M. R. O. 1—36,000-4-10-10-33.

MADRAS RECORD OFFICE.

Government of Madras.

Revenue DEPARTMENT

G.O. No.	374	Press No.
163-66 Dated	25 - 3 - 1870	

Not to be folded or roughly handled

Proceedings of the Madras Government, Revenue Department, 25th March 1870.

No. 163. Read the following letter from the Officiating Conservator of Forests, to the Acting Secretary to Government, Revenue Department, Fort Saint George, dated camp at Ootacamund, 31st December 1869, No. 1,885 :—

AGREEABLY to the Government Order, No. 2,093, of the 19th of July last, I have the honour to submit a report upon the plantations in the Cuddapah, Bellary, and North Arcot Districts, giving particulars of all operations and expenditure from the commencement up to the 31st of October last.

2. *Codoor Red Sanders Plantation.*—This plantation is about fifty Acres in extent, and is surrounded by a bank topped with an aloe-fence; it is situated about a $\frac{1}{2}$ of a mile east of the Railway Station of Codoor on the North-West Line. It was started by Mr. Yarde in January 1865, chiefly for Red Sanders; but this year various other timber-trees have been sown in the nurseries and planted out in the plantation; and Mr. Yarde has been ordered to make experiments upon the growth and cultivation of all timber-trees, and to make this particular plantation a school for the Overseers in his range and others that may be sent to his district for training. Several young men have already been trained under him.

3. This plantation has cost Rupees 2,297-0-2 up to the 31st of October 1869, and there are 10,000 Red Sanders trees planted out, and 3,000 seedlings in the nurseries; of other trees 5,520 have been planted out, and there are 38,200 seedlings in the beds.

4. The Red Sanders seed are collected in May and sown in June or July, and having been previously soaked in water for 24 hours, they germinate in about 25 days; unsoaked, they take from 30 to 40 days to germinate; the seed-beds are watered twice daily. The growth of the young trees was very slow at first, but they have taken a great start during the last two years, and many are now upwards of 20 feet high and a maximum girth of 12 inches. Several severe seasons of drought have been experienced which have caused casualties, and the re-placing of these has somewhat added to the expenditure; but this must occur more or less in all plantations in the plains. The trees are only watered for one year after they are transplanted.

5. The following statement shows the number of trees planted out and the number of seedlings in the nurseries and the expenditure in this plantation up to the 31st of October 1869 :—

Names of Trees.	Number of Trees planted out and edging Beds.	Number of Seedlings in Nurseries.	Expenditure.	Remarks.
			Rs. A. P.	
Pterocarpus Santalinus (or Red Sanders.)	10,000	3,000	.....	Are four years and ten months; greatest height 22 feet; greatest girth, 12 inches.

Names of Trees.	Number of Trees planted out and established.	Number of Seedlings in Nurseries.	Expenditure.	Remarks.
			Rs. A. P.	
Tectona Grandis (Teak) ...	200	2,000		Age from 4 to 6 months; height from 1 to 9 inches.
Cassia florida	200	2,500		
Albizzia speciosa ...	50	700		
Adenanthera Pavonina (or Red Wood)	50	1,000		
Santalum Album (Sandal) ...	20	2,000		
Shorea laeifera (or Sal) ...	2,000	*Nil.*		
Pterocarpus marsupium ...	1,000	*Nil.*		
Melia Azadirachta ...	2,000	30,000		
Total ...	15,520	41,200		
Plantation working charges ...	.....	.....	2,141 0 8	
Seeds	.....	.....	21 6 0	
Fencing	.....	.....	134 0 6	
Total Expenditure ...	.....	.....	2,297 0 2	

6. *Coppergally Plantation.*—This plantation is situated about 7 miles east of Codoor, and close to the line of Railway. The land was formerly covered with fair scrub jungle, but having been cleared by the Locomotive Fuel Contractors it was selected for a plantation in August 1868. It measures 62 Acres, and is fenced in, the same as the plantation at Codoor.

7. After the land had been ploughed 50 Measures of Babul (*Acacia Arabica*) seed were sown broad-cast; the seed germinated remarkably well, but the plants all died away from the heat and want of water, and it is doubtful if this system will ever answer, except in exceptionally favourable seasons. Nursery-beds were then formed and protected by temporary pandals, and different kinds of trees were sown, and watering was carried on systematically. A number of trees have been planted out, and are doing well, and planting out is in full swing as this is the middle of the season.

Proceedings of the Madras Government, Revenue Department, 25th March 1870.

24. The following statement gives the operations up to 31st October 1869:—

Names of Trees.	Number of Trees transplanted.	Number of Seedlings in Nurseries.	Expenditure.	Remarks.
Albizzia speciosa	2,394	20,000		Age 6 months; height 1 to 6 inches.
Melia Azadirachta	.....	20,000		
Pithecolobium dulce	720	100		
Garcinia Livingstonii	*Nil.*	50		
Sterculia colorata	.....	200		
Cassia florida	.....	8,000		
Cananga odorata	.....	100		
Total ...	3,114	48,450	.....	
Plantation working charges	.....	.....	39 6 0	
Seeds				
Establishment.				
1 Peon	.....	.....	157 5 9	
1 Maistry				
Gardeners				
Grand Total ...	.....	.....	196 11 9	

25. Of the three tracts alluded to in the Government Order, No. 248, of the 28th January 1869, we have as yet only taken charge of two, *i.e.*, those at Cooty and at Camalapore on the banks of the Papigunee; the third tract on the banks of the Chittravutty River has not yet been taken over, but I expect to be able to assume charge of this immediately.

26. A permanent first-class Overseer, on a salary of Rupees 100 per mensem, is in charge of the two tracts, and will eventually be in charge of all three; his salary will then be debited in equal proportions to each plantation.

27. All the plantations in the Cuddapah, North Arcot, and Bellary Districts, are under Mr. Yarde, the Assistant Conservator of the Cuddapah and North Arcot Ranges, and very great credit is due to him for the efficient way in which planting is being conducted; he is a very good planter, and has trained his Overseers well. The work, however, is now getting too much for one man, and a separate Assistant for North Arcot is desirable. Planting in all three of these districts should be largely extended, and further tracts of land should be taken up with this view.

28. Coimbatore.—*Mudumallay Teak Plantation.*—Planting was commenced in 1862, and from that date to this, 93 Acres have been planted; the largest trees are 25 feet in height, and 12 inches in circumference at 5 feet from the ground. This rate of growth may be considered favourable, considering that the climate is not nearly so forcing as that of Nelambur, which, indeed, may be considered as one of the most forcing climates in the world. Last year (1868) it was considered advisable to plant 10 miles further west in Wynaad, beyond the bounds of Mudumallay for the following reasons:—

1. The trees have a straighter and rather more rapid growth.

2. The Nelambur Rajah has inserted in the Mudumallay lease very stringent and vexatious clauses with regard to planting; such as thinnings to be made over to him, a stump fee of one Rupee eight Annas to be paid him on every tree cut for timber, &c. By planting ten miles west of Mudumallay, we escape these conditions, secure a better climate for the Teak-tree, and have only to pay one Anna and six Pies per cubic foot more for carriage. In 1868 ten Acres were felled and cleared to be planted in July 1869. Nurseries were made but unfortunately out of 20,000 plants all were destroyed but 2,000; these were planted out, and are doing well. The cause of our failure was due to the mealy-bug. These insects attack the tap roots of the young plants, and destroy them by thousands. Ashes were placed around the roots; and this we were enabled to save 2,000 plants. There was no particular cause for the attack of the insects. The nursery ground was new, no manure was used, and watering was regularly carried on.

29. In planting Teak in these forests, we are rather at a disadvantage as compared with Nelambur; there the seed germinates in a fortnight, and by June the young plant is ready to put out; whereas in Wynaad the seed does not germinate under a month, and the growth is so slow that we can seldom plant before August. Our weeding is much heavier, owing to the tremendous grass which, if not perpetually kept down, soon smothers the plant.

30. *Cost of plantation.*—The cost of the plantation up to November 1869 [illegible] is Rupees 1,613-2-3.

31. *Cultivation of Sandal-wood Plants, &c.*—At Tellicherry in 1866 a plantation of Sandal-wood was commenced, and various experiments were tried; such as growing the seeds in baskets and bamboo pots, transplanting the trees from the nurseries, growing from seed on the spot, shading, watering, &c. After many experiments it was found that it was best to dig a small pit, one foot square, plant the seeds and water in the dry weather. The shade used was of various kinds, the best was the chilli plants. Cotton was tried, but as the leaves were shed in the hot season in the same, the shade was now required, it was given up.

32. Some of the 1863 and 1864 trees are now 19 feet high, and have seeded; they germinate well. In all we have some 50,000 plants from one year old to six years.

33. The cost of planting up to date, November 1869, amounts to Rupees 9,211-13-3, for which we have about 50,000 plants. The cost is heavy, but much money was spent in experiments.

34. The principal enemies to the Sandal-wood plants are rats, when the seed is germinating, and the red dust which ants throw up.

35. Now that we have secured the best mode of growing the plants, the extension of the plantations will be easy. The three requirements are—average rainfall of 60 inches or more, strong or stony soil, the growth of the plant is very slow, it will be 20 years before this plant makes its heart-wood), water within 100 feet of the surface, shade of chilli plants, &c. Stop their leaves in the hottest weather, and do not manure, the roots of all the surrounding trees are the feeding Sandal-wood plant.

36. [illegible] experiment has been made, but as the plants do not [illegible] for the present limited to 4 acres.

Proceedings of the Madras Government, Revenue Department, 25th March 1870.

8. The following statement shows operations up to 31st of October 1869:—

Names of Trees.	Number of Trees planted out and established.	Number of Seedlings in Nurseries.	Expenditure.	Remarks.
			RS. A. P.	
Pterocarpus Santalinus (Red Sanders).	813	*Nil.*	.....	Age one year.
Melia Azadirachta	1,100	2,767		
Adenanthera Pavonina ...	700	1,700		
Tamarindus Officinalis ...	90	*Nil.*		
Terminalia Belerica ...	300	do.		
Albizzia speciosa	400	500		
Diospyros do.	50	200		Age eight months; height three inches to three feet; girth, half inch to two inches.
Santalum Album	50	*Nil.*		
Bastard Cedar	100	.....		
Tectona Grandis	40	.....		
Anogeissus latifolius ...	*Nil.*	300		
Acacia Arabica	.....	1,000		
Dalbergia Sissoo	.....	300		
Total...	3,733	6,767	.....	
Plantation working charges	.....	.....	420 9 6	
Fencing	.....	.....	216 5 6	
Total Expenditure...	.....	.....	636 15 0	

9. *Tryelium Casuarina Plantation.*—This plantation is within a mile from the line of Railway at Triveliore, 3 miles east of Vellore, and is situated at the confluence of the Poiney and Palar Rivers. The tract is entirely sandy with water near the surface, and is admirably adapted for the growth of Casuarina. It was commenced by the Collector of the district in 1867 as a famine-work, and 193 Acres were enclosed and 18,000 plants put down. On the 1st of January, 1868, it was handed over to our department, and the plantation was subsequently enlarged by the purchase of a further tract of 160 Acres at a cost of Rupees 861-10-9; it now consists of 353 Acres, and is properly fenced in, and there are 41,695 Casuarina trees planted out, 20,000 seedlings are in the nurseries, and as planting is rapidly going on at the date of this report, it is hoped that the whole tract will be planted before the end of the season.

10. The following statement gives the operations from the commencement, and the expenditure from the date of our taking charge:—

Names of Trees.	Number of Trees planted out and established.	Number of Seedlings in Nurseries.	Expenditure.	Remarks.
			Rs. A. P.	
Casuarina equesitifolia ...	41,595	20,000		From eight months to two years and eight months; height from two feet to twenty-six feet; girth up to thirteen inches.
Albizzia speciosa ...	355	*Nil.*		
Cassia florida ...	200	do.		
Total ...	42,150	20,000	.....	
Plantation working charges ...	.....	.....	3,074 3 6	
Purchase of land ...	.....	.....	861 10 0	
Do. of seeds ...	.....	.....	28 0 0	
Total ...	.....	.....	3,963 14 6	

The trees are all planted out either 12 feet by 12 feet or 15 feet by 15 feet.

11. Including the purchase-money of a large portion of the land, the trees have only cost about 1¼ Annas each; it is calculated that they will be worth on an average at least Rupees 1-8-0 each in eight years from the date of being planted.

12. The young trees have to be watered occasionally during the first year, but when the whole tract is planted up (which is now nearly accomplished), the expenditure will be very trifling. Casuarina planting is very easy and far less precarious than any other planting in the plains: care only has to be taken that the roots of the seedlings are not injured in lifting them, and that the holes in the sand are sufficiently large for the roots to be put in without being doubled up or twisted in any way. If this is attended to, and the young plants are shaded and watered at first when the weather is *dry*, very few casualties occur; it is never necessary to establish them under shade after removal from the nursery-beds previous to planting out, nor is it even necessary to take them up with a ball of earth or sand attached to their roots; and all the planting operations being in sand, pitting is very easy, and there are no weeds, grass or jungle to keep down.

13. There are two other tracts of land near Vellore suitable for Casuarina that I am endeavouring to secure; one at Veringeepoorum, and the other north of the Railway station at Tiruvallum.

14. *Arcot Plantations.*—This is a small plantation of 30 Acres, and is situated 10 miles south-west of Vellore. It is divided into two blocks by a river. Operations were commenced in September 1867. Casualties have been numerous owing to the very bad seasons experienced in 1867 and 1868; but at the date to which this report refers 4,834 trees of various sorts had been planted out, and are apparently well established; and there are 22,400 seedlings in the nurseries at an expenditure of Rupees 859-11-9.

15. The following is a statement of all operations up to 31st of October last:—

Names of Trees.	Number of Trees planted out and established.	Number of Seedlings in Nurseries.	Expenditure.	Remarks.
			Rs. A. P.	
Cassia florida	1,101	*Nil.*		Age from eight months to one year and six months; height from two to six feet; girth from one to three inches.
Terminalia tomentosa	54	200		
Bastard everquen	58	*Nil.*		
Margifera Indica	54	.....		
Bastard Cedar	129	600		
Santalum Album	10	*Nil.*		
Pterocarpus Santalinus	190	.....		
Albizzia speciosa	1,424	3,800		
Tamarindus Indicus	7	*Nil.*		
Melia Azadirachta	30	8,400		
Ficus Indica	6	.....		
Eugenia Jambolana	6	.....		
Cassia fistula	212	2,400		
Casuarina equesitifolia	1,523	4,600		
Pithecolobium dulce	*Nil.*	200		
Anogeissus latifolius	.....	200		
Dalbiea Officinalis	.....	1,400		
Pterocarpus marsupium ...	.....	600		
Total ...	4,834	22,400	.....	
Plantation working charges ...	.....	.....	859 11 9	
Total Expenditure ...	.....	.....	859 11 9	

16. *Gooty Plantation.*—This plantation is within a mile of the Gooty Railway station: the extent is 404½ Acres, and it is all surrounded with a bank and aloe-fence. The site was only handed over to the department in May 1869. Very large nurseries have been formed, and 89,120 seedlings of different sorts of trees are in the nurseries, and 6,739 trees have been planted out.

17. Twenty Acres of land were sown with the seed of the *Ipomæa* and *Adansonia speciosa*, and the rains having been favourable, the seed has germinated nicely, and stand from 6 inches to 2 feet in height; and it is hoped that this may prove successful in this instance.

18. Labour is at present difficult to procure as the Railway and Canal works have absorbed nearly all that was procurable in the district.

19. The *Pithecolobium Saman* is a valuable introduction, and I am indebted to Mr. Thwaite's Direction of the Peradeniia Gardens in Ceylon for the seed; and he forwarded it as a tree likely to be a great value for Railway fuel, (a further batch has been received since the date to which this report refers, and it has germinated in the Coimbatore plantation). The tree is from Mexico where it is known as the

Gonsaro tree, and one is described in Squier's "Central America" as 90 feet high, with some of the lower branches quite horizontal, and 92 feet long and 5 feet in diameter, the stem of the tree at 4 feet above the base, 21 feet in circumference, and the head of the tree describing a circle of 348 feet.

20. The following statement shows the operations and expenditure up to the 31st of October last:—

Names of Trees.	Number of Trees planted out.	Number of Seedlings in Nurseries.	Expenditure.	Remarks.
Cassia florida	670	10,000		
Parkia biglandulosa	625	1,400		
Pongamia glabra	583	Nil.		
Alequitites triloba	21	Nil.		
Melia Azadirachta	3,840	30,000		
Acacia speciosa	Nil.	35,000		
Pithecolobium dulce		600		
Adenanthera Pavonina		5,000		Age 6 months; height 1 to 6 inches.
Pomolora regia		100		
Pithecolobium Saman		100		
Semecarpus Anacardium		150		
Casuarina equisetifolia		20		
Terminalia Belerica	200	Nil.		
Sterculia foetida	500			
Garcinia Lawsonii	Nil.	500		
Spathodea stipulata		60		
Semecarpus lanceifolia		500		
Sterculia colorata		100		
Cananga odorata				
Total	6,730	82,120	...	...
Plantation Establishment working charges	65 15 4			
Seeds	15 2 0			
Compensation for land taken up	826 0 0		1,200 4 4	
Fencing	292 9 0			
Total advanced.				
Pay of Mistry	60 0 0			
Pay of Gardeners	102 0 0		162 0 0	
Grand Total			1,362 4 4	

21. *Cuddapah Plantation.*—This plantation is close to the Railway Station of the same name on the North West Line, south of Cuddapah.

22. Its extent is 2,295 Acres, and the land was handed over to us on the 1st of May, 1869. Large nurseries have been formed in which there are now 48,650 seedlings and 3,112 young trees planted out.

23. Thirteen Acres were sown broadcast with *Babul* seed, but the germination has been indifferent.

37. South Canara.—*Parapa Teak Plantation.*—In 1865 3 Acres of land near Soolcay were planted with Teak, and in 1866 another 5 Acres, and during this year 15 Acres more. The plants are doing well, though not quite equal to the growth exhibited at Nelumbur. This year's plants are now 2 feet high, and taking an average of 50 trees amongst those planted in 1865 and 1866, the former have a girth of 8 inches, and the latter 5¾ inches.

38. It is proposed to plant 50 Acres of Teak in this locality during the coming season, and Mr. Winter, the Assistant Conservator, is proceeding to Nelumbur to get an insight into the operations under Mr. Ferguson.

39. *Salem Plantations.*—I am sorry to say that very little has been yet done in the district. Nurseries, however, have been established at the different reserves, and a plantation for *Babul* has lately been formed at Mallapooram. In this *Babul* has been sown broad-cast, and come up thick in some places, and the seed has lately been sown in trenches at 15 feet apart—a plan pursued in Bengal—and planting out in pits has been commenced. All these operations will be fully entered into in my next report.

40. A small experimental plantation of Toon (*Cedrela Toona*) was commenced on the Shervaroy Hills near the head of the Attur Ghaut; this is being reported upon separately. It has not been a success, and it is doubtful if it should be kept up.

41. A regular organized system of planting is most necessary in this district, and Mr. Cadell, the Deputy-Conservator, has been drawing up a Map showing what land is available. His report upon this subject is not favourable, and he states that every obstacle is thrown in his way against procuring any land worth planting.

42. Madura.—A small plantation has just been commenced in the Cumbum Valley. Systematic planting should receive attention at once in this district. Overseers and Maistries or gardeners well trained to planting are absolutely necessary, if operations on any large scale are to be attempted.

No. 164. Order thereon, 25th March 1870, No. 379.

Forests, No. 5.

Ordered to lie over.

(True Extract.)

(Signed) R. A. DALYELL,
Acting Secretary to Government.

Ed. F. R. Bantleman.

Entered at Stationers' Hall.

PRINTED BY
W. CLOWES AND SONS,
STAMFORD STREET.

Ordered to be sent

25 Brandenburgh