

MADRAS RECORD OFFICE.

Government of Madras.

Revenue DEPARTMENT.

G.O. No.	1337	Press
		Mis.
Dated	26. 2. 1875	19

Not to be folded or roughly handled

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*Proceedings of the Madras Government, Revenue Department,
26th August 1870.*

No. 402. Read the following Proceedings of the Board of Revenue, dated 6th June 1870, No. 3,868 :—

Read again Board's Proceedings, dated 5th January 1870, No. 30.

Read also the following letter from the Acting Collector of Tinnevely, to the Acting Secretary to the Board of Revenue, dated Trichendur, 14th April 1870, No. 152.

REFERRING to Board's Proceedings, Nos. 30 and 139, dated 5th and 8th January 1870, I have now the honour to forward what I believe to be very full and complete reports on the cultivation of the mulberry, the breeding of silk-worms, and the reeling of silk, as carried on in Tenkasi. The area at present devoted to mulberry cultivation is given in paragraph 5 of the Tahsildar's report. The great falling off in the cultivation of this plant arises, I think, not from the rate of assessment, which is not excessive, but because the people find it has paid better to grow rice, for which they get the true value instead of silk; the true value of which they are ignorant, and are consequently defrauded by the Combaconum merchants. I have little doubt the cultivation of mulberry will increase when the people see that the plant can be grown on well-irrigated punjah, and the people understand how the value of the silk is increasing.

2. I forward specimen leaves, also cocoons and eggs, as well as reeled and woven silk.

ENCLOSURE No. 1.

From the Sub-Collector, to the Acting Collector of Tinnevely, dated Nanguneri, 5th April 1870, No. 76.

No. 30, dated 5th January 1870.
" 139, " 8th "

WITH reference to the Proceedings of the Board, marginally noted, I have the honour to forward the Tahsildar's very full report in original.

2. I will first make a few comments on his report* paragraph by paragraph, and then add what has occurred to me on the subject, endeavouring to satisfy the requirements of the Board in so doing.

* Enclosure I.

3. From paragraph 8 of Mr. Boalth's report, and paragraph 4 of the Tahsildar's, I think it pretty certain that punjah land, irrigated by a well, would answer for the cultivation of the mulberry shrub. As to this, we shall be able to report more accurately hereafter; but I may mention that I planted some cuttings in my garden on receipt of the Board's Proceedings, and they appear to grow freely even now with very little water, indeed, and no sort of attention whatever.

4. Full particulars as to the extent of land now under cultivation in Tenkasi are given in paragraph 5 of the Tahsildar's report. It will be seen from this that the average assessment on land, cultivated with the mulberry, is Rupees 7-0-6 per kottah, or nearly Rupees 4-5-9 per acre. Three kottahs and thirteen Ms. are assessed so highly as Rupees 16-13-6 per kottah; but by far the greater part of the whole is no more than 5 Rupees 1 Anna a kottah, or Rupees 3-1-0 per acre. I cannot think, therefore, that the rates of assessment have much, if anything, to do with the decrease in the cultivation, and I feel satisfied that the only legitimate way of encouraging the industry is, that pointed out by Mr. Stuart in paragraph 6 of his report, viz., by proving to the people that punjah land is by no means essential to the growth of the shrub, and that the

simple and obvious way of avoiding a high assessment is to raise their crops of mulberry leaves by means of wells on punjah land at ordinary dry rates.

5. At the same time there is, perhaps, no necessity for charging anything more than the single nunjah assessment on *single-crop* land so cultivated, and I think it probable that the settlement will greatly equalize the rates generally, and therefore lower those abnormal rates which may reasonably be considered to be unduly high at present.

6. The true reasons, however, for the falling off in the cultivation are *no doubt* those stated as *secondary* causes by the Tahsildar in paragraph 10 of his report; and if the price of silk is rising still, and if it turns out, as is likely enough, that our ryots have been defrauded of their fair share of the enhanced profits by the merchants of Combaconum, who buy their silk in the rough, I have very little doubt that the area of the cultivation will gradually increase again, especially if, as seems likely, the Mussulman (Lubbai) part of the population engage in it to any extent. Whether this class of people possess all the qualities of cleanliness, etc., essential to this branch of industry, is in my opinion doubtful. They *may* perhaps introduce the epidemic.

7. You will observe that the Tahsildar lays great stress* on the *quality of the leaves*, and asserts that the health of the caterpillars depends on this, and on the care with which the leaves are prepared for their consumption. Mr. Boalth does not appear to have noticed this, but it is evidently well known to all experienced cultivators.

* Paragraph 8.

Paragraph 9 of Report.

8. It seems to me that we have no data here to go upon to decide the age to which the mulberry will grow.

9. I fancy the actual cost of cultivation must be slightly exaggerated in paragraph 11 of the Tahsildar's report, but I cannot give a very decided opinion.

10. As to the breeding of the worm the Tahsildar's account agrees generally with that of Mr. Boalth. It is pretty evident, however, that greater care is taken of them here, especially in the matter of ventilation, than was done in Trichinopoly, and then, of course, the climate of Courtallum must be much more favourable than that of a hot place like Trichinopoly; and the ill-contrived houses where the worms were kept, contrast very unfavourably with the airy, clean-looking thatched buildings that I saw at Courtallum. The Tahsildar's remarks on this point, in his 13th and 18th paragraphs, seem to me well worthy of consideration, and may be compared with what Mr. Boalth says in paragraph 20 of his report.

11. In paragraph 16 the Tahsildar observes that eggs can only be sent short distances, *i.e.*, within a week. This, however, appears to be a mistake, as I believe the practicability of sending eggs any distance by sea has long since been established.† It is quite possible there-

fore for the people at Courtallum to send eggs wherever they may be wanted.

12. It is pretty clear that the silk-worms at Courtallum have been remarkably free from anything like epidemic disease, but it is not very easy to say *why*. Perhaps, gentlemen who have had greater experience may be able to deduce from the facts given by the Tahsildar sufficient data to ground a reasonable hypothesis upon. I must confess my utter inability to form anything like a probable deduction as to the true reason of their singular immunity. It *may* be partly on account of the healthy, open situation of the *vi-*ges, where the cultivation is carried on, and partly on account of the very small number of worms employed. It is quite remarkable, also, how particular the owners are about admitting strangers or persons who are in any way unclean into their silk-worm houses.

13. It seems to me that the Tahsildar's idea of introducing an improved spinning wheel to be worked at Tenkasi, under skilled management, is a very good one. The Board, however, will no doubt be able to say, with greater certainty than we can, what is the real value of the silk,‡

‡ Enclosure II.

I am forwarding with this report, and how its value might be increased by an improved system of

working up. If they determine to send a spinning wheel of an improved description, I will take care that it gets all the reeling to do. On this point I would suggest that arrangements be made with some merchants in Madras to purchase our silk at the market-price for some time, so that we may know we are getting a fair value for it, and are not being defrauded by the Nattukottei Chetties. This seems to me to be another legitimate way of encouraging the industry, which a special assessment is certainly not.

14. From Mr. Mackenzie's letter to the *Times of India*, re-published in the *Indian Economist* for January, it appears that an equable climate is perhaps the most important essential to the successful cultivation of the silk-worm, and cleanliness the next. It does not seem to matter *so much* about the heat, so long as there are no sudden and violent changes of temperature, and so long as the climate is a *dry* and not a *muggy* one. Now, any one who knows Courtallum at all, knows what a fresh, dry atmosphere it rejoices in, even during the rains. It is popularly said that the rain* in the season (like

* "Sharrel."

Scotch mist) does not *wet*, and though for two or perhaps three months of the year it is as hot as any part of Tinnevely, and almost more unpleasant, the heat is still by no means unbearable, except for about a month; and in every other respect, it answers Mr. Mackenzie's requirements in the most remarkable manner. To facilitate a comparison of its climate with that of Bangalore and Dharwar, I have drawn up two tables (A. and B.), from which the following conclusions may be drawn:—

First, that the climate of Tenkasi, or at any rate Courtallum, is quite as equable as that of

† The mean annual temperature of Bangalore is said to be 71°, and of Tinnevely 85°, that of Courtallum would be certainly 2 or 3 degrees less.

either Dharwar or Bangalore, though it may be some ten degrees hotter,† and that in number of rainy days and amount of rain-fall, Courtallum and the villages concerned are about on a par with those great silk-producing districts.

15. There is another point alluded to in Mr. Mackenzie's letter, which deserves very careful consideration before any attempt is made to introduce a fresh breed of silk-worms into Tenkasi, and that is, that the imported worms might, from sudden change of climate, sicken and die, and, *perhaps*, infect our healthy natives. It may perhaps be more expedient to "let well alone" as he says, and to extend our cultivation from the stock we have.

16. I have just heard from the Tahsildar that he has already despatched eggs and cocoons to the address of the Secretary to the Board, and trusting they may arrive in good condition, I have, etc.

(A.)

Extreme maximum and minimum readings of Thermometer in

Bangalore. (Average of 5 years.)			Dharwar. (Average of 5 years.)			Courtallum. (No record.)		
						(Say)		
Maximum	...	95	Maximum	...	100	Maximum	...	105°-110°
Minimum	...	53	Minimum	...	56	Minimum	...	65°
		42			44			40-45

(Signed) J. B. PENNINGTON,
Sub-Collector.

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(B.)

DHARWAR.			BANGALORE.			TENKASI.		
No. of months in which rain falls.	No. of rainy days.	Amount of rain per annum in inches.	No. of months in which rain falls.	No. of rainy days.	Amount of rain per annum in inches.	No. of months in which rain falls.	No. of rainy days.	Amount of rain per annum in inches.
...	97	30 inches. 63 cents.	...	88	35 inches. 26 cents.	10 or 11	59	32 inches. 24 cents.
(No information.)			(No information.)					

NOTE.—It should be observed that there is much more rain, and probably many more days on which rain falls in the year at Courtallam and in the ages in which the cultivation of the silk-worm is carried on than at Tenkasi.

(Signed) J. B. PENNINGTON,
Sub-Collector.

ENCLOSURE No. 2.

From the Tahsildar of Tenkasi, doing duty at Tinnevely, to the Sub-Collector of Tinnevely, dated 15th March 1870.

Proceedings of the Madras Government, R. D.
23rd April 1868, No. 619, Miscellaneous.
15th December 1869, Nos. 272a to 272c.
21st " " " 292 and 293.
Proceedings of the Board of Revenue,
30th Sept. 1866, No. 7,250.
4th Jan. 1870, " 10.
5th " " 30.
8th " " 189.
19th Feb. " 1,151.

I HAVE the honour to submit my report on silk, called for in the Proceedings of Government and of the Board of Revenue, as per margin, herewith returned.

2. Silk is reeled from cocoons spun by silk-worms which feed on mulberry leaves. It will therefore be advisable to consider the subject under the following heads:—

- I.—Cultivation of mulberry.
- II.—Breeding of silk-worms.
- III.—Reeling of silk.

3. I. MULBERRY.—This is a perennial plant which would grow into a tree, but is prevented from so doing, and kept down to the height of 4 or 5 feet by early pruning. This is done for two reasons:—

1st.—There is a difficulty in climbing up a tree for the collection of leaves; and,

2ndly.—The quantity of leaves is more abundant in its state as a shrub than as a tree.

Specimen leaves with stem are herewith sent. The Tamil name used by natives is Kumbly Cheddy (கும்பலி சேட்டி). It is perhaps of the Philippine kind. I saw at Tenkasi in December last a mulberry tree about 12 feet high; the leaves were then luxuriant.

4. A mixture of black and red soil is preferable for the cultivation of this plant. It looks like a cotton shrub, and grows well in high nunjah land. Punjab land will not suit this cultivation, unless it can be watered once or twice a week in summer. In double crop nunjah land, mulberry is not raised for this reason, viz., the outturn of rice is considerably greater than in the other case; and nunjah cultivation does not require constant care and labour as in the case of mulberry cultivation and silk manufacture. It is said that neither black cotton soil nor sandy gravelly places suit this cultivation. The uplands of Southern India are more suited for it than the lowlands. Punjab land watered by well with picottahs will, I think, be

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equally suitable for the cultivation. An experiment has been made at Tenkasi and at Melapalayam in the Tinnevely Talook, and the result will in due course be communicated.

5. Mulberry seeds are not sown in this part of the country, but the shrub is propagated by cuttings about 6 inches long in the month of Auni (June), just the season at which the sharrel

Cultivation.

rains of Tenkasi set in. I think this may be tried in any month with perhaps additional labour and care. The tree does not appear to have its origin in India, but was, for the first time, introduced into this country about forty years ago by a European gentleman Mr. Hughes. It was cultivated in twenty-five villages of the talook of Tenkasi up to Fusly 1252 to the extent of 200 kottas 19 mercals and 5 puddies; it now grows only in four villages, viz, Melagaram, Samyarkudiyiruppu, Mathalamparei, and Gunaramanallur, to the small extent of 24 kottahs 17 mercals 5 puddies, as particularized below:—

Fusly 1278, Tenkasi Talook.

Name of Village.	Extent of Cultivation.				Assessment.			Rate of Assessment per kottah.			Remarks.
	K.	M.	M.		RS.	A.	P.	RS.	A.	P.	
Melagaram	3	13	4	5	3	2	10	4	14	7	Before Fusly 1252.
	7	7	7	3	60	14	3	16	13	6	After " "
Gunaramanallur ...	3	3	...	5	17	3	9	2	5	5	Before " "
	...	16	1	...	16	0	3	5	1	0	After " "
Mathalamparei	4	19	6	6	12	4	0	15	15	6	Before " "
Strikrishnamadu or Samyarkudiyiruppu.	4	7	1	4	21	10	5	4	6	0	After " "
Total...	24	17	5	5	175	8	10				

In the month of Auni (June), Audi (July), Auvani (August), and Purattasi (September), the rearing of silk-worm is rare, as the leaves are not then abundant, because the shrubs then undergo pruning or clipping, as otherwise fresh leaves will not shoot out abundantly during the succeeding twelve months.

6. The mulberry field requires hoeing once a month, also manuring yearly, if not half-yearly. Ashes, cow-dung, etc., will do for this; sheep-dung manure is always to be preferred; this is commonly done by keeping sheep-fold in the mulberry fields for a couple of days or so.

Manure.

7. The field requires to be watered once a fortnight or weekly in the lowlands of this district, as otherwise the leaves will not be exuberant; the more the leaves are the greater will be the supply of silk-worms, and a silk

Irrigation.

eventually. The health of the caterpillar depends upon the quality of leaves; sickly leaves are thrown aside, and the leaves having rain-water or dew on the surface have to be wiped with a cloth; if the caterpillar is not healthy, the cocoon will be smaller, and the shell thinner. That the outturn of silk depends upon the advantages of irrigation is unquestionable.

8. The mulberry fruit is edible and black in appearance; its resemblance to some extent to the common caterpillar (கம்பலி பூச்சி), has perhaps given the name to the shrub called "Kumbly Cheddy," (கும்பலி சேட்டி means wool and Q. shrub). The leaves feed the silk-worm; the young caterpillars under the age of ten days feed

Products.

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on tender leaves which have to be chopped up, as their teeth are not ossified before the tenth day. The dead and withered leaves are useless; the leaf becomes sickened by having a white film on the under surface; such leaves are certainly unwholesome for the caterpillar.

9. They have had the mulberry for about forty years in Tenkasi, and though the summer affects the supply of leaves, yet the shrub will not die away for want of water, but it will shoot forth again in the winter.

Age.

10. At Melagaram, the teerwah up to the end of Fusly 1251 was Rupees 2-9-1 per seed-kottah of land, this being the rate for Chilly; but in Fusly 1252, one-fourth of the assessment of one-crop nunjah of the village in which the field is situated, or Rupees 2-5-6, was added, as per Collector's Order noted marginally, to Rupees 2-9-1, for such fields as had been cultivated with mulberry, prior to the date of the above order; thus increasing the assessment of the Melagaram lands to Rupees 4-14-7; it was at the same time ruled that all fields newly cultivated with mulberry in and after Fusly 1252 should be taxed with $1\frac{1}{4}$ nunjah rate, for the reason that the shrub stands all through the year. If the mulberry field is entered in the Ayacut account as "Pishanum one-crop" the assessment to be levied is that for Pishanum, plus half of the maximum rate of the village for Car; and if entered as "Car one-crop" the assessment is Car teerwah, plus half of the maximum rate for the Pishanum cultivation of the village. The maximum rate is not the same in all the villages. The enhanced rate of assessment on mulberry cultivation, and the gradual falling off in the price of silk, combined with the increased price of paddy, discouraged the cultivation of this plant in this talook. The assessment on mulberry fields for the last Fusly was Rupees 175-8-10.

11. One seed kottah of land (1.62 acres) is sufficient to maintain silk-worms reared in sixteen *thattus* or circular plates of *erakali* (elephant grass), three feet in diameter each. These worms in their transformed state of cocoons weigh about 15 viss (viss = 120 Rupees weight) and yield on an average $1\frac{1}{4}$ viss of raw silk in six weeks or forty-five days. We can have annually eight such crops, but we have, generally speaking, only six crops, for, in four months of the year, the leaves not being plentiful the work is suspended. The annual yield calculated at 10 viss, (eight times $1\frac{1}{4}$ viss), per kottah of land gives Rupees 180 according to the present market-rate of 18 Rupees per viss. The expenses incurred in cultivating annually one kottah of land are given below:—

	RS.	A.	P.
Gardeners for hoeing at 10 every month, or 120 a-year, at 4 Annas per head...	30	0	0
Wages of a servant for gathering leaves daily, for feeding worms six times a day, for irrigating every fortnight in summer, at 4 Rupees a-month ...	48	0	0
Manure ...	10	9	0
Annual assessment at Melagaram ...	16	13	6
Total ...	104	13	6

We have to start with one-fourth of a viss of cocoons for one seed kottah of land, the current value of which is 5 Annas at Tenkasi, or one-third of an Anna more than it was on the 1st November last.

12. II. BREEDING OF SILK-WORMS.—From little eggs of the size of *kas-kasa* (Poppy seed), the silk-worms are hatched; they are supposed to be of the sub-species called "Tassek Muttai." From each of these eggs there breaks out a moth on the morning of the tenth day—the eggs were laid by the female butterfly; all eggs do not hatch simultaneously. A difference in the hour of hatching brings about a difference of days in the time the caterpillar is transformed

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into the chrysalis. The moth crawls upon 16 short legs, and feeds on chopped tender leaves of the mulberry; it is fed six times a-day, at 6 A.M., 9 A.M., 12 A.M., 3 P.M., 6 P.M., and 12 P.M. On the fifth day after its birth the caterpillar changes its skin; it does so also on the tenth, fifteenth and twenty-first day; but at particular times these dates are subject to slight changes. This may be seen from the caterpillar requiring no nourishment on these four days, when they are to be left untouched. The leaves need not be tender, nor be chopped up after the tenth day. On the thirty-third day the silk-worm grows to its full size; it is then an inch long, and about one-third of an inch in circumference; it then assumes a white colour, tinged with light yellow. Some caterpillars take thirty-five days to grow to full size. The caterpillars are changed from one plate to another every other day, as otherwise the plates will be left unclean with their excrement; when leaves are scattered over that, the silk-worms emerge and crawl over the leaves. After full growth, the worms seek out some place of concealment; they are then removed to a hanging circular *senthurukam* (செந்தருக்கம்) made of *erakali* (elephant grass), $3\frac{1}{2}$ yards in circumference containing twenty-five concentric circles partitioned; being placed at convenient distances, the silk-worms weave out a web in the enclosures, and change into the

Chrysalis.

chrysalis state, or what the natives call *pokanda* (பொகண்டா) of a white colour, tinged with light yellow. In this dormant state the caterpillar is left for two days in the *senthurukam* (செந்தருக்கம்) or circular hanging plate; it is hung up in verandahs or places having ventilation, in order to prevent the caterpillars or cocoons being devoured by lizards, ants, etc. A cool and well-ventilated place in summer, and a warm place in winter, will promote the health of the caterpillar.

Each *pokanda* weighs on an average twelve times the weight of silk produced therefrom. The *pokandas* are then removed from the *senthurukam*, and kept for eight days in a place beyond the reach of ants, within which period they are put in a hot-water basin and boiled. In this state the silk is reeled off the cocoons by a machine resembling the English spinning wheel, and the dead caterpillars are then thrown out as useless into the dunghill. I am informed that the bullocks eat the dead worms, but this does not appear to be the case everywhere.

If the silk is not reeled off the cocoon within a week of its formation, the caterpillar bursts through its case about an hour after sunrise of the

Butterfly.

forty-third day, and escaping from confinement comes forth with small coloured wings; it remains, however, without flying away in the *thattu* or plates 9 inches in diameter in which the *pokandas* were placed. From each *pokanda* comes out a butterfly with curled up trunk, and two long horns on the upper part of the head: the legs are now six instead of sixteen. In this state, the butterfly, having no jaws, requires no nourishment. Soon after sexual intercourse for eight hours of the day of its transformation, the male is separated by a little force, and taken off the plate; the female is distinguished from the male by their respective sizes, the former appearing larger than the latter. The female being left alone in the self-same

Eggs.

thattu, lies dormant for some hours, and lays a parcel of eggs the same night, i.e., of the forty-fifth day; this is noticed next morning, and the female also is then thrown out into the dunghill; the eggs are preserved unmoved in the same *thattu*, and the process renewed. Paper cards for placing the eggs are not used in this part of the country. Great care is taken so that ants, rats, lizards, etc., do not destroy the eggs, the caterpillars, the cocoons, and the butterflies in their several stages.

13. The Tenkasi silk-worms are not bred in the open air, lest the extremities of cold and heat and the ants inhabiting the tropical trees should kill them. It is on this account that they are reared in a domestic manner. The caterpillars are reared in shelves of thatched houses, the ceiling being lined with wooden planks, the wooden frame for the shelves is made to stand upon four hollow tin or stone cases, filled with water, to prevent ants, etc., climbing up.

14. The vegetarian class of Hindus not eating fish or flesh are opposed to cruelty to insects, etc., on religious grounds. That the Jains are averse to destroy any living being is well known. A Brahmin or Saiva Vellala, seeing the dead worms in the hot-water basin, would not again dare

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to throw cocoons into it. The majority of the Hindus are carnivorous, however, and such as these have no objection to rear silk-worms. *Thiruvalluvar* says: கொல்லான்புலாவை மறுத்துவிடுககூடாதி, எல்லாவற்றிற்செல்லும், i.e., "all living beings worship him who abstains from eating fish and who destroys no living creature." The rearing of silk-worms by Mussulman is indeed a capital idea. I have introduced the cultivation of the mulberry among the Mussulman population of Melapalayam; two enterprising characters having arranged with me to try the experiment.

15. No silk can be reeled off the cocoons from which butterflies burst forth; they are useless, and thrown out. Specimens of empty cocoons are herewith sent. A difference in the size and texture of cocoons affects the respective capability for silk; the colour thereof is yellowish, and its size is that of a small fowl's egg; it is of an oval form. The cocoons of the rainy season are sometimes smaller in size as well as in capability for silk; they are closed at both ends, unlike the "Autherea Yama-mai." On account of the extreme delicacy of the filament of the silk covering the cocoon, five or six of these thrown into the hot-water basin are united together to form one thread. A couple or two of such threads are then twisted together by the silk-weaver to form a thread of the silk cloth manufactured at Combaconum, etc. A specimen of a small silk towel, manufactured at Palamcottah out of the Tenkasi cocoon thread, accompanies this; the colour of it is yellowish. Another specimen towel of bleached thread is also sent herewith; its colour is white.

16. With reference to Government Order, dated 10th December 1869, Miscellaneous No. 146, I beg to state that from the Tenkasi cocoons the silk-worm bursts forth in about eight days, and the male butterfly has to be separated from the female soon after sexual intercourse, and so they can be despatched only to short distances within a week's reach of Tenkasi. The eggs are hatched in about ten days, during which period they may be sent by banghy post. Under these circumstances, it would not, I think, be practicable to despatch eggs and cocoons to such distant places as New South Wales. The cocoons may be sent any where within eight days' reach in ventilated boxes, at which place the box needs to be opened to facilitate the separation of the male from the female butterfly; the eggs laid may then be despatched from that place to distances within ten days' reach. The precautions given in Dr. Bennett's Memorandum, circulated with the above Government Order, should be carefully attended to.

17. The Tenkasi rearers are not capitalists. I see that not one of them has more than one seed-kottah of land. I have asked two of the successful rearers to rear the new eggs that Government may send them gratis. They have consented to try the experiment on a limited scale; 4th viss of cocoons will do for each. They want that variety of "Tussah moth" which would yield six or eight crops in a year. I explained them paragraph 7 of the report of Messrs. DeVecchj and Pater, contained in Board's Proceedings, dated 19th February last.

18. Though silk-worms are subject to an epidemic called Muscardine, yet nothing of the kind has occurred here during the last forty years. In the rainy season the moths get the sickness called Alugal (அலுகல்) or *Sambal noi* (சாம்பல்நெய்); this is, I fancy, caused by the humidity of the atmosphere. In the dry season the worms get the sickness called *Karunaputtu* (கருணபுட்டு) or *Koppulam* (கொப்பளம்); this I suppose to be the effect of excessive heat. The above diseases are not epidemics, and so the loss of moth by them does not exceed ten per cent. Want of proper *magnandrie* or silk-worm house, with windows on all sides to admit of tatties to cool the room in summer, is a cause of this disease. To secure a warm room in the winter season is not a difficult thing; at present, our silk-worm houses are not sufficiently ventilated. The same is used both for summer and winter; hence the occurrence of the annual disease.

19. III. REELING OF SILK.—Silk is reeled off the cocoons in the hot-water basin by a native spinning wheel. It is very simple in its construction. It has superseded the machine introduced by Mr. Hughes on account of the difficulty in repairing the latter when it gets out of order. If the present process of reeling can be improved, the people will certainly be highly benefited, as a better quality of cocoon-silk fetches 100 per cent. more. The accompanying skein of silk

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(Specimen No. 1) was one carefully and slowly reeled in my presence. It looks better than one done in a hurry. The skeins purchased at Tenkasi are first untwisted with two long pestle-like sticks, a yard long, and a *Thiruvadam* (small hand-wheel-like thing): two or four of such threads are then twisted into a yarn (specimen No. 2,) with what is called *Thiruvadam* (திருவடம்) and then spun in what is called *Rattu* (Spinning wheel) by the silk weavers.

20. Cocoons being salable at Tenkasi, I beg to suggest that an improvement in the reeling of the cocoons may be made by introducing a European spinning-wheel to be worked under better management. I believe that a single machine would always find work at Tenkasi. Clear instructions on the best method of reeling silk *evenly* should be circulated among the cultivators. I have explained to those concerned the inferiority of native-reeled silk, while similar silk, properly reeled by suitable machinery, would fetch three times the price.

21. The starting quantity of cocoons is 14th viss; from these there bursts forth butterflies. Each female butterfly is said to lay not less than 100 eggs. The worms hatched are laid out in sixteen plates. They are thrown in the plates crowded, the rearers say, in order to increase warmth; I am informed that worms in the litter do not thrive if scattered. The caterpillars in their chrysalis state weigh 15½ viss, of which 14th viss has to be retained for propagating the seed. So that the outturn is 61 fold on the average.

	RS.	A.	P.
Hire for 120 viss (8×15) of cocoons, yielding 10 viss of silk, at half a Rupee per viss of silk	5	0	0
Hire for boiling them at quarter Rupee per viss of silk	2	8	0
Fire-wood for boiling them	2	8	0
Total...	10	0	0
Add price of labour	104	13	6
Net profit a year for the cultivation of one seed-kottah land	65	2	6
Total...	180	0	0

22. The outturn of silk cultivation (expenses inclusive) at Tenkasi is Rupees 111 per acre, or 180 Rupees for one kottah of land. Mr. Shaw's calculation makes it three times as great, while Mr. Dickens (*vide* extract from the Journal of the Chamber of Commerce for March, printed in Board's Proceedings, No. 7,230, dated 20th September 1869,) gives nine times as much. The net profit at Tenkasi is Rupees 40-4-0 per acre, or Rupees 65-2-6 per seed-kottah land in February last, and that is, 24½ Rupees per acre more than that obtained on the 1st November 1870.

The one-crop nunjah fields of Tenkasi yield on an average a net profit of Rupees 26 per acre at the present rate of 6 Rupees per kottah. A reduction of the assessment on mulberry cultivation is therefore not required under the present state of circumstances.

I quite agree with Mr. Shaw, in his answer to the fourth question, (Board's Proceedings, dated 11th February 1870, No. 1,151,) that the hotter the weather the quicker is the growth of fresh leaves, if water, care, and sufficient manure be given.

23. Our cultivators now see that the price of their cocoon-silk has increased from 14 to 18 Rupees a viss, or 28½ per cent. since November last. Twenty years ago it was sold at 35 Rupees per viss, the price fell gradually to 110 Rupees. But since the last five years, the price has steadily increased. I have given the local price at which Nattukottei Chetties buy at Tenkasi. I am informed that this silk is sold at Combaconum at a profit of 100 per cent.

ENCLOSURE No. 3.—Specimen of leaves.

ENCLOSURE No. 4.—Specimen of Silk.

*Proceedings of the Madras Government, Revenue Department,
26th August 1870.*

SUBMITTED for the information of Government, with the specimens of silk.

2. The price is evidently rising steadily, and it does not seem necessary to apply any artificial stimulus to the production.
3. The Collector will report the results of the experimental cultivation of mulberry and introduction of the manufacture of silk into the Tinnevelly Talook.
4. The Acting Tahsildar deserves great credit for his very interesting report.

No. 403.

ORDER THEREON, 26th August 1870, No. 1,334

Miscellaneous.

On perusal of the Tahsildar's perspicuous and complete report, the Government are disposed to agree with

the Sub-Collector and the Board, that it is not necessary to lower the assessment on land cultivated with mulberry. The chief causes for the recent decline in silk-worm-rearing appear to be, firstly, want of competition among the purchasers of silk; and, secondly, the inferiority of the machines employed to reel the silk from the cocoons. The district of Tinnevelly appears to be comparatively free from the epidemic, which has destroyed a large per-centage of the silk-worms in Southern India.

2. The Government have postponed dealing with the question of introducing a foreign *genus* of worm until the commencement of the next official year, and, in the meantime, it may be well to ascertain whether the insect at present indigenous to Southern India is capable of yielding silk which would fetch a price in the European market sufficiently large to remunerate the growers in India. It is clear that if this result is to be satisfactorily achieved, the cocoons must either be despatched unreeled, or the process of reeling must be considerably improved. Messrs. Pater and DeVecchi, in laying their scheme before Government, pointed out that "native reeled silk is so inferior that it is only worth about 10 shillings per pound, while similar silk reeled by proper machinery is worth 36 shillings per pound." Certain members of the Silk Supply Association, in a Meeting of the Association held on February 18th, 1869, attached equal importance to the proper reeling of the silk, and one member broached the opinion that it would be the better plan for the cocoons to be sent to Europe and there unreeled.

3. The Government therefore resolve to forward to the Secretary of State the specimens of reeled silk received from Tinnevelly as well as raw* cocoons, and to suggest that it be ascertained whether it is probable that Indian grown silk, either reeled or unreeled, will fetch a better price in the European market (after deduction of expenses of carriage, etc.,) than it at present commands in the Indian market. A† specimen of the silk-reeling machines used in Tinnevelly will also be forwarded to the Secretary of State, and he will be requested to obtain

* These latter should be immediately forwarded to Government by the Acting Collector.

† This should be forwarded to Government by the Acting Collector as soon as possible.

*Proceedings of the Madras Government, Revenue Department,
26th August 1870.*

competent advice as to the best means of improving on it, and also (should he deem it advisable) to send in return a specimen or model of the best machine for the purpose used in Europe.

(True Extract.)

(Signed)

H. E. STOKES,

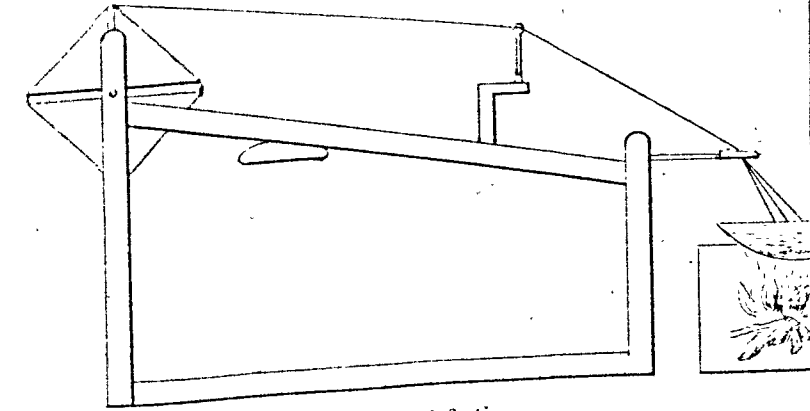
Under-Secretary to Government.

To the Board of Revenue.

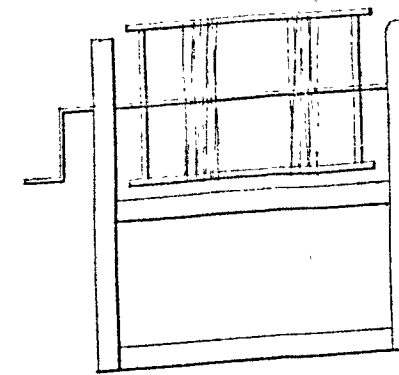
Ed. F. B. Bantleman.

Enclosure in R/O - 26th August 1902 No 402/3

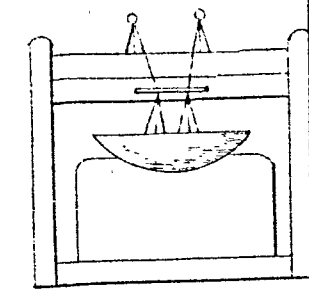
TINNEVELLY SILK REELING MACHINE.



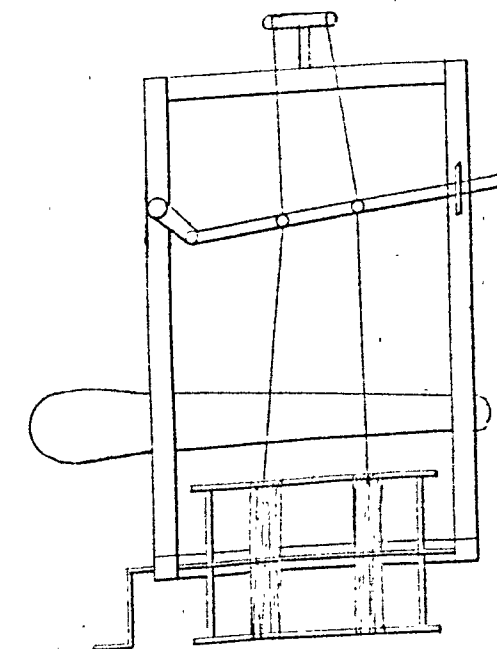
Longitudinal Section.



Front Elevation.



Rear Elevation.



Plan.

Silk

Ref'd to Aug 27
7-February 1902 No 36.

GOVT. OF MADRAS

REVENUE

THE BOARD OF REVENUE

Dated Aug 27 1902.

No. 11.

G. O. No. 11, dated 27th Aug 1902.

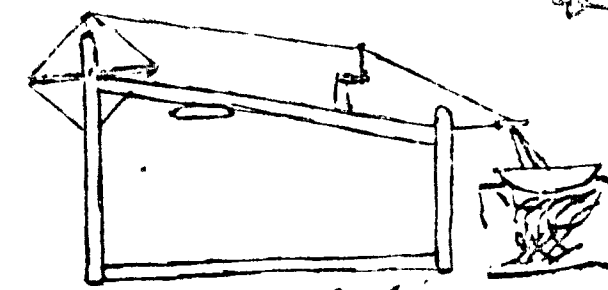
ADDITIONAL

TO THE GOVT. OF MADRAS.

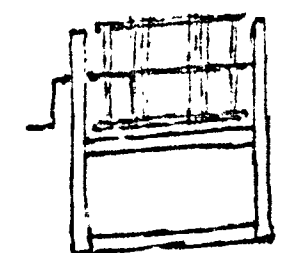
With reference to the letter from the Board of Revenue, dated 27th Aug 1902, No. 11, regarding the proposed alteration of the boundary of the village of ...

Blue depth -

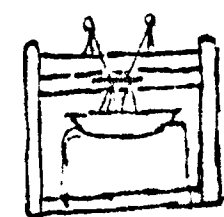
Turner's silk reeling machine



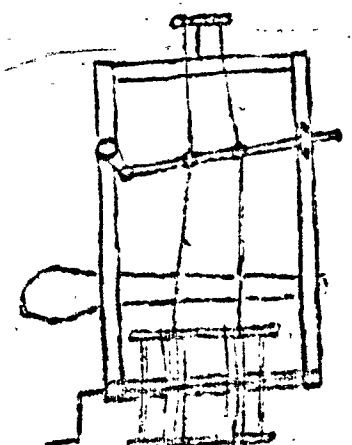
Longitudinal Section.



Front Elevation



Rear Elevation



Plan

Wm. Turner
A. S. 1880.

1783.
Rec. 3323/70

Enclosure in 1783

26th August 1870

No 402-403

Revenue Dept -
10

No 1334

Proceedings of the Madras Govt
under date the 26 Aug 78

Read the following
-ing Pro: of the Bd of Revenue

Submitting report on cultivation of
mulberry, breeding of
silk-worms & reeling of
silk as at present has
been done in Tanjore District
Simultaneously

(G.O. 6th June 1878
No 3868)

S.D.

A.A.

I don't agree with the order
as far as a report of
increased. I would doubt
the statement as far
as respects the
mulberry for silk cultivation
to be based on the
average dry season

On perusal of
the Tahsildar's perspi-
cuous & complete re-
port, the Govt are
disposed to agree with
the Subcollector & the
Board that it is not ne-
cessary to lower the re-
venue on land cul-
tivated with mulberry.
The chief causes for
the recent decline in
silk

silk-worm rearing ap=
= place to be - firstly want of the vicinity. I think
of competition among the that a reduction of this
purchasers of silk & not could hardly feel
secondly the inferiority to give an impetus to
of the machines employ = the industry.
= to reel the silk from
the cocoons. The district
of Simlially appears to
be comparatively free
from the epidemic which
has destroyed a large
percentage of the silk-
worms in Southern In-
dia.

2. The Govt have
postponed dealing with
the question of introduc-
ing a foreign genus
of worm until the com-
= mencement of the next
official year, & in the
meantime, it may be
well to ascertain whe-
= ther the insect at
present

on discussion in
I hope the Draft

present indigenous
to Southern India is
capable of yielding
silk which would
fetch a price in the
European market suf-
= ficiently large to en-
= courage the growers in
India. It is clear that
if this result is to be
satisfactorily achieved,
the cocoons must
either be despatched
= & unreeled, or the
process of reeling
must be considera-
= bly improved. =
Messrs Carter & Co
Beechj in laying their
scheme before Govt
for the

pointed out that
"natural reeled silk
"is so inferior that
"it is only worth about
"10 sh. per pound,
"while similar silk
"reared by proper
"machinery is
"worth 36 sh.
"per pound - certain
members

members of the silk-
supply Association, in
a meeting of the Asso-
ciation held on February
18th 1869, attached equal
importance to the proper
reeling of the silk, and
one member broached
the opinion that it
would be the better
plan for the cocoons
to be sent to Europe
and there unreeled.

3 The Government
therefore resolve to for-
ward to the Secretary
of State the specimens
of

of reeled silk re-
ceived from Tinnevely
as well as raw co.
come and to request
his opinion as to the
probability of Indian
grown silk either reeled
or unreeled fetching
a better price in the
European market after
deduction of expenses
of carriage &c) than it
at present ~~meets with~~ ^{commands} in
the Indian market.
A specimen of the
silk reeling machines
used in Tinnevely
will

+ These latter should be
immediately forwarded to
Govt by the Ag. Collector

suggest but to be
ascertained whether
it is probable but

R/A.

+ This should be
forwarded to Govt
by the Ag. Collector as
soon as possible

13
will also be forwarded
to the Secretary of
State and he will be
requested to obtain
competent advice as
to the best means of
improving on it, and also
(should he deem it ad-
visable) to send in return
a specimen or model
of the best machine for
the purpose used in
Europe.

14. To the 18th of Decr Decr 5 Sept

Spottisall

2612