ROLE OF SERAMPORE MISSION IN THE PROMOTION OF SCIENCE EDUCATION AND TECHNOLOGY IN BENGAL, 1800-1840

Dissertation submitted to Jawaharlal Nehru University

in the partial fulfilment of the requirements

for the award of the degree of

MASTER OF PHILOSOPHY

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2012

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Declaration

I hereby declare that the work embodied in this dissertation entitled **'Role of Serampore Mission in the Promotion of Science Education and Technology in Bengal, 1800-1840'** submitted for the award of the degree of **Master of Philosophy** of Jawaharlal Nehru University is the result of original research and has not been submitted for any other degree to any other university or institution.

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CERTIFICATE

We recommend that this dissertation be placed before the examiners for evaluation.

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My Guide

&

My Parents

Acknowledgement

I would like to express my gratitude to my respected supervisor Professor Aditya Mukherjee, for his invaluable support, continuous guidance, constructive suggestions and constant encouragement that lead to the successful completion of this dissertation. Without his last minute assurance, this dissertation could hardly have taken a concrete shape. It has been a very enriching learning experience to work with him.

I am truly indebted and thankful to Professor Sucheta Mahajan, Professor Mridula Mukherjee, Professor Pius Malekandathil, Professor Neeladri Bhattacharya, Professor Chittabrata Palit, Professor Deepak Kumar, Dr. Sabyasachi Dasgupta, and Dr. Sandeep Sinha for their valuable suggestions.

I am also thankful to all the librarians and staffs of Carey Library and Research Centre, Serampore; National Library, Kolkata; National Library News Paper Archives, Kolkata; Bongiya Sahitya Parishad, Kolkata; The National Archives of India, New Delhi; Nehru Memorial Museum and Library, New Delhi; Jawaharlal Nehru University Library and DSA Library of Jawaharlal Nehru University, New Delhi, for their valuable assistance.

Words fail to express my gratitude towards my dear parents, Mr. Rabi Sankar Mondal and Mrs. Dipali Mondal, for their love support and composure. I am thankful to my mother and to my sister, Anumita for being my strength and always standing beside me. I am grateful to my Uncle, Uday Sankar Mondal and Aunty, Monika Mondal for all their support during my field work in Kolkata. Without the help of my Uncle it would have been difficult for me to locate different libraries in around Kolkata.

I am truly indebted to Taniya di for her affection and help. I am also grateful to my roomy Anamika di for her affection and cooperation. Once again I would like to thank Taniya di and Anamika di and Sabnam to help me in every possible way, especially while proofreading my dissertation. I am obliged to many of my friends, Kundan, Bidisha, Souvik, Biswarup, Sohini, Richa, Somjoti, Chitrita, Rashmi, Rakhi, Radha, Vipul, Ravi and Youngsu for their incessant encouragement and assistance.

In the end the responsibility for all errors are mine.

JNU, New Delhi Amrita Mondal

Abbreviations

Anna	:	Unit of money.
Banan and Phalus:		Spelling and Adjunct.
Bigghas	:	Unit of land measurement.
Carey	:	William Carey.
Jotish	:	Astronomy.
Marshman	:	Joshua Marshman.
Moofussils	:	Town.
Nitty Bakya	:	Moral lessons.
Serampore Trio:		William Carey, Marshman and William Word.
Shastra Puddhati:		Norms of ritual practices.
Thanas	:	Administrative division. It is also known as police station.
The BMS	:	The Baptist Missionary Society.
The CMS	:	The Church Missionary Society.
The LMS	:	The London Missionary Society.
The Mission Press:		Serampore Mission Press.
The SPCK	:	The Society Promoting Christian Knowledge.
Vaids	:	Indigenous doctors used Ayurvrdic medicine for healing.
Ward	:	William Ward.

The last half of the eighteenth and first half of the nineteenth century were one of the most crucial phases of Indian history. During that time the socio-economic, political and cultural conditions of India were going through changes. Not only that, the ruling power was slowly going into the hands of new authority, and the knowledge system got shaped by the new upcoming epistemologies. As during that time Bengal had the longest and the deepest exposure to the East India Company, these upcoming epistemologies became much more effective there than in other parts of India.

These epistemologies slowly shaped the intellectual milieu of Bengal in many ways, from criticizing age old customs to reviving traditional knowledge, from introducing western education to the emergence of a modern Bengali intelligentsia. Ultimately, all this helped to transform Bengal in many ways. In Bengal, Serampore Mission (this mission was established as a part of Baptist mission Society) played an important role in generating these epistemologies. This dissertation is going to highlight the Serampore Mission's role in the propagation of new epistemologies in the suburbs and in Kolkata. While doing so, the dissertation also highlights the response of native society towards these efforts of the mission.

Among the Christian missionaries, Jesuits were the first to come to Bengal in sixteenth century. They came with the Portuguese merchants and when the Portuguese power gradually declined during the seventeenth century, they left Bengal.[1] In the later period, in most of the cases, missionaries were coming to Bengal either with the English merchants or with the Danish merchants. After them, during the eighteenth and nineteenth century, many Christian missionaries belonging to different missions, started to come to Bengal.

In the beginning, the missionaries' main aim was preaching of Christianity and they believed that the key to successful proselytization lay in criticizing the so

[1]Kanti Prasanna Sen Gupta, *The Christian Missionaries in Bengal, 1793-1833*, Firma K. L. Mukhopadhy, Calcutta, 1971, p. 100.

called hidebound practices of indigenous society. The "Society for Promotion of Christian Knowledge" (S.P.C.K) was the first missionary society which sent their missionaries to Bengal. This society did many activities in Kolkata. For example, in 1709, the society sent out a circulating library to Kolkata and in 1731, they opened a Christian school.[2] It is very hard to notice any variation in the missionary work of eighteenth century Bengal but with the influence of the orientalists some of them, began to analyse and translate the old Indian texts. Interestingly, they had given special emphasis on translating the regional grammars into different European languages as well as translating the Bible into different Indian languages. The Roman Catholic Church in Bengal also followed the same trend.

Among the protestant mission, Baptist Mission Society (BMS) first sent their missionaries to Bengal. This society was established on 2nd Oct. 1792 at Kettering, England. Soon after its foundation the BMS, in 1794, sent two missionaries, John Thomas and William Carey to India. Though, it was the first visit of Carey to India but for John Thomas, it was the second. Their aims remained the same like others,

i. to preach Christianity in India and
ii. to translate the Bible into Bengali[3].

It is argued that the time was "a propitious time for missionary work in India. The official policy of East India Company was to oppose all evangelical efforts – not because of an enlightened attitude to other religions or cultures but out of a purely pragmatic, self-interested desire to not create unrest among the 'natives', which might undermine British control and authority."[4] However, the Company's policies changed with time.

The relation between the Company and the missionaries' went smoothly, till the Company was concerned with trade only, but that relation changed when the Company engaged themselves into the Indian politics. Now they became very sensitive over the so called "native society" as far as religion was concerned. These

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[2] Rev James Long, *Bengal missions in context with the Church of England, Together with an account of General Educational Efforts in North India*, John Farquhar Show, London, 1848, pp. 15-16.

[3] Promotha Nath Bishi, *Keri Saheber Munshi*, Mitra & Ghosh Publishers, Kolkata, 1984, p. 4.

[4] Subrata Dasgupta, *Awakening*, Random House India, Noida, 2010, p. 56.

changes also affected the Charter Act of 1793. The higher authorities of the Company now changed their attitude towards the missionary. For example, Sir John Shore (Carey and Thomas came during this period) was discouraging towards the missionaries who followed evangelical ideas.[5] So, when William Carey reached Kolkatta on 11th Nov. 1794, the Company Government was totally uncooperative. It became hard for Carey to carry on his everyday life and he failed to get any job in or around Kolkata. Eventually, Carey decided to leave Kolkata.

During the first five month while staying at Kolkatta he tried to learn the Bengali language with the help of his munshi Ram Ram Basu. Adaptation of indigenous lifestyle, culture and language became an important tactics, as well as part of the mission for the missionaries. For example, Sen Gupta argues, in south India, "The Roman Catholic missionaries in India had conformed to the Indian tradition in their rites. They led their life like Indian sages, which easily appealed to the Indian mind".[6] According to Sen Gupta, following the example of the Moravians the protestant missionaries followed three main activities, first, they tried to learn the indigenous local languages; second, they started to translate the Gospel into the regional language and third, they founded elementary schools. Carey too followed this pattern. After coming to India, he spent few days at Sunderban. During that time he wrote to his sister,

> "When I know the language well enough to preach in it, I have no doubt of having a stated congregation, and I much hope to send you pleasing accounts. I can so far converse in the language as to be understood in most things belonging to eating and drinking, buying and selling, etc. My ear is somewhat familiarised to the Bengali sounds. It is a language of a very singular construction, having no plural except for pronouns, and not a single preposition in it: but the cases of nouns and pronouns are almost endless, all

[5] Kanti Prasanna Sen Gupta, *The Christian Missionaries in Bengal, 1793-1833*, Firma K. L. Mukhopadhy, Calcutta, 1971, p. 49.

[6] *Ibid*., p. 32.

the words answering to our prepositions being put after the word, and forming a new case."[7]

The writing shows that how much Carey was interested in learning the indigenous language. Later on this enthusiastic nature helped him to modify the education system.

In1795, "at the beginning of the great rains in the middle of June, Carey joined Mr. G. Udny[8] and his mother at the chief factory"[9] at Mudnabati near Malda. During that time "as an indigo planter he received the Company's licence to reside for at least five years. So, on 26th June he began his secular duties by completing for the season of indigo manufacture the buildings at Mudnabati, and making the acquaintance of the ninety natives under his charge."[10] While staying in Mudnabati he continued the work of preaching. Though, at that time he did not get much success. Till 1806, no native conversion was made there. But, he also carried on some welfare work and we get evidence of some of those in his diary. In his diary he wrote on 18th January 1795,

"We formed a plane for setting up two colleges (Chowparee Bengali) for the education of twelve youths in each. I had some month ago set up a school, but the poverty of the Natives caused them frequently to take their children to work – To prevent this we intend to Clothe and feed them, and educate them for seven years, in Sanskrit, Persian, &ct. and particularly to introduce the study of Holy Scriptures, and useful science therein; We intend also to order Types from England, at our own expense & print Bible, and other useful thing in Bengali and Hindustani Languages. We have reason indeed to be

[7] Cited in, George Smith, *Life of William Carey, Shoemaker and Missionary*, J. M. Dent & Co., London and E. P. Dutton & Co., New York, 1909, pp. 62-63.

[8] Mr. G. Udny was East India Company's Commercial Resident at Malda and an owner of an Indigo factory at that place. He wrote a letter to Rev. John Thomas and then to Carey to became his assistant in charge of new indigo factory which was built by Mr. G. Udny on his own account. (*Ibid*,. p. 63.)

[9] Cited in, *Ibid.*, p .66.

[10] Cited in, *Ibid*.

very thankful to God for his kind providence which enables us to lay out anything for him, may our Hearts be always ready."[11]

The above quotation indicates that Carey was not only interested in preaching but had also interest in educating the "native" people. Though, the main intention behind this interest was of course, the preaching of Christianity, the significant thing was that he emphasised science education. It can be said that in the later period, Carey's big educational project which started just after the establishment of Serampore Mission, especially in the field of science education, had its beginning in Mudnabati.

He was very passionate about the educational matter. On 27th January 1795 he once again wrote in his diary,

"Mr. Thomas and I (between whom the utmost harmony prevails) have formed a plan for erecting two colleges (Chowparis, Bengali), one here and the other at his residence, where we intend to educate twelve lads, viz. six Mussalmans and six Hindoos at each place. A pundit is to have the charge of them, and they are to be taught Sanskrit, Bengali, and Persian; the Bible is to be introduced, and perhaps a little philosophy and geography. The time of their education is to be seven years, and we find them meat, clothing, lodging, etc. We are now inquiring for children proper for the purpose."[12]

Not only Carey and Rev. Thomas but Mr. Udny was also interested in this educational effort and appreciated them. For this, Carey wholeheartedly praised him and said, "We are under great obligation to Mr. G. Udny for putting us in these stations. He is a very friendly man and a true Christian. I have no spirit for politics

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[11] Terry G. Carter (ed.) *The Journal and Selected letters of William Carey*, Smyth and Helwys Publishing, USA, 2000, p. 48.

[12] Cited in, George Smith, *Life of William Carey, Shoemaker and Missionary*, J. M. Dent & Co., London and E. P. Dutton & Co., New York, 1909, p. 75.

here; for whatever the East India Company may be in England, their servants and officers here are very different; we have a few laws, and nothing to do but to obey."[13]

During 1799, the Baptist Missionary Society impressed by Carey's work; decided to send two other missionaries to India to assist him. As a result Marshman and William Ward came to India in the same year. Not being permitted to land in Kolkata they went to Serampore, a Danish settlement and the Danish Government permitted them to settle there. During the same year, William Carey returned from Mudnabati after the closing of indigo factory and settled at Khiderpore.

During that time these two missionaries invited him to join with them. As a result Carey responded to their invitation and left for Serampore. A new phase was going to start not only in Carey's life but also in Bengal society. At the dawn of the new century these three people, later on who came to be known as the Serampore trio, established the Serampore Mission.

After its establishment this mission actively took part in various fields along with preaching Christianity. The Serampore trio and their other brethren's energetic nature brought about a revolution in the missionary field. This revolution started with the establishment of a printing press and publishing of the Bible into various Indian vernaculars as well as some other Asiatic languages like Chinese and Burmese. This development reached its zenith with the establishment of Serampore College, which became a meeting point of 'western' and 'eastern' knowledge. The heydays of the mission lasted the first three decades of nineteenth century but it left a strong imprint in multiple fields of Bengali society for a long time thereafter.

Historiography:

Various attempts have been made to assess the contribution of the Serampore Mission and its missionaries. George Smith, in his book *Life of William Carey;*

[13] Cited in, George Smith, *Life of William Carey, Shoemaker and Missionary*, J. M. Dent & Co., London and E. P. Dutton & Co., New York, 1909, p. 75.

Shoemaker and missionary, tries to highlight various efforts made by William Carey. Here Smith argued trenchantly, that Carey did not bind himself within the paradigm of preaching but engaged himself towards social welfare. He also remarked that Carey was not only the pioneer of modern Bengali literature but also the founder of modern scientific agricultural system, new printing technology in India and a leper hospital in Kolkata. Along with that, Carey also left a strong imprint on the educational system of that time. He also discusses the other missionaries' activities, to make a comparison between the Serampore Mission and the other missionaries. But he does not mention anything about the other missionaries who were working with Carey under Serampore Mission.

Kanti Prasanna Sengupta, in his book, *The Christian Missionaries in Bengal* emphasises the various objectives of the missionaries and the extent to which they were fulfilled. He also evaluates the impact of these missionaries on the Bengal Renaissance. He starts his discussion with a general introduction of various newly founded missions in eighteenth and nineteenth century but later on basically emphasises the Serampore Mission. While doing so he gives a good description of the various activities of Serampore Mission but he does not adequately emphasise the role of that mission in promotion of science education and technological skill.

E. Daniel Potts, in his book, *British Baptist Missionaries in India*, highlights the different activities of Baptist mission during the first half of nineteenth century in Bengal. He starts his discussion with BMS but gradually shifts toward the activity of Serampore Mission. He tries to depict different activities of the mission, like their role in the field of education or in the field of social reform, from philanthropic perspectives. Not only that, he also highlights the conflict and co-operation between Company Government and the Serampore Mission. Along with this he also discuss about the Indian response to the Serampore Mission.

Sunil Kumar Chatterjee, in his biographical works on William Carey and Felix Carey, tries to make arguments from a single point of view and he suggests that the effort of these missionaries helped Bengal to think in rational way. Chatterjee in his biographical work on William Carey tried to highlight Carey's keen interest towards science. Besides, this book also discusses the scientific curriculum of Serampore

College but this book hasn't discussed the science curriculum of Serampore Mission's schools.

John Clark Marshman's literary works entitled *Life and time of Carey Marshman and Ward, vol.1 and vol.2*, also discuss about the Serampore Mission and its efforts in various field in vivid details. It also gives a picturesque description of the mission, from its establishment by the Serampore trio to its various philanthropic activities and from 'Serampore Controversy'[14] to the death of last person of the Serampore trio.

While discussing about the Bengal Renaissance, David Kopf, in his book *British Orientalism and Bengal Renaissance* tried to evaluate it from a cultural perspective and tried to show the process of cultural interaction started between east and west with the establishment of Fort William College and how that process helped in modernizing Bengali society along with the emergence of Bengali intellectual class. Here he highlighted the efforts of William Carey and Serampore Mission to show how their efforts modernized the Bengali society along with the Bengali language.

Subrata Dasgupta, in his book *Awakening, The Story of Bengal Renaissance* tries to draw a picture of Bengal Renaissance. His description begins with the last quarter of the eighteenth century with several orientalists like Warren Hastings,

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[14] Serampore Controversy : After the death of Fuller (he was the founding father of BMS in England and a great supporter of Serampore Mission's activities in India and friend of William Carey) in 1815, conflict started between the older generation of Serampore Mission and newcomer missionaries on the issue of controlling of Serampore Mission's property. The home committee of BMS, situated in England also supported these new missionaries as they also had some doubts over the questions like, firstly, who owned the Serampore mission's property and secondly, who determined the makeup of the mission family of Serampore. These two questions led to the conflict between Serampore Mission and BMS, which is also known as 'Serampore Controversy'. Unfortunately, the controversy grew worst as the time passed. Continual wrangling over these issues and especially criticism of Marshman by the BMS eventually led Carey and Serampore Mission to separate from the Society. Ultimately, it led Serampore Mission to become an independent society. (Sources : John Clark Marshman, *The Life and Time of Carey Marshman and Ward*, Vol.2, Longman Brown, Green, Longmans & Roberts, London, 1859, pp. 134-150. Terry G. Carter (ed.), *The Journal and Selected letters of William Carey*, Smyth and Helwys Publishing, USA, 2000, pp. 219-246.)

William Jones, Henry Colbrook, William Carey and their works. This discussion covered almost every personality, associated with Bengal Renaissance. Here he argued, "Carey's story also offers a glimpse of the fascinating process called 'acculturation'...".[15] We may not agree with the concept of "acculturation" but certainly the interaction between the two culture occurred through different ways and one of them was the printing press. Establishment of Serampore press helped to develop the vernacular languages.

Susobhan Sarkar, in his book *Bengal Renaissance* depicts the nineteenth century Bengal and Bengal Renaissance from Marxist Perspective but we hardly find any argument on Serampore Mission and its contributions in first half of nineteenth century.

The recent critical works of Peter Van Der Veer, Robert Eric Frykenberg, Antony Copley, and George Oddie also touched on the issues concerning the missionaries in India although Serampore Mission and its efforts towards the promotion of science education and technological skill remained untouched.

Antony Copley's book *Religion in Conflict* deals with the various religious conflicts within different Indian religions in the mid-nineteenth century and through it wants to mark the religious pluralism of India. He looks at that issue from three different angles, "the role of ideology, the nature of cultural contact and conversion".[16] So, he starts his discussion with various ideologies of the "new missionaries"[17] of mid-nineteenth century. Then he emphasises the nature of relationship between these missionaries with other religions of India and also with the new converts. He makes some analytical case studies related to these missionaries in different parts of India. As all the case studies were associated with the second half of the nineteenth century; the Serampore Mission did not occupy a large part of his discussion, though he does devote some parts of his argument towards it. He discusses the poor condition of that mission during the second half of the century and argued

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[15] Subrata Dasgupta, *Awakening*, Random House India, Noida, 2010, p. 57.

[16] Antony Copley, *Religion in Conflict*, OUP, New Delhi, 1997, p. xiii.

[17] *Ibid*., p. xiv.

that, on the one hand when the old generation of that mission "had pioneered a new approach to mission: they had seen that the future lay in the translation of the Bible into Indian languages and a reliance on indigenous ministry", on the other hand "the younger generation of 1830 and 1840s went with the tide and accepted, instead, the strategy of itinerating, one heavily dependent on the European missionary."[18]

In *Christianity in India* Robert Eric Frykenberg, gives a picturesque description of the evolution of Christianity in India. The discussion starts with the emergence of Christianity in the Malabar Coast with the coming of the Apostle Thomas (52 AD.)[19] and Jesuits(1542)[20] in India. How they deal with the indigenous people and culture. Further, the study examines the various efforts made by various missionaries, like translating vernacular grammar, adopting some local practices, convert local heathen, establish "network of 'charity schools' or 'orphan schools' ".[21] While discussing the activities of Christian missionaries under 'British Raj', he also discusses the interaction between the Christian missionaries' with the lower class Hindus and intellectual people. While doing so he also emphasises various educational polices of those missionaries. Though this work gives a vivid account of the role of Serampore Mission in the first half of nineteenth century, we hardly find any mention of its role in the development of science and technology.

Imperial Encounter by Peter van der Veer deals with a much broader concept. The discussion begins with the emergence of secularism and public sphere in India and Britain and how in both cases religion played an important role. He argues all these processes started in the first half of nineteenth century, and in the second half of nineteenth century all these factors helped in the emergence of nationalism in India. Through all over the discussion he mainly highlights how religion played an

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[18] Antony Copley, *Religion in Conflict*, OUP, New Delhi, 1997, p. 67.

[19] It is believed that the Apostle Thomas brought the Gospel to India and founded the Thomas Christians in India. (Source: Robert Eric Frykenberg, *Christianity in India*, OUP, New York, 2008, pp. 92-95, 116.).

[20] Robert Eric Frykenberg, *Christianity in India*, OUP, New York, 2008, p. 129.

[21] *Ibid*., p. 149.

important role in determining the British policies. While doing that he also gives a general description about the role of Christian missionaries' in the process of British policy making. He says, "From 1817 on, the Government of Madras took over direct responsibility for the administration and upkeep of Hindu temples and rituals"[22], but "in Britain this led to strong protests from evangelicals who formed an Anti-Idolatry Connexion League. These Christian protesters demanded of the government that the British would be at least "natural" toward native (Hindu and Muslim) institutions and at best would support Christian missionization in India."[23] Further study shows how the nature of British rule influenced by Unitarian and Evangelical trends. This transformation could clearly be understood in the educational field.[24] The discussion proceeds with the issues like Hindu revivalism and its interaction with Christianity. In a nutshell it could be said that the book tries to highlight the confrontation between Christianity and different Indian religions, and how the confrontation shaped the public sphere and nationalism in India and Britain in nineteenth and first half of twentieth century. Though, we hardly find any mention of Serampore Mission or its various activities in the first half of nineteenth century.

Both Copley and Van der Veer start their study from the second half of nineteenth century. As a result they are not much concerned about the Serampore Mission, which during that time was in its declining phase. So, in a nutshell it could be said that these books mainly deal with Christianity as a religion and its interaction with Indian society and its evolution over the time but neither much concern about the Serampore Mission nor about its efforts in the first half of nineteenth century.

Books on science and technology, like Satpal Sangwan's *Science Technology and Colonisation: An Indian Experience, 1757-1857*, and *Science and the Raj* by Deepak Kumar throw much light on colonial science and its gradual development but they fail to take account of the role of Serampore Mission or any other missionaries in promotion of science and technology.

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[22] Peter van der Veer, *Imperial Encounters*, Princeton University Press, Princeton and Oxford, 2001, p. 21.

[23] *Ibid.*

[24] *Ibid.*, p. 98.

Deepak Kumar, in *Science and the Raj*, says that there were five stages of evolution of colonial science in India[25] though at the initial phase (second half of eighteenth century and first half of nineteenth century) "colonial science lays its highly individual character. During this phase science owed much to individual enthusiasm and some of these individuals merit separate study."[26] Here he gives the name of some enthusiastic person like Rennell, Kyd, Roxburgh, Carey, Lambton, Williams but he does not give detail description of their work. So, William Carey and the others Serampore Missionaries' role in the evolution of colonial science remained untouched.

In *Scientific Bengal* Chittabrata Palit devotes one chapter on Serampore Mission, 'Serampore Missionaries and Science', where he gives a short description on contribution of Serampore Missionaries in scientific development. There he only focused on William Carey, Felix Carey and on John Mack, not on the other Serampore Missionaries. He argues, "the role played by Serampore Missionaries in the spread of science in India was undoubtedly pathbreaking"[27] as for them "religious conversion, cultural conversion went hand in hand".[28]

The article *The Contribution of the Serampore Missionaries to Education in Bengal, 1793-1837* by M. A. Laird highlights several education policies of Serampore Mission and argues that "from the beginning they were concerned with education, starting schools at first in their immediate vicinity and eventually throughout the province of Bengal…"[29] starting from this argument the author went through several phases of Serampore Mission. It gives a good description on the emergence of new curriculum by those missionaries and their aims behind that. This article however

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[25] Deepak Kumar, *Science and the Raj*, OUP, New Delhi, 2006, pp. 5-6.

[26] *Ibid*., pp. 64-65.

[27] Chittabrata Palit, *Scientific Bengal*, Kalpaz Publication, Delhi, 2006, p. 51.

[28] *Ibid*.

[29] M. A. Liard, The Contribution of the Serampore Missionaries to Education in Bengal, 1793-1837, *Bulletin of the School of Oriental and African Studies,* University of London, Vol.31, No.1 (1968), pp. 92-112.

does not discuss science education in detail, nor does it examine the question whether women were brought within this fold of education.

Fiona G. E. Ross's book *The Printed Bengali Character and Its Evolution* highlights the development of movable metal Bengali characters. She begins her discussion from the last half of eighteenth century and then gradually proceeds to nineteenth and twenty century. In this process, she first deals with movable typefaces, and then with the development of mechanical type[30] and photocomposition[31] of Bengali scripts. When she describes the development of movable metal typefaces of Bengali characters, she also discusses the contributions of Christian missionaries, especially the contribution of Baptist Mission Society, Bishop College and Serampore Mission in this process. In her book, Ross argues, initially these three Christian organizations and their associated missionaries became interested in the development of Bengali typeface for their religious aims but gradually it helped in the evolution of typefaces. She also says that the main contribution of the missionaries was, being able to print typefaces of "numerous Indian Languages and scripts previously neglected by Honourable Company's Press"[32]. While discussing the role of Serampore Mission in the development of movable Bengali typeface, Ross says "during the years 1800 to 1838 the Serampore Mission Press unwittingly determined the standard of typography for many Indian scripts which was to last for a considerable period of time"[33]. Besides, she gives vivid descriptions of different typefaces prepared as well as used by these missionaries.

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[30] Mechanical type: "The closing quarter of nineteenth century witnessed the transformation of typefounding and printing in Europe and America by the invention of various mechanical devices. It was not until the 1830s that Bengal experienced the true impact of these inventions which effectively revolutionized vernacular language." This kinds of typefaces were divided into two process, they are, linotype composition and Monotype composition. (sources: Fiona G. E. Ross, *The Printed Bengali Character and Its Evolution*, Sahitya Samsad, Kolkata, 2009, p. 132)

[31] Photocomposition: "The Second half of twentieth century saw the second radical transformation in typesetting technology: the era of photocomposition had begun." This process of Photocomposition was also divided into two processes, Filmsetting and Digital photocomposition. (Source: *Ibid.*, p. 176.)

[32] *Ibid.*, p. 40.

[33] *Ibid*.

This enormous work gives a vivid account of the role of Serampore Mission and its missionaries in the evolution of Bengali typeface, but some points are still untouched by Ross. For examples, though she highlights the evolution of typefaces but does not discuss its impacts on the students of the Mission's schools. Besides, she does not discuss enough on the issue of using technological knowledge by these missionaries while improving the quality of papers.

One can notice that how these works cited above tried to depict the nineteenth century from various perspectives and placed Serampore Mission and William Carey in that time frame. But there are some problems. The existing works are either hagiographic or they have been written from religious perspective. Some writers totally ignored their efforts in promotion of science and technology. Beside this, few writers tried to decode the efforts of Serampore Mission in the promotion of science and technology, yet some points are still untouched by them. From religious perspective, it is very hard to differentiate Serampore Mission from the other Christian missions as their basic agendas were almost the same. But this mission marked it difference in few subjects like their keen interest in the promotion of science or its practical applications. Though, they were not the first on the promotion of science. It was the Halle missionaries of Tranquebar [34] who first introduced a mixed vernacular-English curriculum "with biblical ideas and the very latest principles of science and technology from west"[35] but for Bengal province they were the first. Though, Serampore Mission was situated in a suburb, it became a scientific hub during the first of nineteenth century.

From the review of the secondary sources on Serampore Mission it is seen that certain area have reminded untouched or neglected. It is these areas which constitute my research questions.

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[34] This mission came to Tranquebar, India, in 1706. Later on this mission was spreading its unit to Thanjavur by the 1730, Tirunelveli by the 1770, Travancore (Tiruvanthapuram) and Serampore by the 1800, and other parts of India thereafter. (Source: Robert Eric Frykenberg, *Christianity in India*, OUP, New York, 2008, p. 145.)

[35] *Ibid.*, p. 158.

Research Questions:

1. What kinds of efforts were made by Serampore Missionaries for promoting science education?
2. What was the nature of the various forces which converged to make Serampore a premier scientific hub in Bengal in the first half of the 19th century?
3. How they implemented science in their daily life? How they used their technological skill?
4. Was the interaction between indigenous and western scientific systems one sided or did western science benefit considerably from its interaction with the traditional knowledge systems of indigenous society?
5. How was native society reacting to the efforts of the Serampore Mission and what was the character of their response to the scientific programs of the mission?

This dissertation is going to explore all these issues through three main chapters. They are,

1. New Science Education and Efforts of Serampore Missionaries
2. Application of Scientific knowledge and technology
3. Action, reaction and counter-reaction

Chapter 1

The first chapter will discuss the role of Serampore Mission in promotion of science and about the factors that made Serampore Mission a scientific hub. This chapter will also highlight several others factors related to Serampore Mission, much on the contemporary social-political situation and some others factors related to education.

Chapter 2

Second chapter is going to deal with the technological part and the implications of scientific knowledge, i.e. how these missionaries were using different technology and scientific knowledge in their daily life. Also, it will study the role of technology on health care, agricultural development.

Chapter 3

This chapter throw some more light on the process of interaction between the indigenous people and missionaries. Starting with a general discussion on the interaction between the intellectual classes the chapter will discussion on interaction and reaction between the Serampore Missionaries and the common people.

Thus this work is going to look into the gray areas of that time to get a clear picture of interaction between western scientific knowledge with indigenous one, evolution of science education, and impact of the Serampore Missionaries on Christians and non-Christians indigenous people and how those people especially the lower section of the society reacted to them.

Sources:

According to J. C. B Webster, most of the works on Christianity in India has written from mainly five points of views, the first category consists of those studies that focus on socio-cultural changes resulting from interaction between Christian and members of other communities.[36] The second category is the perspective of conversion studies and third one is the study of Christian communities as Indian communities.[37] The forth category consist of political studies and fifth one is general histories and reference work.[38]

This dissertation tries to raise research questions through the study of socio-cultural and technological interaction between the Serampore Missionaries and indigenous people of Bengal. While doing so, I took the help of variety of sources like, pamphlets, memoirs and sermons related to Serampore Missionaries, educational reports related to native Schools and Serampore College, monthly circular letters of Serampore Mission, various reports of Serampore printing press, official as well as

[36] Sabyasachi Bhattacharya (ed.), Approaches *to History Essays in Indian Historiography*, Indian Council of Historical Research in association with Primus Book, New Delhi, 2011, p. 162.

[37] *Ibid*.

[38] *Ibid.*, p.162.

private letters of the Serampore trio and various issues of Baptist mission Magazines and Evangelical Magazines.

While accessing these sources I looked at them from various perspectives, like what kind of efforts were made by Serampore Missionaries while introducing science education in schools as well as in Serampore College and how these process evolve over the time, what were the Serampore Missionaries attitudes towards indigenous society while introducing new technological knowledge in the field of printing, paper making, new agricultural practices and while healing the indigenous people. I also tried to find out the nature of indigenous reactions towards their activities and how these reactions shaped their further activities and obviously, how the power was exercised behind all these activities of Serampore Mission.

While dealing with these sources I faced some problems, firstly about the authenticity of several reports and letters published in *Samachar-Darpan* and *Friend of India* as while publishing them the Serampore Mission authority mentioned neither the names of the reporters who sent those reports nor the names of writers who sent their letters for editorial. Even historians like E. Daniel Potts, also mentions the same problem in his book, *Baptist Missionaries in India 1793-1837: The History of Serampore and its Missions*. Secondly, sometime information contradicted to each other which sometime made me confused, but I tried to solve that by cross checking them.

Certainly, from the very beginning BMS's missionaries in India sent frequent letters to its mother organisation in England. Not only that, after coming to India William Carey wrote several letters to his friends, family members and other missionaries of BMS while informing them each and every details of his daily work, his daily life and progress of the mission in various fields in India. Those letters are a good source of information about the mission strategy, its activities and its expansion. Besides, they also give a vivid picture of native society. Educational Reports of native schools which were working under their supervision, reports of Benevolent Institutions, established by them and reports of Serampore College provide a lot of information on their respective fields while notifying the educational progress, curriculum etc.

Different missionary magazines like Baptist magazine and The Evangelicals also give information on their mission. A periodical, *Dig-Durshuna* and two news papers, *Samachar-Darpan* (in Bengali) and *Friend of India* (in English) also provide good information as well as the perspective of Serampore Missionaries on various issues. I am also relying on some contemporary newspapers of that time like *Calcutta Gazette* and *Samachar-Chandrika* to examine the Serampore Mission's activities and its roles in society. Some old books written by Serampore Missionaries, like *Kothoponkothon* by Carey, *Vidya-Harabali* by Felix Carey, etc., also provide a lot of information to this research.

Rich collections of Carey Library and Research Centre on nineteenth century's pamphlets and periodicals, along with different memoirs and personal letters of Serampore Missionaries and several reports related to education, helped me to locate my sources. Rare book section and newspaper archive of National Library and Bongiya Sahitya Parishad at Kolkata also assisted me in locating my sources. Beside all these I also took help from some authenticated websites, like http://www.archive.org/ and http://books.google.co.in/ to find some primary as well as secondary sources.

New Science Education and Efforts of Serampore Missionaries

This chapter is going to discuss, how the Serampore Missionaries introduced a new kind of education system, which mainly emphasised science education in various schools, established or supervised by them. Besides, the chapter also discusses the science curriculum of Serampore College. Before going into the main discussion, the chapter throws some lights on existing educational system of nineteenth century Bengal. During the first half of nineteenth century, there were three different educational systems in Bengal. They were indigenous educational system, educational system run by East India Company and educational system introduced by Christian missionaries. These educational systems were running parallel to each other guided by their associated authority.

Interestingly, indigenous education system worked through three different educational institutes. They were, 'Pathshalas'[1], 'Tols'[2] and 'Madrassas' or 'Makhtab'[3]. At that time there was hardly any printed text books for the pupils. Though, some manuscripts were available containing lessons on both subjects like language and Arithmetic. Those manuscripts were mainly used by the instructors of those indigenous educational institutes known as "Gurumoshai" or "Mulla" according to their religious status. Abdul Karim and Panchanan Mondal have listed the subject matter of these manuscripts. Referring to them Poromesh Acharya argues, pupils dealt with many subjects, like spelling , letter writing, multiplication tables,

[1] Pathshalas were the village educational institution. The teacher of that institute was called, 'Gurumoshai'. The pathshalas fully depended on the fees paid by the students, and on occasional gifts from the villagers. (Source: Poromesh Acharya, *Bangalar Deshaja Shiksha Dhara*, Anustup Prakashani, Kolkata, 2009, p. 3.)

[2] Tols were almost like the Pathshalas, but there student were mainly given the lesson of Sanskrit and Shastras. These tols were almost fully supported by land endowments. (Source: *Ibid.*)

[3] Madrassas or Makhtab were the institute for Islamic and Arabic study. They got financial support from the mosque. (Source: *Ibid*.)

rules of Arithmetic, Grammar and moral lessons like 'Gurudakshina, Data Karna, Prahlad Charitra and Chanakya Slokas'[4]. Other subjects were the rules of land measurement, agricultural accounts, zamindari and commercial accounts. Besides, the indigenous curriculum also emphasised on lessons like how to write different types of letters and maintain land revenue, along with the rule of cubic and square measurements which are required for digging ponds.[5] Noticeably, this indigenous curriculum emphasised the practical use of knowledge system.

Although reading and writing got equal importance in this education system, but most of the time lessons were given orally to students. Students came to 'Pathshalas' at the age of five or six. Initially they started to practice writing on the ground with a stick. Within few months, these newcomers were able to read and write. When they became able to read and write enough, they would start to learn accountancy. Then they would start to write with ink on the Palm leaves.[6] Rev. William Adam also mention in his *Second Report on the State Education in Bengal* that there were four stages of writing in the 'course of instruction indicated by the nature of the materials employed for writing on',[7] they were the ground, the palm-leaf, the plantain-leaf and paper.[8] Another important feature of this education system was that most of the pupils were male. At that time, females were not allowed to take lessons like the males. It was believed that if they were given education then they would become widow. So, they indulged themselves in house management and various rituals.[9]

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[4] Puranic stories.

[5] Poromesh, Acharya, 'Indigenous Education and Brahmanical Hegemony in Bengal' in Nigel Crook (ed.) , *The Transmission of Knowledge in South Asia*, OUP, New Delhi, 1996, pp. 108-109.

[6] William Adam, *Report on State Education In Bengal*, G. H. Huttmann, Bengal Orphan Press, Calcutta, 1835, p. 10.

[7] William Adam, *Second Report on the State Education in Bengal, District of Rajshahi*, G. H. Huttmann, Bengal Orphan Press, Calcutta, 1836, p.13.

[8] *Ibid*.

[9] Poromesh Acharya, 'Indigenous Education and Brahmanical Hegemony in Bengal' in Nigel Crook (ed.), *The Transmission of Knowledge in South Asia*, OUP, New Delhi, 1996, p. 112.

Certainly, it is wrong to argue that the indigenous education system was useless because this education system emphasised on indigenous existing knowledge system. Even, few English observers like Buchanan Hamilton encouraged this teaching learning process. Necessity of the society always determined the curriculum of the education system. Looking through the above enlisted subjects of Pathshasla's curriculum, one can easily understand how far they were fulfilling the basic needs of everyday life. While quoting William Adam's report, Poromesh Acharya says, "…in the first decade of the nineteenth century, out of thousand students who studied grammar, four to five hundred would study some part of Kavya, four hundred would study either Meemansa Sankhya or Vedanta. Ten might study Tantra, ten might read Jyotish and fifty might opt for Bhagabat or Puran"[10]. William Adam, however, may have correctly observed that the popularity of Alamkar, Tantra and Jyotish was greater than the world has estimated. Adam also remarked that Bengal Brahmins unlike their counterparts in other provinces of India took little interest in Vedic studies.[11] Therefore, it could be said that there is no point to call indigenous system totally unscientific as this education system mainly emphasised on those knowledge which were useful for everyday life. However, changes occurred with the coming of Christian missionaries and East India Company.

Parallel with the indigenous educational system, East India Company also made educational efforts after 1813. Before 1813 they did not want to interfere with the indigenous society, not because of any enlightening attitude towards the religion or culture of Indian society but out of their business and desire of not to create unrest among the 'natives'.

After attending 'Diwani' (1765), the Company officials took interest in knowing about the indigenous society and that's why, some of the Company officers established few organisations like, Asiatic Society (1784), Calcutta Madrassa, Sanskrit College at Benaras etc. The main intention behind all these activities of Company was to understand the oriental texts of laws to rule the country. Some

[10] Poromesh Acharya, 'Indigenous Education and Brahmanical Hegemony in Bengal' in Nigel Crook (ed.), *The Transmission of Knowledge in South Asia*, OUP, New Delhi, 1996, p. 101.

[11] *Ibid*.

Company's officers did not follow this attitude of Company. Officers like, Charles Grant, Willerberforce, George Udny started to criticize the vicious practices of indigenous society and also the Company Government for being incapable of preventing so.[12] They suggested that, only introduction of western education and philanthropic work of missionary would stop all the vicious practices in the Indian society. To convince the British Parliament and Company Government in Britain about this, Charles Grant made several efforts but failed. Indeed, Grant lost the unique opportunity to become a pioneer in the introduction of western education in India.[13]

Certainly, Grant's failure did not mean an end of his efforts to send evangelists to India. After 1790 some Christian missionaries came to India and obviously William Carey was one of them, but East India Company Government was totally uncooperative to them. With the coming of Lord Wellesley, this uncooperative attitude of Company towards missionaries was changed a bit, but this changes of attitude remained for a short period. Interestingly, at that time it could be noticed that the Company's attitude towards the native society as well as to the missionary had changed little with the changes of Governor Generals. This attitude was permanently changed with the Charter Act of 1813. This act "empowered Governor General to appointment 'a sum of not less than one lakh of rupees' in each year out of 'the surplus territorial revenues' for the revival and improvement of the landed natives of India, and for the introduction and promotion of knowledge of the sciences among the inhabitants of the British territories in India."[14]

With this Act, East India Government started to take interest in indigenous education system and this process started with the establishment of 'Calcutta School Book Society' (1817), 'School Book Society' (1818), and 'Hindu College' (1817). In the mean time controversy started with the rise of the question, how they spend one lakh rupee while educating the 'natives'. Initially they solved the question of nature of education as the Company Government decided to bring such a curriculum for

[12] D.P. Sinha, *The Education Policy of The East India Company in Bengal to 1854*, Punthi Pustak, 1964, Calcutta, pp. 6-7.

[13] Suresh Ghandra Ghosh, *The History of Education in Modern India, 1757-2007*, Oriental Black Swan, 2009, New Delhi, p. 18.

[14] *Ibid*.

educating natives which should be secular in nature along with useful aspects. Within this secular curriculum they incorporated subjects like classical languages of Europe and India, Geography, Astronomy for the schools[15] and for the colleges they decided to introduce subjects like classical Indian language as well as vernacular language along with English literature and English science. They opened the educational field for all without any discrimination.[16]

Besides the Company's efforts, parallel initiatives were made by Christian missionaries. Much before the East India Company's restriction became operative these Christian missionaries had started to take initiative to spread education in Indian society. From the very beginning these missionaries were clear in their aim behind all their activities, which was preaching of Christianity.

These Christian missionaries first set their feet on southern India and started their work there. To fulfil their aim they opened schools parallel to the indigenous schools run by local Brahmins. Compared to South India, Christian missionaries started their work much later in Bengal. "Before the missionaries had begun to consider the possibility of educating the inhabitants of Bengal, several sporadic and short-lived attempts had been made by certain individuals of Calcutta",[17] most of them were either Company officers or belonged to philanthropic organisations. As a result few private schools were being set up during that period. One by the group of Company's Chaplains and six others with the Governor General as a patron.[18] In the very next year (February, 1790) it amalgamated with the Charity School Society and in the same year, in the month of April "these two in collaboration set up a free school."[19] However, all these attempts were ineffective and did not work for long.

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[15] These subjects were incorporated within the curriculum of Calcutta Grammar school. (Source: *Friend of India*, Quarterly Series, 10th June, 1824.)

[16] Gauri Viswanathan, *Masks of Conquest: literary study and British rule in India*, Columbia University Press, USA, p. 1989, p. 34.

[17] D.P. Sinha, *The Education Policy of The East India Company in Bengal to 1854*, Punthi Pustak, 1964, Calcutta, p. 1.

[18] *Ibid*., p. 2.

[19] *Ibid.*, p. 3.

After 1813, Christian missionaries started to take direct interest in education in Bengal. Some efforts were made by few missionaries before 1813. For example Serampore Mission founded 'Benevolent Institution' in 1809 in Kolkata for the 'natives' to make them capable in reading, writing and preaching scriptures in Bengali or English language, without detaching them from their former way of life.[20] But, only after getting the official permission of preaching Christianity in India, Christian missionaries made a parallel education system, which was influenced by evangelical ideology. Initially they founded normal schools and orphanages for educating indigenous people as well as for the orphan children of soldiers.[21] Slowly they expanded their educational network and established five types of missionary schools in Bengal. First type of boarding schools was founded for European boys and girls. Second was "for the education of the children of such who lost cast (sic) for Gospel". The third type of boarding schools was founded for the Indian Christian boys and girls. The fourth type of schools was established mainly for the 'Roman Catholic' boys and girls. Last kind of schools was founded with the intention of converting the 'native' pupils.[22]

While formulating the curriculums of these missionary schools, some of these missionaries gave emphasis on both eastern as well as western subjects, along with the study of the Bible. The interesting thing is, while doing so few of them incorporated new subjects like different science subjects, like Geography[23], in their schools curriculum. M. A. Laird argued that Christian missionaries were the pioneer in introducing the elementary science in curriculum, compiling them into the textbooks and starting school for the girls[24] and Serampore Mission played an important role in all fields. For example, in 1816 Serampore Mission established an institution to supervise several Native Schools and to instruct them they made a

[20] *Friend of India*, vol. 1, September, 1818, p. 131.

[21] Robert Eric Frykenberg, *Christianity in India*, New York, OUP, 2008, p. 149.

[22] Kanti Prasanna Sen Gupta, *The Christian Missionaries in Bengal, 1793-1833*, Firma K. L. Mukhopadhy, Calcutta, 1971, p. 100.

[23] At that time geography was treated as science subject. Besides it was known as natural science.

[24] M. A. Laird, *Missionary and Education in Bengal*, 1793-1837, Clarendon Press, Oxford, 1972, p. xi.

manual[25] for those schools. Interesting thing is, while doing so; they did not fully reject the indigenous methods of teaching. Instead of that, they introduced such an educational curriculum where western and indigenous notion of education were mingling with each other.

After discussing these general educational trends of second half of eighteenth century to first half of nineteenth century it could be said that there were three main trends. First trend was obviously the indigenous education system, and this educational process continued through 'Pathshala' 'Tols' 'Madrassas' in rural Bengal and Bihar from time immemorial. Second trend was established by the Company Government, especially after 1813, whereby without disturbing the indigenous education system they tried to modify that by their educational policy. Eventually, in later period the motivation of their educational policy was changed over time. Third one was, obviously the Christian missionaries. Their main aim was to change the heart of the 'hearten' and to bring them within the fold of Christianity.

Role of Serampore mission in the Promotion of Science education in Schools:

After its establishment, Serampore Mission started its journey in educational field with opening of two boarding schools on 1st May 1800 and one native school in the month of June with forty pupils.[26] Mr. and Mrs. Marshman was the pioneer in that work. Like the other missionaries in India, at the initial phase while making the School curriculum, these Serampore Missionaries mainly emphasised on English language. This intention was well depicted in a letter to the Baptist Missionary Society in England. Some part of the letter said,

> "Commerce has raised new thoughts and awakened new energies, so that hundreds, if we could skilfully teach them gratis, would crowd to learn the

[25] *Manual of the direction of superintendants attach to the institution for the encounter of native school*, Mission House, Serampore, 1818.

[26] John Clark Marshman, *The Life and Time of Carey Marshman and Ward*, Vol.1, Longman Brown, Green, Longmans & Roberts, London, 1859, p. 131.

English language. We hope this may be in power some time, and may be a happy means of diffusing the knowledge of the Gospel. At the present of our hands are quite full."[27]

This part of the letter depicts the main motivation of the missionaries while educating 'natives'. Their aim was to bring changes in the hearts of the heathens by providing them education, converting them to Christianity and train them as future missionaries. Keeping these aims in mind Serampore Missionaries tried to introduce such curriculum in their schools where students were given lessons of Arithmetic, 'Scripture'[28] along with English language. They also emphasised on the learning of vernacular languages, like Sanskrit and Bengali. At the beginning these Missionaries did not give importance to the science subjects. First and foremost, they introduced subjects like Orthography, Grammar and Vocabulary in vernacular language, Mathematics along with the lessons of Ethics and morality.[29] Even when they established 'Benevolent Institution' during 1809-10, for the Eurasian poor of Kolkata, there also they limited their curriculum within the "reading, writing, and arithmetic, in different degrees and capable of preaching the scriptures in the Bengalee or the English languages".[30]

After 1813, all political bans on missionaries' activities were abolished and East India Company became encouraging towards the missionaries' education activities. In that course of time some changes occurred in the educational curriculum of Serampore Mission's schools. Marshman planned to extend the curriculum as well as the schooling network in different parts of Bengal and outside of it. These plans were properly drafted in 'Hints Relative to Native School', published in 1816. Several reports of the *Reports of the Institution for the Encouragement of Native Schools in India* depict the implementation of these plans and expansion of schooling network in different parts of Bengal. In *Hints Relative to Native School*, Marshman

[27] Cited in, John Clark Marshman, *The Life and Time of Carey Marshman and Ward, Vol.1*, Longman Brown, Green, Longmans & Roberts, London, 1859, p. 131.

[28] E. Daniel Potts, *British Baptist Missionaries in India, 1793-1837*, At The University Press, Cambridge, 1969, p. 116.

[29] *Ibid*., p. 119.

[30] *Friend of India*, Vol. 1, September, 1818, pp. 133-134.

discussed about the introduction of new subjects, like geography and use of compendiums in the Native Schools. Compendiums were used to describe matters like grammar, Arithmetic including a view of solar system, Ethics and morals etc.[31] During that time geography came within the folds of science, so it also was known as natural science.

At the school level they did not introduce any science subject except geography and 'Jotish'. Only after the establishment of Serampore College; the mission authority introduced different science subjects like Chemistry, Botany and Zoology in the College syllabus. They also introduced *Scientific Copy Book* to help students to make their concepts clear. While preparing that copy book they followed a method. At first they chose a topic and then explained that in one, two or three sentences of convenient length.[32] The 'Scientific Copy Book' contained the ideas of solar system or 'Jotish', Geography, Chronology, General History, True nature of virtue, Morality and Religion.[33] It could be said this copy book was a kind of hand book for students which provided essential knowledge for their future. Some sample questions of this copy book have given in the appendix no.3. These sample questions also reveal another thing which highlights the fact that these Serampore Missionaries tried to use science education in the favour of propagating Christianity, as they incorporated questions related to Christian theology and ethics within this copy book.

When Serampore Mission established 'Institute for the encouragement of Native School' in 1816, several schools established in towns and villages within thirty miles of Kolkata came under its supervision. In fact several other schools of different parts of Bengal also came under the institution. For example, at Catwa[34] and its neighbourhood area some schools had established under the supervision of William Carey Junior[35]. The first school report depicts that in those areas the demand of

[31] *Hints Relative to Native School*, Serampore, 1816.

[32] *Manual of direction of Superintendants attached to the institution for the Encouragement of Native Schools*, Mission House, Serampore, 1818, p. 36.

[33] *Second Report of The Support and Encouragement of Native Schools, Begun at Serampore, Nov. 1816: with a list of subscribes and benefactors*, The Mission Press, Serampore, 1818, p. 37.

[34] Catwa is a small town, situated in Nadia district, West Bengal.

[35] William Carey Junior was the second son of William Carey.

schools was indeed high. In Dacca, several new schools were opened by Mr. O. Leonard in the beginning of the year 1817 but the Serampore mission restricted the number into five.

Serampore Mission Press published the first report of this institution in 1817, named, *The First Report of the Institution for the Encouragement of Native Schools in India*. The report shows, that within one year (July, 1816 to October 1817) of its establishment eighty-three native schools of Bengal came under this Institution's supervision. The report also shows that within one year approximately six thousand seven hundred and three students enrolled them in these native schools.[36] From the beginning of the 'Institution for the Encouragement of native School in India', the Serampore missionaries introduced different subjects like, *Dig-Durshuna*, Letters, Astronomical Compendium, Spelling Lessons, Tables and Inferior lessons with Elementary Tables. Besides they made certain subject combinations with these subjects. Details of the various subjects combinations introduced in these native schools during the initial year along with the number of students who were opted them are given in the appendix no. I.

Initially large number of pupils of these schools enrolled themselves in the Spelling Lessons. The appendix no I has shown that gradually student become interested in other subjects. Few of them opted various courses where *Dig-Durshuna* taught with other subjects. Besides, *The First Report of the Institution for the Encouragement of Native Schools in India* shows that pupils became eager to learn new information provided by Serampore mission.

In the following years these Missionaries were publishing subsequent reports of this institution. *The Second Report of the Institution for the Encouragement of Native Schools in India*, published in 1818, shows that number of students in native schools gradually increased and till October 1818, the number of students had reached seven thousand one hundred and eighty eight[37]. Besides, almost twelve new schools were founded after October 1817 (appendix no II*)*. The second report of the Institution also shows that with the help of Serampore Missionaries, the Institution

[36] *The First Report of the Support and Encouragement of Native Schools in India: with a list of subscribes and benefactors*, The Mission Press, Serampore, 1817, p. 12.

[37] *The Second Report of the Support and Encouragement of Native Schools, Begun at Serampore, Nov. 1816: with a list of subscribes and benefactors*, The Mission Press, Serampore, 1818, p. 9.

introduced few new subjects in the Native Schools after 1817, like *Dig-Durshuna*, Jotish, the Shastra Puddhuti and Letters, Nittee Bakya, Shastra Puddhuti and Spelling lessons and made certain subjects combinations of *Dig-Durshuna* (Appendix no. II). The subjects' combinations are given below.

1. Jotish, Letters and *Dig-Durshuna*
2. Letters and *Dig-Durshuna*.
3. Only *Dig-Durshuna*
4. Jotish, Shastra Puddhuti, Letters and *Dig-Durshuna*.
5. Nittee Bakya, Letters and *Dig-Durshuna*.

The Mission authority was unable to provide these new subjects combinations in every school as they did not have enough teachers. Though, 'Dig-Durshuna' was a Bengali journal for the youth, but the Serampore missionaries incorporated this as a subject within their school curriculum. However few schools had managed to give the lessons of *Dig-Durshuna* to their students. Lessons of *Dig-Durshuna* were divided into two levels, inferior and advanced. The second report also depicts that three hundred and seventy three students had written repeatedly the lessons of *Dig-Durshuna.*[38] *The Third Report of the Institution for the Encouragement of Native Schools in India* notified that 1818 onwards, 'Samachar-Darpan' and *Dig-Durshuna* were sent to every school.[39] These Serampore Missionaries used this Bengali newspaper and journal, namely, 'Samachar-Darpan' and 'Dig-Durshuna' as a text-book in their schools. With the expanding of schooling network outside of Bengal they translated the first two volume of *Dig-Durshuna* in Hindi and published them in 'Dev-Nagree' character with the same view.[40]

It has already been discussed that due to lack of proper teachers the Serampore Mission authority could not able to provide the lessons of *Dig-Durshuna* to all students, but the lessons of Spelling and Adjunct (Banan and Phalus), elementary tables, inferior lessons provided by most schools to their students.

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[38] *The Second Report of the Support and Encouragement of Native Schools, Begun at Serampore, Nov. 1816: with a list of subscribes and benefactors*, The Mission Press, Serampore, 1818, p. 13.

[39] *The Third Report of the Institution for the Support and Encouragement of Native Schools, Begun at Serampore, 1816*, Serampore Mission Press, Serampore, 1820, p. 15.

[40] *The Second Report of the Support and Encouragement of Native Schools, Begun at Serampore, Nov. 1816: with a list of subscribes and benefactors*, The Mission Press, Serampore, 1818, p. 26.

Interestingly, the lessons of spelling and adjunct were divided into different levels. For example, the spelling lessons were started with two syllables words and gradually proceed with three, four and five syllables. After completing the lessons of easy spelling pupils moved to the lessons of Adjuncts. The first report of native school shows that pupils started their lessons of spelling with two or three syllables words and at the time of second reports shows that these students moved to four or five syllables words and adjuncts words. Besides, new students were engaging themselves with two or three syllables words. Vivid numerical description has given in the appendix no. *II*.

To illustrate different lessons properly to students, Serampore Missionaries planned to use compendiums. As a result, they prepared various compendiums on different subjects for illustration. These compendiums were the Elementary Tables, the Grammatical Tables, the Orthographical Tables, the Arithmetical Tables, Tables of Vocabularies, the Astronomical Compendium, the Geographical Compendium, the Philosophical Compendium, the Historical and Chronological Compendium and the Compendium of Ethics and Morals. These compendiums were also given numbers, like 'the 1st elementary table, the 3rd orthographical tables'[41] etc and 'in the various compendiums, the lessons were numbered in same manner'[42].

Along with these compendiums, the Serampore Missionaries also prepared a set of Arithmetical tables and translated them into Bengali. This compendium consisted of 'all fundamental rules of Arithmetic, with directions for solving them, as well as the weights and measures, used by natives'[43]. In this way they prepared and printed twenty four tables.[44] In 1818, Serampore Mission published *Dig-Durshuna,* a magazine for youths, through which the Serampore Missionaries tried to circulate some scientific and geographical knowledge among the youths. The main aim of this magazine was to secure the improvement of youths mind and to prevent youths' minds from getting filled with idle or injurious ideas.[45]

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[41] *Hints Relative to Native Schools, Together with the Outline of an Institution for Their Extension and Management*, Serampore Mission Press, Serampore, 1816, p. 26.

[42] *Ibid*., p. 27.

[43] *Ibid.*, p. 37.

[44] *Ibid*.

[45] *Friend of India*, vol. 1, (month not mentioned) 1818, p. 26.

The importance of *Dig-Durshuna* in schools once again discussed by Serampore Missionaries in the *Manual of direction of Superintendants attached to the institution for the encouragement of Native Schools*, published in 1818. In this manual Serampore Mission Authority said, "Those who used the copy books should read daily a part of Dig-Durshuna, which is published monthly for the use of schools".[46] So, two copies of every issue of *Dig-Durshuna* were sent monthly to every school. This magazine mainly contained various facts and truths related to natural objects like cloud, air, water, snow and various metals. It became a good scientific book for students. In addition to all these, this journal also contained different information related to history and anecdotes of historical nature, accounts of the various discoveries made at different times by Europeans and some other information which might be suitable for the minds of native youths (appendix no. III).[47] (Vivid description about the content of journal and its scientific articles has been given later in this chapter) Though most of the articles of this journal were being translated from western article, it left a good impact on the Bengali intellectual society. Later on, following this book some other scientific books for the youths were published from Kolkata. One of them was *Pasvali* or *Animal Biography* published by the School Book Society in 1822.[48]

Curriculum of each school under Serampore Mission was not always the same. The several educational reports published by this mission press, give a vivid picture about the variation of curriculums. It shows that, in most of the schools spelling lesson were given due attention. The next important subjects were writing and reading of *Dig-Durshuna*, letters and elementary tables; though it was after 1818 that they introduced *Dig-Durshuna* in the schools in a large scale. We can notice another variation in curriculums after the expansion of Serampore Mission network in north-east India. For example, in 1829 David Scott, a missionary of Serampore Mission, opened a school for Garo boys at Singimari under the supervision of Serampore

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[46] *Manual of direction of Superintendants attached to the institution for the encounter of Native Schools*, Mission House, Serampore, 1818.

[47] *The Second Report of the Support and Encouragement of Native Schools, Begun at Serampore, Nov. 1816: with a list of subscribes and benefactors*, The Mission Press, Serampore, 1818, p. 21.

[48] Abhijit Gupta and Swapan Chakravorty (ed.), *Print Areas: Book History in India*, Permanent black, Delhi, 2004, p. 208.

Mission. There Scott "envisaged, in association with the school where instruction would be imparted to the Garo boys through their own language rendered in Bengali script, an extensive agricultural and animal husbandry project." [49]

It could be said that, missionaries also changed their methods according to need of the situation. In the case of Scott, he thought that his policy would help to stabilize the Garos and bring them within the folds of Christianity.[50] After the Serampore Mission, the American Baptist mission started their missionary school in north-east India. They also tried to follow the Serampore mission's methods of teaching. Incidentally, they emphasised on English education as well as on gospel.[51]

Besides, all these activities Serampore Missionaries were also much interested to incorporate females within their educational system. In the *First report of The Support and Encouragement of Native Schools*, they talked about educating females. In that report they discussed about the enrolment of girls in one of their schools. Those girls were given permission "to partake of the instruction imparted by the institution under the eye of a teacher in whom particular confidence has been reposed" [52] and those girls had also gone through "their exercise separated from the boys' by a mat partition".[53] During 1823, there were seventeen schools in and around Serampore and the curriculum was similar to that of the boy's school, including Bengali reading and writing Arithmetic, little knowledge of Geography and some other rudiments of useful knowledge and above all Christian religious teachings.[54] Noticeable thing is all females who took admission in their schools, were Christian by their religion.[55]

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[49] Federick S. Downs, *Christianity in North East India, Historical Perspectives*, ISPCK, Delhi, in association with CLC, Gauhati, 1983, p. 54.

[50] *Ibid*.

[51] Milton S. Sangma, *A History of American Baptist Mission in North-East India*, Vol.2, New Delhi, Mittal Publications, 1992, p. 2.

[52] *The First Report of the Support and Encouragement of Native Schools in India: with a list of subscribes and benefactors*, The Mission Press, Serampore, 1817, p. 18.

[53] *Ibid*.

[54] Cited in, M. A. Laird, *Missionary and Education in Bengal, 1793-1837*, Clarendon Press, Oxford, 1972, pp. 135-136.

[55] William Adam, *On The state of education In Bengal*, Calcutta, Military Orphan Press, 1835, p. 74.

These female schools were still running after the death of the Serampore trio. William Adam reported in his 'On The state of education In Bengal' in 1835, that during that time there were "two female schools in Serampore in operation, one called the Central School containing one eighty three girls and second called the Christian Village School containing fourteen girls."[56] At that time the curriculums of these schools was almost like earlier. Pupils were made to start with reading. After that the children practised writing on palm-leaves, and read books like, "Child's First Book, conversations between a Mother and a Daughter, History of Bible, Esop's Fables in Bengalee".[57] When the pupils completed these mentioned subjects, they were given advance lessons. At this phase they had to "write in copy book and read the New and Old Testament, the Indian Youth Magazine and Pearson's Geography".[58] Not only that, some Christian widows also enrolled themselves in schools.

Serampore College and Promotion of Science education:

In 1818, the very next year of establishment of Hindu College at Kolkata, the Serampore Trio founded the Serampore College within the Mission premises. Later on it became the vertex point of 'eastern literature and western science' as a result; the teaching was backed up by a well-stocked library, laboratory, museum, medical unit and observatory. Clearly, in that institution science was given due attention. In the first prospectus of Serampore Collage, named, *College for the Instruction of Asiatic Christian and Other Youth in Eastern Literature and European Science at Serampore, Bengal* describes the aims of the institution. In the prospectus, it was said that, eastern languages like Sanskrit, Arabic, and Chinese as well as major western languages like Greek, Latin, and English was taught there. Reading of Bible was given due attention as it was presumed that 'their minds be thoroughly imbued with a knowledge of the Scripture and Christian Doctrine'.[59]

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[56] William Adam, *On The state of education In Bengal*, Calcutta, Military Orphan Press, 1835, P. 74.

[57] *Ibid.*

[58] *Ibid*.

[59] *College for the Instruction of Asiatic Christian and Other Youth in Eastern Literature and European Science at Serampore, Bengal*, Printed for Black, Kingsbury, Parbury and Aleen Leadenhall Street, 1819, p. 7.

The fifth point of this instruction's prospectus[60] depicts that along with various eastern and western languages and literatures, pupils should be taught European Science to expand their knowledge. It was said that this science education started with elementary ideas, based on geography, like, solar system, the laws of motion, nature of the mechanic powers etc., and 'gradually advance as the mind of youth expand'[61]. In that prospectus, it was also said that lectures were delivered on various branches of science which were open to every Hindu or Muslim who would like to attend them.

From the time of its establishment, Serampore College gave due attention to the learning of English. While explaining their plans, the Mission authority said that if pupils acquired a good knowledge over English language then through the knowledge of English language they could easily access the treasure of western science along with western literature and that could enable them to enlighten their own people. Most of the faculty members of the Serampore College were enthusiastic in promoting

[60] The Fifth out line of college prospectus was, "In addition to this their mind should at the same time be imbued with European science and information. In doing this we must of course begin with elementary ideas, and gradually advance as the minds of youth expand. Select, but accurate, views of general history and geography, (the best calculated to enlarge the mind,) will of course succeed elementary reading. These may be followed by views of solar system,- the principles of attraction and gravitation, - the laws of motion, - nature of the mechanic power, &c. ; which, united with those superior ideas of morality they must gain from the study of sacred Scriptures, will expand their minds to a degree not easily conceived. For this, little is necessary beyond perspicuous epitomes in their own language, explained and illustrated by regular Lectures on these subjects. As the mind like the body must be fed as it is able to received nourishment, to youth anything above this would serve only embarrass; and those above the age of mere youth, respecting European ideas are still in a state of mental infancy. To such, higher treaties would now be as useless as a work above the Eton grammar to a boy commencing the study of Latin; and before anything more can be indeed, those who feel interested in enlightening the native minds, with the Calcutta School Book Society , formed with this express view, will have provided a sufficient supply. To youth under this course of instruction, indeed, elementary treatises properly digested, with the general reading furnished by the Monthly and Weekly Selection now publishing in the native language, will be nearly sufficient. Those who think that English would more effectually enlighten the native mind, may be asked, how many of those ideas which have enlarged their own minds were imbibed from their Latin studies, and not through the medium of their mother tongue, although nearly half their Latin words were familiar to them though the letter, while to a native every English words is strange. Such person should also recollect how many there are to whom were denied the means of studying Latin, but whose minds, through the information happily poured around them in their vernacular tongue, are scarcely less expanded then their own. (Source: *College for the Instruction of Asiatic Christian and Other Youth in Eastern Literature and European Science at Serampore, Bengal*, Printed for Black, Kingsbury, Parbury and Aleen Leadenhall Street, 1819, p. 7.)

[61] *College for the Instruction of Asiatic Christian and Other Youth in Eastern Literature and European Science at Serampore*, Bengal, Printed for Black, Kingsbury, Parbury and Aleen Leadenhall Street, 1819, p. 7.

science education. They strictly followed the outline mentioned in the College prospectus for the promotion of science. In the process of promoting science education in College two people took lead role, one was Felix Carey, son of William Carey and another one was John Mack. While doing this they did not neglect the 'Eastern' or 'Vernacular' knowledge.

For example, on the occasion of establishment of Serampore College, in 1818 *Samachar-Durpan* published news of that event along with the description of different subjects which were taught there. The importance of the news was that, it argued that if anyone had keen interest on Indian Astronomy and wanted to study *Suryasidhanta*[62], *Lilabati*[63], then they must contact the Serampore College. They appointed Kalidas Bhattachariya, a famous scholar for that.[64] On another day, while discussing the solar eclipse, 'Samachar-Darpan' quoted a verse from *Surya Siddhanta*. These two news highlight one thing that Serampore Mission did not delegitimized the eastern knowledge system while promoting science education, rather they tried to make people rational by providing both eastern and western knowledge to pupils.

Lectures were given at College by several Serampore Missionaries like, William Carey, Mr. Albrech, and John Mack. All of them selected their area of interest and taught over there. For instance, after the establishment of Serampore College, Carey used to give lectures on Zoology and Botany.[65]

Mr. Albrech, another Serampore Missionary and professor of Serampore College, had taken the responsibility of the Geographical Department. He took good care of maps of the world.[66] While giving the description of these maps it was said, the maps were "on globular projection and its four quarters, in separate Sheets with

[62] Suryasidhanta was an old Sanskrit book on astronomy.

[63] Lilabati was an old Sanskrit book on Astronomy and mathematical calculation.

[64] *Samachar-Darpan*, 20th March, 1819.

[65] '*Brief Memoir Relative to the Operation of Serampore Missionaries, Bengal'* Parbury, Allen & Co., London, 1827, p. 27.

[66] *Ibid*.

the name of places, rivers and mountains in Bengali character."[67] So, the richness of that subject in that College could be really assumed.

Another respected professor of the Serampore College of that period, Sir John Mack joined the Serampore Mission as well as the College in 1821. He joined the College as a chemistry Professor. While joining Serampore mission, he brought many scientific books along with scientific apparatuses with him. Those things enriched the College library as well as the College laboratory. Along with the other science subjects, Mack also taught Geography. He taught this subject in a more scientific way and used maps while teaching. Later on he translated the English map of India into Bengali for the benefit of students. Serampore Missionaries always encouraged the learning of natural science like Geography. The Mission's keenness towards that subject made it a compulsory subject in school from the beginning.

In 1823, John Mack first delivered a lecture on Chemistry at Serampore Mission. As the college notified, this lecture was open to all. The Fourth report of Serampore college for the year 1823 had depicted that 'the most respectable natives in Serampore and its neighbourhood have been invited to attend the course free of cost, as well as the students and Pundits of the college and those connected with the establishment. The course has also been favoured with the Company of Gentlemen from Barackpore, and of a few from Calcutta'[68] and that lecture left a great impact on the audience. The Fourth report also said that after the succeeding lecture of that day, people who attended the lecture, discussed about all the things, whatever they had seen. Though, some problems occurred as that lecture was delivered in English. Mack also faced same problem when he delivered lecture at Asiatic society. To overcome the problem he tried to learn the native language. He tried to deliver lectures in Bengali and translated many scientific terms with the help of scientific Sanskrit terms.

Parallel to all these scientific lectures, the Serampore Missionaries also published several scientific books in vernacular language. In this process of publishing scientific book, Carey's son Felix Carey took an important role.

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[67] '*Brief Memoir Relative to the Operation of Serampore Missionaries, Bengal'* Parbury, Allen & Co., London, 1827, p. 27.

[68] *Calcutta Gazette*, Thursday, 27th May, 1824.

A number of valuable scientific works in Bengali were written and translated by Felix Carey.[69] For example, he wrote an encyclopaedia and translated a book on anatomy, named *Vidya-Harabali*. Actually it was the first anatomy book in Bengali. It was published in two volumes. First volume described different internal parts and anatomy of human body as well as the anatomy of some animals like cow and dog. Second part discussed on chemistry, medicine and surgery.[70] These two books had big demand for long time even many years after Felix's death.[71] In that book Felix Carey translated the medical terms into Bengali and while doing so he took the help of Sanskrit terms. Besides, he also translated John Mack's book *Principles of Chemistry* in Bengali. The unfortunate death of Felix Carey gave a great blow to Serampore Mission's effort on the promotion of science education. Later on, the tradition was carried on by Sir John Mack. His interest towards science led him towards all these works. He had some interest in Botany. He sent some species of plant to Botanical Garden in Calcutta from Pegu.[72] While staying at Rangoon, in his several letters to William Carey, he discussed about several plants, new animals etc.[73]

After discussing Serampore Mission's schools' and College's curriculums of science, it could be said that when they were preparing the curriculum of schools and college, they gave equal importance towards the secular curriculum of East India Company Government, moral educational system of Christian missionaries' and indigenous educational system. This kind of approaches of the Serampore Missionaries towards education was really noticeable. In the later period attitudes of different Christian missionaries while educating Indians changed. For example, when Alexander Duff founded his school as well as college 1830 onwards, he was strongly

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[69] Chittabrata Palit, *Scientific Bengal*, Kalpaz Publication, Delhi, 2006, p.49.

[70] Felix Carey, *Vidya-Harabali*, Vol. I, Serampore Mission Press, 1820, p. 3, (Actually the proposal of that second volume discussed in the end of first volume and it was also said that after completing so respected mission press notified that on Samachar-Darpan and on Friend of India.)

[71] *Friend of India*, 1835-1839, during those years Felix Carey's book on anatomy appeared in the advertizing page which display the mane of those books which were on sale.

[72] William Roxburgh, *Description of Indian Plants*, vol. I, Printed for W. Thacker and Co. Calcutta, and Parbury, Allen and Co. London, 1832, p. 5.

[73] Cited in, Sunil Kumar Chatterjee, (ed.) *Family Letters of Dr. William Carey*, Non-Liner, (place is not mentioned in the book), 2007, p. 161.

critical of the secular educational curriculum of Company Government.[74] While preparing his school as well as college curriculum, Duff covered a large number of 'literary instructions, beginning with the alphabet and extending to the most advanced course of literature'.[75] He mainly emphasised to make pupils rational with close questioning on various issues.[76] Though, in this whole process he marginalised the indigenous knowledge system.

On the contrary, Serampore Mission while promoting science education and rational knowledge, not just raised questions on various superstitious and vicious practices of indigenous society but also gave legitimacy to indigenous scientific knowledge by incorporating them within their schools and college curriculums.

Promotion of Science and useful knowledge through Mass media:

Interestingly, the Serampore Missionaries did not limit their work of propagating scientific knowledge only in the mission schools or Serampore College but tried to spread that scientific knowledge into the larger society. When the Serampore mission press started to published 'Samachar-Darpan' and 'Friend of India' from 1818 onwards, they used to publish several scientific articles in them.

Beside these two newspapers, 1818 onwards the Serampore Mission started to publish the Bengali monthly magazine *Dig-Durshuna* for the youth. Not only that, different kinds of geographical as well as scientific articles were being published in various issue of 'Friend of India'. Some of them were, Northern Expedition, English traveller in Africa, Methods of finding the size of Earth, Volcanic Eruption and many others. Sometimes they discussed ethnographic issues to give some ideas the inhabitants of other countries to readers. In those articles, they discussed about the food habits, life style, and nature of those inhabitants.[77] The list at next page shows

[74] Gauri Viswanathan, *Masks of Conquest: literary study and British rule in India*, Columbia University Press, USA, 1989, p. 48.

[75] *Ibid.*, p. 53.

[76] *Ibid.*, p. 54.

[77] *Dig-Durshuna*, August, October, November, December, 1818.

the name of the geographical articles published from May, 1818 to January 1820 in *Dig-Durshuna*.

Table no. 1

Month and Year	Volume	Articles published on the Magazine.
May, 1818	vol. 1	Discovery of America by Columbus and Discovery of The sea route to India.
August, 1818	vol.1	Discoveries of new countries and Description of America and Africa.
December,1818	vol.1	Movement of air.
Jan, 1820	vol.3	Description of cloud.

It was already discussed earlier that along with geographical articles Serampore Missionaries also published various scientific article in *Dig-Durshuna*. The below list shows the scientific articles published in 1818.

Table no. 2

Year and Date	Name of the Scientific Articles.
September,1818	Speed of sound, Electricity, description of different kinds of Metals and their nature.
October, 1818	Echoing nature of Sound.
November,1818	Mixing of Metal, Oxidation of Iron.
December,1818	Magnet.

In the subsequent year various scientific as well as geographical articles were being published in *Dig-Durshuna*. These articles were, 'Description of Balloon',

'Description of Comet', 'Description of the City of Bhukhara' and 'Description of Berlin' etc.

To generate the scientific knowledge within the society, this mission published various scientific articles in newspapers like, *Samachar-Darpan* (in vernacular language) and in *Friend of India* (in English). Both of these newspapers were being published from 1818 onwards and circulated a variety of contemporary news, related to different fields. Significantly, both newspapers took a lead role in spreading of rationality in the society in the first half of nineteenth century. For example, in *Samachar-Darpan* they published news of an incident, where they exposed a sage, who was trying to make fool of other people.[78] Not only that, these two newspapers also contained news of new inventions and scientific developments in the western world. The next Table (no. 3) shows the name of the scientific articles published in *Friend of India* from January 1825 to December 1825.

Table no. 3

Name of the newspaper	Publishing year and vol. & month	Name of the articles.
Friend of India (monthly)	1825, vol. viii, no.1 January	Metrological Essay and observation, Lithography, elastic fluid.
Friend of India (monthly)	1825, vol. viii, no.1, February	Theory of magnetism, electricity produced by congelation of water.
Friend of India (monthly)	1825, vol. viii. No.1 March	Fundamental compound of chemistry, Eruption of mud volcano in Sicily.
Friend of India (monthly)	1825, vol. viii, no.1, April	Effect of lightning on human body and New method of destroying Calculi[79].

[78] *Samachar-Darpan*, 25th December, 1819.

[79] Calculi are the plural form of Calculus, according to medical term it is a stone that forms in an organ or duct of the body.

Friend of India (monthly)	1825, vol. viii, no.1, August	Study of nature and Zinc Plates for Engraving.
Friend of India (monthly)	1825, vol. viii, no.1, November	Popular methods of Solving Question in Astronomy, the detection of Arsenic as a poison.
Friends of India (monthly)	1825, vol. viii, no.1, December	Methods of finding the distance of moon.

Along with all these efforts, they took another step to promote the scientific education. The Missionaries started to publish some scientific book written by them. 1835 onwards they started advertising those books in *Friend of India*, sometimes they discussed about these books on *Samachar-Darpan* also. These books were *Vidya-Harabali, Elementary Chemistry* and *Goladhya* or *Treatise on Geography etc.*

Conclusion:

Certainly, during the first half of nineteenth century, whatever the Serampore Missionaries did for the promotion of science education was really appreciable. During that time Missionaries education policy was mostly "inspired by the religious rather than socio – political motives".[80] Even in 1817 and in 1818, when two important institutions, Calcutta Book Society and School Book Society were founded with the help of some British and reputed Bengali men, then some missions and missionaries came forward to support these two institutes. They thought these two institutes would publish and supply religious books to schools. But their intention never gained success. Both institutes never published or supplied any religious books to the schools. When their intention failed, they argued in favour of their case and objectives in a long article which was published in *Asiatic Observer* in 1823. There they argued, "Before we can reasonably hope that the Hindoos will be converted unto

[80] M. A. Laird, *Missionary and Education in Bengal, 1793-1837*, Clarendon Press, Oxford, 1972, p. xii.

Christ, it is necessary that they should be capable of understanding … of what the missionary preach to them …will be delivered from the power of darkness and translated into the kingdom the lord Jesus, those chains will be somewhat slackened by which Satan has bound them fast."[81] So, from above quotation it can be easily understood that whatever Missionaries were doing, they did for spreading of Christianity.

On the contrary, Serampore Missionaries were very liberal in this matter. They promoted education not only for their religious aim but they wanted both the Christians and non-Christians native accept rational ideas. *The Fourth report of Serampore Mission* described the reaction of non-Christians after attending the science lecture in Serampore College. Not only the Fourth report but several reports of Serampore College show the enthusiastic nature of the College on educational field along with promotion of science. Even the prospectus of Serampore College shows their enthusiastic nature and the discussion already highlight their various efforts made for the promotion of science. Though, it was true that their main intention of preaching of Christianity in India remained.

Another noticeable thing is, while they endeavoured in educating girls they didn't make any distinction on the basis of gender. Girls were also given the lessons of *Dig-Durshuna*. Though the, Serampore Missionaries also introduced needle work in female schools. It is true that the school curriculums of Serampore Mission were not always the same. It might be possible that location of schools and availability of teachers on different subjects shaped the curriculums of the schools.

After the establishment of Serampore College (1818) they took different methods to promote science education. They organised several lectures on different topic associated with science, published few books on science subjects and while doing so these Missionaries' took vernacular language as a medium of interaction with the society. Though they were more interested in the propagation of western science but that didn't mean that they neglected the traditional knowledge system. Along with the western science they placed some indigenous subjects like, Jotish,

[81] Cited in, Kanti Prasanna Sen Gupta, *The Christian Missionaries in Bengal, 1793-1833*, Firma K. L. Mukhopadh, Calcutta, 1971, p. 99.

Shastra Phudhati in their schools as well as College curriculum. So it could be said that Serampore Mission's perspective while introducing 'western scientific knowledge' was totally different from East India Company's. Whereas the Company Government introduced science education by delegitimizing 'eastern' knowledge systems, the Serampore Mission and its Missionaries introduced 'western' science by mingling eastern as well as western knowledge systems.

While promoting scientific knowledge among the larger section of the society they started to publish several scientific articles in two well known newspapers, *Samachar-Darpan* and *Friend of India*, published by Serampore Mission Press. They even reserved one section of each issue of *Friend of India* for scientific articles and news, containing the news of new discoveries of the west.

Unfortunately all efforts of Serampore Mission's to the promotion of science education did not work for long due to financial crisis, especially after 1825, but it could be said that, with all these efforts, Serampore Mission had begun a new era in the field of science education which made them pioneers in the field of science education, among the contemporary Christian missions. It was for the first time that the suburban people of Bengal got the taste of new education system along with the science education. It could be concluded that, these heydays of Serampore Mission in the field of science education did not last for long. After 1824, due to heavy financial crisis this mission was forced to close most of their Native Schools. But they did not give up their hope and continued their work of promotion of science and useful knowledge through their two newspapers, *Samachar-Darpan* and *Friend of India*. However, after 1837, the number of scientific articles in *Friend of India* had decreased and after 1840 it was totally stopped.

Application of Scientific Knowledge and Technology

The Serampore Mission and its missionaries did not bind themselves within the promotion of science education. Their keenness towards science led them towards technologies as well as its application. They used their scientific and technological knowledge in the field of printing, agriculture and health care. In these three fields the processes of interaction, adaptation and acculturation between the East and West went side by side. Whatever these Serampore Missionaries had done in all these fields were not new. As from the very beginning most of the Christian missionary groups practised them, like they established printing press to publish sacred scripts, healed natives and sometime promoted agriculture. It can be said that these Serampore Missionaries also followed the same paths. The distinction between the Serampore Mission and other Christian Missions lay in their different approaches to these activities.

In most of the cases the Christian Mission and their missionaries tried to impose western ideas on indigenous people in different fields while arguing that their salvation lay in the acceptance of Christianity. They criticized the various indigenous practices. The Serampore Mission's approach towards the eastern knowledge system was different from other Christian Missions and missionaries. Though these Serampore Missionaries were also criticizing indigenous society for its various vicious practices, but at the same time while promoting science and technology they tried to make some interaction between East and West rather than imposing western knowledge upon the eastern one. This process of interaction started with printing technology and gradually proceeded with the development of agricultural sector and health sector.

Development of Printing Technology and Promotion of Scientific Knowledge

Establishment of printing press and printing of sacred scriptures was part of missionary activity in India from fifteenth century onwards. This process had started in Goa, at Malabar region and developed with the establishment of printing press in Tranquebar by Tranquebar-Halle missionaries but the development of printing technology as well as the typeface took place with coming of William Carey and the establishment of Serampore Mission.[1]

From the beginning, Carey was clear about the aim of preaching Christianity in India, so he tried to learn the local language and develop a clear understanding of Indian culture and religion and used these ideas to argue the Christian case.[2] Besides, he also translated the Bible into vernacular language with the help of his munshi Ram Ram Bosu.[3] Meanwhile he also asked the home society[4] to send him a printing press, but his request was denied. At last he decided to purchase a printing press on his own as well as some typography from Britain but because of financial hindrance he had to postpone his plan. Incidentally in 1798 his wish of purchasing a printing press came true as Mr Udny, the owner of indigo factory at Mudnabati where Carey worked, purchased a wooden printing press for him. Eventually, at that time the press was not put into professional use as till then these missionaries had lack of experience in printing technology, and also they had no typeface in any vernacular language.[5]

Development of printing technology, especially the Bengali font, started much earlier in Bengal. Initiatives were taken by East India Company as a result of which a Company's clerk, Charles Wilkins designed a standard Bengali typeface in movable metal type for the first time.[6] This font is known as CW1.[7] This font was first used in

[1] B. S. Kesavan, P. N. Venkatachari, Anima Das, B. K. Sen, History of Printing and Publishing in India, A Story of Cultural Re-Awakening, Vol.1, National Book Trust, India, 1985, p. 189.
[2] Terry G. Carter (ed.), *The Journal and Selected letters of William Carey*, Smyth and Helwys Publishing, USA, 2000, p. 144.
[3] Carey to Fuller, 17th July, 1796, Mudnabati. (source: *Ibid.*, p. 106.)
[4] Home Society means the main branch of Baptist Mission Society at England.
[5] B. S. Kesavan, P. N. Venkatachari, Anima Das, B. K. Sen, History of Printing and Publishing in India, A Story of Cultural Re-Awakening, Vol.1, National Book Trust, India, 1985, p. 191.
[6] Fiona G. E. Ross, *The Printed Bengali Character and Its Evolution*, Sahitya Samsad, Kolkata, 2009, p. 3.
[7] CW1 Font: first font of Bengali typeface. The structure of CW1's characters does not accord with contemporary penned forms, i.e. the strokes often joined in a manner contrary to the coustomary stroke-

Nathaniel Brassey Halhed's *Grammar of the Bengal Language*, in 1778. Fiona G. E. Ross argues that the quality of type and nature of typography, used in this book was much higher than the early Indian imprints.[8] The development of typeface did not stop there. Appreciation of Company Government and availability of local labours who were trained by Wilkins in casting typeface helped Wilkins to prepare another three fonts, CW2, CW3 and CW4.[9] With the gradual development of typeface the quality of the printed character improved.

When this kind of development took place in the Company's publishing house, at Kolkata, parallel efforts were made by Serampore Mission. It has already been discussed that from the very beginning Carey faced problems with the typeface because of its high manufacturing cost. This problem was still with him up to the foundation of Serampore Mission and Serampore press with the help of William Word and Marshman. But soon the Serampore Trio solved the problem of type font as they convinced Panchanan Karmakar, a smith and employee of Sir Charles Wilkins', to prepare Bengali type font for them.

Panchanan Karmakar was appointed by Charles Wilkins to prepare the Bengali typeface for him. Wilkins trained him for that. Wilkins also employed some other 'natives' for preparing typeface, though he never acknowledged the contribution of those 'native' employees publicly. Contrary to him when Serampore Trio appointed Panchanan for preparing Bengali font, they gave full reorganization to Paanchanan's contribution. In the Mission's *First Memoir Relative to the Translations of the Sacred Scriptures*, Serampore Missionaries undoubtedly accepted the contribution of Panchanan Karmakar for his accuracy in type-casting and cutting of matrices.[10] After Panchanan's death the work was carried on by his son-in-law, Monohar Karmakar. Besides these two indigenous people, another person, John Fountain, a missionary who came to India at October, 1796, helped these missionaries in preparing type faces. So it could be said that the process of interaction between eastern technological skill

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sequence of handwritten forms. (Source : Fiona G. E. Ross, *The Printed Bengali Character and Its Evolution*, Sahitya Samsad, Kolkata, 2009, p. 18.)

[8] *Ibid.*, p.19.

[9] CW2, CW3, CW4 : these were the other three early Bengali typeface used by Charles Wilkins. This typeface represented the gradual development of Bengali typeface. Among these typefaces the last one was best from the other in respects of its alignment of characters; the vertical size main stroke letter became shorter in comparison to the earlier font. (source : *Ibid.*, pp. 21, 31-33.)

[10] *Ibid.*, p. 46.

and western technological knowledge had started with development of printing technology.

In 1800, Serampore Mission was being able to make first Bengali typeface, known as SB1. In the subsequent years with this typeface the Mission press was able to publish the New Testaments followed by, *Mangal Samachar*, along with Ram Ram Basu's *Raja Pratapaditya Charitra* and so on. Though Fiona G. E. Ross while criticizing the first Serampore typeface says that 'in comparison to the earlier font of Wilkins and the Chronicle Press, the font of Bengali types first used by the Baptist missionaries has to be regarded the inferior, both in relation to the design of its letterforms and to its poor alignment.'[11] Besides, while talking about the range of characters used by Serampore, in comparison to Wilkins's range of characters, Ross argues that the range of characters in the first Serampore font was quite similar to Wilkins.[12]

Meanwhile Panchanan, along with his son-in-law Monohar was able to prepare seven hundred Devnagari punches, which was primarily required for the printing of Sanskrit grammar for Carey. In 1803 the death of Panchanan Karmakar did not break the process of development and casting of different typeface. Serampore Mission continued this process With Monohar Karmakar. Various memoirs[13] related to the translation of sacred scriptures, published and written by Serampore mission, discussed this gradual development of typeface. For instances, on the one side the *Sixth Memoir related to the Translation of the Scriptures into the languages of India* notified the publication of Bible or sacred scriptures in two Indian languages and New Testament in seven Indian languages.[14] On the other side the subsequent memoirs of *Sixth Memoir*, enlisted the publishing of sacred scriptures, Old Testament and New Testament in different Indian languages. For example, the *Seventh Memoir Related to the Translation of Sacred Scriptures* depicts the publishing of New Testament in

[11] Fiona G. E. Ross, *The Printed Bengali Character and Its Evolution*, Sahitya Samsad, Kolkata, 2009, p. 44.
[12] *Ibid*.
[13] Serampore Mission used to publish many memoirs related to their progress in the field of translation and publication of sacred scriptures in different languages.
[14] *Seventh Memoir Respecting the Translation of the Sacred Scriptures into the Languages of India*, Serampore, 1820, p. 2.

various Indian languages, like Sikh, Telinga, Kunkuna, Mooltanee, Gujarati, Assumes languages.[15]

On 11th Mach 1811, this prosperous Serampore Printing Press was destroyed as a devastating fire broke out within the printing press and most of the typeface of different languages except some steel punches for the Indian scripts, the press and matrices of all fonts was destroyed.[16] Despite all these losses, the Serampore Mission was being able to recover all these damage and once again started their publishing house within a year.[17]

Interestingly, the Serampore Missionaries were able to produce another four type font after the destruction by fire. Instead of SB1 font this time they produced SB1R font which was an improved version of the earlier one. The second Bengali typeface was SB2, which in terms of typography and size was the best. This font was planned by Lawson but completed by native artists.[18] Another two types of fonts came into existence after 1820's. One of them was SB3, used in Dharma Pustak (Holy Bible in Bengali) in 1829 and another was modified version of SB3, known as SB3R, used in Bengali New Testament.[19]

The Eight Memoir Related to the Translation of Sacred Scriptures mentioned the Serampore Missionaries' preference towards the use of the metallic movable character rather than the woodcut character because of its sustainability, legibility and neatness.[20] While discussing about the metallic movable type, the memoir also said that the good thing about this type was that there was no need of paper of a particular thinness, like printing on wood. They mentioned that with the help of this movable type in the current edition, they could use common paper.[21] Though, they said, in comparison to English types generally used in printing, these metallic types were still large. This memoir also discussed about their success in preparing the Chinese movable character and even the Oriya characters.

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[15] *Seventh Memoir Respecting the Translation of the Sacred Scriptures into the Languages of India*, Serampore, 1820, pp. 5-7
[16] Fiona G. E. Ross, *The Printed Bengali Character and Its Evolution*, Sahitya Samsad, Kolkata, 2009, p. 49.
[17] *Ibid.*, pp. 50-51.
[18] *Ibid*,. p. 51.
[19] *Ibid*., p. 58.
[20] *The Eighth Memoir Related to the Translation of Sacred Scriptures into the Languages of India*, Serampore, 1822, p. 25.
[21] *Ibid.*

Eventually these vernacular typographical developments, especially the Bengali typographical development not only served the Serampore Missionaries' purpose of publishing of sacred scriptures in various Indian vernaculars, but indirectly this development helped in the promotion of rational as well as scientific knowledge in Bengali. 1818 onwards when the Mission press started to publish a large number of school books as well as newspapers, a youth magazine and other books related to science in Bengali, Hindustani and in English, this new Bengali type face was of great help.

Noticeably, after using the new Bengali typefaces by the Mission press, the characters on paper became neat and clear which became more attractive to the readers. While making the publication much more attractive they used woodcuts for titles.[22] 1818 onwards when the Mission press started to publish *Dig-Durshuna* they used to print that magazine on good quality of paper with a clear and bold type face, which made it readable to the youths.[23] Even while publishing several schools' books and *Scientific Copy Book* they used good typeface and left sufficient amount of spaces for students to practise writing with bold hand.[24]

Though these Serampore Missionaries published a large number of books for schools but they were unable to fulfil the requirement of books. They started to publish compendium on various subjects by which they were able to teach a large number of students at one time. Use of the newly prepared type font helped them to produce various compendiums with sufficient accuracy which made them easily readable and attracted pupils towards books. Another noticeable thing was the demand of these books. Earlier this Mission press used to supply books to Fort William College and to their own schools. Later, Calcutta book Society also bought books from them because of the good subject matter and accuracy of printing.[25]

Besides improving typeface and its technology, these missionary also made some technological development in the field of manufacturing papers. At that time two kinds of papers were easily available for writing and printing as well. They were

[22] Fiona G. E. Ross, *The Printed Bengali Character and Its Evolution*, Sahitya Samsad, Kolkata, 2009, p. 58.
[23] *The Second Report of the Support and Encouragement of Native Schools, Begun at Serampore, Nov.1816: with a list of subscribes and benefactors*, The Mission Press, Serampore, 1817, p. 31.
[24] *Ibid*., p. 36.
[25] *Ibid.*, p. 17.

costly European paper and handmade or mill made native paper. Serampore Missionaries faced problems with both of them. On the one hand, European papers were good in quality and sustained for longer period but their cost was high. On the other hand though the price of native paper was quite low but the quality was not good. Moreover these papers were made of rice paste and easily attracted the bookworms and white ants[26]. These problems worried them and they tried to find solutions.

While solving this particular problem they planned to set up a paper mill and in 1804 they asked Baptist Missionary Society of London to send a missionary who had good knowledge of paper manufacturing. Following this they also asked to send necessary machinery for manufacturing paper.[27] But Baptist Mission Society did not listen to them. At last in 1809, these Serampore Missionaries took self initiatives and tried to set up a paper mill with the help of Joshua Row[28]. Within two years of establishment, the paper mill hoped to produce their own paste-boards for binding. Not only that, in the meantime they were successful in making ink for their own printing machine and also hoped not to import printing ink any more from Britain.[29]

As time passed the quality of Serampore Paper Mill's papers improved. In 1820, in *Seventh Memoir Respecting the Translation of the Scriptures into the language of India*, Serampore Mission reported that for the sixth edition of New Testament they used long octavo pages. While describing the quality of the paper used in this edition; they said, that they prepared 'a paper for a suitable size made of the sun (crotoleria juncea) which though inferior to English paper in point of colour, is equally impervious to the worm, and far more durable, being made of the raw material the fibre of which processes a superior degree of strength."[30]

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[26] George Smith, *Life of William Carey, Shoemaker and Missionary*, J. M. Dent & Co., London and E. P. Dutton & Co., New York, 1909, p. 183.
[27] E. Daniel Potts, *British Baptist Missionaries in India, 1793 – 1837*, The University Press, Cambridge, 1967, p. 111.
[28] Joshua Row was one of the young missionaries who came to India in 1803 and joined the Serampore Mission. (source : Lightom and Mornay Williams (ed.), *Serampore Letters, Being the Unpublished Correspondence of William Carey and Others With John Williams, 1800 – 1816*, G. P. Putnam's Sons, London, 1892, p. 107)
[29] E. Daniel Potts, *British Baptist Missionaries in India, 1793 – 1837*, The University Press, Cambridge, 1967, p. 111.
[30] *The Seventh Memoir Respecting the Translation of the Sacred Scriptures into the languages of India*, Serampore, 1820, p. 3.

With the increase in the quality of paper, it had not only helped the Mission to improve visibility of printed characters and publish large number of Bibles in various sizes[31], but it also helped them to publish good number of school books with good quality of paper. It has already been discussed in the first chapter that while promoting science education in schools they published a large number of scientific books. In this process they mainly emphasized reading, writing and memorizing the lessons. For writing they planned to distribute Scientific Copy Book[32] where pupils would write their lessons. So it was necessary to provide papers of good qualities to the students so that writing ink did not blot on the other side. While preparing the school books Serampore Missionaries were concerned about that and prepared copy books of exact size with a quality of paper capable of bearing ink on both sides. It helped students to use these copy books for writing purposes in their regular classes. The good quality of paper helped the students to write dictation with sufficient accuracy.[33] Besides, scientific copy books they were conscious about the quality of paper used for books and compendium.

The paper producing machine at Serampore Paper Mill was very cumbrous and expensive. Besides, to run this machine earlier these missionaries had to employ forty men who worked in relays to run the wheel of the paper producing machine.[34] Up to that point of time everything was all right. After 1818, number of publication of this mission press increased due to publication of two newspapers, one magazine and several other books. Meanwhile an accident took place in the paper mill. Unfortunately, one man died due to that accident and incidentally the rest took a superstitious aversion to the wheel.[35] As a result the missionary abandoned that machine. This unexpected incident and large demand of papers enforced these missionaries to import a steam engine to work the paper mill.

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[31] *The Seventh Memoir Respecting the Translation of the Sacred Scriptures into the languages of India*, Serampore, 1820, p. 3.
[32] *The Second Report of the Support and Encouragement of Native Schools, Begun at Serampore, Nov.1816: with a list of subscribes and benefactors*, The Mission Press, Serampore, 1817, p. 39.
[33] *The First Report of the Institution for the Encouragement of Native Schools in India with a list of subscribes and benefactors*, The Mission Press, Serampore, 1817, p. 9.
[34] John Clark Marshman, *The Life and Time of Carey Marshman and Ward*, Vol.2, Longman Brown, Green, Longmans & Roberts, London, 1859, p. 224.
[35] *Ibid*.

On 1820, Serampore Missionaries imported a twelve-horse power steam engine.[36] While covering this news *Samachar-Darpan* gave the description of this steam engine as well as its importance in Britain. The newspaper said that the engine was run by steam and Serampore Mission wanted to manufacture paper with this machine.[37] J. C. Marshman argued that the steam engine used in Serampore Mission Press premises, which was the first ever erected in India. Native people surrounding Serampore were surprised with it and started respecting it as a God. Educated people from Kolkata came to Serampore to see this machine and its function. Even Serampore missionaries were impressed with its function and called it as the reality of that day[38] and they hoped that as the time passed other technology and manufactured goods of Britain would come to India.[39] Ironically, later their assumption came true but the aims were opposite.

It could be said that in the field of printing they were the real pioneers of introducing the art and science of western printing into India.[40] Partially it would be right as, though they introduced new technologies in this field but, it is also true that without the help of indigenous blacksmiths they were not able to produce the typeface at low expenditure for the printing of sacred scriptures in different indigenous languages as well as other books. This typographical development made by Serampore Mission with the help of indigenous knowledge as well as the technological development encouraged to establish several other native printing press in Kolkata along with Serampore.

Use of Scientific Knowledge in Agriculture & Horticultural Sector

Agriculture and Horticultural sectors both drew attention of the Serampore Missionaries. Before them the Jesuits missionaries of Goa gave special emphasis to the cultivation of indigenous herbs in the sixteenth century. Timothy D. Walker

[36] John Clark Marshman, *The Life and Time of Carey Marshman and Ward*, Vol.2, Longman Brown, Green, Longmans & Roberts, London, 1859, p. 224.
[37] *Samachar-Darpan*, 25th May, 1820.
[38] John Clark Marshman, *The Life and Time of Carey Marshman and Ward*, Vol.2, Longman Brown, Green, Longmans & Roberts, London, 1859, p. 225.
[39] *Samachar-Darpan*, 25th May, 1820
[40] E. Daniel Potts, *British Baptist Missionaries in India, 1793 – 1837*, The University Press, Cambridge, 1967, p. 109.

argued that this process might be called as "hybridization"[41]. During that time Malabar and non- European concept of healing blended together in the terms of cultivation of indigenous Ayurvedic herbs.[42] However, they were not that much interested in agriculture of India. As far as the Serampore Mission concerned the case was a bit different.

It has already been discussed that William Carey was eager to learn the indigenous languages but his interest was not limited only to this. He also tried to get knowledge on indigenous culture and most surprisingly, indigenous agriculture. In one of his letters to Fuller on November 16, 1796, while discussing about the plan of foundation of a mission and source of its income, Carey presumed that agricultural practice might be a good source.[43] Indeed, he also wrote that he knew all the methods of agriculture that were used in India. This letter revealed Carey's interest towards agriculture. In his letter to Dyer, dated 15th July 1819, he wrote that, he was very fond of Natural Science, particularly Botany and Horticulture. He called these subjects as his amusement.[44] He also said that his amusement also inspired his other brethren. He said that Marshman encouraged him by sending him different stones, plants etc. Actually his keen interest towards natural object like insects and plants from his childhood helped him in further development in this field.[45] His keenness towards Botany and Zoology also encouraged other missionaries. When different Serampore Missionaries went to various places for mission's work, frequently Carey wrote letters to them while asking them about their progress. Besides, he also asked them about the vegetation, living beings of those places. Sometime he also asked them to send the specimen of those. For example, in 1814, BMS sent Jabez Carey to Molucca Island as an inspector of the school situated in that Island[46], William Carey wrote several letters

[41] Timothy D. Walker (University of Massachusetts Dartmouth)**,** "Supplying Simples for the Royal Hospital: An Indo-Portuguese Medicinal Garden in Goa (1520-1830)", *Unpublished Seminar Paper*, The Institute for Southeast Asian Studies (Singapore), 28 - 30 September 2010, p. 2.

[42] *Ibid.*, p.28.

[43] Terry G. Carter (ed.), *The Journal and Selected letters of William Carey,* Smyth and Helwys Publishing, USA, 2000, p. 136.

[44] *Ibid.*, p. 233.

[45] John Clark Marshman, *The Life and Time of Carey Marshman and Ward*, vol.1, London, Longman Brown, Green, Longmans & Roberts, 1859, p. 2.

[46] Charles William, *The Missionary Gazetteer; comprising a geographical and Statistical Account of the Various Station of the Church, London, Morvian, Wesleyan, Baptist, and American, Missionary*

to him. While doing so in the letter dated February 1, 1815, he asked Jabez about the natural endowments of that place. He wrote,

> "….. Tell Eliza that I expect her to dry seeds for me and butterflies, also to pick up stones, shells and crabs. You have many curious crabs and prawns. Send them but when you send seeds or dried birds – send me some stuffed birds – be careful to pack them very close, that no cockroaches can come at them. Send me bulbous root and more parasitic plants. Send ugly shells as well as pretty ones."[47]

Much before the establishment of Serampore Mission, Carey started his experiment with agriculture in India. When he first landed in India, for his livelihood he tried to use his knowledge of Botany and applied for the post of superintendent of Botanical Garden. Though he did not get the job, but his friend Roxburg got selected for that post. So his connection with the Botanical Garden still remained and he accessed and developed his knowledge of Botany. Indeed after the establishment of Serampore Mission, Carey made a small botanical garden within the Mission premises, where he tried to collect and plant different kinds of plants collected from different parts of the world. Thus within the agricultural field he left a strong imprint on the horticultural sector.

In the very beginning he asked BMS home committee to send him few 'instrument of husbandry, viz. Scythes, Sickles, Plow Wheel, and such things, and a yearly assortment of all Garden &Flowering seeds and seeds of Fruit Trees…".[48] Not only to the Society at London, but he also wrote to his friends staying in England to send him "assortment of culinary and flower seeds"[49], roots of Tulip, Daffodil or Narcissus. He also planted an ash tree within Serampore Mission which was brought by him from England.

He also planned for the timber plantation to increase and improve the Mission's financial condition. In one of his letter to Sutcliffe he wrote that, during his conversation with the Supreme Council he told them about his plan of timber

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Societies with their progress in Evangelization and Cultivation, Frederick Westley and A. H. Davis, London, 1828, p. 18.

[47] Terry G. Carter (ed.), *The Journal and Selected letters of William Carey*, Smyth and Helwys Publishing, USA, 2000, p. 292.

[48] Letter from Carey to Jabez, 1st February, 1815, place not mentioned. (Source: *Ibid.*, p. 291.)

[49] Letter from Carey to Sutcliffe, 1st January, 1800, Calcutta. (Source: *Ibid*., pp. 291-292.)

plantation over thousands of bighas of land and he hoped it would increase the income of the Mission. Indeed he also talked about his plan for cultivation of coffee and some other articles along with timber which would in few years bring in considerable income to the mission.[50]

Sherwood Eddy, one of the biographers of William Carey, argues that "as an erudite botanist, he studied scientifically the fauna and flora of India as his one primary recreation."[51] In addition to this he also argued, that he was the first in the orient to advocate scientific forestry and was one pioneer of many practical agricultural plans. The zenith of Carey's life as a botanist came with the foundation of 'Agricultural and Horticultural Society of India' in 1820. Later on this Society became the model for 'Royal Agricultural Society of England' which was founded in 1838. While founding that respected Society his passion was shown in his letter to his sister dated 4th March, 1820,

> "I am now engaged in promoting the establishment of an agricultural society – (in) India. I have had several conversations with Lord and Lady Hastings about it who both of them encourage it much. I was with Lady Hastings yesterday a couple of hours about it. She is uncommonly for its forming. This if it can accomplish will be a great Blessing to India."[52]

After getting permission from the authority, to circulate his plan of establishing an 'Agricultural and Horticultural Society of India', on April, 1820 he issued a *Prospectus of an Agricultural and Horticulture Society in India*. This prospectus highlights Carey's views on the establishment of this Society. According to the prospectus they were,

1. 'To pay close attention to the improvement of land.'[53]
2. To introduce new and useful plants.[54]
3. The improvement of implements of husbandry.[55]

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[50] Letter from Carey to Sutcliffe, 31st March, 1812, place not mentioned, (Source: Terry G. Carter (ed.), *The Journal and Selected letters of William Carey,* Smyth and Helwys Publishing, USA, 2000, pp. 208-209.)

[51] Eddy Sherwood, *Pathfinder of the World Missionary Crusade*, Whitemore and Stone, place is not mentioned, 1945, pp. 27-28.

[52]Letter from Carey to his Sister, 4th March, 1820, Calcutta. (Source: Terry G. Carter (ed.), *The Journal and Selected letters of William Carey,* Smyth and Helwys Publishing, USA, 2000, p. 191)

[53] *Transaction of the Agricultural and Horticultural Society of India,* Vol.1, re-printed at Baptist mission Press, Calcutta, 1838, p. 215.

[54] *Ibid,*. p. 216.

4. To improve the quality of cattle. This 'came under the dimension of stock, whether introducing for labour, the dairy or food'.[56]
5. 'Bringing of waste lands into a state of cultivation'.[57]

At the end of that prospectus Carey also placed the proposal for publishing a report of 'the proceedings of the Society and communications from individuals, describing either successful or unsuccessful practices'[58]. Carey's main intention behind these publications was to make people aware of different activities of the Agricultural society. He also planned to publish these reports and proceedings of the Society in at least two indigenous languages apart from English.

According to the plan of Carey, on 14th September, 1820, an institution named 'Agricultural and Horticultural Society of India' was formed under the patronage of the Governor General. Within a month there were five members and all of them were some of the most opulent natives.[59] By the end of 1822 number of the members had increased and reached to about fifty.[60]

After its establishment it expanded its network in multiple ways. The Society engaged in making proposal of "awarding prize to the Native gardeners for the best specimens of vegetable produce"[61], circulating them through Bengali newspapers. Not only that, the Society also published a small work, containing a "brief summary of the principles of gardening, direction for farming for the cultivation and preservation of the principle, useful and ornamental plants and seeds and lastly a calendar of gardening for every month in a year"[62]. 1836 onwards the Society started to publish several reports of the society from the time of its establishment.

Beside all this, with the help of Carey botanists like William Roxburgh or Natalia Wallich were able to enlist Indian plants. While establishing Serampore mission Carey also prepared a botanical garden within the mission premises. It has already been discussed in this chapter that he planted several imported as well as

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[55] *Transaction of the Agricultural and Horticultural Society of India,* Vol.1, re-printed at Baptist mission Press, Calcutta, 1838, p. 217.
[56] *Ibid*.
[57] *Ibid*.
[58] *Ibid*., p. 220.
[59] *Missionary Register for MDCCCXXII*, Vol.10, London, 1822, pp. 66-67.
[60] *The Baptist Magazine*, Vol. 13, p. 222.
[61] *Calcutta Gazette*, 25th January, 1827.
[62] *Samachar-Darpan*, 18th April, 1835.

indigenous plants in that garden. He also prepared a garden receipt book. Within that receipt book "he was accustomed to put down the names of the plants introduced into his garden and afterwards to affix marks of their success"[63]. Along with this receipt book, his several private papers on botanical subjects helped J. O. Voigt, surgeon to Danish Government, Serampore to prepare *A Catalogue of the Plants*.[64]

Health care and Medicines

Along with the printing press and agricultural sector, the Serampore Missionaries also used their scientific knowledge in the field of community health care and medical services to heal the 'native' heathen and to make them conscious and rational on health issues. Though there was nothing new in this initiative, as from the very beginning Christian missionaries were interested in this field. They attempted to heal the indigenous 'heathen'. For example, in sixteenth and seventeenth century Jesuits of Goa tried to heal indigenous people along with Portuguese inhabitants of Goa. The Goa Royal Hospital was also run by them where they used western medicine along with indigenous herbs used by the southern people. These Jesuits not only used them but they cultivated these herbs within the hospital premises, in the hospital garden. Behind this their main intentions were, first, "fresh plant medicines were of course considered to be more efficacious, and an on-site garden would have allowed for the hospital apothecary staff to create curative compounds with newly picked ingredients near to hand. Medicines that were stale or had travelled a great distance might have lost some of their healing potency. Second, hospital officials worried about the poor quality or possible adulteration of medicines purchased from outside sources."[65] Timothy D. Walker of University of Massachusetts Dartmouth while discussing this interaction between western medical knowledge with indigenous one called this as a process of 'Hybridization' of colonial medical sphere.[66]

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[63] J.O. Voigt, A Catalogue of the Plants, Calcutta Bishop's College Press, Calcutta, M. DCCXLV, p. xxiv.
[64] *Ibid*.
[65] Timothy D. Walker (University of Massachusetts Dartmouth), "Supplying Simples for the Royal Hospital: An Indo-Portuguese Medicinal Garden in Goa (1520-1830)", *Unpublished Seminar Paper*, The Institute for Southeast Asian Studies (Singapore), 28 - 30 September 2010, p. 7.

[66] *Ibid.*, pp. 2-3.

Most of the missionaries in eighteenth and nineteenth century took the healing practice as a part of their mission's activity. Serampore mission also did not avoid this philanthropic activity and also indulged themselves in it. Incidentally, they left a different imprint on this field.

These Serampore missionaries also started the healing practices from the very beginning. It is already discussed in the introduction of the dissertation that in 1793, Baptist Missionary Society of London sent William Carey and John Thomas for preaching Christianity in India, among them John Thomas was a medical evangelist. At that time it was his second visit to India. Before this, he already visited Kolkata as a Company's medical surgeon but during this time he failed to preach Christianity in India. After coming to India in 1793 as a missionary, he came to be known as the first medical missionary in India.[67] While staying in Kolkata both of them went through heavy financial crisis and eventually decided to leave Kolkata. In the meanwhile, Carey was able to manage a job in an indigo factory at Mudnabati. So, he left for Mudnabati. Within a few days Thomas joined him at Mudnabati and started their missionary work.

Besides the missionary work of preaching, Thomas started his healing practices at Mudnabati by distributing medicine to native people. While moving from place to place he tried to heal local people by giving them medicine. In a letter to the Society at England, Carey wrote about the philanthropic works of Johan Thomas. Carey wrote,

> "… Bro. Thomas has been the Instrument of saving numbers of Lives – This house is constantly sounded with the Afflicted and Cures wrought by him would have gained any Physician or any surgeon in Europe the most extensive reputation. – We ought to be furnished . . . by with at least Half a Hundred pounds of Jesuit's-

[67] George Smith, *Life of William Carey, Shoemaker and Missionary,* J. M. Dent & Co., London and E. P. Dutton & Co., New York, 1909, p. 43.

Bark[68] – Other medicines we have plenty of for some time to come."[69]

After Thomas, the Serampore Mission healing practice was carried on by Felix Carey, son of William Carey. He was attracted to medicine under the influence of Dr. Taylor, a missionary doctor at Serampore.[70] He also took practical training in medicine in a Calcutta Hospital.[71] He led a medical mission to Burma in 1807. While describing this medical mission at Burma, Carey informed Fuller that Felix introduced the Vaccine Inoculation at Rangoon.[72]

Though Carey Marshman and Ward did not get any formal medical training but they took the lead role in generating public consciousness with the help of printing technology on issues related to health and medicine. From 1818 onwards, Serampore Mission Press started to publish two newspapers, *Samachar-Darpan* and *Friend of India*. Both the newspapers tried to make people conscious of the causes of several diseases and how to take precautions against them, invention of new medicines etc. Besides, they also tried to make people aware of the various superstitious activities performed by those who tried to prove themselves as true healers.

During the first half of the nineteenth century diseases like, Cholera and Small Pox took the shape of pandemic in Bengal. The two respected newspapers gave a wide coverage to them. On 27th March 1819, *Samachar-Darpan* expressed its worry about the spread of Small Pox in Kolkata also convinced people to take the anti-pox vaccination. In that news they also assured indigenous people by saying that one of the Hindu medical books also support the application of anti-pox vaccination. So it could be said that they tried to convince the 'natives' to accept western medical practices by proving to them that much practices were mentioned in the Hindu medical text too.

When Cholera took the shape of an epidemic during the second decade of nineteenth century, *Samachar-Darpan* continued to publish various news related to Cholera, from its spread in different parts of India, especially in Bengal to the

[68] Jesuit's Bark : Bark of a tree used to make quinine.
[69] Letter from Carey to Society, Hooghly River, 10th January, 1799. (source : Terry G. Carter (ed.), *The Journal and Selected letters of William Carey,* Smyth and Helwys Publishing, USA, 2000, p. 189)
[70] Chittabrata Palit, *Scientific Bengal*, Kalpaz Publication, Delhi, 2006, p. 48.
[71] *Ibid*., p. 48.
[72] Letter from Carey to Fuller, 20th April, 1808. (Source : Terry G. Carter (ed.), *The Journal and Selected letters of William Carey,* Smyth and Helwys Publishing, USA, 2000, p. 189.)

numerical statistics of the people dying due to the disease in Bengal, especially in Kolkata.[73] Interestingly, they did not stop their work with the factual information on this disease but they also suggested Company Government that if they would like to establish a medical college, train 'native doctors' in western medicine through it and permitted them to assist the western doctors, then it would be possible to reach every village effected by Cholera.[74] On 18th March, 1820 they circulated the news that Dr. Jemison published a book after a lot of research on how to cure Cholera. At the same time the newspaper also hoped that in future this research would help to prevent the outbreak of Cholera. Thus, on the one hand they notified people about the outbreak of Cholera, on the other hand they tried to convince the Company Government to train native doctors to control the spread of the disease.

Samachar-Darpan played an important role to promote the rational ideas against the various superstitious beliefs on some diseases. Leprosy was one of them. During that time the indigenous society saw leprosy patients as a bad omen and they used to burn them alive.[75] Carey, from the very beginning tried to convince people against it and tried to establish a leprosy hospital at Kolkata. During August 1819, Carey was able to collect twenty two thousand rupees and built three hundred huts for the accommodation of leprosy patients and their families.

Serampore mission's efforts in generating general awareness got proper shape with the establishment of the Serampore Hospital in 1836. Eventually, after the establishment of Serampore College, Serampore Missionaries planned to introduce medical studies at the College and they also wanted to appoint a medical professor in the College.[76] But they failed to do that. Yet, this plan got partially fulfilled with the establishment of Serampore Hospital. Initiative was taken by Dr. Marshman. With the help of several good admirers of this mission the hospital set up its working committee. Dr. Voigt, a famous doctor of Serampore, was appointed the medical officer of the hospital.[77] This hospital provided both indoor as well as outdoor medical services. Poor 'natives' from Serampore and neighbouring British territory had came

[73] 'Samachar-Darpan', 25th April, 1820.
[74] *Ibid*., 13th June, 1818.
[75] George Smith, *Life of William Carey, Shoemaker and Missionary*, J. M. Dent & Co., London and E. P. Dutton & Co., New York, 1909, p. 214.
[76] *The Christian Observer*, Vol.23, 1824, p. 656.
[77] John Clark Marshman, *The Life and Time of Carey, Marshman and Ward*, Vol.2, Longman Brown, Green, Longmans & Roberts, London, 1859, p. 495.

to this hospital. For treatment the hospital authority used only western medicines, supplied by the British Government.[78] *The First Report of Serampore Hospital* also revealed the plan of establishment of a female ward, as well as to collect donation for that. This first report also highlights their keenness to introduce new medical instruments in the hospital for better treatment. The subsequent reports of the hospital highlight the improvement of both indoor and outdoor facilities of the hospital.

The report of 1839 shows that the hospital was able to provide medicine and check-up facilities for different diseases like Syphilis, Rheumatism, Chronic Diarrhoea, Ulcers, Fevers, Abscesses, Ophthalmic, Dysentery, Cholera and many others. At the same time the reports also mentioned that from the establishment of Serampore Hospital to the publication of the hospital report of 1839, at least three thousand three hundred eighty people benefited from the hospital medical facilities out of which two thousand one hundred fifty nine people were not inhabitants of Serampore. These people were mainly inhabitant of British territory surrounding Serampore.[79] At the same time the hospital authority repented the unwillingness of the 'natives' to come to the hospital, but they also said that most of the patients who came to the hospital for healing, got cured by western medicines. Those who could not get cured by the hospital treatment were kept under observation.

To present the number of patients healed and treated from Serampore Hospital, two subsequent lists are given below in table no 4 and 5. The first table deals with the number of patients, who came to hospital suffering from different diseases and second table deals with the medical and surgical cases treated in Serampore Hospital, from its opening on the 1st of June, 1836, to the end of 1838.

Table no.4

Medical and Surgirical cases treated in Serampore Hospital, during 1838[80]

Syphilis	……	59 (3 partially cured.)
Rheumatism	……	52
Chronic Diarrhoea	……	23 (died 5, one ran away the day after his reception)
Ulcers	……	31

[78] *The First Report of Serampore Hospital*, 1837.
[79] *Friend of India*, 7th February, 1839, p. 87.
[80] *Ibid*.

Fevers	……	20 (died 1.)
Abscesses	…….	12 (3 but partially cured, because would stay no longer)
Ophthalmic	…….	9 (3 had not patience to stay till they were cured)
Dysentery	……	9 (died 1.)
Wounds	……...	7
Spleen	……...	7 (Died 1.)
Bruises	……	5
Cholera	……..	6 (died 1.)
Fractures	…….	4
Sprains	…….	4
Dropsy	…….	3 (Died 1.)
Oczaena nasi	…….	3
Catarrh	…….	3
Palsy	…….	2 (one much relived, the other not cured)
Sool	…….	2
Colic	…….	2
Blennorrhoea	…….	1
Epilepsy	…….	1
Hygroma	…….	1
Dislocation	…….	1
Cancer mammary	……	1 (not cured)
……		
Admitted in all	…….	269 (of whom 184 from the British Territory.)
Discharged	…….	259,
Died	……..	10

Table no. 5

Dispensed medicines to 1084 outdoor patients, of whom 721were from the British Territory.[81]
Medical and surgical class treated in Serampore Hospital from its opening on the 1st June, 1836, to the end of 1838.[82]

Rheumatism	……..	114 (4 partially cured.)
Syphilis	……..	109
Fevers	……..	89 (died 4. 1 ran away before he was completely cured.)
Chronic Diarrhoea	……..	72 (died 18, of whom several a few hours after their reception, I ran away before he was cured.)
Ulcers	……..	68 (died 1. One expelled for theft.)
Abscesses	……...	32 (3 but partially cured, because they would stay no longer.)
Wounds	……	27.

[81] *Friend of India*, 7th February, 1839, p. 88.
[82] *Ibid.*

Ophthalmia	……	25 (3 had no patience to stay till they were cured.)
Dropsy	……	19 (died 9, all having suffered from a complication of diseases.)
Fractures	…….	19
Cholera	…….	18 (died 2.)
Spleen	…….	18 (died 2.)
Dysentery	…….	13 (Died 2.)
Bruises	…….	12
Blennorrhoea	…….	8
Sool	…….	7
Cotaneous Diseases	……..	7
Sprains	……	4
Hemorrhage	……	3
Chronic Hepatitis	……...	3 (1 not cured.)
Oceana nasal	……...	3
Cough	…….....	3
Palsy	……	3 (1 not cured, 1 considerably relieved.)
Dislocations	……	3
Cholerine	……	2
Consumption	……	2
Colic	……	2
Patrid Sore Throat	……	2 (died 1)
Hydrocele	……..	2
Difficult parturition	…….	2 (died 1)
Epilepsy	……...	1 (much relieved)
Apopiexy	……	1 (died.)
Abortion	……	1
Ambustion	……	1
Pleuritis	……	1
Locked jaw	……	1
White Swelling	…….	1
Hygroma	……	1
Seirrhus	……	1
Cancer mammae	……	1 (not cured)
Strangury	……	1
Rupture	……	1
Mumps	……	1
Contracture	……...	1
Nervous debility	……..	1
Imanlly	……...	1
……		
Admitted in all	……	707 (of whom 440 from the Britain territory.)
Discharged	…….	646
Died	.....	43
	…….	689
……		
Remaining	……..	18

Besides the establishment of Serampore Hospital the Mission circulated various health related information like how to cure and prevent various diseases, invention of different new medicine and disclosed the real picture of dishonest native doctors through *Samachar-Darpan*. One interesting point could be noticed here is that they used vernacular newspaper, published form Serampore Press to articulate these ideas. Besides, they also published some health related issues in *Friend of India*, but the content was lesser than *Samachar-Darpan*. It could be possible that they used vernacular news paper to reach a large number of people.

On 10th December, 1836 *Samachar-Darpan* published news on how people could be cured of cholera and how the disease could be prevented. Along with these activities they also tried to make people rational on the health related issues. On 25th December, 1819, *Samachar-Darpan* published news to disclose the real identity of a dishonest native Brahman, who tried to cure people by shouting the name of 'God Hari', a Hindu God in the village 'Mokam Noliya', and tried to make fool of people. The respected newspaper disclosed all the truth, though at the same time the newspaper authority were upset as native people still went to that Brahman for healing purposes.[83]

It could be said that the practice of healing and circulation of general awareness on health issues was never neglected by the Serampore Mission and its missionaries. To reach to the native people they took the vernacular language as a medium. Though one thing is noticeable they did not say much about Ayurvedic indigenous medicines. These missionaries took several initiatives to enlist and preserve different species of indigenous plants; even they helped Botanical Garden of Kolkata to do so. They provided required facilities to William Roxburgh to prepare and publish *Flora Indica; or Description of Indian Plants, Volume 1 & 2*, but they personally or publicly never used or preferred indigenous medicine. They always used western medicine and consulted the western doctors. In most of the cases they tried to prove the 'native' doctors as dishonest and wicked. On one hand these kinds of activities helped common people to be rational but on the other hand it delegitimised Ayurvedic medical practice.

[83] *Samachar-Darpan*, 25th December, 1819.

Conclusion:

After discussing the role of Serampore mission in the promotion of technological knowledge it could be said that, for them the development of technology did not only mean the expansion of use of machine or implication of western knowledge but development through interaction between eastern and western knowledge. This process started with the development of printing technology. In this field they took good initiatives to make a fruitful interaction between eastern technological skills with western technological knowledge. To develop the printing font they convinced Panchanan Karmakar who used western technology while doing so. Even the Serampore Missionaries acknowledged him as he had 'a degree of accuracy which would not disgrace European artists'.[84]

The development of typefaces and manufacturing of paper helped in publishing of books in large number and in cheaper rates. Not only that, all these processes not just helped Serampore Mission to decrease their expenditure but it also inspired local and other native presses in this field. Because of its cheap rate contemporary intellectual as well as learned people used to buy these books. Especially after the publishing of *Dig-Durshuna* and *Samachar-Darpan* many people of low monthly income, became interested in buying them. It could be said that the development of printing technology helped these missionaries to get success in the promotion of science education.

Besides, developing the printing technology they also acknowledge the indigenous technological skills and for some extant indigenous knowledge system. Though, during the first half of nineteenth century the west had sufficient knowledge in preparing Indian typeface, but high manufacturing cost of casting them, enforced Serampore Missionaries to take the help of indigenous craftsmen. They employed a number of indigenous labours without any caste barrier in their paper mill and printing press.

In agricultural sector, their approaches towards indigenous agricultural practices were much interactive. While improving the Indian agriculture these

[84] Cited in, Fiona G. E. Ross, *The Printed Bengali Character and Its Evolution*, Sahitya Samsad, 2009, Kolkata, p. 46.

missionaries, especially Carey emphasised to understand the indigenous agriculture. In the very first point of the prospectus of 'Agricultural and Horticultural Society of India' founded in 1820 by him, he emphasized this. Besides, he was also concerned about horticulture. He planned to train gardeners for that purpose. He tried to establish his own garden by collecting seeds and roots of different plants, especially western plants from Britain and planted them in Serampore garden.

Another noticeable thing is the oscillating nature of Serampore Missionaries towards indigenous knowledge while healing the indigenous people. On one hand, in contrast to their interest in Botany especially Indian plants they were literally disinterested towards Indian indigenous medicine or Ayurveda. Though, some time they used indigenous medical books and knowledge to support their arguments. Ironically, in the time of practical implementation they neither used indigenous medicines nor took advice from 'Vaids'. For their personal care they used western medicine and called western doctors for healing. Even when in 1836, these missionaries founded the Serampore Hospital; they mainly used western medicine and also planned to introduce western medical instruments. Not only that, they criticized many 'vaids' for their 'superstitious' practices in the name of healing, through the columns of *Samachar-Darpan* and *Friend of India*, which obviously made people rational in all these field, but it delegitimised the indigenous Ayurvedic medicine.

So, it could be said that the Serampore Mission's approach towards interaction of eastern and western technological field changed with the demand of situation. In the fields of printing and agriculture they appreciated the process of interaction but in the terms of healing practice they did not. While healing indigenous people they used western medicine but did not use Indian Ayurvedic texts. In a nutshell it could be said that in comparison to other western bodies' approaches towards Indian society, Serampore Mission's approaches towards the Indian society in the terms of technology was much more cooperative. Above all these technological activities gave Serampore an important place in the nineteenth century Bengal, after Kolkata.

Actions Reactions and Counter Actions

Serampore missionaries had received a variety of responses from the indigenous society of Bengal for their different approaches on educational and technological fields. These indigenous responses were multifaceted like missionaries' approaches, as these approaches touched different realms of indigenous lives. This chapter tries to highlight these responses of indigenous people, the literate, semi-literate or illiterate people, who belonged to different religions as well as different social strata of nineteenth century Bengal society. Besides, the chapter also tries to decode how the responses of indigenous society shaped the further activities of Serampore Missionaries.

While describing the reactions of indigenous people, most of the contemporary writing looked to these interactions either from the religious perspective, as the base of these conflicts between Christian missionary and indigenous people was religion, or mainly concentrated on reaction of intellectuals towards different approaches of Serampore Missionaries. However, the natures of reactions of common indigenous people towards the approaches of Serampore Missionaries in the promotion of science education and technology development remained untouched.

Education, Indigenous Responses and counter action of Serampore Missionaries

Certainly, it is very hard to trace the voice of common indigenous people of Bengal unlike that of the intellectuals. It was due to their illiteracy that they hardly expressed their thought on their own. Besides, these people also had embedded fear in their mind of losing caste, which might have disrupted their normal or established pattern of life.[1] This thought kept them aloof not only from Serampore Missionaries,

[1] E. Daniel Potts, *British Baptist Missionaries in India, 1793-1837*, The University Press, Cambridge, 1969, p. 207.

but also from the other Christian missionaries, whereupon in the beginning they did not want to enrol their children into any mission school. This fear of conversion or loosing of caste was not absurd, as in beginning the curriculum of the mission schools incorporated the study of the Bible and religious teachings of Christianity. Even Serampore Missionaries were not free from this.

In the meantime, few Christian missionaries including Carey, Marshman and few British East India Company's officers, like Charles Grant, were emphasising on spreading of science education among the natives along with Biblical studies. They thought that "the spread of western knowledge, particularly western scientific knowledge would undermine the non-Christians inherited beliefs, making way for the coming of Christianity".[2] Serampore mission and its missionaries also followed this line of thinking and took lead role in it.

These two opposite attitudes towards western education, on the one hand the negative attitude of indigenous people towards the western education and on the other the missionaries' attempts at spreading this education as a mode of spreading Christianity, had made the initial attempts of spreading of science education among the natives by Serampore Mission, unsuccessful. After the passing of the Charter Act of 1813, the educational scenario of India as well as Bengal had begun to change. Instead of a purely religious approach, the Serampore Missionaries' attitude while educating the indigenous society became more liberal than the other Christian missionaries of Bengal, working during that time or thereafter. The free education of the missionary schools attracted indigenous people and slowly they could realise that their fears were unwarranted, as they could take the education and leave Christianity alone.[3] Later, this attitude was spreading among the different sections of indigenous society, from intellectual class to common indigenous people.

During 1830's, when Alexander Duff established his school in Kolkata, initially large number of pupils got registered in his school pretending that Duff and his school was the only way of their education. The main intention behind this attitude

[2] E. Daniel Potts, *British Baptist Missionaries in India, 1793-1837*, The University Press, Cambridge, 1969, p. 207, p. 235.

[3] M. A. Laird, *Missionary and Education in Bengal, 1793-1837*, Clarendon Press, Oxford, 1972, p. 55.

of indigenous society was either their keenness of getting good English education or their intention of getting printed books for their children free of cost.[4] Duff said that, once the free books were distributed those who came to school for getting free books, ran away and never turned up again. Duff also agreed that, 'sometime book pages were often converted not into stores for the intellect but wastepaper for petty retailers in the bazzar".[5] While other indigenous people, who were sending their children for English lessons, took away their child when children gained sufficient knowledge of English. To convince these parents that no proselytizing was going on his school, he invited them to his school. In spite of that, parents withdrew their children "whenever they sensed what they saw as the tyranny of Bible".[6]

The nature of indigenous responses towards educational approaches of the Serampore Missionaries, in comparison to the Duff's educational approach was a bit different. With the passing of Charter act in 1813 and after getting the legal permission from the East India Company government, Serampore Mission introduced western scientific subjects in their mission's schools as well as in Native Schools of Bengal, which came under their supervision in 1816. Their ultimate aim behind introducing science education, which has already been discussed, was no doubt to preach Christianity. However, while promoting science education in vernacular medium, the Serampore Missionaries tried to persuade the 'natives', that their main aim behind introduction of the science subjects in schools was to enrich young minds with useful knowledge.

It has already been discussed in chapter One that with the help of *Dig-Durshuna* they tried to introduce science subjects in the schools. To make their plan more successful they used to send two copies of monthly *Dig-Durshuna* to every school. While acknowledging the importance of this book, they said that along with the school's pupils, the book *Dig-Durshuna* was equally useful for any grown up person as well. After its publication in 1818, the demand of this youth magazine

[4] Gauri Viswanathan, *Masks of Conquest: Literary Study and British Rule in India*, Columbia University Press, USA, 1989, p. 51.

[5] *Ibid*.

[6] *Ibid*., p. 58.

continuously increased and that trend remained for long. Serampore missionaries also put their efforts to make it popular among the common 'natives'. They tried to incorporate new information like news of new discoveries, article related to various natural objects, lifestyle of different people etc. within this book and their efforts were working. In the second report related to the Native Schools', the Serampore Mission authority depicted that "many grown up persons have expressed a strong desire to obtain the numbers as they have been printed."[7]

Besides, many natives also purchased different issues of this magazine to read in their families. This huge demand of the magazine encouraged the Mission's press to fix its price at lower rate without reducing the quality of the paper. They thought this would bring the magazine within the reach of natives who had a small income.[8] This approach of the Serampore Mission got good response from the natives. To fulfil the demand of this magazine among the people of Kolkata, the School Book Society took almost thousand copies of each issue of this magazine from the Serampore Mission Press.[9] All these development encouraged the Missionaries to translate the first volume of this magazine into Hindi.[10]

Along with the publication of *Dig-Durshuna*, Serampore Missionaries also prepared a *Scientific Copy Book* (see appendix no. IV) for their students. With this book the Missionaries tried to make pupils write their thoughts with neatness and accuracy[11]. They hoped this copy book would also help them to memorise their lessons as they wrote their lessons several times.[12] While distributing these copy-books among the students they wished that both students and their parents accepted this approach. To encourage students to write on the *Scientific Copy Book* they

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[7] *The Second Report of the Support and Encouragement of Native Schools, Begun at Serampore, Nov.1816: with a list of subscribes and benefactors*, The Mission Press, Serampore, 1818, p. 24.

[8] *Ibid*., p. 25.

[9] *Ibid*.

[10] *Ibid*., p. 19.

[11] *Ibid.*, p. 26.

[12] *The Third Report of the Institution for the Support and Encouragement of Native Schools, Begun at Serampore, 1816*, Serampore Mission Press, Serampore, 1819, p. 20.

instructed the masters of schools to pay a small amount of money, like an 'Anna', to each boy who would regularly write two pages of the Scientific Copy Book through all the months in neat and correct manner. Pupils used to do that for the rewards.

Certainly, behind all these efforts, the main intention of the Serampore Missionaries was to spread rationality among indigenous people through science education, with the hope that, the power of rational thinking would make them critical to their own religion and ultimately help them to take the decision of converting to Christianity. The Serampore Missionaries also thought that if few of the indigenous people would be able to acquire this rationality and they could be able to show their countrymen the real picture of Hinduism then it would be easier for them to convert the rest. Thus they wrote,

> "When the native advocates for Christianity, therefore shall be able to show their countrymen, that 'Divine Sages' whom they religiously obey have been completely mistaken respecting the age and the history of the world, the motions of the heavenly bodies, and even the form of the earth - this will tend to shake their faith in the whole system. A knowledge of the general principles of Christianity will have the same tendency, as all their object of worship are formed of matter, the every experiments of this science will tend to shake belief in them together. Thus it is in India especially, that knowledge may be made a most powerful auxiliary to religion, in the general dissolution of such system of idolatry."[13]

Interestingly, the intention of Serampore Missionaries did not remain uncontested. When the Serampore Missionaries tried to give emphasis on the reading of Bible, along with the science and subjects like spelling lessons, letters in the Native Schools, working under their supervision, villagers were opposed to that. Eventually indigenous people were interested in learning western science. *The second Report of the Institution for the Encouragement of Native Schools* shows that at the beginning the curriculums of these schools under this institution were containing both indigenous subjects like, 'Jotish', 'Nittee Bakya' (moral stories), letters, spelling

[13] *Brief Memoir relative to the operations of Serampore Missionaries, Bengal, With an Appendix*, Parbury, Allen &Co. Leadenhall Street, London, 1827, p. 20.

along with western science, like Dig-Durshuna. Eventually, they made certain subject combinations, like

1. Jotish, Letters and Dig-Durshuna.
2. Letters and Dig-Durshuna.
3. Only Dig-Durshuna.
4. Letters only.
5. The Jotish, the Shastra Paddhuti and Letters.
6. The Jotish, the Shastra Paddhuti and Letters and Dig-Durshuna.
7. Letters and the Shastra Puddhuti.
8. Jotish alone.
9. Spelling lessons.
10. Nittee Bakya, The letters and Dig-Durshuna.
11. Elementary parts.

Among these subjects combinations most of the students found interest in the spelling lessons and reading of *Dig-Durshuna* only (appendix no. II). The appendices of the First and Second school report related to the Native Schools (appendices no. I &II) shows few children took the subjects' combinations like, 'Nittee Bakya, The Letters and *Dig-Durshuna*' or 'Jotish alone' or 'Letters only' or 'The Jotish', The 'Shastra Paddhuti and Letters'. Even after 1817, when few more schools were established under the supervision of Serampore Mission, all students of these schools enrolled themselves mainly in two subjects, in *Dig-Durshuna* and in spelling lessons.

Besides, the Serampore Missionaries were getting good responses from indigenous society in higher education. William Adam remarked that the good thing of this college was its liberal nature. In the college the Serampore Missionaries did not allow any discrimination in the name of religion or caste within the college. He also said "by opening the college without restriction to persons of all creeds, and thus gradually inducing natives of weight to assist in the general diffusion of Christianity

by their influence and support …"[14] Adam while listing the number of student the respected college on 31st December 1834, said that there was ten European students, forty-eight native Christian students and thirty-four native students but not Christian, studying in the Serampore College.[15]

Eventually, the Serampore Mission authority did another thing; they prepared two separate courses for European and East-Indian students and the native Christians and non-native Christians. On one hand, the European and East-Indian students were taught Hebrew, Greek, Latin, Bengalee and Mathematics and attended lectures on mental Philosophy, Chemistry and ancient and ecclesiastical History, on the other hand 'native' Christian and non-Christian students were given lessons of Sanskrit, Bengali, English as language along with the lessons of Chemical Studies, Logical Courses, including a summary of Baconian System and analysis of the ancient Aristotelian Methods, explanation of nature, the varieties, the Law of Evidence etc.[16]

The Serampore Missionaries never accepted any caste discrimination in their schools or in the college. Pupils from different castes of Hindu religion came to the schools. In the first report of Native Schools the Serampore Missionaries said that though one third of the school children were Brahmin, they attended the classes with the children coming from other caste and mingled with them. In the report, the missionaries were also saying that there was no such incident where the Brahmin pupils left the school for they had to attend classes with lower caste.[17] The same was true of in Serampore College. Adam in his report mentioned, "The non-Christian students are the son of Brahmans and other natives residing in Serampore and its vicinity, who neither board in the college nor do anything that may compromise their caste, but attend daily for instruction by their tutors, and at the lectures delivered in the colleges."[18]

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[14] William Adam, *On The state of education In Bengal*, Calcutta, Military Orphan Press, 1835, P. 70.

[15] *Ibid*.

[16] *Ibid*., pp. 70-71.

[17] *The First Report of the Support and Encouragement of Native Schools in India: with a list of subscribes and benefactors*, The Mission Press, Serampore, 1817, p. 18.

[18] William Adam, *On The state of education In Bengal*, Calcutta, Military Orphan Press, 1835, p. 71.

The College's science lectures especially chemical lectures, delivered by Prof. John Mack not only attracted students of the College, but it also attracted the contemporary intellectuals of Serampore, Barakpore and Kolkatta. The fourth report of Serampore College depicts that though the chemical studies lectures were delivered in English, but it could be understood by the opulent natives of Serampore and its neighbourhood. These people were curious to see experiments made on objects which they for so many years were accustomed to worship. When they saw them 'decompose and formed again'[19] thereafter they never made these facts the subject of general conversation as they did earlier. These indigenous people were so amazed by these chemical studies lectures and chemical experiments that they started discussing them.[20] People from different area came to Serampore week after week by boat to listen to all these chemical studies lectures.

Certainly, this inquisitiveness of the 'native' people, as well as, of students of western science left a positive impact on the development of Indian education. At the school level this interest also led the indigenous 'upper' caste people to compromise their caste and attend classes with 'shoodra' pupils. Interestingly their enthusiastic approaches towards western science education left a negative effect on indigenous education system especially on the indigenous teachers or 'Gurumoshais'. These missionary schools, run by Serampore Mission, gave western science education along with other useful knowledge in the vernacular medium free of cost. So, indigenous people tried to send their children to those schools rather than sending them to 'patshalas', where parents had to pay the tuitions fees to the teacher. Yagoesh Chandra Vidyabagal argues, though the Christian missionaries helped in developing the education system of Bengal, but at the same time it destroyed the indigenous education system.[21]

This argument of Vidyabagal is not fully applicable for the Serampore Missionaries, for their liberal attitude towards the indigenous society, as well as for their initiatives to please the indigenous society. These two attitudes persuaded them

[19] *Calcutta Gazette*, 27th May, 1824.

[20] *Ibid*.

[21] Yogesh Chandre Vidyabagal, *Banglar Jana shiksha*, Visvabidalay Sanghraha, Kolkata, 1858, p. 12.

to introduce indigenous subjects in their schools but indigenous people were less interested in these indigenous subjects except orthography. Therefore, it could be said that Serampore Missionaries' approaches towards the promotion of science did not discourage the indigenous knowledge system, though it may have adversely affected the patshalas.

'Sahebder Thakur', Missionaries and Indigenous Responses:

Like in the educational field, Serampore missionaries had got a variety of indigenous responses while promoting new printing technology in Bengal during the first half of nineteenth century. Interestingly, these responses changed according to the social statues of people. For example, on the one hand the intellectual people tried to understand different technological approaches from their rational perspective; on the other hand, 'semi-educated' and illiterate indigenous people were trying to understand all these approaches from their own perspective and were also fascinated by the same.

It has already been discussed in the second chapter that after coming to India, Carey was quite interested in the establishment of a printing press for several reasons, especially for preaching, but due to its high price, he was unable to buy a printing press, for a long time. Fortunately, Mr. Undy, the owner of indigo factory at Mudnabati where Carey worked as superintendent, gifted a wooden printing press to him. When in 1798 the wooden press came to Mudnabati, the villagers became as excited as Carey was. Yet, their reasons of excitement were different.

Carey's writing shows that he was happy to get the printing press. It seemed to him that one of his dreams came true, but villagers looked at printing press as a sacred thing that arrived in their village. They gave a new name to the printing press as 'Sahebder Thakur' which means the "idol of the Europeans".[22] In 1799, when the indigo factory at Mudnabati was closed, Carey moved to Khiderpore with his printing press. In the meanwhile Mr. Fountain, a printer, came from England and joined him.

[22] B. S. Kesavan, P. N. Venkatachari, Anima Das, B. K. Sen., *History of Printing and Publishing in India, A story of Cultural Re-awakening,* Vol. 1. National Book Trust, India, 1985, p. 190.

With his help when Carey was being able to print the first sheet of paper from his wooden printing press, the villagers of that place, as well as neighbouring areas came to see this. These villagers were fascinated with the printing press and expressed their fascination by composing a song on it. The translation of that song is given below,

"English Company is great

Books are published by the machine

When the machine starts its working

It affects the business of Gurumoshai's by reducing his earning,

Our goodness! English Company is great."[23]

Later on during 1820's, when Serampore Missionaries imported a twelve-horse power steam-engine for manufacturing paper, it surprised the people and made them curious. Common 'native' people crowded to see this steam-engine. They called it as "machine of fire" and started to respect it as a God.[24] On the contrary, the responses of the intellectuals were different. While depicting that, J. C. Marshman said, "gentlemen of scientific tastes, who had never had an opportunity of seeing a steam-engine, came to Serampore and studied its mechanism under the instructions of the engineer."[25]

The influence of Serampore Printing Press on the indigenous people did not end with this. Eventually, it increased and reached its zenith with the establishment of Serampore Mission Press in 1800. During those days people who came forward for conversion, used to think that the Serampore Mission would give them money and

[23] Promotha Nath Bishi, *Keri Saheber Munshi, Mitra & Ghosh Publishers*, Kolkata, 1959, p. 187.

[24] John Clark Marshman, *The Life and Time of Carey Marshman and Ward*, Vol.2, Longman Brown, Green, Longmans & Roberts, London, 1859, p. 224.

[25] *Ibid.*, p. 224.

shelter.[26] Lord Minto argued that majority of the converts, made by the Serampore Mission were "attracted by little gains and in their employment at Printing Press".[27]

As a result, many 'heathen' accepted Christianity to get jobs in Serampore Mission Press. Most of these converted 'natives' came from lower section of society such as 'Soore'[28], 'Dhobe', 'Carpenter', 'Kaibarta'[29], 'Jogge'[30], 'Tili'[31] and others, like beggars, especially Muslim beggar, but none of them came from respected families.[32] These people got employed in Serampore Mission Press in different positions depending on their capacities. For example, one of the converted Muslim was employed "as Persian compositor" in the Serampore Mission Press.[33] Certainly, it does not mean that all employees of the Serampore Mission Press were converted by the missionaries or only converted 'natives' got jobs in the Serampore Mission Press. While recruiting employees for the printing press, the Serampore Mission authority recruited many indigenous people of different religion and did not force them for conversion.

William Ward in one of his letter described the religious diversity of the employees who were working at the Serampore Mission Press. In December 1811, he wrote in a letter to his cousin that they recruited Hindus, Muslims as well as 'converted natives' for the printing press. These employees were given work according to their ability. Some employees were composing, others distributing or correcting the texts before printing. He also wrote that in the press "four persons

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[26] Kanti Prasanna Sen Gupta, *The Christian Missionaries in Bengal, 1793-1833*, Firma K. L. Mukhopadhy, Calcutta, 1971, p. 147.

[27] Cited in, Kanti Prasanna Sen Gupta, *The Christian Missionaries in Bengal, 1793-1833*, Firma K. L. Mukhopadhy, Calcutta, 1971, p. 148.

[28] A group of low caste people who were preparing and selling alcohol for their livelihood known as Soore.

[29] Fisherman.

[30] Lower caste people.

[31] A group of people depended on oil making for their livelihood.

[32] Kanti Prasanna Sen Gupta, *The Christian Missionaries in Bengal, 1793-1833*, Firma K. L. Mukhopadhy, Calcutta, 1971, p. 144.

[33] *Ibid*.

throwing off the sheets of the Bible in different languages; and on the left a dozen Musselmans employed in binding the scriptures for distribution".[34] Not only that, with the help of two indigenous people, Panchanan Karmakar and Monohar Karmakar, the Serampore Mission was able to make almost forty typefaces in different Indian vernaculars. The Serampore Missionaries did not force them to change their religion and become Christians.

The main intention of Serampore Baptist Missionaries to come to India was obviously converting the Indian 'heathens' into Christianity, but their aim got shaped by the existing situations. It might be possible that the Serampore Missionaries realised that if they forced every employee of the printing press for conversion, then their press would not be able to run long, as most of the Hindu and Muslim employees would quit. It could be said, the Serampore Missionaries tried to avoid confrontation by adopting the policy of not attempting forcible conversion.

Undoubtedly the newly prepared typefaces, made by Panchanan and Monohar Karmakar, helped the Serampore Mission to publish the Bible, the New and Old Testaments in different Indian languages; along with different other books in Bengali and in English. These books were covering a wide range of subjects. To make people aware of these books, published from the Mission Press, the Serampore Mission used to advertise the name of the books with their prices in several issues of *Friend of India*. Among them few popular books were, *Bengalee Grammar*, *Colloquies*, *Bengalee Dictionary*, *Rajavali*, *Hitopudesh*, *Selection from Esop's Fables*, *Juvenile Dialogues*, *Anecdotes of Virtue and Valour*, *Brief Survey of History*, *History of Bengal*, *The Ramayana*, *The Mahabharata*, *The Probodh Chandrika*, *The History of Raja Krishna Chandra Roy*, *Oriental Poem*, *Watt's Collection*, *Hymns For Infant Mind*, *Principles of Chemistry*.[35] During the first four decades of nineteenth century these books had great demand among the people. To fulfil this demand of books as well as of newspapers (Samachar-Darpan and Friend of India) the Serampore Mission authority came up with a solution; they gave advertisements in the *Friend of India* and

[34] Cited in, Fiona G. E. Ross, *The Printed Bengali Character and Its Evolution*, Shishu Sahitya Samsad, Kolkata, 2009, p. 49.

[35] *Friend of India*, 29th September, 1842.

in *Samachar-Darpan*, saying that if anyone wanted to buy or subscribe for these books and newspaper, then they should write to Serampore Mission and the mission authority would deliver it to the subscriber as soon as possible.[36]

Gradually, general readership in Bengal increased with the publication of *Samachar-Darpan* from Serampore Mission Press.[37] Initially most of the readers were either intellectuals or belonged to upper class families, but gradually common indigenous people also became interested in printed materials. Sukumar Sen argues that this common readership was mainly associated with Vaishnavite families, who lived in towns or moofussils of Bengal.[38] 1815 onwards, this increasing readership as well as the prosperity of Serampore Mission Press encouraged the establishment of local native presses in Kolkatta. For example, Baboo Ram was the first person who established a printing press, followed by Gunga Kishor, formerly employed at Serampore Press.[39] 1820 onwards few other newspapers as well as periodical came into existence. This development of printing presses, influenced by Serampore Mission, left an important impact on the intellectual milieu of Bengal.

Besides increasing the general readership, Serampore Mission also made people politically conscious through the columns of *Samachar-Darpan*. The newspaper used to publish different news on different contemporary political issues of that time which helped in the 'growth of political consciousness among the people despite their constant urging of Indians to be loyal to the British Rule'[40].

From the early years of establishment of Serampore Mission Press, these Serampore Missionaries had started to critique various vicious practices and superstitious beliefs among Hindus through pamphlets and later on through newspapers. For instance, they criticized the practices of sati, infanticide, human

[36] *Samachar-Darpan*, 27th June, 1818.

[37] Sukumar Sen, *Battalar Chapa o Chobi*, Ananda Publishers, Kolkata, 1984, p. 70.

[38] *Ibid*.

[39] Cited in, Fiona G. E. Ross, *The Printed Bengali Character and Its Evolution*, Shishu Sahitya Samsad, Kolkata, 2009, p. 49.

[40] E. Daniel Potts, *British Baptist Missionaries in India, 1793-1837*, The University Press, Cambridge, 1969, p. 213.

sacrifice and many others. Gradually, they also started to criticize the polytheistic beliefs among Hindus through several pamphlets and writings.

Stung by the publications of Serampore Mission 1820 onwards few indigenous intellectuals of Kolkata started to defend Hinduism through their writings, and later publication of newspapers. The process started with Rammohun Roy. He tried to defend Hinduism from the onslaught of the Christian missionaries of Serampore. Interestingly, while defending Hinduism he never supported all the vicious practices of Hinduism but what he did, was that he tried to show the monotheistic approaches of Hinduism through his writings, where he tried to incorporate the best of Christianity within the structure of Hinduism.[41] This started a series of attack and counter attack between him and Serampore Missionaries.

During 1819, Raja Rammohun Roy started a paper, *Sambad Kaumudi* with Bhowani Chandra Banerjee as editor. While criticizing the vicious practices of Hinduism, the paper also talked about the reformation of Hinduism from the beginning. Besides, the newspaper tried to organise agitation against the practice of sati but soon the publication of this newspaper was stopped and Bhowani Chandra Banneriee started a newspaper *Samachar-Chandrika* in 1821, to support Hinduism. Interestingly, this newspaper "defended the practices of sati and resolutely opposed all the social and religious reform measures advocated by Raja Rammohun Roy."[42] Eventually, this newspaper became critical to *Samachar-Durpan*. Whenever the *Samachar-Darpan* tried to critique Hinduism or any of its practices, *Samachar-Chandrika* tried to defend Hinduism with staunch voice. During the third decades of nineteenth century this rivalry was clearly seen in the columns of these two newspapers.

[41]E. Daniel Potts, *British Baptist Missionaries in India, 1793-1837*, The University Press, Cambridge, 1969, p. 207.

[42] J. Natarajan, *History of Indian Journalism , Part II of the report of the Press Commission*, Government of India Press, The Publications Division Ministry of Information and Broadcasting Government of India, New Delhi, 1955, p. 18.

New Agricultural Plans of Serampore Mission and Indigenous Responses:

Like in the case of other technical and scientific initiatives, the Serampore Mission got diverse response from indigenous people when Carey founded the Agricultural Horticultural Society in 1820. Soon after its foundation, the Society became a government organisation. Certainly, some indirect connections with Serampore Mission continued and William Carey and Marshman remained connected with this Society even after the East India Company took responsibility of the Society. Soon after its foundation Carey worked as a President of the Agricultural and Horticultural Society till 1824. Even after 1824, Carey took the chair as a President in few meetings of the Society. He also suggested some working methods for the Society, which was accepted by the other members and the Society acted accordingly. As the Society made its laws and norms of working procedures following the ideas of Carey, it could be said that an indirect link remained between the Agricultural and Horticultural Society and the Serampore Mission till the 1840's.

Carey's main intention behind the establishment of the Society was to improve indigenous agricultural system. To achieve this goal he wanted that the opulent 'native' gentlemen took active part in the formation of the Society, like European gentlemen. His intention to incorporate the 'native' gentlemen within the Agricultural and Horticultural Society was clearly depicted in the Society's prospectus, written by him. In the prospectus he said that,

> "It seems highly desirable therefore that a Society should be formed in India, for the encouragement of both Agriculture and Horticulture, under any name which may be agreed on by gentlemen who may engage in its formation. The Funds requisite for carrying on its operations might easily be furnished by each member's subscribing eight rupees quarterly, and any gentleman subscribing four hundred rupees might be a member for life. The business of the society might be conducted by President, two Vice-Presidents, and a committee to be chosen annually. Each member might pay on his admission a sum of not less than a gold mohur. It is peculiarly desirable that native

gentlemen should be eligible as members, but also as officer of the Society in precisely the same manner as Europeans."[43]

Later on 14th September 1820, after the foundation of the Society, a meeting was held at Town Hall in Kolkata, where the Society decided to accepted the membership of 'native' gentlemen and said "the gentlemen of every nation be eligible as members: and that all members, after the formation of the Society, be admitted by ballot of a majority of the members then present."[44]

Following these rules, the Agricultural and Horticultural Society accepted the membership of 'native' people and within few months of its foundation, the Society got good responses from the opulent indigenous people. Soon five opulent 'native' people of Bengal took membership of the Society and helped the Society financially. In 1828 the member list contained nine opulent Bengalis of nineteenth century Kolkata. They were Dwarkanath Tagore, Dyalchund Addi, Oomanundun Tagore, Kasheenath Mullik, Raja Bidyanath Raya, Prusunnukoomar Deb, Ubhuyachurun Baroojya, Shivachundra Das, and Ramkumal Sena.[45] During the initial period of its foundation another opulent 'native' Radhakanta Dev played an important role in the Society. For example, Babu Radhakanta Dev helped the Society by granting five hundred acres of land.[46] Besides, financial help, Radhakanta Dev also took active participation in the meetings of the Society and read several papers on agricultural issues of Bengal, on that occasion.

While making good connections with upper class natives, the Society did not segregate or leave out the common indigenous natives from their activity. The reason behind this consideration was that the Society realised that without the help of common indigenous people, especially native gardeners, their experiments in the

[43] *Transaction of the Agricultural and Horticultural Society of India*, Vol. 1, re-printed at Baptist mission Press, Calcutta, 1838, p. 220.

[44] *Ibid*., p. 221.

[45] List of Members to the Agricultural and Horticultural Society, 1 July, 1828. (Source: *Ibid*., pp. vii - viii.)

[46] *Transaction of the Agricultural and Horticultural Society of India*, Vol. 2, printed partly at the Hurkaru Press, Calcutta, and partly at The Serampore Press, 1836, p. 12.

agricultural and the horticultural sector would never become successful. When Carey was preparing the prospectus of the Agricultural and Horticultural Society, he realised the necessity of incorporating indigenous gardener in the activities of the Society and planned to give rewards to those gardeners who made some contribution in the development of cultivation. On 20th March, 1822 this plan was accepted by the members of the Society and they made certain categories and norms for rewarding the gardeners.[47] The Society got good responses from indigenous society in this matter.

On January 1st 1827, the Agricultural and Horticultural Society of India organised the first vegetable exhibition and also held a competition for it. Though earlier they rewarded few people but all of them were Europeans, in 1827 the Society rewarded five natives for the first time.[48] In the following years the Society was continuously organising such exhibitions and competitions very frequently. *Friend of India* and *Samachar-Durpan* covered these programmes and also published names of winning vegetables along with their owner and also described the rewards. Interestingly it could be found that the reward owners were mainly cultivating vegetables like potato, peas, cabbages and cauliflowers. Besides, the Society was distributing seeds, imported from outside of India, like English Flower Seeds, Guinea Grass Roots etc, among the gardeners in and around Kolkata. During 1835, *Friend of India*, in each of its issues published the advertisement of distribution of seeds, like cotton, tobacco by the Agricultural and Horticultural Society.[49]

Health Care and Response

While healing the indigenous people, Serampore Missionaries took many different steps. The Serampore missionaries started these practices much before the establishment of Serampore Mission. At that time John Thomas took the initiative to heal the 'heathens'. While reporting this incident to the Baptist Mission Society at

[47] *Transaction of the Agricultural and Horticultural Society of India*, Vol. 1, re-printed at Baptist mission Press, Calcutta, 1838, p. 226.

[48] *Ibid*., p.239.

[49] *Friend of India*, 4th October, 1838.

London, he wrote that many 'native' people came for healing and took medicines from Thomas.[50]

After 1818, when the Serampore Missionaries started to publish *Samachar-Durpan* and *Friend of India*, they used to publish news on different health related issues, to make people conscious. In this way, they not only tried to make indigenous people rational but at the same time also tried to disclose the deceitful practices of some people in the name of healing, to their readers. Unfortunately, they did not get much success in making people rational as most of the people in the society were illiterate. For these reasons they got responses from only certain section of society. Regret at these unsuccessful attempts was reflected in their own writing. For instance the Serampore Missionaries wrote that though they disclosed the deceitful practice of a person, who tried to pretend that he healed 'natives', yet they could not stop villagers form taking help from that dishonest Brahmin.[51]

Interestingly, the missionaries were getting good responses from the opulent natives for their philanthropic works. For example, while notifying the news of establishment of a Leper Hospital at Kolkata in 1820, *Samachar-Darpan* acknowledged the financial help of indigenous people on this project. The news reported that, Kali Sankar Ghosal, a 'native', donated five thousand rupees for this, but the news did not mention to what extent people took advantage of the hospital.

When the Serampore Hospital was established, the case was a bit different. After the establishment of Serampore Hospital in 1836 many native people once again helped them financially. The hospital reports show their names and amount of donation but at the same time the reports mentioned that indigenous people hardly used these facilities despite the availability of good health care in the hospital. While revealing the main reason behind this 'native' response, the authority said, "many of the sick are reluctant to avail themselves of its advantages, not only from the natural

[50] Carey to Society, Hooghly River, 10th January, 1799. (Source: Terry G. Carter (ed.) *The Journal and Selected Letters of William Carey*, Smyth and Helwys Publishing, USA, 2000, p. 189.)

[51] *Samachar-Darpan*, 25th December 1819.

feeling of dislike to leave their own home, and place themselves among strangers in their affliction, but still more from the prejudices and fear connected with the east".[52]

Instead of this prevailing situation, people came to the Serampore Hospital, from Serampore as well as from neighbouring area under British territory, for treatment. The reports mention that most people got cured, few were left sick. Those who were left sick, the hospital authority put them into the supervision of hospital doctors and proper diets along with check-up facilities were provided. Yet there were instance of these patients running away from the hospital.[53]

Despite all these information, the responses of rich and intellectual indigenous people were not clearly described by the missionaries or by the hospital authority. It could be noticed that the rich and opulent natives of Serampore, its surroundings and Kolkata, gave good amount of money to the hospital fund, but whether they took the treatment facility of the Serampore Hospital or not, is not clear from the missionary or hospital reports. Certainly the practice of donation given by opulent natives of Bengal was not new in nineteenth century Bengal. The donor list of 1st January, 1838 of Serampore Hospital, published in *Friend of India* in 7th February, 1838 shows that almost fifteen natives, among whom few were well known, like Dwarkanath Tagore, Baboo Raja Krishna Deb, donated good amount of money to this hospital. One year later, on 7th February, 1839 *Friend of India* published another modified list of donors, which covers the time period from January 1838 to January 1839. This list excluded few names of donors who were enlisted in the donor list of 1st January, 1838, at the same time this list mentions the name of the places, where the donor belonged to. This information reveals the fact that; most of the donors were from Hooghly and Serampore. This new list also shows the name of eight native who gave donation and interestingly they belonged to Hooghly, and not Kolkata.

The list of donators along with their donating amount in the hospital fund, published in 7th February, 1839 is given below,

[52] Report of Serampore Hospital, *Friend of India*, 7th February 1839, p. 87.

[53] Report of Serampore Hospital, *Ibid.*

Table No: 6

Contributions to the Serampore Native Hospital from January 1838, to January 1839.[54]

	Co.'s Rs	As.	P.
Mr. J. Baker ……...	…….. 10	00	
W. H. Belli, Esq. Hooghly, ……...	…….. 25	00	
Bissumber Dutto, ……...	……. 12	00	
H. Bonnevie, Esq, Rungpore ……..	……. 16	80	
Cossier, Esq, Hooghly, ……	…….. 10	00	
Mrs. Dent, ……	…….. 12	00	
Mr. Dunbar, ……	…….. 5	00	
F. E. Elberling, Esq ……	…….. 75	00	
Through Mr, Elberling ……	…….. 15	00	
A Friend through J. Marshman, Esq ……...	…….. 30	00	
A Friend through J. Marshman, Esq ……...	…….. 50	00	
N. J. Gantzer, ……	……... 12	00	
Mrs. Geisler, ……	…….. 100	00	
Gour Mohun Gossain ……...	…….. 50	00	
Government of Serampore, ……..	…….. 533	54	
Hurronath Chatterjee, Hooghly …….	…….. 2	00	
Joykrishno Mukhopadya, Hooghly …….	…….. 5	00	
Ishenchunder Bundopadya, Hooghly, ……	…….. 1	00	
Juggomohun Dutt, ……	…….. 12	00	
Judmatt Sing, ……...	…….. 3	04	
Mrs. Dr. Marshman, ……...	…….. 100	00	
Modoo Sudden Shah ……...	…….. 4	00	

[54] Report of Serampore Hospital, *Friend of India*, 7th February 1839, p. 87.

C. Ochterlony, Esq., Hooghly, ……	……..	16	00
Pran Kisto Roy, ……..	……..	43	00
Rev. Mr. Pickance ……..	……..	10	00
Radhamadub Dutto ……..	……..	3	00
The Hon. Col. J. Rebling …….	……..	31	14
E. Samuells, Esq., Hooghly, …….	……..	32	00
Serampore Ladies Benevolent Society …….	……..	300	00
Seblluk Sepoy ……	……..	5	69
Sebik Khodabux ……	……..	8	06
W. Stopford, Esq, ……	……..	18	00
Mr. G. Surita, ……	……..	12	00
Suamasundery Deby ……	……..	24	00
Mrs. Turner, ……	……...	8	00
	……..		
	Total	1594	85

From this table it appears that, eventually ‘natives’ were getting interested in the works of the hospital and donated a certain amount of money according to their ability. Interestingly, in 1836, at the very beginning of the hospital one man, named, Babu Raghuram Goswami lent his house to the hospital for the use of two years.[55]

Certainly it could be said, that the responses of indigenous society towards the healing practice of Serampore Mission was mixed, as these people on the one hand donated good amounts of money to the fund of the Serampore Hospital, but on the other they were not much interested in using that facility to cure themselves.

[55] Samachar-Darpan, 5th May, 1836.

Conclusion:

Lack of homogeneity orders in the indigenous responses could be clearly seen while tracing indigenous responses. They were continuously changing with the changing approaches of Serampore Missionaries. The main reason behind this changing nature of indigenous responses was the clash between different approaches of Serampore Missionaries with indigenous religious ethics prevailing in Indian society during that time. The social background of the indigenous people affected their responses. All these factors moulded responses of 'natives' in such way that these responses changed according to the situation, connected with the approach of the missionaries and the needs of the indigenous people. Consequently, different approaches of Serampore Mission in different field made the nature of indigenous responses either confrontational or negotiable. Also, these responses were further modifying the approaches of the missionaries.

While introducing science education at schools and Serampore College through vernacular medium, the intention of the Serampore Missionaries was to make pupils rational so they could questions their own religion. At the same time they tried to introduce the Bible in schools, but it left negative impacts on the indigenous people. Though the indigenous people were becoming interested in western science education they opposed the Serampore Mission's attempt at giving lessons of the Bible in Native Schools, which were working under the supervision of this mission. To solve this problem Serampore Missionaries introduced some indigenous subjects in those Native Schools and postponed their plans of introducing lessons from Bible. Later on, while preparing the curriculum of Serampore College the missionaries prepared two different curriculums for two different groups of pupils. One was for European students and another for indigenous students.

Interestingly, indigenous people irrespective of caste and creed had almost the same kinds of responses towards the Serampore Missionaries' approach of promoting science education in schools. They accepted the western science education but rejected Christianity. Certainly the indigenous responses towards the technological approach of Serampore Mission were different. Unlike the science education, in

technological field, responses of these people varied according to the social status of indigenous society.

Two kinds of responses could be found while tracing the indigenous responses on the technological approaches of Serampore Mission. Among these responses, one came from the illiterate or semi-literate people of the society, who tried to understand these technological developments, especially the coming of printing press, its working process and its development from their religious perspective or through traditional knowledge system or how these technological developments affected their daily life. These perspectives led them to imagine the printing machine or the steam-engine as a deity. Therefore, out of respect they prepared songs on these machines.

For various reasons, it is hard to trace responses of these illiterate and semi-literate people towards the Agricultural and Horticultural Society and Serampore Hospital, established by the Serampore mission. Firstly, though the Agricultural and Horticultural Society organised some vegetables exhibitions and distributed seeds of different vegetable plants and flowers among the native gardeners, yet whoever participated in these exhibitions or received seeds from the Society all of them lived in or around Kolkata. Therefore, a large part of indigenous cultivators or gardeners remained outside the scope of activities of the Society. Secondly, in the case of health care, the responses of the illiterate and semi literate indigenous people were influenced by the existing beliefs of the contemporary society. These beliefs stopped them from taking treatments provided by Serampore Hospital. This was noted in Serampore Hospital's report. Despite these reactions, the missionaries tried to give proper treatment to ill indigenous people. Interestingly, at the beginning of the mission, when John Thomas distributed western medicine to heal the indigenous people, they took those medicines. After thirty six years of that event when Serampore hospital was established to heal the indigenous people, their responses were clearly noticeable. The hospital report shows the number of patient in the outdoor to be much better than the numbers of indoor patients. While discussing reasons behind that, hospital authorities said, the dislike of indigenous patients to leave their home during their illness and came to the hospital and their fear which was connected with east.

On the other hand, responses and understanding of intellectuals, regarding the printing press and use of steam engine technology were much more logical and reasonable than the common indigenous people. There keenness towards science and new technology drove them to Serampore to see the functioning of the steam-engine. Even when the Agricultural and Horticultural Society or Serampore Hospital was established by the Serampore Mission with the help of ruling governments and the educated and opulent indigenous people donated good amount of money to these organisations fund and attended several meetings of the society.

Eventually, the newly established printing press and printing material had not only influenced these educated and intellectual people, but also increased the general readership of Bengal. Also, affected by the criticism of Hinduism by Serampore Missionaries, intellectuals and educated opulent 'natives' of Bengal started to establish their own printing press and published vernacular newspapers in Kolkata to defend Hinduism from the criticism of Serampore Missionaries.

These two kinds of indigenous responses determined the further activities of Serampore Mission. For example, on the one hand few 'lower class' indigenous people converted into Christianity for getting a job or money from the missionaries but the missionaries were not forcing any employee of their printing press to become Christian. There was no Serampore Mission document that shows that these missionaries only gave jobs to the native Christians. They gave jobs to the indigenous people beyond their caste and creeds. So it could be found that the press employees belonged to different religious communities. They did so, as they could understand that without the help of indigenous labour the printing technology could not flourish. It is possible that the Serampore Missionaries understood that if they forced the employees to become Christians they could face scarcity of labour in the printing press.

On the other hand, the enthusiastic nature of indigenous opulent natives encouraged the Serampore Missionaries to make plans involving them. For example, to attract the opulent and educated people while notifying them about the activities of the Serampore Mission, these missionaries exhibited their newly imported machines to them, organised science lectures free of cost, etc. While preparing the prospectus of

the Agriculture and Horticultural Society, Carey supported the more for giving membership to the opulent 'natives' as he realised that without their financial support, the Society could not run for long. Carey also hoped that lands of these 'native' would become the experiment ground of the Society. In most of the cases, Serampore Missionaries were cooperative to these educated people but while criticizing Hinduism, the missionaries did not change their perspective to please these opulent native. Later on this issue become a major point of conflict, between the indigenous intellectuals and Serampore Missionaries.

In a nutshell, it could be said that the responses of indigenous society towards activities of Serampore Mission and its missionaries were not homogeneous. Sometimes these responses were negotiable, sometimes they were confrontational. Responses changed and got shaped according to different situations, social status of indigenous people, and most importantly how the Serampore Missionaries' approaches were affecting individual life, especially their religious beliefs. Perhaps, these responses of indigenous society determined the further action of the Serampore Mission, which sometimes made their action flexible while promoting science education or technology in the first half of nineteenth century.

While doing my research on 'The Role of Serampore Mission in the Promotion of Science and Technology in the first half of nineteenth century Bengal', I could find that the Serampore Mission and its Missionaries adopted different methods while introducing science education in school and college levels. They promoted science education by translating western scientific articles into the indigenous language, especially in Bengali and published them for students. While doing so, they chose subjects like, Geography and Astronomy (Jotish) for schools and Geography, Astronomy, Chemistry, Botany and Zoology for the college curriculum. Initially they started to promote science education in schools, so they adopted such methods that would help them to teach a large group of pupils. Therefore they prepared compendiums to elaborate science and other subjects easily to students. They prepared *Scientific Copy Book* and published *Dig-Durshuna*, a science magazine for the youth to make them aware of general knowledge and other science subjects. Eventually the popularity of the *Dig-Durshuna* expanded beyond the premises of schools and got popularity among the educated people of Kolkata. Through this book they tried to inform people about different scientific activities, discoveries of the west, and geographical locations of different places with a description of their inhabitants, their lifestyle, etc.

Certainly, the Mission authority did not prepare the same curriculum for all schools. The reasons behind that were, they had to meet local demands and faced the problems associated with the lack of required number of teachers to teach science subjects. Scarcity of teachers prevented the Serampore Mission authority from introducing the lessons of *Dig-Durshuna* at every native school. During 1830's David Scott, a Serampore Missionary, established a school for Garo boys at Singimari in north-east India. That time when he was preparing the curriculum for this school he gave importance to local need. There Scott tried to give general lessons along with the training of agriculture and animal husbandry project to Garo boys to help them to settle in a particular place. Indeed behind all these activities Scott's intention was to bring them within the folds of Christianity. It is also noticeable that the Serampore Mission prepared the same curriculum for the girls' schools which had already prepared for the boys' schools.

While introducing science education at the Serampore College, the Serampore Mission and its Missionaries adopted different methods. At the time they established the Serampore College, they simultaneously built a museum where Carey used to preserve samples of different rocks, small dead animals and other creatures which helped pupils to understand their lessons of Zoology and Geography. In 1821, John Mack came from England and joined the Serampore College as a Chemistry professor. With his cordial help the Serampore Mission authority established a laboratory for practical lessons of Chemistry. The botanical garden of the Serampore Mission and Carey's keen interest in Botany and Zoology also helped pupils to understand the lessons of Botany and Zoology. Beside these, the keenness of other Serampore Missionaries towards science also helped the Serampore Mission to promote science education both in schools and college. For instance, Felix Carey and John Mack translated some science books from English to Bengali. These books had great demand during that time. Along with all these activities the Serampore Missionaries also conducted lectures in Chemistry, which were delivered by John Mack. These lectured attracted many British Officers as well as intellectual 'natives' of Serampore and its neighbouring area. Even many people came from Kolkata to attend them. These lectures had left an imprint on the audience and they started to discuss the things which they had heard and seen at the time of lectures.

Though Serampore Mission and Missionaries promoted western science education, they did not neglect or delegitimized the eastern knowledge system or eastern science completely. They incorporated 'Jotish' within their school curriculum. In 1818, they established a college in Serampore. At that time they gave an advertisement in *Samachar-Durpan* while notifying that, their college would provide best lessons of Astronomy, which was taught by the best 'native' teacher. Another noticeable thing was that following the Serampore Mission's activities other Christian missions also started to spread science education among the indigenous people. Still there were some difference between them and Serampore Mission. While educating indigenous people most of the Christian missionaries chose English as medium of instruction, whereas the Serampore Mission did the entire process of educating indigenous people through the vernacular medium.

When the Serampore Missionaries started to introduce new technology, their aim was to reach their goal of proselytizing heathen and make them rational. From the

beginning Serampore Missionaries wanted to establish a printing press to publish the Bible, New and Old Testaments in various Indian languages so that the 'heathens' could understand the words of God by themselves. After the establishment of the Serampore Mission Press, they tried to fulfil their aim by publishing the Bible and Testaments in several Indian languages. Their intention of publishing Bible and Testaments in different languages also helped in preparing typefaces in different Indian languages with the help of 'native' blacksmiths. Apart from publishing the Bible and Testament in several Indian languages they also published several other books on different subjects including science, newspapers, magazine which helped them to promote science education and knowledge in schools, college as well as in the certain section of indigenous society.

The development of printing technology opened up new ways of interaction between the eastern and western technologies. While introducing western technologies the Serampore Missionaries took the help of eastern skills. For example when Serampore Mission Press was established they recruited indigenous labours for different posts associated with printing press. Even for the development of printing technology the Mission made their rule flexible and made negotiation with indigenous society by not forcing their printing press' employees for conversion.

The evolution of printing technology by Serampore Mission also left huge impact on the Bengal society. With the publication of *Samachar-Darpan* the number of readership of books, newspapers or magazine in Bengal increased. This development also helped in the establishment of some new 'native' printing presses in Kolkata which ultimately helped in bringing out the native reactions and placed them before a large group of people. In 1820 they imported a steam engine for Mission's paper mill. They exhibited that steam engine for the public and people from different section of society came to Serampore from neighbouring area to see its functions.

In other technological fields, like providing health care to indigenous people and experimenting with Indian agriculture, the Serampore Mission's approach was a bit different from their approaches in the printing field. In the field of agriculture and horticulture the Serampore Missionaries wanted the help of indigenous society. Therefore they established Agriculture and Horticultural Society of India and incorporated indigenous opulent natives in it. They also encouraged local gardeners to

experiment with new imported seeds. These seeds were distributed to them by the Society. Besides all these activities the Serampore Mission also tried to make people conscious on different health related issue and also the deceitful practices of quack doctors through their newspapers.

While tracing the nature indigenous responses to the Serampore Mission's promoting science education and technology, it was seen that the response was changed according to different situations. These responses were sometimes confrontational and at other time negotiable in nature. For example, if the missionaries' approaches hurt the religious sentiment of indigenous people then it created a ground of conflict between Christianity and Hinduism and made these indigenous responses confrontational. On the contrary when they tried to introduce new printing technology by establishing printing press which did not affect the religious sentiment of indigenous people directly that time indigenous responses were negotiable and accepting toward the approaches of Serampore Missionaries. Also within this pattern of responses another structure could be found related to different social status, literacy levels and different levels of understanding of the indigenous people.

While solving the research questions of this dissertation certain questions arose in the course of discussions. These questions need to be solved through further research. First, different reactions of illiterate or semi-literate people towards the different approaches of Serampore Mission need to trace intensively. In this research I tried to proceed to a certain extent. Yet some lacunae have remained because of the scarcity of the sources. Second, in 1838, the *Friend of India* published the list of donors who gave donation to the hospital fund; among them some donors were indigenous and opulent natives of Serampore and its neighbouring areas. Beside, the Serampore Hospital's reports also depict that indigenous people did not like to come to the hospital for treatment during their illness. Now the problem is, if both incidents were true then why these indigenous people tried to help Serampore Hospital financially or what was their intention behind that. Third, if indigenous people did not like to come to the hospital, then who were those patients who came to the hospital for treatment? Fourth, it is clear from the activities of Serampore Missionaries that sometime they tried to incorporate indigenous subjects within their curriculums but question is why they did so. Weather it happened just because of the missionaries who

wanted to make some negotiation with the indigenous society by giving acknowledgement to indigenous knowledge system, or there were some other reasons behind that. Last but not least, it was already known that in 1818 the Serampore Missionaries published the magazine for youths, *Dig-Durshuna*. The question arises how could Serampore Mission authority use the same book in their native schools before 1818? At the same time when the first native report depicts that in 1816 onwards *Dig-Durshuna* was used by the native schools.

Finally, I would like to conclude by discussing that during the first half of nineteenth century, Serampore Mission took various methods to promote science education in school and college. They started their work of promoting science education with incorporating science subjects in schools' and college's curriculum. They started to translate western scientific books and articles into Bengali, used printing technology to print them for school and college pupils as well as for the educated people. Besides, they imported a steam-engine from England for paper making and also exhibited that. People of Serampore and its neighbouring area came to Serampore mission premises to see the steam engine. Along with these activities, they organised science lectures at Serampore College and opened them to all. All these activities of Serampore Mission attracted many people from neighbouring area of Serampore and Kolkata. All these activities of Serampore Missionaries made Serampore as a scientific hub during the first half of nineteenth century. Certainly the establishment of Serampore press and its printing activities made Serampore a familiar name to people.

Along with promoting science education and making Serampore as a scientific hub, the Serampore Missionaries used different technologies in their daily life. Even they tried to implement different technologies in daily life of indigenous people by establishing Agricultural and Horticultural Society of India for the development of Indian Agriculture and Serampore Hospital to provide medical facility to the people of suburb. Besides, they took the help of printing press and published many news and articles related to health and agriculture to make people aware of these.

When these Serampore Missionaries started to convince indigenous people about western medicine, they took the reference from eastern medical knowledge and indigenous medical books. In spite of this the Missionaries were also trying to make

people aware of deceitful practice of indigenous doctors, which at the same time decreased the popularity of indigenous healing practices. Certainly while implementing technologies in the field of agriculture and horticulture, they made certain development in this field. For example with the help of 'Calcutta Botanical Garden' and its head William Roxburgh, another botanist Nataniel Wallich, Carey was able to edit two volumes of *Flora Indica*; or *Description of Indian Plants* and printed them from Serampore Mission Press. This book enlisted the large variety of Indian plants.

The Serampore Missionaries' approaches towards the indigenous society and knowledge system had evolved over time. On one hand, sometime they tried to negotiate with eastern knowledge system for their own convenience, on the other they at time made certain confrontation with this knowledge system and delegitimized them.

These oscillating approaches of Serampore Missionaries had its reflection on the nature of responses or reaction of indigenous people towards these changes. Sometime the responses of indigenous people were negotiable with Missionaries' approaches. At other times the indigenous people refused to accept the Missionaries' approaches and confronted them. The main reason behind the shift of indigenous responses was religion. At times Serampore Mission or its Missionaries approaches were flexible with the indigenous religion and did not hurt the religious sentiment of indigenous people, at that point the indigenous people tried to negotiate with the Missionaries' approaches, otherwise confronted them.

Interestingly it is wrong to generalise them just from the perspectives of confrontation or negotiation while tracing reactions of indigenous people, because within the fold of indigenous responses a variety of responses have existed and they are heterogeneous in nature. These responses were changing with social status, understanding level of indigenous people and with their financial condition. For example, when printing press arrived at Mudnabati and when for the first time Serampore Mission purchase steam engine, illiterate and semi-literate people were wonder-struck by them and imagined them as their deities. Whereas literate people were trying to understand these technologies introduced by Serampore Mission, from their rational perspectives. Certainly with these changes of indigenous reactions,

sometime Serampore Mission and its Missionaries modified and re-structured their further approaches to indigenous society.

So it could be said that during first half of nineteenth century whatever the Serampore Mission and its Missionaries had done for promotion of science education and technology, was really admirable. They had certain limitations. In spite of that whatever the Serampore Mission and its Missionaries had done that touched different realms of indigenous society and helped to make people think rationally.

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Name of various Schools under the Superintendence of the Serampore Mission, with the Date of their being opened. (this table published as an Appendix with the First Report of The Institution for the Encouragement of Native Schools in India with a list of subscribes and benefactors, published by The Mission Press, Serampore, in the year of 1817.)										
Year	Month of	location of School	Numerical Numbers are indicating the number of students under different courses.							
			Average number of Students	Dig-Durshuna Letters and Astronomical Compendium	Dig-Durshuna & Copying Letters	Only Letters	Only Dig- Durshuna	Spelling Lessons	Table	Inferior Lessons & Elementary tables
1816	Not known	Vullubh – Poora	45	6	7	*	*	*	9	Rest of the students
1816	July	Nabob – Gunj	90	6	11	*	18	Rest of the students	*	*
1816	August	Ruhura	9	8	*	*	10	Rest of the students	*	*
1816	September	Kam – Deva – Poora	*	*	*	*	29 (engaged in writing this)	*	*	Rest of the students
1816	September	Mahesha	70	*	4	9	6(already completed) 8(engaged in writing this)	Rest of the students	*	*
1816	October	Ichcha – Poora	60	*	*	*	22(engage in written to lessons) 5(written the lower lessons)	Rest of the students	*	*
1816	October	Chin-amora	47	*	*	*	4(advance lesson of Dig- Durshuna) 3 (inferior lesson of Dig- Durshuna)	Rest of the Students	*	*
1816	October	Bukksha	50	*	*	*	8 (completed it) 3(written the inferior lesson of it)	Rest of the Students	*	*
1816	October	Nuvu – Grama	120	*	22	*	11	Rest of the Students	*	*

Year	Month	Location of School	Numerical Numbers are indicating the number of students under different courses.							
			Average number of Students	Dig-Durshuna Letters and Astronomical Compendium	Dig-Durshuna & Copying Letters	Only Letters	Only Dig- Durshuna	Spelling Lessons	Table	Inferior Lessons & Elementary tables
1816	November	Sookka – Chura	53	*	20	*	7(employed on the Dig-Durshuna)	Rest of the Students	*	*
1816	Novemer	Kaoogahee	70	*	*	8	8 completed the lesson of Dig-Durshuna. 13 students still engage in this.	*	*	*
1817	November	Noa- Para	46	*	7	*	5 (employed on the Dig-Durshuna. Highest lesson 22 lowest lesson 12.)	Rest of the Students	*	*
1816	December	Bighetee	45	*	6	*	10(employed on the Dig-Durshuna, Highest lesson 47;lowest lesson 11)	Rest of the Students	*	*
1816	December	Khurusurai	92	*	*	*	6(advanced to lesson 22.)	Rest of the students	*	*
1816	December	Bali	94	*	24	*	23	Rest of the students	*	*
1817	January	Khurudu	96	*	36	*	2 (advanced to the lesson 47.)	Rest of the students.	*	*
1817	February	Kona – Nugura	65	*	*	*	12 (they were writing Dig-Durshuna; highest at lesson 20, lowest at lesson 5)	Rest of the students	*	*
1817	February	Bura	49	*	*	*	13(written the Dig-Durshuna to lesson 10	6 (employed in spelling words of four syllables)	Rest of the students occupied with	*

									first elementary table.	
Year	Month	Location of School	Numerical Numbers are indicating the number of students under different courses.							
			Average number of Students	Dig-Durshuna Letters and Astronomical Compendium	Dig-Durshuna & Copying Letters	Only Letters	Only Dig- Durshuna	Spelling Lessons	Table	Inferior Lessons & Elementary tables
1817	February	Vegum-Poora	37	*	*	*	*	5 students have completed spelling lessons. 10 students advanced to words of four syllables Remainder has begun the spelling.	*	*
1817	March	Nihatee	36	*	*	*	6 (have written the Dig-Durshuna to lesson 35.	10 (are spelling words of four syllables)	Rest of the Students.	*
1817	March	Anunda – Nugura	60	*	*	*	8 (advanced to the lesson 20)	12 are in the spelling lessons of four syllables. 8 in the spelling lessons of three syllables.	*	Rest of the Students.
1817	March	Kulac-hura	65	*	*	*	9 (advanced in the Dig-Durshuna to lesson 20.)	16 in the spelling lessons of three syllables.	*	Rest of the students.
1817	March	Gungadhura – Poora	45	*	*	*	*	6 employed in the spelling lessons of three syllables.	*	Rest of the students.

								15 in the spelling lessons of two syllables.		
Year	Month	location of School	Numerical Numbers are indicating the number of students under different courses.							
			Average number of Students	Dig-Durshuna Letters and Astronomical Compendium	Dig-Durshuna & Copying Letters	Only Letters	Only Dig- Durshuna	Spelling Lessons	Table	Inferior Lessons & Elementary tables
1817	March	Agura – Para	47	*	*	*	*	16 in the spelling lesson of two syllables.	Rest of the students.	*
1817	March	Domu-jooree	*	*	*	*	*	13 engaged in spelling lessons of three syllables.	Rest of the students occupied with elementary tables.	*
1817	April	Shiva – Poora	68	*	*	7	*	8 on the spelling lessons of five syllables. 20 ditto on those of four syllables.	Rest of the students occupied with elementary tables.	*
1817	April	Nata – Guree	60	*	*	*	*	11 engaged in the spelling lessons of three syllables. 7 in those of two syllables.	Rest of the students engaged with first tables.	*
1817	April	Shiakhala	90	*	16	*	3	*	*	Rest of the students.
1817	April	Govinda - Poora	32	*	*	*	*	12 occupied in the spelling lessons of four syllables.	Rest of the students engaged with first tables.	*

								5 in those of three syllables		
Year	Month	Location of School	Numerical Numbers are indicating the number of students under different courses.							
			Average number of Students	Dig-Durshuna Letters and Astronomical Compendium	Dig-Durshuna & Copying Letters	Only Letters	Only Dig- Durshuna	Spelling Lessons	Table	Inferior Lessons & Elementary tables
1817	April	Pandura	31	*	3	*	9	*	*	Rest of the students.
1817	April	Bulurama – Poora	65	*	*	*	8	10 engaged with spelling lessons of four syllables. 9 in those of three syllables.	Rest of the students.	*
1817	May	Nusiba – Poora	60	*	*	*	*	6 advanced the spelling lessons of three syllables. 8 to those of two syllables. Rest of the students are in Banan and Phalas.	*	*
1817	May	Nimite	42	*	*	*	*	8 occupied in the spelling lessons of two syllables. Rest of the students are in Banan and Phalas.	*	*

Year	Month	Location of School	Numerical Numbers are indicating the number of students under different courses.							
			Average number of Students	Dig-Durshuna Letters And Astronomical Compendium	Dig-Durshuna & Copying Letters	Only Letters	Only Dig- Durshuna	Spelling Lessons	Table	Inferior Lessons & Elementary tables
1817	May	Somu – Nugura	60	*	*	*	*	10 advanced to the spelling lessons of four syllables. 21 to those of three syllables Rest of the students are in Banan and Phalas.	*	*
1817	May	Mudhoo – Vatee	57	*	*	*	*	9 engaged in the spelling lessons of three syllables. 6 on those two syllables.	Rest of the students occupied with elementary tables.	*
1817	May	Jhapuru-Duh	*	*	*	*	12	20 occupied in the spelling lessons of five syllables.	Rest of the students occupied with elementary tables.	*
1817	May	Kikala	95	*	*	*	*	45 (engaged in the spelling lessons of two syllables.)	Rest of the students occupied with elementary tables.	*
1817	May	Gopala – Nugura	43	*	*	*	*	30 occupied in spelling lessons of two syllables.	*	*

								Remainder in Banan and Phulas.		
Year	Month	Location of School	Numerical Numbers are indicating the number of students under different courses.							
			Average number of Students	Dig-Durshuna Letters and Astronomical Compendium	Dig-Durshuna & Copying Letters	Only Letters	Only Dig- Durshuna	Spelling Lessons	Table	Inferior Lessons & Elementary tables
1817	May	Vera – Varee	70	*	*	*	*	42 engaged in the spelling lessons of two syllables.	Rest of the students occupied with elementary tables.	*
1817	May	Vuna - Hoogli	45	*	*	*	*	10 to those of two syllables. 21 advanced to the spelling lessons of three syllables	*	Rest of the students.
1817	June	Mushat	*	*	*	*	*	24 to those of two syllables. The remainder in the Banan and Phulas	*	*
1817	June	Krishna – Rama – Poora	65	*	*	*	*	37 on the spelling lesson of two syllables.	*	Rest of the students
1817	June	Patoola	65	*	*	*	*	17 on the spelling lesson of three syllables.	*	*

								Remainder on the Banan and Phalas.		
Year	Month	Location of School	Numerical Numbers are indicating the number of students under different courses.							
			Average number of Students	Dig-Durshuna Letters and Astronomical Compendium	Dig-Durshuna & Copying Letters	Only Letters	Only Dig- Durshuna	Spelling Lessons	Table	Inferior Lessons & Elementary tables
1817	June	Vundi – Poora	100	*	*	*	*	31 on the spelling lesson of three syllables. 18 to those of two syllables Remainder in Banan and Phulas.	*	*
1718	June	Kamar – Koonda	65	*	*	*	*	28 on the spelling lesson of two syllables. Remainder on the Banan and Phulas.	*	*
1817	June	Meliya	52	*	*	*	*	17 on the spelling lesson of two syllables. Remainder on the Banan and Phulas.	*	*
1817	June	Pulutagere	45	*	*	*	*	17 on the spelling lessons of two syllables.	*	*

								Remainder on the Banan and Phulas.		
Year	Month	Location of School	Numerical Numbers are indicating the number of students under different courses.							
			Average number of Students	Dig-Durshuna Letters and Astronomical Compendium	Dig-Durshuna & Copying Letters	Only Letters	Only Dig- Durshuna	Spelling Lessons	Table	Inferior Lessons & Elementary tables
1817	June	Jugut – Nugura	60	*	*	*	*	20 on the spelling lessons of two syllables. Remainder on the Banan and Phulas.	*	*
1817	June	Dhana – Hana	60	*	*	*	*	33 engaged with the spelling of two syllables. Remainder on the Banan and Phulas.	*	*
1817	June	Gopala – Poora	110	*	*	*	*	43 engaged with the spelling lessons of two syllables. Remainder with the Banan and Phulas.	*	*
1817	June	Dukshena – Dee	50	*	*	*	*	20 occupied with the spelling lesson of two syllables. Remainder with the Banan and Phulas.	*	*

Year	Month	Location of School	Numerical Numbers are indicating the number of students under different courses.							
			Average number of Students	Dig-Durshuna Letters and Astronomical Compendium	Dig-Durshuna & Copying Letters	Only Letters	Only Dig- Durshuna	Spelling Lessons	Table	Inferior Lessons & Elementary tables
1817	July	Rugoonatha – Poora	50	*	*	*	*	29 occupied with the spelling lesson of two syllables. Remainder with the Banan and Phulas.	*	*
1817	July	Vashain-a-para	47	*	*	*	*	22 occupied with the spelling lesson of two syllables. Remainder with the Banan and Phulas.	*	*
1817	July	Sara	95	*	*	*	*	30 advanced to the spelling lessons of four syllables. 10 to those of three syllables. Remainder on the Banan and Phulas.	*	*
1817	July	Phoora – Phoora	*	*	*	*	*	30 on spelling lessons of two syllables. Remainder on the Banan and	*	*

								Phulas		
Year	Month	Location of School	Numerical Numbers are indicating the number of students under different courses.							
			Average number of Students	Dig-Durshuna Letters and Astronomical Compendium	Dig-Durshuna & Copying Letters	Only Letters	Only Dig- Durshuna	Spelling Lessons	Table	Inferior Lessons & Elementary tables
1817	Julu	Vuna – Nopara	*	*	*	*	*	26 occupied on the spelling lessons of two syllables. Remainder on the Banan and Phulas.	*	*
1817	July	Mandura	62	*	*	*	*	35 on the spelling lessons of two syllables.	Rest of the students are on first tables.	*
1817	August	Datora	90	*	*	*	*	35 on the spelling lessons of two syllables. Remainder on the Banan and Phulas.	*	*
1817	August	Adum – Poora	*	*	*	*	*	15 on the spelling lessons of two syllables. Remainder on the Banan and Phulas.	*	*

Year	Month	Location of School	Numerical Numbers are indicating the number of students under different courses.							
			Average number of Students	Dig-Durshuna Letters and Astronomical Compendium	Dig-Durshuna & Copying Letters	Only Letters	Only Dig- Durshuna	Spelling Lessons	Table	Inferior Lessons & Elementary Tables
1817	August	Prisada – Poora	52	*	*	*	*	10 on the spelling lessons of three syllables 15 on those of two syllables. The remainders on the Banan and Phulas.	*	*
1817	August	Gopinatha – Poora	85	*	*	*	*	35 on the spelling lessons of two syllables. Remainder on the Banan and Phulas.	*	*
1817	August	Bamuna – Ari	30	*	*	*	*	8 advanced to the spelling lessons of three syllables. 10 to those of two syllables.	Rest of the students are on the first tables.	*
1817	August	Singoora	60	*	*	*	*	38 on the spelling lessons of two syllables. The rest on the Banan and Phulas.	*	*

Year	Month	Location of School	Numerical Numbers are indicating the number of students under different courses.							
			Average number of Students	Dig-Durshuna Letters and Astronomical Compendium	Dig-Durshuna & Copying Letters	Only Letters	Only Dig- Durshuna	Spelling Lessons	Table	Inferior Lessons & Elementary tables
1817	August	Yaduva – Vatee	120	*	*	*	*	48 engaged in the spelling lessons of two syllables. The rest on the Banan and Phulas.	*	*
1817	August	Mundu-lika	80	*	*	*	*	12 on the spelling lessons of two syllables. The rest on the Banan and Phulas.	*	*
1817	September	Tura – Jugut – Nugura	58	*	*	*	*	25 employed on the spelling lessons of two syllables. The rest on the Banan and Phulas.	*	*
1817	September	Krishna – Nugura	50	*	*	*	*	25 on the spelling lesson of two syllables. The rest on the Banan and Phulas.	*	*

Year	Month	Location of School	Numerical Numbers are indicating the number of students under different courses.							
			Average number of Students	Dig-Durshuna Letters and Astronomical Compendium	Dig-Durshuna & Copying Letters	Only Letters	Only Dig- Durshuna	Spelling Lessons	Table	Inferior Lessons & Elementary tables
1817	September	Kakoo-riya	45	*	*	*	*	No lad advanced beyond the Banan and Phulas.	*	*
1817	September	At – Poora	50	*	*	*	*	20 employed on the spelling lessons of two syllables. The rest on the Banan and Phulas.	*	*
1817	September	Jhikira	75	*	*	*	*	42 engaged in spelling lessons of two syllables. The rest on the Banan and Phulas.	*	*
1817	September	Brahmuna - Para	*	*	*	*	*	27 employed on the spelling lessons of two syllables. The rest on the Banan and Phulas.	*	*

Year	Month	Location of School	Numerical Numbers are indicating the number of students under different courses.							
			Average number of Students	Dig-Durshuna Letters and Astronomical Compendium	Dig-Durshuna & Copying Letters	Only Letters	Only Dig- Durshuna	Spelling Lessons	Table	Inferior Lessons & Elementary tables
1817	September	Juya – Nugura	71	*	*	*	*	None advanced beyond the spelling lessons.	*	*
1817	September	Para – Abo	130	*	*	*	*	38 advanced to the spelling lessons of two syllables. The rest on the Banan and Phulas.	*	*
1817	September	Shyama – poora	*	*	*	*	*	20 written lessons of two syllables. The rest on the Banan and Phulas.	*	*
1817	September	Koolakasha	45	*	*	*	*	No one advanced beyond the Banan and Phulas.	*	*
1817	September	Juya – Krishna - Poora	30	*	*	*	*	3 writing the Banan and Phulas.	Rest of the students employed on the first table.	*

Year	Month	Location of School	Numerical Numbers are indicating the number of students under different courses.							
			Average number of Students	Dig-Durshuna Letters and Astronomical Compendium	Dig-Durshuna & Copying Letters	Only Letters	Only Dig- Durshuna	Spelling Lessons	Table	Inferior Lessons & Elementary tables
1817	September	Biagachee	55	*	*	*	*	16 writing lessons of two syllables.	Rest of the students employed with first table.	*
1817	September	Amgachee	80	*	*	*	*	No one advanced beyond the Banan and Phulas.	Rest of the students employed in the first table	*
1818	October	Rama – Nugura	85	*	*	*	*	No one advanced beyond the Banan and Phulas.	*	*
1817	October	Baliya	60	*	*	*	*	11 writing the spelling lessons of two syllables.	*	*
1817	October	Nubab – Poora	90	*	*	*	*	Remainder employed on the Banan and Phulas.	*	*
1817	October	Vasoodeva - Poora	60	*	*	*	*	No one advanced beyond the Banan and Phulas.	*	*

State of the schools under the superintendence of the institution, from Nov. 1, 1817, to Oct. 31, 1818, this table published as an appendix with Second report of the institution for the support and encouragement of Native Schools began at Serampore, Nov. 1816 with list of subscribes and Benefactors, Published by The Mission Press, Serampore, in the year of 1818.												
Location of the school	Average Number of students	Numerical numbers are showing the number of Students in Different subjects.										
		Jotish, the letters and Dig-Durshuna	Letters and Dig-Durshuna	Only Dig-Durshuna (writing)	Letters Only	The Jotish, the Shastra Puddhuti and letters	The Jotish, the Shastra Puddhuti and letters and Dig-Durshuna	Letters and the Shastra Puddhuti	Jotish alone	Spelling lessons	nittee bakya the letters and Dig-Durshuna	Elementary parts
Vullubha Poora	41	5	15	**	19	*	*	*	*	*	*	Rest of the students
Nabob Gunj	115	16	*	*	*	22	*	27	37	*	*	Rest of the students
Chatura	71	8	15	*	34	*	*	*	*	Remains were engage in spelling lessons	*	*
Ramu Krishna Poora	48	*	9	23	*	*	*	*	*	*	4	Rest Of the students
Mahesha	67	*	*	*	9	*	16	27	*	12	*	*
Ichcha Poor	85	*	*	9	*	*	*	*	*	Rest of the Students	*	*
Bukksha	*	*	*	10 (inferior lessons)	*	*	4	*	*	11	*	Rest of the students
China -moora (remove to Nadia)	61	*	*	18	*	*	*	*	*	Rest of the students	*	*
Nuvu Grama	113	*	*	*	11	*	*	*	*	Rest of the students	*	*
Kaoog -achee	82	*	*	*	3	23 (shastra was excluded here)	16	*	*	*	*	Rest of the students
Noa para	59	*	*	*	23	*	5	7 (Dig-Durshuna	*	*	*	Rest of

								also included here)				the students
Location of the school	Average Number of students	Numerical numbers are showing the number of Students in Different subjects.										
		Jotish, the letters and Dig -Durshuna	Letters and Dig-Durshuna	Only Dig-Durshuna (writing)	Letters Only	The Jotish, the Shastra Puddhuti and letters	The Jotish, the Shastra Puddhuti and letters and Dig-Durshuna	Letters and the Shastra Puddhuti	Jotish alone	Spelling lessons	nittee bakya the letters and Dig-Durshuna	Elementary parts
Bighetee	41	2	*	*	24	*	*	*	10 (including Letters)	Rest of the students	*	*
Bali	107	17	*	*	28	*	15	21(jotish And Letters)	*	*	*	Rest Of The Students
Khurusurai	77	*	*	*	25	5	22 (including Letter writing)	*	*	Rest Of The Students	*	*
Khurudu	62	*	*	*	34	4	*	*	17 (including Letter Writing)	Rest Of The Students	*	*
Buar	51	*	*	*	25	*	*	19 (including Dig-Durshuna)	*	*	*	Rest Of The Students
Nihatee	47	*	*	*	*	*	9	4 (including Dig-Durshuna)	10 (including Letter writing)	*	*	Rest Of The Student-s
Anunda Nugura	67	*	18	22	*	*	3	10 (including Dig-Durshuna)	*	*	*	Rest Of The Student-s
Kulachura	42	*	*	18	*	*	*	6	*	11 (in five syllables) Rest of the students	*	*

										engaged with banans and plalas		
Location of the School	Average Number of students	Numerical numbers are showing the number of Students in Different subjects.										
		Jotish, the letters and Dig -Durshuna	Letters and Dig-Durshuna	Only Dig-Durshuna (writing)	Letters Only	The Jotish, the Shastra Puddhuti and letters	The Jotish, the Shastra Puddhuti and letters and Dig-Durshuna	Letters and the Shastra Puddhuti	Jotish alone	Spelling lessons	nittee bakya the letters and Dig-Durshuna	Elementary parts
Gungadhur Poora	37	*	10	13	*	*	*	*	*	*	*	Rest of the students
Agura Para	89	*	11	23	*	*	*	*	*	10(engage with five syllables) 11(in three syllables) Rest on banan and plulas	*	*
Nata-Guree	49	*	10	12	*	*	*	*	*	Rest of the students engaged with Banan and phulas	*	*
Goninda -poore	46	*	*	7	*	*	*	*	*	12(spelling lessons of five syllables) Rest of the students engaged with Banan and Phulas	*	*
Shiakala	64	*	*	*	36	3	*	13	*	*	*	Rest of the students
Huri-Pala	198	*	42	*	73	*	*	*	*	24(lessons of five syllable) 39 (three syllables) 11(two syllables)	*	Rest of the students
Buluram Poora	48	*	11	21	*	*	*	*	*	*	*	Rest of the students
Pandura	64	*	7	*	23	*	*	*	*	*	*	Rest of the students
Nusiba Poora	54	*	5	*	15	*	*	*	*	11 (spelling lessons of three syllables)	*	Rest of the students

Location of the School	Average Number of students	Numerical numbers are showing the number of Students in Different subjects.										
		Jotish, the letters and Dig -Durshuna	Letters and Dig-Durshuna	Only Dig-Durshuna (writing)	Letters Only	The Jotish, the Shastra Puddhuti and letters	The Jotish, the Shastra Puddhuti and letters and Dig-Durshuna	Letters and the Shastra Puddhuti	Jotish alone	Spelling lessons	nittee bakya the letters and Dig-Durshuna	Elementary parts
Nimite	50	*	*	10	*	*	*	*	*	11(spelling lessons of five syllables) Rest of the student engaged on the Banan and Phulas	*	*
Somu-Nugura	42	*	*	16	*	*	*	*	*	*	*	Rest of the students
Mudhoo-Vatee	52	*	*	10	*	*	*	*	*	11 (spelling lessons of two syllables) Rest of the students engaged with Banan and Phulas	*	*
Jhapurudu -h	63	*	*	13	*	*	*	*	*	9(occupied in the spelling lessons of four syllables) Rest of the students engaged with Banan and Phulas	*	*
Kkala No.1	109	*	18	*	*	*	*	*	*	26(spelling lessons of five syllables 29(four syllables)	*	Rest of the students
Gopale Nugura	90	*	*	*	*	*	*	*	*	9(advanced to the spelling lessons of five syllables) 17(four syllables) 27(three syllables) Rest of the students engaged with Banan and Phulas	*	*

Location of the School	Average Number of students	Numerical numbers are showing the number of Students in Different subjects.										
		Jotish, the letters and Dig -Durshuna	Letters and Dig-Durshuna	Only Dig-Durshuna (writing)	Letters Only	The Jotish, the Shastra Puddhuti and letters	The Jotish, the Shastra Puddhuti and letters and Dig-Durshuna	Letters and the Shastra Puddhuti	Jotish alone	Spelling lessons	nittee bakya the letters and Dig-Durshuna	Elementary parts
Vuna Hoogli	48	10	14	19	*	*	*	*	*	*	*	Rest of The Students
Mushat	50	*	*	*	5	*	*	*	*	9(were in the lessons of five syllables) 19(were in two syllables) Rest of the students were on Banan and Phulas	*	*
Krishna Rama Poora	34	*	*	*	*	*	*	*	*	11(were occupied – d in spelling lessons of two syllables)	*	Rest of the students
Patoola	65	*	*	*	25	*	*	*	*	*	*	Rest of the students
Kamara – Koonda	100	*	11	*	31	*	*	*	*	*	*	Rest of the students
Dhana– Hana	81	6	20	*	*	*	*	*	*	*	*	Rest of the students
Gopala Poora	82	*	11	*	28	*	*	*	*	*	*	Rest of the students
Dukshena - Dee	59	*	26	29	*	*	*	*	*	*	*	Rest of the students
Rugoonath-a Poora	43	*	11	*	17	*	*	*	*	*	*	Rest of the students
Vashai-Na-Para	47	*	*	10	*	*	*	*	*	9(engaged with the spelling lessons of five syllables) 10(with three syllables)	*	*

										Rest with banan and phulas		
Location of the School	Average Number of students	Numerical numbers are showing the number of Students in Different subjects.										
		Jotish, the letters and dig -Durshuna	Letters and Dig-Durshuna	Only Dig-Durshuna (writing)	Letters Only	The Jotish, the Shastra Puddhuti and letters	The Jotish, the Shastra Puddhuti and letters and Dig-Durshuna	Letters and the Shastra Puddhuti	Jotish alone	Spelling lessons	nittee bakya the letters and Dig-Durshuna	Elementary parts of education
Sara	82	*	6	*	*	*	*	*	*	11(engaged with spelling lessons of four syllables)	*	Rest of the students
Vuna Nopara	55	*	*	12	*	*	*	*	*	11 (occupied in the spelling lessons of four syllables)	*	Rest of the students
Phoora Phooora	49	*	*	*	*	*	*	*	*	10 (advance to the spelling lessons of five syllables) 14 (engage with four syllables 20(engaged with three syllables)	*	Rest of the students
Mandura	112	*	*	*	27	*	*	*	*	12 (occupied in the spelling lessons of five syllables) 17(engaged with three syllables) Rest of the student engaged with Banan and phulas	*	*
Datora	95	*	*	*	*	*	*	*	*	10 (in the spelling lessons of five syllables)	*	Rest of the students

										12 (in the spelling lessons of four syllables)		
Location of the School	Average Number of students	Numerical numbers are showing the number of Students in Different subjects.										
		Jotish, the letters and Dig -Durshuna	Letters and Dig-Durshuna	Only Dig-Durshuna (writing)	Letters Only	The Jotish, the Shastra Puddhuti and letters	The Jotish, the Shastra Puddhuti and letters and Dig-Durshuna	Letters and the Shastra Puddhuti	Jotish alone	Spelling lessons	nittee bakya the letters and Dig-Durshuna	Elementary parts of education
Prisada-Poora	25	*	*	*	*	*	*	*	*	8 (occupied in the spelling lessons of two syllables) The rest on the banan and phulas	*	*
Gopinatha – Poora	117	*	14	*	*	*	*	*	*	14 (lesson of five syllable)	*	Rest of the students
Yaduva – Vatee	134	*	7	*	*	*	*	*	*	14 (advance to the spelling lessons five syllables) 32 (on four syllables)	*	Rest of the students
Mundulika	100	*	13	*	*	*	*	*	*	13 (on the spelling lessons of five syllables) 23 (have advanced to four syllables)	*	Rest of the students
Tura – Jugut – Nugura	64	*	*	*	*	*	*	*	*	15(on the spelling of five syllables) 28(advanced to lessons of three syllables)	*	Rest of the students
Krishna – Nugura	102	*	*	12	*	*	*	*	*	13 (in the spelling lesson of five syllables) 43(advanced to four syllables)	*	*

										The rest on the banan and phulas		
Location of the School	Average Number of students	Numerical numbers are showing the number of Students in Different subjects.										
		Jotish, the letters and Dig -Durshuna	Letters and Dig-Durshuna	Only Dig-Durshuna (writing)	Letters Only	The Jotish, the Shastra Puddhuti and letters	The Jotish, the Shastra Puddhuti and letters and Dig-Durshuna	Letters and the Shastra Puddhuti	Jotish alone	Spelling lessons	nittee bakya the letters and Dig-Durshuna	Elementary parts of education
At- Poora, no.1	61	*	*	*	*	*	*	*	*	12 (occupied in the spelling of five syllables) 20 (advance to those of four) 25 (towards three syllables)	*	Rest of the students
Kakooriya	85	*	*	16	8	*	*	*	*	17(advance to the spelling of five syllables) 27(three syllables)	*	Rest of the students
Jhikira	95	*	9	*	*	*	*	*	*	12 (have advanced to the spelling lessons of five syllables) 39 (on four syllables)	*	Rest of the students
Brahmuna – Para	61	*	*	10	*	*	*	*	*	6 (have advanced to the spelling lessons of four tables) 18 (on three syllables)	*	Rest of the students
Juya – Nugura	108	*	12	*	*	*	*	*	*	12 (have advanced to the spelling lessons of five syllables.)	*	Rest of the students

										54 (on four syllables)		
Location of the School	Average Number of students	Numerical numbers are showing the number of Students in Different subjects.										
		Jotish, the letters and Dig -Durshuna	Letters and Dig-Durshuna	Only Dig-Durshuna (writing)	Letters Only	The Jotish, the Shastra Puddhuti and letters	The Jotish, the Shastra Puddhuti and letters and Dig-Durshuna	Letters and the Shastra Puddhuti	Jotish alone	Spelling lessons	nittee bakya the letters and Dig-Durshuna	Elementary parts of education
Shyama – Poora	100	*	6	*	8	*	*	*	*	16 (are occupied in the spelling lessons of five syllables) The remainder with the Banan Phulas	*	*
Juya – Krishna – Poora	38	*	*	*	*	*	*	*	*	10(advanced to the Spelling lessons of three syllables)	*	Rest of the students
Biagachee	88	*	7	25	*	*	*	*	*	*	*	Rest of the students
Amgachee	90	*	30	*	35	*	*	*	*	*	*	Rest of the students
Rama – Nugura	108	*	14	*	*	*	*	*	*	11 (are employed on the Spelling Lessons of three syllables) 52 (advanced to those of two syllables) Rest on the Banab and Phulas	*	*
Baliya	131	*	*	22	*	*	*	*	*	19 (are employed on the Spelling Lessons of three syllables) 43 (advanced to those of two syllables)	*	*

										Rest on the Banab and Phulas		
Location of the School	Average Number of students	Numerical numbers are showing the number of Students in Different subjects.										
		Jotish, the letters and Dig -Durshuna	Letters and Dig-Durshuna	Only Dig-Durshuna (writing)	Letters Only	The Jotish, the Shastra Puddhuti and letters	The Jotish, the Shastra Puddhuti and letters and Dig-Durshuna	Letters and the Shastra Puddhuti	Jotish alone	Spelling lessons	nittee bakya the letters and Dig-Durshuna	Elementary parts of education
Nubab – Poora	56	*	*	*	*	*	*	*	*	11 (are employed on the Spelling Lessons of four syllables) 32 (advanced to those of three syllables) Rest on the Banab and Phulas	*	*
Duphur – Poora	69	*	22	25	*	*	*	*	*	*	*	Rest of the students
Vasoodeva – Poora	93	*	*	*	13	*	*	*	*	16(are employed on the Spelling Lessons of three syllables) 44 (advanced to those of two syllables) Rest on the Banab and Phulas	*	*
Sola – Hurisha – Poora	59	*	*	*	*	*	*	*	*	18 (are engaged in the Spelling Lessons of three syllables) 10 (advanced to those of five syllables) Rest on the Banab and Phulas	*	*

Location of the School	Average Number of students	Numerical numbers are showing the number of Students in Different subjects.										
		Jotish, the letters and dig -Durshuna	Letters and Dig-Durshuna	Only Dig-Durshuna (writing)	Letters Only	The Jotish, the Shastra Puddhuti and letters	The Jotish, the Shastra Puddhuti and letters and Dig-Durshuna	Letters and the Shastra Puddhuti	Jotish alone	Spelling lessons	nittee bakya the letters and dig-Durshuna	Elementary parts of education
Nanna	123	*	39	*	45	*	*	*	*	12 (are on the Spelling lessons of five Syllables) Rest of the student engaged in Banan and Phulas	*	*
Dukhinsh-ore	66	*	*	16	*	*	*	*	*	15 (on the spelling lessons of five syllables) The rest on the Banan and Phulas)	*	*
These schools were newly established after October 1817												
At - Poora	159	*	*	31	*	*	*	*	*	17 (occupied with the spelling lessons of five syllables) 35(advanced to those of four syllables) 45 (engaged with three syllables) Rest of the studentsengaged with Banan and Phulas	*	*
Kikala, No. 2	125	*	*	9	*	*	*	*	*	15 (Spelling lessons of five syllables) 39(advanced to four syllables) 55 (engage -d with three syllables)	*	*

										Rest of the students engaged Banan and Phulas)		
Location of the School	Average Number of students	Numerical numbers are showing the number of Students in Different subjects.										
		Jotish, the letters and Dig -Durshuna	Letters and Dig-Durshuna	Only Dig-Durshuna (writi--ng)	Letters Only	The Jotish, the Shastra Puddhuti and letters	The Jotish, the Shastra Puddhuti and letters and Dig-Durshuna	Letters and the Shastra Puddhuti	Jotish alone	Spelling lessons	nittee bakya the letters and Dig-Durshuna	Elementary parts of education
Boraee	47	*	*	*	*	*	*	*	*	13(occupied with the spelling lessons of four syllables) 25(advanced to three syllables) Rest of the students engaged with Banan and Phulas)	*	*
Areadaw	68	2	*	11	*	*	*	*	*	17 (are occupied with the spelling lessons of five syllables) Rest on the Banan and Phulas	*	*
Moneeram – Poora	60	*	12	*	*	*	*	*	*	12 (occupy-ed with the spelling lessons of five syllables) 15(advanced to those of four syllables) 7 (engaged with three syllables) Rest of the students engaged with Banan and Phulas	*	*

Location of the School	Average Number of students	Numerical numbers are showing the number of Students in Different subjects.										
		Jotish, the letters and Dig -Durshuna	Letters and Dig-Durshuna	Only Dig-Durshuna (writing)	Letters Only	The Jotish, the Shastra Puddhuti and letters	The Jotish, the Shastra Puddhuti and letters and Dig-Durshuna	Letters and the Shastra Puddhuti	Jotish alone	Spelling lessons	nittee bakya the letters and Dig-Durshuna	Elementary parts of education
Bishorpara	39	*	*	*	*	*	*	*	*	8(occupied with the spelling lessons of four syllables) 7(advanced to those of three syllables) 19(engaged with two syllables) Rest of the students engaged with Banan and Phulas	*	*
Digeraw	40	5 (the jotish, the Dig-Durshuna and the letters) 8 (only jotish and Dig-Durshuna)	*	10	*	*	*	*	*	7(engaged with the spelling lesson of five syllables) 6(with four syllables) Rest on the Banan and Phulas	*	*
Baganda	82	*	*	20	*	*	*	*	*	10 (occupy-ed with the spelling lessons of five syllables) 33(adva-nced to those of four syllables) 8(engaged with three syllables) Rest of the students engaged with Banan and Phulas	*	*

Location of the School	Average Number of students	Numerical numbers are showing the number of Students in Different subjects.										
		Jotish, the letters and Dig -Durshuna	Letters and Dig-Durshuna	Only Dig-Durshuna (writing)	Letters Only	The Jotish, the Shastra Puddhuti and letters	The Jotish, the Shastra Puddhuti and letters and Dig-Durshuna	Letters and the Shastra Puddhuti	Jotish alone	Spelling lessons	nittee bakya the letters and Dig-Durshuna	Elementary parts of education
Romonath – Poora	77	9(learnt all three subjects) and 14 student only engaged with Jotish and the Dig- Durshuna	22	*	*	*	*	*	*	10 (engaged with the spelling lessons of four syllables) 16(engaged with three syllables) Rest on the Banan and Phulas	*	*
Ahooea	58	*	*	*	*	*	*	*	*	23 (advanced with the spelling lessons of five syllables) 9(engaged with those of four syllables) 21(engaged with three syllables) Rest of the students engaged with Banan and Phulas	*	*
Dewanbhu-rry	36	*	*	*	*	*	*	*	*	25 (engaged in spelling lessons of two syllables) Rest of the students engaged with Banan and Phulas	*	*

Appendix - III

Contents of first five issues of Dig-Durshuna.[1]

No. I. – 1. Account of the discovery of America. - 2. The Geographical limits of Hindoost'han. – 3. A view of the chief articles of tread raised in Hindoost'han; cotton, indigo, &c. – 4. Mr. Sadler's aerial journey from Dub into Holy-Head. 5. Particulars relative to the court of Raja Krishna Chundra Raya.

No. II. – 1. Discovery of the passage to India by way of the Cape of Good Hope. – 2. Trees and Plants found in Bengal, but not indigenous to Britain, as the Sugar-cane, &c. – 3. Death of Her Royal Highness the princess Charlotte. – 4. Account of Steam Boats. 5. Subscription of Natives in the district of Comillah to the Native Schools. – 6. Death of Mohun Bachusputi a famous pundit, leatly, at the water-side, calling on the one God alone. – 7. Account of Bengalee works lately Published. – 8. Various acts of beneficence recently done by the natives.

No. III. – 1. A view of Ancient History from the creation to the food, and of the Western World to the birth of Christ, in which the rise of the four great monarchies is distinctly traced and those circumstances mentioned which bear in any degree on India. 2. The natural history of the Elephant. – 3. An account of the ancient city of Gour.

No. IV. – The division of the Roman Empire into Eastern and Western – the fall of the western part - some account of Mahommed - the rise of the Mussalman Empire in Asia – in Spain – in Africa and Egypt. – The five later Musulman Empires, - that of the Seljuks at Bagdad – of Ghizni – of Jinghis –khan – of Timur-beg – of the Turks, with reflections on the fall of the four first of these. A Dialogue between a Teacher and his Disciple, respecting Newton's discovery of the doctrine of Gravitation; - Apologue of the Earth and her Children Complaining to her of their various miseries.

No. V.– 1. Continuation of the General View of History, containing the History of the Western World from the division of the Empire to the present time. – 2. A concise view of the present state and population of the world and various Religions professed,

[1] Second Report of The Support and Encouragement of Native Schools, Begun at Serampore, Nov.1816: with a list of subscribes and benefactors, The Mission Press, Serampore, 1818, pp. 21-22. (Spelling and sentences constructions are remain unchanged.)

with an average of the number of persons attached to each. 3. On the Cause of Thunder and Lightning. 4. An account of the manner of talking Whales. – 5. Brief History of the chief cities in Bengal. – 6. Anecdotes from History, illustrative of particular virtues.

Contents of the Eleven last Numbers of the Dig-Durshuna.[2]

No. VI. – of lightning and Thunder; of the fixed stars; Destruction of the Alexandria Library; Natural History of the Camel; of the city of Babylon; of the divisibility of Matter; Obidah, or the vanity of Riches, an allegory; of the division of time; of the Cataract of Niagara in Canada.

No. VII. – Of the origin of printing; of the Echo; of the Barbarism and Manners of the Ancient Britons; of the city of London; of the Beaver; of trial by Jury; on the force of Habit.

No. VIII. – On Metals; of Platina; of Gold; of Silver; Of Quicksilver; of Copper; of Iron; of Lead; of Tin; on the laws of Sparta; the Expedition of Xerxes into Greece.

No. IX. – Of the Magnet; of the Coal Mines in England; of the Pearl Fishery in Ceylon; of the Salt Mine near Cracow in Poland; Manners of the Laplanders.

No. X. – Of Mahmood the great, King of Gujni; of Mahmood, the Second King of Gujni. The necessity of considering both sides of a question; on Intemperance; anecdote of a King and Dervise; of the Druids.

No. XII. – Of Masood II, Fifth king Of Gujni; of Abdul – Hussen, Sixth King of Gujni; of Abdul – Rashid, Seventh King of Gujni; of Arsilla, Eleventh king of Gujni; of Bhuy – ram, Twelfth king of Gujni; of Kusro, and Kusro II. Gouride Dynasty – Mahmood, king of Gour and India; of Mahmood, second king of Gour, of Mahmood of Khurasm; Example of filial Piety; Perseverance Rewarded.

No. XIII. – Of the reign of Jenghis-khan. The Treatment of the Dead among different nations; of the great Wall of China; of the Egyptian Sphinx.

[2] The Third Report of The Institution for The Support and Encouragement of Natives Schools, begun at Serampore, Nov. 1816. Printed at the Mission Press, 1820. pp. 44-45. (Spelling and sentences constructions are remain unchanged.)

No. XIV. – Of the Dynasty of Kuttub, King of Delhi; of Aram; of Altmush; of Feroze; of Sultana Rizia; of Byram II; of Masood IV. History of the Air Balloon; of the Clouds.

No XV. – of Mahmood II; of Balin. Of the Bee; of the handsome and deformed Leg; of the care of Animals during winter.

No. XVI. – Of Kei Kobad. Of the Great Famine in Bengal; of the Comets; of the manner of Bird – catching in the Fero isles.

Appendix – IV

Questions and Answers on the First Scientific Copy-book.[1]

Q. How long is it since the earth created?

A. Nearly six thousand years.

Q. Out of what was the earth created?

A. God created the earth and all things out of nothing.

Q. what is the form or figure of the earth?

A. the earth is in form like a ball.

Q. What is its circumference?

A. Twenty-one thousand eight hundred miles.

Q. Does the earth's move?

A. The earth moves round the sun once in the course of a year.

Q. How is day and night caused?

A. By the earth's turning round on its own axis.

Q. What renders the days and the nights of unequal length?

A. The earth's moving round the sun once in the year, hence the days are unequal in length.

Q. In what state was the language of man at first?

A. The language of all men was at first same.

Q. Who observe good and evil actions?

A. the eye of God is everywhere, beholding the evil and the good.

[1] The Third Report of The Institution for The Support and Encouragement of Natives Schools, begun at Serampore, Nov. 1816. Printed at the Mission Press, 1820. pp. 41-44. (Spelling and sentences constructions are remain unchanged.)

Q. How high are the clouds above the earth?

A. Seldom above three miles.

Q. How high is the highest mountain above the level of the sea?

A. Little more than five miles.

Q. How were men created?

A. God created all men of one blood.

Q. How long has India been known to Europeans?

A. Full two thousand years.

Q. Who was the first king of Hindoost'han?

A. Menu was the first king, who lived about three thousand years ago.

Q. How many times does a man die?

A. A man dies only once.

Q. When does the judgement take place?

A. After death is the judgement.

Q. What do the earth and other planets encompass?

A. The earth and the other planets move round the sun.

Q. how are vapours and clouds formed?

A. They are formed from exhalations.

Q. Whence is the rain?

A. The rain proceeds from the clouds.

Q. What is of more value than sun, moon and stars?

A. The soul of man.

Q. Who are the two mightiest powers on earth?

A. England and Russia.

Q. What occasion man's misery?

A. Sin.

Q. who will punish sinners?

A. The righteous and holy God.

Q. when will be the general judgement?

A. God hath appointed a day in which he will judge the world in righteousness.

Q. How is the Rainbow formed?

A. It is formed by the rays of the sun falling on the clouds, and when the sun shines not, there can be no rainbow.

Q. Whence arise the ebbing and flowing of the tide?

A. From the motion of the moon.

Q. How far is the moon from the earth?

A. Two hundred and forty thousand miles.

Q. What will become of the earth at last and all things there in?

A. At least the earth and all therein will be burnt up.

Q. Whence arise the rain and fruit seasons?

A. God created them.

Q. How Far distant is the sun from the earth?

A. Ninety - five millions of miles.

Q. What proportion do the land and the water bear to each other?

A. Two – parts of the globe are water, and one part is dry land.

Q. From whence arises man's sin?

A. God tempts no man to sin; everyman sins after the wish of his own mind.

Q. What will happen to those who regard not father and mother?

A. With those who regard not father and mother God will be angry.

Q. what is a chief command of God?

A. That every man loves his neighbour as himself.

Q. Into how many parts is the earth divided?

A. Into four: Europe, Asia, Africa and America.

Q. Why was the world formerly drowned?

A. God for the sin of man destroyed the world by a flood.

Q. Who were saved at the time of this deluge?

A. Only Noah and his family.

Q. When the earth was destroyed by a deluge, whence sprang mankind?

A. From Noah all men have since descended.

Q. By sea how far is England distant from Bengal?

A. About seven thousand kroos.

Q. When it is midnight in England what time is it at Calcutta?

A. It is morning.

Q. How many people are on the earth?

A. It is supposed that there are about eight hundred millions.

Q. Of what from is the earth?

A. Globular, like a kudumba flower.

Q. What is the annual revenue of England?

A. About fifty millions of pound sterling.

Q. Which is the heaviest of all metals?

A. Gold is the heaviest of all metals.

Q. to what extent can gold be beaten out?

A. One ruttee of gold can be beaten out till it become a cubit and half square.

Q. if drawn to a thread how far will one ruttee extend?

A. To the distance of three hundred cubits.

Q. whence do all the metals come?

A. they are dug out the earth.

Q. How much is water heavier than air?

A. Nearly nine hundred times heavier.

Q. How far does light travel in a moment?

A. Nearly two hundred thousand miles.

Q. Who created the soul and body of man?

A. The self-existent God created man both soul and body.

Q. Can the spirit or soul of man enter a beast body?

A. No, it is impossible.

Q. Does God created a sprit to each human body?

A. Every man's body has its own separate sprit.

Q. Why is the water hot in the well at Seetakoond?

A. Because in different parts of the earth, and particularly there, there are combustible substances in the earth, which communicate heat to the waters.

Q. On what is the earth supported?

A. God hath established the earth upon nothing.

Appendix V

Picture of a Pathshala, 1795, Bengal, (source: Carey Library and Research Centre, Serampore College, West Bengal)