, demonstrating how colonial structures reshaped and systematised the study of insects in India.*

Keywords: *Colonialism, Entomology, Exploration, Insects, Discovery*

Insects are one of the most successful groups of creatures on earth. They constituted about three-fourths of the total living creatures present on earth. India is the home to about 0.1 million different insect species.[1] Even the insect world is vast and vibrant but the mainstream Indian society had very less knowledge about that world till now. After thorough research about those evidences, it is clear that, like many other fields, Indians not only had clear knowledge about the concern field, but people used to apply that knowledge in many aspects of their lives. But that kind of knowledge was only for a selected group of people, such as professionals like baidyas (ancient doctors), writers, or painters. A major section of society had very limited resources about the concerned field. But the situation changed after the arrival of Europeans in India. But, marginalised sections of the society had proper in depth knowledge insects from ancient times. On the other hand, the study of natural world and its elements became very much popular among Europeans from the period of Renaissance. As they started their voyage in Asia and Africa from fourteenth and fifteenth century, the flora and fauna of those newly discovered lands make them interested to work on them. In Europe, the study of natural history started

in the early sixteenth century. Not only individual scholars but even natural history organizations became functional from the seventeenth century. From the end of the century, entomology even developed as a different field. So, European knowledge about the insect world was newer than Indian. But, in reality, Indian knowledge was basically individual effort, whereas Europeans developed institutional research within a very short period.

On the other hand, the political situation of India faced a little bit of change in that period, when many European youth came to India to grab trade opportunities. From the early seventeenth century, they not only cemented their trade network over the subcontinent but also started to explore the natural variety of India. Investigation, exploration, and study of the various newly discovered species opened a new dimension in European natural history. Even those kinds of efforts started individually, but soon they got official patronage also, which made their work easier. Goa-based Portuguese missionary Garcia d'orta was the first European who started the study of natural history in the Indian subcontinent.[2] Except that, Dutch naturalist and administrator Hendrik Van Rheede and his book Hortus Malabaricus xopened a new dimension because it includes more than 780 species of plants with descriptions and images, which were totally unknown to Europeans.[3] Later, the Dutch government-owned Tranquebar settlement became the epicenter of the concern field. With the active support of the Dutch government, Bartholomaeus Ziegenbalg (1682-1719) and Heinrich Plutscahu (1676-1752) formed Danish-Helle or Lutheran Mission. Under its guidance, members engaged themselves in various scientific endeavours like the study of local flora, fauna, and minerals, with the collection of specimens and documentation of observations. Even only new discoveries and basic details of new species were recorded by the members of the society, but the mission was considered as the watershed in the study of natural history.[4]

The trend of exploration and discoveries in various new fields reached new heights in the eighteenth century because of the favourable political situation in India. In the first half of the century, the British East India Company secured their position in the business with the Farman of Farukhsiyar (1717), which gave them an upper hand over the other competitors of Europe. After achieving economic stability, the company took an interest in the political field and became a part of many regional conflicts all over India. The British East India Company won the Battle of Plassey (1757) and secured its administrative position in Bengal, Bihar, and Odisha after the Battle of Buxar (1764). But the mind set of Europeans about India was still negative. For many, the Orient has been a dominion of hordes and a land of spiritual mysteries and exotic sensuality. Even young Europeans came here for a secure future, but most of them failed to acclimate themselves due to humid weather and mosquitoes. The scenario can be easily visualized by a famous quote of Rudyard Kipling, "Oh, East is East, and West is West, and never the twain shall meet."[5] In the second half of the

eighteenth century, more Britons arrived in India as Christian missionaries and company employees. It is generally known that the majority of them were amateur explorers and naturalists who gathered new samples and sent them to Europe for further research. Sir William Jones (1746-1794), the founder of the Asiatic Society of Bengal, opened a new dimension for the people of Europe about India and did much to encourage interest in Oriental studies in the West. He took the responsibility of collecting and translating ancient Sanskrit texts, which made age-old knowledge of India easily accessible for Europeans. According to Edward Said, William Jones, for his vast knowledge of oriental peoples and their culture, is considered the undisputed founder of scholarly Orientalism.[6] His aim was to rule, learn, and compare the Orient with the Occident. Soon more people came to India with the dual purpose of improving the quality of life of Indian people and advancing their knowledge with Indian tradition, culture, and nature. As a result, a new trend of exploration was started in India. British officials and their subordinates travelled all over the country and discovered many forgotten cultures, new geographical areas (river, mountain, and forest), mines, various species of birds, insects, and animals, and many more. The field of natural history also wasn't untouched.

The discussion of entomology in modern India has to start with Carl Linnaeus. His significant contribution to the study of Indian natural history was Systema Naturae, which helped to establish Linnaeus's system of taxonomy as the gold standard for categorizing creatures. In the eleventh edition of the book, he developed the binomial nomenclature system, also known as Linnaean taxonomy.[7] Despite the fact that the Bauhin brothers, Caspar and Johann, contributed to its invention, Carl Linnaeus was the first to use the method consistently throughout his book. He developed a brand-new system of classifying and naming animals, plants, and insects that is still in use today after rapidly realizing the necessity to give the countless newly found species formal names. The Linnaean system, based on a binomial system, gave each species a generic name and a specific name that complied with the rules of Latin grammar.[8] The work of Linnaeus became the norm for nomenclature (the classification of species) and taxonomy (the grouping of creatures). He was acknowledged for using scientific nomenclature while describing insects and listed roughly 1900 different species in his work. But most importantly, the tenth edition of Systema Naturae, which also included the earliest documentation of 12 species of Indian insects, is regarded as a key publication from the perspective of Indian entomology. It was for the first time a European scholar collected scientific details about Indian insects and classified them according to their origin.[9]

As discussed earlier, the first-generation officials of the company were very enthusiastic about the exploration of the natural world of India. Many of them enjoyed royal patronage from the local rulers. Among them was J. G. Koenig (1728–1785), a member of the Danish medical mission, who came to Tranqueber

to follow his passion as a naturalist. He journeyed throughout the southern peninsula of India, collecting a variety of plant and insect species from the southern portion of Tanjore. Koenig, who couldn't afford to support his field research until 1774, accepted a position as a naturalist with the British East India Company and the Nawab of Arcot. Later, Professor Linnaeus himself studied and named Koenig's collections. He also wrote a professional article titled "The Natural History of so-called White Ants—the Termites, where the details about the specific insects were mentioned."[10] He actually drew inspiration from J. C. Fabricius, who had already written about the castes of European termites. J. G. Koenig clearly depicted the delicate structure of the termitaria and the biological specifics of the unyielding social animals in his own article. His engagement and enthusiasm in the field of entomology encouraged many of his colleagues, like Christoph Sammuel John, Johan Peter Rottler, and Johann Gottfied Klein, who also worked in several other fields of natural history.[11] Later in the 1780s, James Kerr of Patna (1782–1782), a surgeon of the East India Company and the translator of a Persian text referring to the rise and advancement of the Mahratta State into English, worked on the lac insects. He published the paper entitled 'Natural history of the insect that produces the gum lacca, describing the coccoid as Coccus lacca. In the paper, he discussed the variety of lac insects, their physical structures, and the uses of lac in various fields of contemporary society.[12]

Dr. James Anderson, a surgeon and well-known botanist in the company, made significant contributions to the study of modern Indian entomology. Unlike other contemporary botanists, Anderson focused on plants and insects that were economically important. He was appointed as surgeon in Madras, where he found cochineal insects and submitted numerous samples to Sir Joseph Banks (1743-1820), President of the Royal Society. Several tests on those insects were conducted in Europe, and a raw crimson dye taken from female cochineal insects was employed in the manufacturing of scarlet, orange, and other red colour. He felt that the plant on which the insects fed influenced the quality and colour of the carminic acid, so he attempted to feed them on a local version of the plant known as cactus. His studies into plant replacement failed quickly. However, he was fortunate to obtain numerous identical plant samples from China, Manila, and the Cape of Good Hope. Anderson professionally attempted to work on such insects with the help of EIC, but subsequent research has proved that Dr. Anderson never introduced actual cochineal insects to Madras.[13] William Jones, a wine merchant and a member of the Linnaean Society of London, wrote a book based on the Linnaean's collection held by the society and his own findings, which was referred to as the 'Icones Jones' by the society's president, James Edward Smith (1759–1828), or later Iconotypes: A Compendium of Butterflies and Moths.[14] It contains finely delineated paintings of more than 1500 species of butterflies and moths. He started the process of data collection with his own sketches from the 1780s, as well as the collections or cabinets of

many contemporary London-based contemporaries, including Joseph Banks, Dru Drury, and John Francillon. In this book, he included the original name and detailed description of every species, along with the geographical locations where it was found.[15] On the other hand, J.C. Fabricius, one of the students of Carl Linnaeus, was considered one of the greatest entomologists of the eighteenth century. He made a thorough study of insects and classified nearly 10,000 insects. As Linnaeus's classification was based on the number of wings of the insects, he used the form of mouthparts to discriminate between new species of insects and others. Fabricius was the first entomologist to make an extensive study of Indian insects. He worked on over 1000 species of insects in India and classified them into 13 orders based on the type of mouthparts. Dr. William Roxburgh (1751–1815), a Scottish surgeon and botanist of the company in the Carnatic region, contributed several research papers on silk cultivation and lac insects, like On The Lacsha, Or Lac Insect (1792), in the journal of the Asiatic Society. The insect, known to the Hindus by the name of Arrinday or Arundi in Bengal, was introduced to Europe even before, when William Jones mentioned the insect in a letter to Dr. Anderson, under the name of Phalana Riciui, dated May 17, 1791.[16] But Roxburgh made a thorough study of the insects and got some letters from Mr. William Pope, written by Michael Atkinson, from which he collected vivid details of the insects. In his writing, he mentioned detailed descriptions of his field survey and the different stages of the life cycle, like larva, chrysalis, and imago, food habits, and the detailed physical structure of the insects. Roxburgh even mentioned how a fine pippla near Crishanagar was almost wholly destroyed by the insect.[17]

In such a way, individual effort reshaped the field of natural history during the last decade of the eighteenth century. With the active support of the Royal Society of London and the Asiatic Society of Bengal, those early entomologists not only discovered many new species from all over India but also recorded valuable details about their physical structure, life cycle, food habits, and many more. Especially the Asiatic Society played a crucial role in the field of entomology at that period. As members of the society diligently pursued Indian studies, the intellectuals with antiquarian fervour gathered a sizable collection of archaeological, ethnological, geological, and zoological artefacts, where entomological specimens remain as one of the most attractive items always. Thus, the seeds of museums in India were sown when it was considered necessary to put these many artefacts in a location that would be appropriate for their acceptance and preservation. Asiatic Researches, the journal of the Asiatic Society, with many other subjects, published many research papers about the insect' world and became a watershed in the history of entomology of modern India. As example, Dr. James Anderson sent a letter to Mr. William Jones where he recommended Dr. William Roxburgh's article on lac insect to publish in the journal of society, and it was published in the second volume of 1799. In later versions, many discoveries of unknown insects were published.[18]

In 1830, Asiatic Researches published an article named 'Account of a Curious Insect,' where vivid details, lifestyle, and food habits of a new insect were recorded.[19] As with many other fields of natural history, the annual session of the Asiatic Society became a centre for the discussion and exchange of ideas for entomology also.

In the first half of the nineteenth century, institutional research started with full pace in the field of natural history, or more precisely, entomology. But individual research or field surveys were also continued by the British officials. Francis Buchanan Hamilton (1762-1815) served as the personal surgeon of Governor Lord Wellesley. He joined in the Medical Service of Bengal presidency, but soon he was given the special responsibility from the government to promote the study of natural history of India. Buchanan was the man behind the forgotten Barrackpore Zoo, which later became Alipore Zoo. Later, with the active support of East India Company (EIC), he made a comprehensive study in a large portion of topography, agriculture, forest, mine, history, and condition of the inhabitants, trade, and commerce. In the field of entomology, he also a had remarkable contribution because of the detailed study of the sericulture industry of Malda and Murshidabad. Buchanan travelled to many silk-producing villages, from where he collected detailed descriptions about the lifecycle of insects and the variety of silks.[20] He identified several different types of silkworms being raised in the Bengal province, including the Bombyx mori (mulberry silkworm), the Philosamia ricini (eri silkworm), and the Artheraea assamica (muga silkworm). Buchanan also described the methods used by the silk farmers to breed and rear silkworms, including the selection of mulberry leaves, the construction of rearing houses, and the maintenance of proper temperature and humidity. In the case of Malda and Murshidabad, nearly 34,596 people were engaged with sericulture, and insects like Nisteri, Chota palu, Bada palu, and China palu were raised there.[21]

Edward Donovan (1768-837), a natural history illustrator, zoologist, and writer, is credited with the first European illustrations of the entomology of India and Australia. His book, Natural History of Insects of New Holland, New Zealand, New Guinea, Otaheite, was the first contribution to the study of Asian insects, where he used the specimens collected by Joseph Banks, Dru Druny, and other private collections as well as from his own museum. Though he wasn't a traveller, but he conducted a thorough study and prepared thousands of sketches of insects. In the book, Donovan didn't follow the original Linnaean style properly; he just tried to present already collected specimens in more detail, nomenclature as more correct, the synonyms more numerous, and the localities more precise. In a small extent, the work can be compared with the detailed descriptions given by Fabricius, but Donovan's work had greater portions of those insects also, which had not been described by any authors. Especially the Lepidoptera and other species of insects with proper descriptions of their physical structure and engravings, were included in his book for the

first time.[22] On the other hand, another important book named Natural History of the Insects of India written by E. Donovan was later edited and republished by J. O. Westwood. It is considered one of the monumental works in the history of entomology in India. According to Westwood, with his additions, the book surely will be "the entomological production of a country for which we ought to cherish the liveliest and deepest interest, as being connected intimately with the prosperity, the dignity, and the honour of the British Empire; in a word, of British India."[23] Here also Donovan didn't followed Linnaean style properly; by using his predecessors and his own collection, he gave a detailed description of the Indian insect world. But the book has its own limitations. The observations of Westwood made the book more valuable, as descriptions of many insects and their individual figures were added. J. O. Westwood also mentioned about various limitations of Donovan's work, where he mentioned many insects were overlooked as the inhabitants of the West Indies due to the careless observations of his predecessors.[24] As an example, many varieties of beetles, like genera Catascopus, Orthogonius, Panagaei, Buprestidae, and Elateridae, was there in India, which are mentioned in the book.

The Indian Museum, one of the oldest museums in Asia, is considered a watershed in the study of modern entomology in India. Thus, the seeds of museums in India were sown when it was considered necessary to put these many artefacts in a location that would be appropriate for their acceptance and preservation. As discussed earlier, the members of the Asiatic Society collected many specimens as supportive documents of their field study. Later, the Asiatic Society of Bengal decided to open the Society Museum in 1796 after the initiative received enthusiastic support from the society's members. Dr. Nathaniel Wallich, a Danish botanist who had been arrested during the siege of Serampore, Hooghly, but afterwards released by the government in recognition of his scientific accomplishments, wrote to the Society in 1814 and fervently urged the establishment of a scientific society. The idea was quickly accepted by the society's members, and it was decided to build a museum on the grounds of the Asiatic Society of Bengal. As a result, a museum was formed, with Dr. Wallich serving as the honorary curator. Under its jurisdiction, contemporary naturalists or entomologists continued their study and discovered many unknown details about the concerned field. In its official publication, named Indian Museum Notes, the researchers published articles about their field study and findings. In the edition of 1889-91, many naturalists recorded the negative impact of insects on agriculture. E. T. Atkinson published an article named 'Notes on Indian Insect Pests,' where he collected the specimens of the insects like rice sapper, chora poka, and green bug and mentioned how harmful they were for agricultural products.[25] In the same journal of the Indian Museum, L. De Niceville recorded the life cycle and food habits of a specific butterfly named Suastus Gremius (Pattanai), who was considered responsible for the destruction of paddy crops in the field. The condition was so serious that landowners hired

children with butterfly nets and instructed them to catch as many as they could.[26] E. C. Cotes published another article where he mentioned the lifestyle of weevils and their tendency to attack rice or paddy fields. He also mentioned the experiments of Mr. H. M. Ross, who discovered numerous unknown details, like how villagers surrounding Ranch Town observed better precautions to preserve the rice, as their rice was singularly free from weevils.[27]

Besides these institutional initiatives, individual efforts also made the field more enriched. The Fauna of British India, a series of scientific books edited by W. T. Blandford, had a profound and lasting impact on Indian entomology. The series was started around 1881 after a letter had been sent to the Secretary of the State for India, which was signed by Sir Charles Darwin and Sir Joseph Dalton Hooker and forwarded by P. L. Sclater to R. H. Hobart. This monumental 13-volume series, published between 1889 and 1930, served as the first comprehensive documentation of Indian insects. In the second edition of the book, some volumes are directly dedicated to birds, reptiles, and insects, especially butterflies. It covered a vast array of insect groups, providing detailed descriptions, illustrations, and distribution data for thousands of species.[28] In the volume of 1897, C. T. Bingham devoted his focus to the study of bees and wasps, where he mentioned the existence of varieties of Eumenidae, Monteeumia, Labub, Rhynchuim, and bees like Thaumatosoma, Osmia, Heriades, and Astata. Many of them were really unique for contemporary entomologists, as they were noticed only in India. This volume has immense value in the study of the concerned insects because Mr. Bingham not only confirmed the existence of those insects in India, he also recorded physical structure, unique details, food habits, nature, and specific areas to explore the insects with his close observation.[29] In the volume of 1903, Col. Bingham recorded the details about the ants and the Chrysididae, where he conducted a thorough study of those two insects. To mark his hard work, W. T. Blanford wrote in the preface of the volume of 1903, 'The knowledge of Indian members of these groups is more imperfect than is that of the Aculeata. Col. Bingham's knowledge of Indian animal life, accumulated during a long period of service in India and Burma, can be employed in a group of insects that is better known and of which a complete general account has for many years been urgently required.

The Bombay Natural History Society (BNHS), which was essentially a group of eager youth to explore the new land, was another significant organization of that era. Around 1811, British hunters in Bombay organized a hunting squad. They engaged in shooting and riding with foxhounds. Sir Bartle Frere began to finance the Bombay Hunt in 1862. In 1856, Lawrence Hugh Jenkins, a registrar of the Supreme Court at the time, Drs. Don (of Karachee), Andrew Henderson Leith (a physician), George Buist, and Henry John Carter founded a natural history organization, probably as an offshoot from the Bombay Geographical Organization. The group only lasted for a maximum of three years. Eight men

who were interested in natural history gathered on September 15, 1883, in Bombay at the Victoria & Albert Museum and laid the foundation stone of the association. In the official journal of BNHS, over the years many research articles were published about insects. The edition of 1886 had many articles related to insects, as Mr. E. H. Aitken published sketches and details of many butterflies from the Bombay Presidency, like Nymphalide, Satyrine, Nymphaline, etc.[30] In the edition of 1888, Captain C. T. Bingham discussed about the collection and preservation of the specimens of ants, bees, and wasps in a scientific manner. He even mentioned the use of potassium cyanide in the laboratory to kill insects.[31] In the same edition, Lionel De Nickville added details of the life cycles of larvae and butterflies with sketches and observations of Mr. Gnenee, Mr. Mooro, Mr. W. H. Edwards, and many others about the physical structures of such insects.[32] In the edition of 1893, E. C. Cotes published a report on the locusts and their destructive attack in Bengal, Madras, Assam, and Bombay with the help of the Revenue and Agricultural Department of Central as well as local agricultural departments. Here he mentioned species like Acridium peregrinum, which caused destruction in all the presidencies. Even the preventive methods applied in the Bombay presidency were recorded here, where the Cyprus Screen System failed and a new plan of marching lines of beaters, armed with bundles of twigs, through the fields, beating the ground was applied. This method became partially successful in destroying eggs of the locust.[33]

By all these, the late nineteenth and early twentieth centuries witnessed a gradual growth of knowledge in the field of entomology. Both individual and institution-based efforts under the Europeans brought the field into full focus of the government. In the twentieth century also, the same momentum was noticed in that particular field. H. Maxwell Lefroy, an Imperial Entomologist, was appointed in 1901 by the government to supervise the matter, which was later followed by the Central Agricultural Institute at Pusa, initiated by Lord Curzon.[34] After establishing such an institute, the administrators secured more knowledge and importance of entomology in agriculture and medicine. Later, Howlett, as Imperial Pathological Entomologist, and T. Bainbriggs Fletcher took proper initiative to lead the institution properly.[35] Gradually, the British provinces began to have their own entomologists and related research institutes also. Among the Indian states, Mysore was the first one to appoint its own entomologist in 1908. The establishment of the entomological department at Pusa and the appointment of the official entomologists at the government level and the establishment of a dedicated organization like the Entomological Society of India played a crucial role in that particular field. In the earlier decades of the twentieth century, Indian entomologists usually met during the Indian Science Congress sessions, and entomological papers were presented and discussed in the zoological section. In the Silver Jubilee Session of the Indian Science Congress (ISC) held in Calcutta in 1938, entomology became an independent section. From 1917, the meetings of agricultural entomologists at

Pusa, with the leadership of Thomas Bainbridge Fletcher, are known as 'Fletcher meetings.' T B Fletcher, who succeeded Harold Maxwell Lefroy as the Imperial Entomologist, later advocated for a separate institution for entomologists.[36] After a long hibernation of 18 years, the proposal of Fletcher got the government approval, and finally an ad hoc committee was formed with M. F. Hussain, Hem Singh Pruthi, Narayan Chandra Banerjee, Dev Raj Mehta, and many others. On 7th January, 1938, at the ISC Session of Calcutta, TV Ramkrishna moved a resolution with the name 'Entomological Society of India,' and the organization was launched by M F Hussian, eminent locust entomologist and Principal of Punjab Agricultural College.[37] In later years, the ESI played a vital role in the field of entomology in India, as it sponsored many entomological discoveries, and many of the society's sessions became witnesses of scholarly discussion and the publication of field survey reports.

Notes and References (Endnotes)

1. M. G, Venkatesha, "Is Entomology Curriculum Offering Insect Biodiversity in India," Current Issue 93, No. 8 (2007): 1047-8
2. Rajesh, Kochhar, Natural History in India During the eighteenth and nineteenth Centuries, Indian Academy of Science 38, No.2 (2013): 201-24
3. Ibid, 201.
4. J. Ferd. Fenger, History of the Tranquebar Mission, Trans. Emil Francke (Tranquebar: Evangelical Lutheran Mission Press, 1863), 15-17
5. Rudyard Kipling, Rudyard Kipling's Verse: Definitive Edition (New York: Doubleday, Doran & Co., 1940), 233–36.
6. Edward W, Said, Orientalism: Western Conceptions of the Orient, (New Delhi: Penguin India, 2001), 56-58
7. Carolus, Linnaeus, Systema Naturae: Facsimile of the First Edition with an Introduction and First English Translation of the Observations, Trans M. S. J. Engel-Ledeboer and H. Engel, (London: HES & De Graaf Publishers, 1964,), 11-12
8. Mariette, Manktelow, History of Taxonomy, (Uppsala, Evolutionary Biology Centre, Uppsala University, 2008), 2-3.
9. W.D.L, Ride, International Coder of Zoological Nomenclature, (London, International Union of Biological Science, 1999, 3-5.
10. J. G, Koenig, "The Natural History of so-called White Ants-the Termites," Research Activities of the Berlin Society of the Friends of Nature, Berlin, Vol. IV(1779), 8.
11. Raman, Anantanarayanan, "Economic Biology and James Anderson in Eighteenth Century Coromandel," Historical Notes, Current Issue, 100, No.7, (April 2011), 1092-93.
12. Ibid., 1092-93.
13. Ibid., 1092-93.
14. R.I., Vane-Wright,"William Jones of Chealsea (1745-1818), and the Need For A Digital, Online 'Icones'," Antenna, 34, No.1: 16-18

15. Ibid, 16-18.
16. William, Roxburgh, "On the Lac Insects," Asiatic Researches, II (1799), 361-64.
17. Ibid, 362.
18. Ibid, 362.
19. "Account of a Curious Insect," Gleanings in Science, I, (Calcutta: Government Gazette Press, 1829): 144-45
20. Francis Hamilton, Buchanan, A Geographical, Statistical and Historical Description of the District or Zilla of Dinajpur, (Calcutta, Baptist Mission Press, 1833), 290.
21. W. W., Hunter, A Statistical Account of Bengal, Vol. 7, (London, Turbner & Co., 1876), 96.
22. Gibson, Suzannah, Patron's Review: The Careering Naturalists: Creating Career Paths in Natural History, 1790-1830, Archives of Natural History 42, No. 2 (April,2001): 195-214
23. J. O. Westwood, ed., E. Donovan's Natural History of the Insects of India: Upwards of Two Hundred and Twenty Figures and Descrriptions, (London: Henry G. Bohn, 1980), 5
24. Ibid., 5-6.
25. E.T, Atkinson, "Rhynchota," Indian Museum Notes, Calcutta: Government Printing Press, 1889-90), 2-3.
26. L. De, Niceville, "Rhopalockra," Indian Museum Notes, Calcutta: Government Printing Press, 1889-90), 9.
27. E.C. Cotes, "Further Notes," Indian Museum Notes, Calcutta: Government Printing Press, 1889-90), 15-16.
28. N. B. Kinnear, "The History of Indian Mammalogy and Ornithology," Journal of Bombay Natural History Society 50 (1951): 766-78.
29. Ibid., 766-78.
30. E. H, Atkinson, "A List of the Bombay Butterflies in the Societies Collection," Journal of Bombay Natural History Society 1 (1886): 126.
31. C. T, Bringham, "Hints of Collecting and Preserving Hymenoptera," Journal of Bombay Natural History Society 3 (1888): 112.
32. Ibid., 166-67.
33. E. C, Cotes, "The Locust of Bengal, Madras, Assam and Bombay," Journal of Bombay Natural History Society 3 (1893), 120-22.
34. M. Afzal, Hussain, Entomology in India: Past, Present and Future, Section of Entomology, (Presidential Address, 1939), 202-8
35. Ibid, 202-8
36. R. A., Buchanan, "The Rise of Scientific Engineering in Britain," The British Journal for the History of Science 18, no. 2, (Jul. 2005): 218-221
37. Hussain, Entomology in India, 202-8