

CHAPTER - 1

NATURE OF THE SILK CULTIVATION : PRODUCTION AND ORGANISATION

The region of Malda lies in the west of Rajshahi Division. It is bounded on the north by the Purnea and Dinajpur districts, on the east by Dinajpur and Rajshahi, on the south by Murshidabad and on the west by Murshidabad, Santhal Parganas and Purnea.¹ The Civil Station and Administrative Headquarters are at English Bazar, which is also the principal town in the region, situated on the west bank of the Mahananda.² The geographical position along with the entire ecological condition of Malda promoted an all-round manifestation of silk industry.

The production of raw silk mainly depends on two stages: (1) Cultivation of Mulberry, and (2) Rearing of silk worms.

1. MULBERRY CULTIVATION: Mulberry cultivation is a very important part under the enlarged history of the silk cultivation. Behind the success of mulberry cultivation, essential components are (i) richness of the soil, (ii) congenial climatic conditions and (iii) earnest human endeavors for raising luxuriant crops of mulberry.³

¹ G. E. Lambourn, *Bengal District Gazetteers Malda*, Calcutta : The Bengal Secretariat Book Depot, 1819, p.1.

² W.W. Hunter, *A Statistical Account of Bengal*, Volume VII, New Delhi : D K Publishing, 1974, p. 18.

³ Sailendra Kumar Bag, *The Changing Fortunes of the Bengal Silk Industry 1757 – 1833*, Calcutta : Manasi Press, p. 108.

(a) ROLE OF ESSENTIAL COMPONENTS FOR MULBERRY CULTIVATION:

Growing of silk worms, their eating of the mulberry leaves, and the development of mulberry trees demands a favourable condition of the soil. The nature of Malda's soil played a vital role for development of the mulberry trees. William Hunter remarked about the soil of Malda stating that the river basin was 'sandy, but enriched each year by the deposits of mud that are left by the inundations of the Ganges.'⁴ In 1772, Robert Orme wrote about the nature of soil of Bengal, that, 'The province of Bengal is the most fertile of any in the universe.'⁵

The smooth growth of silk worms and production of their best silk gums mainly depends on the proper soil. In Malda, mainly Ganga, Mahananda and other rivers were helpful for navigation, while these river banks were also used as productive lands for mulberry cultivation; their tributaries were very essential for irrigation in the mulberry land.

The middle part of the Province consisting mostly of riparian tracts, being better enriched by conditions, facilitated the production of luxuriant crops of mulberry and cocoons. The silk industry

⁴ W. W. Hunter, p. 20

⁵ Robert Orme, *Historical Fragments of the Mughal Empire*. London: F. Wingrave, 1805, p. 404

concentrated in these riverine regions.⁶ As per result, the different areas under Malda, like English Bazar, Kaliachak, Manikchak, Mothabari emerged as prominent centres for silk cultivation.

Climatic conditions always played a significant role on the ecological setting of Malda. Climate played a key role for the growth of sericulture. It helped silk worms to live, grow and to form cocoons. Silk worms formed cocoons 'in a temperature between about 60⁰ and 85⁰F the best temperature. That was being 70⁰ - 75⁰F with about a similar percentage of humidity.'⁷

The temperature was a very important factor for development of the filament's quality of the cocoons. Both temperature and humidity of Malda were favourable for the development of the sericulture industry. The average annual rainfall in Malda District was 60-64 inches and on an average there were 67 rainy days at Malda.⁸ Water was an important component in the growth of silk industry. The land of Malda was very favourable for mulberry cultivation: it produced four crops of mulberry leaves in a year, sometimes five and occasionally six (highly rich ground). Plantation was renewed once in three or four years to ensure a constant succession of leaves.⁹

⁶ W.H. Hamilton, *A Geographical, Statistical And Historical Description of Hindostan and Adjacent Countries*, Volume 1. London: John Murray, 1820, p.29.

⁷ C. C Ghosh, *Silk production and Weaving in India*, Council of Scientific and Industrial Research, India, 1949, p.4.

⁸ Jatindra Chandra Sengupta, *West Bengal District Gazetteers: Malda*. Calcutta: Government of West Bengal Press, 1969, p.15.

⁹ Letter written by C. C. Hyde, Resident at Gungypore Factory to George Saunders, Acting President and Members of the Board of Trade, Fort William, dated 22 February, 1831. Board of Trade, Commercial Proceeding Number 17, Volume 498, 1 March 1831, Part 1. West Bengal State Archives [Henceforth WBSA], Calcutta.

The entire silk industry depended on people who were engaged with that industry. Earnest human endeavours were made for raising luxuriant crops of mulberry, which was the only food of the domesticated silk worms. A large number of the total population in Malda, proved their excellent ability for the development of silk industry.

A moderately rich, light soil was necessary for ideal mulberry cultivation, as sandy soil kept the root cool thus, irrigation was almost unnecessary.¹⁰ Preparation of a mulberry field demanded careful attention. The soil was first dug up in the month of April. Then, upon the surface of the loose soil a quantity of superior earth was thrown until it was raised about 18 inches above its original level.¹¹ The preparation of mulberry land was very calculative, because the land required a proper drainage system for preventing flood waters from entering the field. It was also furnished with wells for watering the plants, if necessary. Drains were also used for discharge of surplus water from the mulberry field.

In the different mulberry cultivated areas of Malda, generally irrigation was not needed for the cultivation of mulberry, except in summer season. During dry season, the light and porous nature of the mulberry soil separated it from the roots of the plants which ran chiefly near the surface horizontally causing detraction. So, in a hot climate, the mulberry plants should not be safely left to nature.¹² Areas where the level of soil was very high and water passed over the surface quickly, irrigation was necessary to produce huge quantity and best quality of mulberry leaves.

¹⁰ Letter written by N. Wallich, Superintendent at Botanic Garden to Macnaghten, Secretary to the Board of Trade, dated 12 April 1833, Proceedings, Board of Trade, Commercial, 8 July 1883, Proceeding Number 52, Volume 525. WBSA.

¹¹ Sailendra Kumar Bag, p. 111.

¹² J. Geoghegan, *Some Account of Silk in India*, Calcutta: Office of the Superintendent of Government Printing, 1872, p.107.

Most of the times, when mulberry shrubs could be raised from seed; this mode of cultivation was avoided. The plantation by cuttings had the advantage on the plantation raised from seeds both as to the quickness and strength of the growth of the plants. Those advantages were very helpful for

mulberry cultivators. During this period, this process of mulberry cultivation was noticed in Malda as well as Bengal. In 1797, silk ryots of various aung with seeds of the china mulberry, and plantations were successfully raised. The seeds were sown in the month of March and April, and crops were raised in the ensuing October and November.¹³

(b) Different Kinds of Mulberry Cultivation – Bush System or Tree System:

The mulberry cultivation was one of the components under entire agricultural system. The process of mulberry cultivation mainly comprised of silk worm rearing and silk breeding. Mulberry played a significant role in determining the production cost of cocoons and silk, as 60 percent of the cost of cocoons went to silk.¹⁴ The production of mulberry leaves varied from place to place.

¹³ Letter written by P.Touchet, Agent in Radnagore to Peter Speke, President and Member of the Board of Trade, dated 14 October 1797, Board of Trade, Commercial, Fort William 20 October 1797, Proceeding No. 85, Vol.No. 131, Part – II, WBSA, Calcutta.

¹⁴ Buchanan, *Purnea Report*, Patna, 1928, p. 404.

Buchanan reported that in Malda the average production of leaves was $82\frac{1}{2}$ seers, whereas in Purnea it was 171 seers. The price of a basket of leaves differed at different times from 1 to 30 rupees.¹⁵ In Malda, most of the silk related workers were mainly depended on the mulberry cultivation and rearing worms for their normal livelihood.

Different types of mulberry cultivation were followed in different places. In Malda, also Bengal, the cultivators were habituated about the bush system of mulberry cultivation; the mulberry plant in such system was not allowed to rise above a foot and a half or two feet. It was cut two times per day to feed the silk worms. Mulberry was a hardy tree and was easy to grow. Silk worms like to eat leaves of white mulberry due to its tenderness. Then appear the red mulberry. The black mulberry was in least demand due to the harshness of its leaves. The leaves of the 'Alba' i.e., white fruited mulberry were taken eagerly by the silk worms. White mulberry tree was of quicker growth. The constant plucking of leaves did not injure the trees.

The filament of the white mulberry cocoon was finer than that of the red and black mulberry cocoon. The quality of the filament of the cocoon was also influenced by temperature.¹⁶ If leaves of the white, red and black mulberry were given at the same time to the insect, it will eat first the white, next the red, and lastly the black, in the order of the tenderness of the leaves.¹⁷

¹⁵ Ibid. p. 401.

¹⁶ Sujit Chandra Guha, p. 21.

¹⁷ Porter George Richardson, *A Treatise on the Origin, Progressive Improvement and Present State of the Silk Manufacture*. London: L R O. Brown and Green, 1831, p. 95.

Cuttings were the best and essential process for the development of mulberry trees. It was the easiest way of raising it. Though a great number of trees could not be obtained by this method as from seed, still there was a great advantage of it in point of strength as well as in rapid growth.¹⁸ As mulberry leaves was the only one food for silk worm, so the cultivators were highly careful about the nurturing of mulberry trees. Five different components were much essential for the smooth growth of the mulberry leaves. These are – (i) solid fibre, (ii) saccharine, (iii) resinous substances, (iv) water and (v) colouring matter. The leaves containing the most nutrient were supplied to the silk worms. All those components were very helpful for the entire development of the silk worm. Special care was taken to maintain the qualitative size and health of silk worms. All the months in a year were not suitable for the different stages of mulberry cultivation.

October was mainly used for planting slips, and in June, leaves were collected from the plants. Plants were cut down close to the ground every three or four years. This was done in February and the leaves were again plucked from the new sprout in June. The mulberry trees lasted upwards of 15 years in good soil and not less than six or seven years in bad soil. In general, the cut down of the plant close to the ground took place every three years. The purpose was to keep the standard at a height which enabled the cultivator to pluck their leaves without climbing. The trees were manure, watered and fresh earth was put round them. Whenever grass appeared, the earth was dug up to destroy it.¹⁹

Mulberry leaves were plucked one time per day: either in the morning or in the evening. The leaves should be collected in advance for the next day. There were reasons for the collection of mulberry leaves in advance. So long as there was dews on the leaves, or so long as the leaves were wet after

¹⁸ Ibid. pp. 98 -99.

¹⁹ J. Geoghegan, p. 19.

shower, they were not suitable for collection and were not fed. Besides, when it rained for more than two consecutive days, the leaves so gathered were dried by fanning. The leaves dried up in hot weather.

Mulberry cultivators collected mulberry leaves carefully due to the presence of silk worms. Wet, fermented, muddy and dusty leaves were never given to the worms. They required three times as much food as they ate during previous stages.²⁰ Tender leaves of mulberry were finely cut and sprinkled over the newly hatched worms.²¹

(c) Different season for mulberry cultivation:

In Malda, and also in West Bengal, silk was cultivated three times in every year. The local name of the harvest was bund. The bunds named after the months in which ripen. There were three bunds – (i) November bund, (ii) March bund and (iii) July bund. November bunds were chief bund and it was gathered from October to February.²² March bund was gathered from March to June and the July bund was gathered from July to September. The winter cocoon was the best in nature and hence expensive. After the November bund was the March bund, and July or *Barsat* bund was the last when the cocoons became poor in quality.²³

²⁰ N.G. Mukerji, *Handbook of Sericulture*. Calcutta: Bengal Secretariat Press, 1899, pp. 32-33.

²¹ N.G. Mukerji, *A Monograph on the Silk Fabrics in Bengal*. Calcutta: Bengal Secretariat Press, 1903, p.11.

²² G.E. Lambourn, p.67.

²³ Sukumar, Bhattacharya, *The East India Company and the Economy of Bengal From 1704 to 1740*, London : Luzac & Company ,LTD ,1954, p.146.

The cuttings were mostly significant under mulberry cultivation and the process of cuttings was maintained under scientific ways. The cuttings from the largest branches of the trees grown on the high banks of the field were used for propagations. These cuttings were five or six inches in length. Before the slips were planted in October, they were placed in a hole and kept constantly wet until vegetation appeared. These slips were then planted in rows.

Three or four slips were obliquely placed in each hole and superficially covered with mould, so that no part of the plant was seen. The distance from cluster to cluster was 6 or 7 inches. The plants appeared towards the end of December. The fields were then cleared of weeds. The earth was loosened and hoed up near the roots.²⁴

The growers of mulberry knew well that when the season was dry and the plant very small, mats should be used to cover the shrubs from the heat of the sun. Again, these were also used to protect the plant from heavy rain.²⁵ In the month of April next, when the plants sprang up about 18 inches leaving about a foot of stem, they were toppled. The earth was loosened. After two months, the first crop was obtained. Then, a second crop was obtained in September, a third in October, a fourth in November and a fifth in December, followed by a sixth in March and so on.²⁶ The plant was cut usually four times in a year, and stripped of its leaves twice.

²⁴ Letter written by C.C.Hyde, Resident at Bauleah Residency to George Saunders, Acting Resident and Member of Board of Trade, Fort William, dated 30 June 1833. Board Of Trade, Commercial, Proceeding Number 52, 8 July 1833, Volume 525. WBSA, Calcutta.

²⁵ Ibid.

²⁶ Ibid.

The later was practiced during the rainy season, so as to prevent injury by water penetrating the cut parts of the plant. While very young worms were required to be feed, the leaves were also stripped off from the twigs of the mulberry plant.²⁷ It was notable how cultivators were always focused on extra care of mulberry plant, and the condition, quality and yield of its leaf was and an agronomical problem.

(d) Different varieties of silk worms:

The worms were of the following varieties: (i) Nisteri or Purani or Mandraji (*Bombyx Crossi*), (ii) Chota palu or Desi (*Bombyx fortunatus*), (iii) Bara Palu (*Bombyx tenta*), (iv) China palu (*Bombyx surensis*), and (v) Bula Palu: all multivoltine varieties. Of these the first two were the most common, Desi gave the cold weather crop, and Mandraji that of the hot weather. The worms were kept in a bamboo rack and fed twice a day. They begun to spin after 35 to 36 days and the cocoon was completed in three days.²⁸

2. Rearing of silk worms :

Silk worm rearing was an important part of the silk industry. The silk producing industry essentially engaged rearing of silk worms for the production of cocoons. Silk worm rearing as well as its growth was an art in hands of the rural based silk related artistic workers in Malda. The silk industry was one of the earliest of all industries which preoccupied the servants of the British East India Company in Bengal. The silk worms were indigenious and its fist home was said to be in the Brahmaputra valley.²⁹

²⁷ Ibid.

²⁸ G.E. Lambourn, pp. 66-67.

²⁹ Sujit Chandra Guha, p.29 .

The sericulture industry of India was traceable not to China but to the Himalayan country.³⁰ The Punda caste was the hereditary silk worm rearing caste. They lived mainly in Malda and in parts of Bogra, Rajshahi and Murshidabad. They were the best, most intelligent, and most prosperous of all cocoon rearers.³¹

The biggest portion of cocoon rearers was from Muslim community. Besides that, the lower caste among the Hindus were engaged in minimum numbers, the higher caste Hindus like Brahmans, Baidyas and Kayasthas hardly participated in cocoon rearing. The entire section of rearers was treated as Bosni. In Bengali, mulberry meant *tunt* and the cocoon rearers were known as *tuntias*, *tuntia kaibartas* and *tuntia chasas*.³² The position of the cocoon rearers in society was higher than that of most cultivators. The following stages should be maintained to the proper rearing system.

(a) Proper condition of rearing house for silk worms :

The rearing houses of Malda were of thatched roof and made of mud walls. According to George Williamson,³³ the walls of a breeding house ought to be very close for the sake of warmth. It was well ventilated and doors and windows were protected by the bamboo chick or net, so that the parasitic flies could not enter into the rearing rooms. According to him, it should have a door to the south or east with a window on every side to receive light and leave a free passage for the air. The mats should be used to admit of or shut out light and to keep out pernicious winds as per necessity.

³⁰ N.G. Mukherji, *A Monograph on the Silk Fabrics of Bengal*. Calcutta: Bengal Secretariat Press, 1903, p.8 .

³¹ Ibid, p.13.

³² Ibid.

³³ He was the Superintendent of the Company's silk investment in Calcutta. He made sericulture his special study and wrote a treatise in 1775. Board of Trade, Commercial Proceeding, 30 June 1776. WBSA, Calcutta.

As per his calculation, the major portions of the rearers made their rearing houses about 24 feet long, 15 feet broad, and 9 feet high including a raised floor of 3 feet. A rearing house thus built would hold 256,000 worms. It would be filled with 5 *ghurras*,³⁴ each with 16 'shelves'³⁵ measuring 5.50 feet by 4.50 feet. The *dalas* were 'Leaped' with cow dung. Each *dala* contained 3,200 silk worms.

Silk worms being very sensitive and susceptible were not to be hermitically sealed in room. The *dalas* were supported by bamboos resting on earthen saucers filled with water to protect the silk worms from ants.³⁶ Every breath of fresh air should be allowed to pass in.³⁷

The silk worm came out of an egg which was about the size of a grain of mustard. These were yellow when first laid but in three or four days, they changed colour. The largest and plumpest eggs of a lively bluish or grey colour were considered the best. The small ones which were weak, puny, white, yellow and brown, were considered good for nothing.³⁸ The hatching of eggs was hastened or procrastinated according to different degrees of heat or cold administered on them. The hatching of those eggs which were laid on the paper made of the bark of the mulberry tree was hastened by spreading them abroad or by laying them very loosely rolled up.

³⁴ Ghurras - were machans made of bamboos.

³⁵ Shelves - were known as dalas.

³⁶ J. H.T. Walsh, *History of Murshidabad District*, London : Jarrold and Sons, 1902, p.106.

³⁷ Sailendra Kumar Bag, *The Changing Fortunes of the Bengal Silk Industry 1757-1833*. Calcutta: Manasi Press, January 1989, p.121.

³⁸ Letter written by George Williamson, officer under British East India Company to William Aldersey, President and Member of the Board of Trade, dated 22 December 1775, Enclosure. Board of Trade, Commercial, Proceedings, 30 January 1776, Volume 6, Part 1, WBSA. Calcutta.

The hatching of those eggs which were laid on the plantain leaves and deposited in earthen pots was accelerated by putting them into a thick gilded cotton bag laid either before fire or in the sun during the day time, and in the night those were covered with an additional quantity of cotton. When the backwardness of the mulberry shrubs rendered it necessary to delay the hatching, the eggs were put

into a pot covered with a piece of paper pricked with three or four holes and immersed in cold water or placed in cool situation free from moisture where neither the heat of the sun nor warmth of a fire could affect it.³⁹

Indeed, the eggs were never taken out of the pots or exposed to the air until those were wanted to be hatched. So far as the *Bombyx Mori* or Annual silk worms were concerned, their eggs were hatched early in the month of February when the leaves of the mulberry began to spring out. Immediately after the Hindu festival of Sri Panchami which occurred in the month of March or early *Phagun* corresponding the first half of the month of February, the cultivators hatched the eggs of the Annual silk worms.⁴⁰ The rearing of the worm was to be in a house or apartment having two or three opening at the top for letting out the smoke which might be created at the time of kindling fire for keeping off the damp air and also the fly. Before the eggs were placed in the apartment, fire was kindled in it for a day or so.

³⁹ Ibid.

⁴⁰ Board of Trade, Commercial Proceeding, dated 8 July 1833, Number 52, Volume 524. Immediately after the Hindu Festival of Sri Panchami , the rearers hatched the eggs of Annual silk worms.

It was of great consequence that by means of fire a constant and equal warmth was maintained in the apartment where the worms were hatched and where they slept, fed themselves and molted. As red or bluish flame annoyed worms greatly, the fire was made of dried cow dung which produced gentle heat and refreshed worms by the odor of the dung.

During that period, day by day movement of the silk worms was very important. When the worms were ready to come out, the eggs swelled and their roundness became a little pointed. On the first day, sheets of paper were hung up with their backs to the sun till they acquired the warmth. Then those were rolled up close and set in a warm place. On the evening of the second day those sheets were unrolled and the eggs appeared blackish. If any worms were hatched those were cast away. Experiments showed that those worms which were not hatched with others, never agreed with them in the time of molting, eating or making pods. Therefore, these old worms when retained, increased the care and occasioned loss. Those sheets were rolled together very loosely and were set in a warm place sheltered from the wind.⁴¹

The next day a little before noon, those rolls were opened and were found full of worms like little black ants. Such eggs as were not hatched within an hour afterwards were thrown away. Those newly hatched, but had flat heads, those that were shrivelled those whose colour was little sky blue or yellow were also thrown away. The good sort were of the colour of a mountain seen at a distance. The newly

⁴¹ Williamson's Treatise on the Culture of Silk, Board of Trade, Commercial Proceedings, 30 January 1776, Volume 6. WBSA, Calcutta.

hatched worms on the sheet remained if the sheets were held upside down. The smell of the sliced mulberry leaves would attract the hungry little worms. Some of those which were sluggish were kept down with a feather by gently slapping the back of the paper. The greatest number of worms was generally hatched early in the morning.⁴² At that time, pure food (that is, mulberry leaves should be free from moisture or dews) of the silk worms were very necessary, which promoted those to the next step.

As soon as the morning dews evaporated, leaves were plucked and put into a bag which opened and shut like a purse. Greatest care was taken so that the leaves were not bruised in gathering nor pressed too hard together. No more leaves should be gathered at one time than were required to be served to the worms for that particular day, and the first feed next morning. During rainy season, food for two days were gathered to overcome the difficulty of procuring.⁴³ But such practice was avoided in wet weather and mainly when the moisture was actually upon the leaves. These leaves required preservation and a pollution free cool place with a proper circulation of air. The leaves were good and remained green and firm. Then, fresh leaves were given to the worms. Leaves gathered from immature shrubs were not given to them.⁴⁴ In rearing silk worms, it was found that when the worms were given leaves that were just thrown out by the plant, they became sickly and the cocoons they produced were deficient in quantity, quality and staple.

As the leaves of young shoots contained an excess of water thus, those were deficient in nutritive material like as saccharin and resinous matter. The matured leaves of the shrubs were always better for

⁴² Ibid.

⁴³ Board of Trade, Commercial Proceedings, 30 January 1776, Volume 6, Part1, George Williamson's "Treatise on Silk Culture".

⁴⁴ Ibid.

the annual silk worms to young and tender ones, and the immature leaves were very harmful for the worms. The dirty and yellow leaves also were not good for the worms. Besides, the highly drought or deeply rainy season were not suitable times for the production of perfect mulberry leaves. Due to this reason, the silk worms were debilitated and they produced inferior qualities cocoons. Generally, when the silk worms were composed of good health, then they surely produced good cocoons. So, niggard economy must not be practiced, since semi-starvation of the worms was bound to affect the quality and quantity of silk.

Moreover, wastage was not grudged, since it was compensated by the superior health of the worms and the consequent increase in the quantity, quality and staple of the silk produced. So it was an imperative necessity that the silk worms were supplied plentifully with leaves, otherwise, they would be overheated to blast all hope.⁴⁵ Generally, when the silk worms were composed of good health, then they surely produced good cocoons. So, niggard economy must not be practiced, since semi-starvation of the worms was bound to affect the quality and quantity of silk.

Naturally, silk worms were very sensitive. So, the cultivators gave great attention on their feeding and management. At the young stage of silk worms, the fine cut up mulberry leaves were given for feeding, and when the worms grew larger leaves were supplied; and in the third and last stage, entire branches were placed on the shelves of the worms. Generally, silk worms were fed four times in a day. The cultivators cleaned silk worms as it was an important factor for the healthy growth of the worms.

Fresh supplies of leaves for silk worms were necessary at every four hours. The *dalas* were cleaned by women workers. The work was done during midday. The change of the colour of silk worm's skin

⁴⁵ J. Geoghegan, p. 108.

occurred through different phases. The dirty rearer were never prosperous as the silk worms began to change skin and with each change slight change of colour appeared. When the time for the change of skin was approaching, silk worms became sluggish and they lose interest in eating leaves.

At the time of moulting, food was not given. For safety the moulting worms were placed on the shelves separated from the rest. The total period of larval stage was one month. If a silk worm died on shelf, it was immediately changed and was removed from the shelf. When silk worms were ready to spin it became translucent and changed from a greenish cream to a mellow light orange colour and started to spit out silk from the mouth. This time, worms were placed on the 'Chandrakies'⁴⁶ for spinning. At night a lamp was kept burning, because in the dark the worms tended to slacken off and spinning was thus delayed. The average time taken for cocoon spinning is fifty-six hours.⁴⁷ When the spinning was completed, the cocoons were removed from the *chandrakies* and were spread out on the shelves. The main purpose was to provide direct heat of the sun necessary for the killing of the grub, so that the moths could not come out by cutting and spoiling the cocoons. The process of cleanliness of the rearing room was regularly done.

In the silk cultivated area, the male or female moths were called *Chokra – chokri* . Moths cut it out quickly. It commenced early in the morning and made its way out by noon. Female moths were larger and fatter than the males, because of eggs and were not so active as the males. The sexes were

⁴⁶ Chandraki is known in Bengal as talias, chances or fingas.

⁴⁷ Walsh, History of Murshidabad District. London: Jarrold and Sons , 1902 , p.106.

separated two or three hours after their emergences. The females lay about 400 - 500 eggs and soon after those moths died.⁴⁸

The development of silk worms was divided into four stages. Mulberry silk worm passed through four distinct stages in its life. In the first stage, the moth lays eggs; in the second stage, tiny larvae or caterpillars were hatched, fed on mulberry leaves, grow and spin cocoons when fully grown; inside the cocoon the caterpillar transforms into pupa, this was the third stage, and the pupa developed into a moth in the fourth stage, which cut an opening through the cocoon, emerged from it and lay eggs again, thus, continuing the cycle. The time taken to complete the cycle depended on the nature of the silk worm and the climate.⁴⁹ The huge difference for cultivation happened between univoltine and multivoltine silk worms. Mostly good quality silk came from the univoltine silk worms, which were cultivated through one cycle in a year. These silk worms were reared in cool climate. But in tropical climate the multivoltine races were reared and those gave 5-6 crops a year. Each cycle lasted for about six weeks. The period was lengthened in cold season.

When larve appeared the trays were covered with special paper and finely chopped mulberry leaves were spread over the covering. The worms began to crawl through the opening and fed on the leaves. Within 20 – 35 days, the silk worms under maintained under intense care and during that time they felt a voracious appetite excepting the four periods of slumber lasting for a day at a time. At that moment, the silk worms could not eat leaves.

⁴⁸ A Dictionary of Indian Raw Materials and Industrial Products, Part VII, CSIR, New Delhi, 1973, p. 2.

⁴⁹ Ibid.

On awakening from slumber, the silk worms shed their old skin and then started feeding. The silk worms took the final feed lasting 7-10 days with great avidity after the fourth or last moult. In this period, silk worms grew rapidly and reached their full development and, therefore, a number of bamboo - made trays were needed to hold them.

The silk worms gained in weight about 10,000 times during the whole feeding period. When the silk worms became strong and fully developed their length varied between 5 to 9 cm. The silk worm turned into creamish white caterpillar, nearly transparent and filled with liquid silk. Its aversion to eating and constant restless movement of head from side to side indicated that the worm was ready to spin cocoons. The 'ripe' worms were taken from feeding trays and were placed on spinning trays for making cocoons. The silken case spun by larvae was an oblong object and its size was 2.54 cm x 1.25; weight including pupa was 0.42g .⁵⁰ The cultivators' motive was preservation of the best quality of cocoons for seeds, and others were subjected to a treatment where the chrysalises were stifled without damage to the cocoons. Silk worms needed enlarged and proper space at the time of spinning in as much inadequate space led to the formation of double cocoons⁵¹ from which raw silk popularly called dupion was produced.

The thread of the double cocoon became fluffy and, therefore, became difficult to reel. It was used for getting seed. In fact, the formation of double-cocoons was rare at Malda. Generally, it was very

⁵⁰ Ibid. pp. 2 – 3.

⁵¹ Double Cocoons were two worms jointly formed into one cocoon.

popular in Japan, China, and in Europe. It was observed that the tendency of forming the double cocoons was hereditary.⁵² The silk worms have sixteen legs in pairs. The first six legs were covered with scale and placed under the first three rings. The other ten legs were called holders. The holders were membranous, flexible and attached to the body under the rings. These were also furnished with little hooks. Those hooks assist the worms in climbing.

The growth of silk worms was very speedy and the entire process was completed within a short term. The significant feature of the silk worm was that, they were cold blooded creatures. The number of eggs produced by the female moth varied. Some accounted 250, while others reckoned 400 to 500. This variation happened due to the circumstances of the place where the sericulture took place.⁵³ The climatic condition always played an important role for the development of sericulture. The indoor atmosphere of the rearing room provided circulation of fresh air and cleanliness free from any diseases.

As silk worm was a cold blooded animal, so, temperature was an important component for the smooth growth and good health. The optimum temperature in cocoon rearing was 30°C from the 1st to 3rd instars, 25°C in the 4th instar and 20-25°C in the 5th instar. Cocoon growing at these temperatures was always useful for the decrement of duration of the larval stage and the mortality. It also helped to increase the weight of cocoons as well as its production.

The suitable temperature for the rearing of silk worms in all stages was 24°C. It might range from 21.5°C to 30°C when the temperature in atmosphere became low or high of these ranges, the silk

⁵² N.G Mukerji, *A Bird's - Eye View of Indian Sericulture*. Calcutta: Thacker Spink and Co, 1907, p. 31.

⁵³ Porter George Richardson, *Descriptions of Silk Worms*. London : Smith, Elder & Co. , 1831, pp. 105-119.

worms were bound to suffer under arrangement could be made to keep the rearing room warm or cool as necessary. Both in very high and low temperatures eggs did not hatch, silk worms were not fed, grow and spin cocoons properly.⁵⁴ The temperature of the rearing room was kept at about 23°C and humidity between 65 and 75%.⁵⁵ It was not possible to produce good quality silk without favourable climatic situation.

The climatic condition of Malda was always favourable for sericulture. Both high and low humidity were not suitable for the proper prospect of silk worms. Silk worms were able to resist high humidity at the early stage. But in the advanced stage, high humidity seriously affected silk worms and it was the main cause for their mortality. During the time of spinning, high humidity reduced the best quality of cocoons.

The high and low humidity produced bad quality cocoons. Thus, cultivators were very serious about the nature of perfect temperature of humidity. When the humidity was too low the air became too dry. It dried up mulberry leaves quickly thereby, adding trouble to the silk worms. The worms did not grow well, spin only small cocoons, and the eggs did not hatch well. If the humidity was too high, worms grew fat, attacked by the diseases and the silk formed fluffy texture which was then difficult to reel. If the temperature and humidity were high then it was bad for the silk worm.⁵⁶ The humidity and temperature of the work room, thus, had a great impact on the quality of the silk produced. The nature of humidity was favoured for Malda in this respect.

⁵⁴ C. C. Ghosh, p.19

⁵⁵ A Dictionary of Indian Raw Materials and Industrial Products, Part VIII (C.S.I.R), New Delhi, 1973, p.4.

⁵⁶ C . C . Ghosh, p.19.

At the time of hatching of silk worms, light was an essential factor. The suitable time for hatching was in the morning. At dark development of silk worms became slow and irregular. But sudden illumination caused rapid emergence. The silk workers of Malda got a fruitful result by illuminating bulb at night in the rearing room. Dr. Buchanan estimated the yield as follows: in Dinajpore on Mahananda, particularly in the Malda region, 2 ½ seers (of 88 sicca) of cocoons produced 15 sicca weight or 6.8 percent of silk.⁵⁷

(a) Silk worms diseases and ways of prevention :

The attack on mulberry diseases by pests varied from season to season, variety to variety and place to place.⁵⁸ Different kinds of diseases existed in sericulture: Pebrine (*Kata*), Muscardine (*chuna-keta* or *calcino*), Flypest (*Kuji*) , Flacherie (*Kalsira*) , Gatine (*Salfa*) , Grasserie (*Rasa* or jaundice), court (*Rangi Lali*) and the Dermestes Vulpines.⁵⁹

(i) Pebrine

⁵⁷ Buchanan, District Records of Dinajpore, p. 104.

⁵⁸ Madan Mohon Rao, *A Text book of Sericulture*. Hyderabad: B.S. Publication, 1998. p. 30.

⁵⁹ Sujit Chandra Guha, p. 38. Mohammad Ashraf Khan, Madan Mohon Bhat, Tribhuwan Sing eds. *Silkworm Crop Protection: Concept and Approaches*. New Delhi: Daya Publishing House, 2011, pp. 94-119.

Pebrine was a very harmful disease, it affected the growth of silk worms since time immemorial. It was not possible to identify the disease at the beginning as its growth was not rapid in comparison to other disease, after some days it was suddenly visible. It was fully developed within 30 days. Pebrine was not an old disease but important diseases. The germs of it were in India and causal organism was in the worms all the time that began to cause disease. Pebrine was eliminated through the different process. One of mostly of these, always should be cleanliness of the rearing house. In Malda, the Silk growers were fully known about the detection from Pebrine disease.⁶⁰

(ii) Muscardine (*Chunakkete* or calcino)

Muscardine was a bacterial disease. It was such an epidemic of the silk worm caused by a parasitic fungus. It could be control by disinfection eggs, used of all the appliances, and should rearing the worms in a clean way. Muscardine was visible only fulfill developed moment. When the silk worms were affected by muscardine they gradually turned into lime Like in appearance. The Italian name of the disease was calcino and the Bengali name Chuna – Kete. A Pale rose – colour was seen all over the body just before death. The body became limp and lost its elasticity. It ceased to move and rapidly died. After death the worms look a piece of chalk. Like Pebrine , muscardine was always been known in Bengal silk rearers. The caterpillars attacked by muscardine at its last stage would spin cocoons, but the moths would not emerged from it and on opening of the cocoons the pupae would be found white efflorescence. When the muscardine broke out, it was stopped by keeping the worms fasting for a few hours and burning sulphur in the rearing room thoroughly shutting it up.⁶¹

⁶⁰ Mohammad Ashraf Khan, Madan Mohon Bhat, Tribhuwan Sing eds. *Silkworm Crop Protection: Concept and Approaches*. New Delhi: Daya Publishing House, 2011, pp. 94-119.

⁶¹ *Ibid.*, pp.79-93.

(iii) Fly Pest (Kuji)

The silk worms were attacked by the different pests in the various times. The important pests known as fly pest. Always, this diseases not treated as a pest. The fly pest Generally attacked the silk worms When they crossed the 3rd or 4th moult. If the damage was serious, the caterpillar would not spin cocoon and if the damage was not so serious it would spin but at that stage the moth would never be formed inside the cocoon. Moreover, the cocoons thus got would be useless for reeling. The rearers of Malda were highly care to protect of the silk worms from the fly pest.

In each bund, the silk worm rearers reared the worms at alternate bund to avoid excessive loss from the parasitic fly. The ventilator and the window of the rearing room were covered by net so that the fly pest could not make enter the room.⁶²

(iv) Flacherie

The flacherie diseases were composed of different components, such as bacteria, streptococci, coli and bacillus. When silk worms were attacked by flacherie, the body became sluggish and black. The silk cultivators of Bengal called the disease *Kalsira*. The best way to control the flacherie disease was by feeding appropriate quality and quantity of leaves. A minute insect caused *tukra*, which could easily be wiped out by kerosine emulsion.⁶³ The silk rearers tried to disinfect the bed with lime and bleaching powder from the protection of the disease.

⁶² Ibid., pp. 6 – 26.

(v) Gatine (Salfa)

In the early stage of silk worms they were attacked by gatine due to highly hot or cold temperature. When attacked by gatine, the colour of worms turned black. It was not a vital disease to the silk rearers and it did not rapidly spread into the silk worm. The gatine disease was prevented, if the silk worms were restored in normal temperature, also by keeping the rearing room clean. This disease was not very common to the sericulturists of Bengal. Although it was known in Bengal as *Salpa* and popularly known in Karnataka as *Hasirumoto* disease. The preventive measures of this disease was done by strict hygienic and congenial environmental conditions, infected larvae infected were instantly removed and destroyed.⁶⁴

(vi) Grasserie

Grasserie was caused by Borrelina virus, not an infectional disease. The infected silk worms turned yellowish. Unsuitable food and faulty ventilations were the main causes of the grasserie. Grasserie disease was also known as *Rasa* or jaundice to the rearers. The rearers of Malda used leaves from large mulberry trees and avoided the use of shrub leaves as far as possible. In Bengal, more loss took place from grasserie than from flacherie. The main way of controlling this disease was by providing proper ventilation and by avoiding extreme low and high temperature.⁶⁵

(vii) Court

⁶³ Ibid., pp. 66 – 67.

⁶⁴ Ibid., pp. 65 – 66.

⁶⁵ Ibid. pp. 67 – 68.

It was a hereditary disease. Silk workers use of good seeds had helped the silk rearers to avoid that court disease.⁶⁶ Court was more common in the month of February and March. When worms were given 'naicha',⁶⁷ or leaves from the shady places, or were fed with insufficient leaves at the last stage, this abnormality occurred amongst the silk worms. When silk worms were affected by court disease their colour turned into chrysalises. During this period, silk worms did not produce cocoons.

(viii) The Dermestes vulpinus

It was caused by a kind of beetle which ate up silk worms in all its stages. This pest took shelter in the cocoon godowns and came with the seed cocoons. So the seeding was done outside the rearing room. The appliances were always kept clean so that the epidemic from pest was naturally checked. The cocoon rearers of Malda were very much aware of these diseases and they always tried to fight it out, so that the cocoonaries could be saved from it.

(c) Different Steps of the Silk Production by Worms:

The silk worms produced the yarns through the various stages. The cocoons were made by only fine yellow transparent gum, which were produced by silk worms. During the time of spun, the thread apparently seemed single. But the fact was that, two threads were stuck together by their sides from beginning to end. The worm at first started the work through spinning thin and irregular threads, but threads were to support its future structure. The worm formed a sort of oval or a loose texture which was called the floss silk. During this period, it completed the firm and formed the consistent ball of silk. It always remained within the sphere it was forming. During its work, it rested on its hind part, fastening and directing the threads with mainly its mouth and the fore legs. Those threads did not

⁶⁶ N. G. Mukherji, p.31.

⁶⁷ Naicha leaves were leaves gathered from the new plantation.

proceed in continued circles inside of the ball, but was spun in spots backward and forward. This was the cause why the pod in winding off, did not turn round while ten or twelve yards of silk were drawn out.⁶⁸

At the end of two days, worms usually completed its ball, in size and shape like pigeon's egg. The inside was generally smeared with a gum of the same nature with that out of which the silk was formed. Water could not penetrate unless they were imperfectly formed and the silk almost reeled off. When the pod was completed, the worm got shortened with the rings off its skin. At this stage upon opening the pod, it was found that the worm assumed the form of a chrysalis having brown smooth skin composed in rings and the skin thrown off by it was in the ball with it.⁶⁹

In this stage, it continued near a fortnight, from the time it began to spin. Then it turned into a large white moth with four wings, two black eyes and two horns branching sideways like two very small black feathers. It then moistened the end of the pod with clean liquor, which was thrown out of its mouth. This softened the gumminess of silk. The frequent motions of its head loosened the texture of the silk, and the ball was pierced by the moth. Hence, it was necessary to kill the chrysalis while in pods. A sufficient number of pods were kept for breeding purposes.⁷⁰ The phase of reeling was very symbolic. The sound of the chrysalis shaking within the pods indicated that those were ripe, and also fit for reeling. They were then taken out of the mat and sorted into four groups and were put in separate baskets. Although, the seed cocoons (the cocoons designed for breeds) were put in one basket

⁶⁸ Letter written by George Williamson, officer under British East India Company to William Aldersey, President and Members of the Board of Trade, dated 22 December 1775. Board of Trade, Commercial, Proceeding Number 9, 30 January 1776, Volume 6, Part 1. WBSA. Calcutta.

⁶⁹ Ibid.

⁷⁰ Ibid.

and the double cocoons (cocoons having two worms) in another basket, the firmest cocoons for reeling were put in the third basket, and lastly, the cocoons of looser texture, thinner and imperfect cocoons were placed in the fourth basket.⁷¹ For future breeds, the strongest and largest cocoons were prepared out of disease free and healthy worms. It was remarkable that, the weak worms were prepared immature and small cocoons. So, the cultivators always tried to developed the perfect physical growth for the silk worms.

During the time of choosing the seed cocoons it was necessary that an equal number of males and females were selected. The cocoons containing male worms were cleaned at the last moment than those containing the females. These cocoons by reason of the worms having eggs were swelled in the middle part than those containing males. The double cocoons were sometimes mistaken for females. But these cocoons were easily distinguished by their clumsy shape.⁷²

Under sericulture management system, four methods were set-up to kill worms in the cocoons. It was remarkable that, the silk worms were killed first by the heat of the sun, second, by the heat of the oven, third, by the steam of boiling water and at the end by salt. When the first method was used the cocoons were exposed in the sun for about five hours and then wrapped up in hot coarse cloths. The heat of an oven also killed them in about a quarter of an hour. Then, they were taken out and exposed to the air or to the sun for drying, which was necessary at that moment. In the third method, steam was allowed to penetrate through the pods. The silk cocoons in a basket were placed on the boiler within one inch of the hot water. When the silk worms were killed in lower portion, the basket was turned upside down and fixed over the steam till the whole was fulfilled stoved. Then they were poured out on a blanket

⁷¹ Ibid.

⁷² Ibid.

and wrapped up closely. Once the temperature cooled down those were spread in the sun or in the air for drying the moisture.⁷³ In the fourth stage, the pods were put into extended earthen pots. Four ounces of salt were poured on each ten pounds of cocoons. The pots were then closed tightly so that the air was totally excluded. By such means, the worms in the cocoons were killed within a week.

In Malda, and also in other parts of Bengal, the two previous systems of four methods were followed during the period. The rearers or their agents: the *pykars* used to back the cocoons in the hot sun for the purpose of killing the chrysalis within it.⁷⁴ This made the colour of silk dull to the great detriment of the Company's silk investment.

We remarkable note that the principle of non-violence served as a driving impulse in their minds. Moreover, the *chassies* could not afford to buy wood to bake cocoons. Second, their motive to prevent the conversion of the cocoons into threads of the fine letters, led them to give in to this course of action. For the output of silk from a given quantity of being less, their gain was much affected while the reeling of coarse threads better remunerated them. Third, this was also designed to prevent the spoiling of their cocoons on the stages of the cocooneries for delaying opening for any length of time from inattention or careless winding. It was the custom to regard the cocoons before their conversion into threads as the property of the tenderers. So they had to suffer loss for no fault on their part, and

⁷³ Ibid.

⁷⁴ Ibid.

naturally they were induced to bake their cocoons in the sun as a precaution against any probable loss. The detail method of baking the cocoons in the woven was prevalent at all the filatures of the English East India Company in Bengal.

The method such was that when the British East India Company collected the cocoons, the factory workers baked them carefully for two to two and a half hours in hot oven for killing the moths, otherwise they spoil the cocoons by piercing or eating those. Those baked cocoons were then exposed to the sun for eight to nine hours. When dried properly, they were laid on the stages of the cocoonery 2 or 3 inches deep, and turned 2 or 3 times in a day. The Madrassy cocoons were very soft, they could not be ovened. In that case, they were melted away or bruised. Even the Dessee cocoons of April and rainy bunds were not baked, only the October, November – March bund cocoons were baked. But the Bengal cocoons could not be baked at all the seasons of the year. In the Aurungs under Malda, the cocoons were baked during all seasons of the year.

In general, the moth came out of silken sepulchers about a week or ten days after the pods were formed. Having cut their shells, they were engaged into a sexual intercourse. At the end of this stage, the female laid eggs but both them died immediately. The unique features between males and females was very explicit: the female having a large round belly. Its colour were whiter and its horns not so large nor so black as the males. Besides, the body of the male were slender and sharp at the end than that of the female.⁷⁵ The male fluttered his wings very quickly and moved with extreme activity. The

⁷⁵ Sailendra Kumar Bag, p.134.

female remained quiet and moved her wings very little. In its original state of freedom, the moth attached the eggs to the leaf or the bark of the tree, so that they would not fall to the ground.⁷⁶

Before moths were born a piece of cloth in proportion to their numbers was fixed against the wall with its lower sides twined up about four inches. This was designed to protect moths from falling on the ground while coupling. After that moths were smoothly taken out of the pods and placed in pairs upon the cloth where they existed as copulated. The strongest and largest moths were put together and the weak ones were rejected.⁷⁷ When moths were coupled, they were removed to another cloth, hung in the same manner in different parts of the room. This was designed to avoid confusion as to which had coupled, and which had not. Moreover, it was essential that the males would be thrown away to prevent the females from being disturbed while they were laying their eggs.⁷⁸ At this stage, moths laid eggs on the mulberry leaves or on paper made from the back of the mulberry trees. When the plantain leaves were used, these were spread on mats with edges to prevent the moth from creeping off and to strewing their eggs. When the paper made of mulberry trees was used the moths were placed on another sheet for laying eggs. When covered with eggs, the sheets were dipped three times in water with a bit salt dissolved in it.

In the next stage, mainly for the air drying, those were hung from a beam. After few days, the sheet was taken downward and was again immersed in the water. The sheet was taken out and hung up again till it dried. This was then rolled up tightly and enclosed. It was kept in an earthen vessel, standing on

⁷⁶ Letter written by George Williamson, officer under British East India Company to William Aldersey, President and Member of the Board of Trade, dated 22 December 1775. Board of Trade, Commercial Proceeding, Number 9,30 January 1776, Volume 6, Part 1. WBSA. Calcutta.

⁷⁷ *Ibid.*

⁷⁸ *Ibid.*

one end. Eggs turned into different colour at different stages: eggs when laid were of a pale yellow colour, then assumed a greenish hue, eventually those turned red, and in about four or five days they attained a bluish grey colour. The yellow coloured eggs were good for nothing.⁷⁹

The cultivators took utmost care of silk worms to get the best cocoons. So far as the large or annual silk worms were concerned, their seeds could be preserved for a year from January to January by simple means of closing an earthen pot so as to exclude the air, and this method was successful.⁸⁰ The silk cultivators were aware of the proper method of silk worms rearing. Also, they paid attention on ecological factors: soil, air, weather, along with proper time of feeding and rearing.

The superior advantages of a pure, mild and regular temperature on the border of a mountainous country such as the northern provinces of Italy including Piedmont, Milan and Tirol approaching the Alps, produced superior quality of Italian silk.⁸¹ In India, the winter or the spring crop was the most successful. A moderate and equal temperature prevailed then.⁸²

A lot of differences in the cultivation of silk existed between India and European countries. The difference in mulberry cultivation, silk worm rearing, winding, reeling also existed between the two countries. During the very early phase of Company's establishment in India, the Company was not focused on developing the sericulture sector.

⁷⁹ Sailendra Kumar Bag, p.135.

⁸⁰ Ibid.

⁸¹ Ibid. p.136.

⁸² J.Geoghegan, p. p.111.

The nurturing place of silk worms in India was not suitable at all times. The rearing houses were made of bamboo, straw, and mats. The silk worms rearing place were very dark and silk worms were attacked by different diseases. In the second phase of the 18th century, the Company tried to develop the entire sericulture system for the purpose of their own profit. As a result, they tried to introduce new stocks of worms from abroad, but the result was not very fruitful. Besides during the period, in Malda also including other parts of Bengal it was not always easy for the poor rearers to build a suitable place and necessary condition for silk rearing.

(d) Different Types of Prejudices in Silk Cultivation :

Most of the silk cultivators were illiterate. As a result, they were fully unknown about the modern science and technological methods. The female cultivators or rearers were more superstitious than male workers. Young girls and women rearers were not allowed to enter the rearing rooms. They were also not allowed in the rearing room, when they also wore dirty clothes. Fish, turmeric, garlic, onion, snuff and tobacco were prohibited. No persons excepting those who fed the worms were allowed to enter into the rearing houses.⁸³ The rearers believed that the worms would die if any unknown person entered in.

ROLE OF THE INTERMEDIARIES:

In colonial period, the role of the intermediaries was very significant in silk industry and silk trade. In the eighteenth century, the silk industry were fully controlled by the intermediaries. They maintained a

⁸³ Sailendra Kumar Bag, p.137.

link between the primary producers and the silk merchants. They occupied a position of reliance as they served both the Company and native merchants. The *banyans*,⁸⁴ the *gomastahs*, the *dallals* and the *pykars* belonged to the same group of intermediaries and gained important position conducting the silk industry and trade of Bengal. In the primary stage, the high competition existed between Asian and European traders in gaining financial profit from silk. But in the final stage, British East India Company took over the mercantile profit through their political power in Bengal.

(a) *Banyan*

Banyans role were highly important in the silk trade during the colonial rule. “A Banyan is a person...by whom the English gentlemen in general transact all their business.”⁸⁵ In the pre Plassey period, they belonged to the Vaisya caste. But during the changing societal condition in post Plassey period, many upper caste Hindus became Banyan and they used it as a profession to gain more economical profit. A Banyan was an Indian partner of the foreign silk merchants in India and had the knowledge of silk related market conditions. They got political protection from the Writers and conducted partnership business on commission basis.

During the period of Warren Hastings, Cantoo Babu was a famous banyan. He was a notable silk merchant of Kasimbazar and founded Kasimbazar Palace. He got the title Maharaja from the English East India Company. The most famous *banyan* in the second half of the eighteenth century was Gokul

⁸⁴ ‘Banyan’ comes from Sanskrit word ‘Vanik’ meaning a merchant and merchant’s banker.

⁸⁵ William Bolts, *Considerations on India Affairs*, London : Printed for J.Almon, 1772, p. 80.

Ghosal, Baranasi Ghosal, Hydaram Banerjee, Akrur Dutt, Monhur Mukherjee and their names frequently occurred in the judicial records of the time.⁸⁶

(b) *Gomastah*

The *Gomastahs* enjoyed the power and got money from silk business.⁸⁷ The *gomastahs* were salaried agent. The *gomastahs* were appointed on a regular basis as employees of the Company. They were also involved with factory administration. Their salary was fixed. Their condition was similar to the employees of private trade.

Within the total process of business transaction, the power of the *gomastahs* was very different from that of the *dallals* and *pykars*. They did not belong to any mercantile community like the *banyan*. A merchant-cum-banyan was respected more than a general *gomastah*. They exercised arbitrary or extra power and bounded the rural weavers to take advance money against their will to establish a monopoly both upon the workers and their work. “The assent of the poor weaver was not deemed necessary; for the *gomastahs*, when employed on the company’s investment, frequently made them sign what they please; and upon the weavers refusing to take the money offered, it has been known they have had it tied in their girdles, and they have been sent away with a flogging.”⁸⁸

⁸⁶ N.K.Sinha, *The Economic History of Bengal From Plassey to the Bengal*, Vol.1, Calcutta : Firma K. L. Mukhopadhyay, 1965, p. 104.

⁸⁷ Letter written by H.W.Drog, Resident at Cossimbazar to John Lumsden, President and Member of the Board of Trade, Fort William, dated 30 March 1809, Board of Trade, Commercial Proceeding, 12May 1809, Volume 232, WBSA, Calcutta.

⁸⁸ William Bolts, p.193.

The artisans had no legal assurance or protection against the fraud and violence by those agents.⁸⁹ The malpractices of Agents were always supported by the Residents and junior servants of the Company who were engaged in private trade.⁹⁰ *Gomastahs*, “under the sanction of the Company’s name” and “under the pretence of securing an investment for the Company” often controlled all manufacturers and weavers of silk for their own benefits.⁹¹

(c) *Dallals*

Under the system of production-organization, *dallals*⁹² played an important role. Mainly, they were middlemen between the sellers and purchasers. Thus, they acted as a brokers. They received commission if their transaction was successful. From their side, without any capital investment for their work, they gained financially as a commissioned agent. “Many *mutasaddis* being devoid of capital had chosen the profession of a broker.”⁹³

Although we say that, *dallals* belonged to the mercantile community, but they were neither traders nor manufacturers. They merely acted as a bridge between sellers and purchasers. Their management skill was very high.

(d) *Pykars*

⁸⁹ William Bolts, p. 193.

⁹⁰ William Bolts, P.70.

⁹¹ Khan Mohammad Mohsin, *A Bengal District in Transition Murshidabad, 1765-1793*. Dacca:Asitic Society of Bangladesh, 1973, p.72 .

⁹² *Dallals* means brokers.

⁹³ Kaliprasanna Sinha, *Hutam Pencher Naksha*. Calcutta : Sahitya Parishad, 1363, p.7 .

The *pykars* were very close to the silk cultivators. Like the *gomastahs*, the *pykars* were not appointed as salaried employees. They were the bridge between cocoon rearers and Commercial Resident of the Company. Due to Company's *dadni* system, *pykars* purchased cocoons from cultivators. The Company's Resident gave money to the *pykars* for the regular supply of raw materials. They signed an agreement for continued supply of cocoons, so they were purely trader – cum – contractors. The *pykars* never paid their balances.⁹⁴ They maintained direct contact with the silk growers to purchase and collect the cocoons.

For the purpose of the collecting cocoons, they travelled from village to village. As a result, they became a significant person of the trading community. Besides that, their position were different from the *dallals* or brokers. The *dallals* were engaged by their employers to find goods for them and received a small commission in return.⁹⁵ *Pykars*, on the other hand, like the *banyans* were not the business partners of the Commercial Resident and had no share in the profit or loss. Within their capabilities, they collected raw materials as per order and always maintained various conditions of the agreement. After that, they became the chief supplier of raw silk of Malda. They maintained very close connection with the Company's officers and other European traders. Economically they were very independent and became the best native person under the production organization system.⁹⁶

⁹⁴ Letter written by C. C. Hyde, Resident at Gungypore Factory to George Saunders, Acting President and Members of the Board of Trade, dated 22 February 1831. Board of Trade, Commercial, Proceeding Number 17, 1 March 1831, Volume 498, Part 1, WBSA, Calcutta.

⁹⁵ Buchanan Hamilton, Dinajpur Report, p.320.

⁹⁶ Sushil Choudhury, *Trade and Commercial Organisation in Bengal*. Calcutta : Firma K. L. Muhopadhyay, 1975, p. 75.

The British East India Company could not avoid of the importance of *pykars*, because they were main suppliers of the cocoons for the Company.⁹⁷ They generally visited rural areas for collecting cocoons. So, for the Company, necessity and significance of *pykars* was unavoidable. As per causes, the Company was fully depended on such matters. The *pykars* collected cocoons from the very backward and long distance villages for the factories.⁹⁸ They were authentic directors for the entire rural-urban based silk industry and trade.⁹⁹

Thus, it may be stated that the nature of the silk cultivation and system of the production organization, both were very necessary stages for the development and prosperity of the silk industry and trade colonial Malda. Company's agents did not get pure silk without proper way of silk cultivation and production organisation method. Both steps were dependable on each other. When cultivation of mulberry was not carried out in proper time and process, the production organisation stage was not successful. The sericulture was an age old practice. The native cultivators were actively engaged with the silk cultivation. In the production organization system, the different types of intermediaries like *banyan*, *gomastah*, *dallals* and *pykars* played as significant roles. Thus, they became core directors of the entire silk industry. But all the credits must go to the different native workers engaged in the development of the entire silk cultivation and production organization system in Malda during the colonial period.

⁹⁷ Gautom Bhadra, 'The Role of Pykars in the Silk Industry of Bengal', (c.1757-1833), *Indian Historical Congress Proceedings*, Aligarh, 1975.

⁹⁸ Ibid. *I H C*, 1975.

⁹⁹ A. F. Tytlar, *Consideration on the Present Political State of India*, Volume 2. London : 1816, p. 390.