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# MADRAS RECORD OFFICE.

## Government of Madras.

Revenue DEPARTMENT.

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Dated 13-9- 1873.

**Not to be folded or roughly handled**

*Proceedings of the Madras Government, Revenue Department,*
*13th September* 1873.

No. 98. Read the following letter from J. R. COCKERELL, Esq., Commissioner of the Nilgiris, to the Hon. R. A. DALYELL, Acting Secretary to Government, Revenue Department, dated Ootacamund, 10th July 1873, No. 29 :—

I HAVE the honour to submit the Administration Report of the Government Cinchona Plantations on the Nilgiris for 1872-73. I take the opportunity to reply, at the same time, to G. O., No. 549, dated 29th May last, Revenue Department, upon the report of Mr. Broughton upon the respective merits of the mossing and coppicing systems. The Government Order remarks upon a statement of Mr. Broughton that 85 per cent. of 2,000 trees from which the bark was stripped in October 1871 have failed to renew their bark; that this instance of the failure of the mossing process should receive the Commissioner's and Mr. McIvor's gravest consideration.

2. Mr. Broughton's report is dated the 19th April 1873, or about seventeen months after the removal of the bark. In paragraph 10 of his present report, Mr. McIvor says : "Originally it was believed that renewed bark could be taken at eighteen months' growth, but now it is found that twenty months to two years' growth is necessary for the easy removal of the renewed bark."

3. Mr. McIvor informs me that the 2,000 trees referred to by Mr. Broughton are at the present moment in the most luxuriant possible health, and that he has already commenced to remove the renewed bark. I suspect that Mr. Broughton, in referring to these trees, intended to point out that they had been tardy in putting on the renewed bark, and not that he feared the bark would not renew. I infer this from the circumstance well known that no tree could survive if it was stripped of bark as Cinchona trees are stripped, and did not at once commence a more or less rapid reparatory process.

4. The observation is made in paragraph 1 of the Government Order, that the Government consider the Commissioner's remarks in paragraphs 9 and 10 of his covering letter to Mr. Broughton's report "show almost conclusively (if his figures are correct) that the mossing system is likely to be more profitable than the coppicing system which Mr. Broughton advocates."

5. I beg to state that my figures were under, not over the mark. The present report of Mr. McIvor proves this to be the case by facts. Paragraph 9 says that 200 *C. Succirubra* of 1862-63 and forty plants of 1864-65 were coppiced in May 1871, and yielded 355 lbs. of dry bark; and paragraph 10 states that 1,000 *C. Succirubra* of 1862-63 were stripped also in 1871, but in the month of February. These trees yielded at that time, though this information is not in the report, 1,030 lbs. of dry bark. In October last year the second harvest of natural bark was removed, amounting to 1,950 lbs. of dry bark, and recently the first harvest of renewed bark, that is to say, the renewed bark from the spaces yielding the 1,030 lbs. of natural bark, amounting to 764 lbs. of dry bark. These 1,000 trees planted in 1862-63 have, therefore, already yielded 3,744 lbs. of dry bark, and in October next the renewed bark will be taken from the spaces which yielded the 1,950 lbs. of dry bark; and this harvest will probably amount to 1,200 lbs. of dry bark, because the trees have expanded in size since the 1,950 lbs. was stripped. In my calculation I will exclude the latter renewed bark, amounting to 1,200 lbs.

6. The coppiced trees above mentioned were 240 in number, and 40 of them were, when coppiced, two years younger than the 1,000 trees. I do not know what bark the 200 trees gave, and I shall, therefore, consider the 240 trees as equal to one-fourth of the 1,000 trees, and all as of the same age. The calculation is not fair to the coppiced trees, but it is not so unfair as to vitiate altogether the argument I found on the calculation; because the comparison is so immensely in favour of the mossing process that small errors are unimportant. The 240 trees then yielded 355 lbs. of dry bark, and the trees, though in *selected* localities, that is to say, selected in order that the results might be favourable to coppicing, have as yet, as I am personally aware, only thrown up shoots as thick as a walking stick covered with bark which when dry curls, and is no thicker than blotting paper. I saw these shoots early in the year. Mr. McIvor, in his present report, says that the south-west monsoon has rendered them more vigorous; but he does not mean to say that the growth hitherto arrested has suddenly become luxuriant. He uses the modified phrase at paragraph 9 of his report, the shoots are "becoming more healthy." These coppiced trees, at all events, will not be fit for a harvest of bark to be taken for a long term of years.

7. I put, then, the hitherto yield of the 240 coppiced trees against the hitherto yield of one-fourth of the 1,000 mossed trees. The result is that the former yield is 355 lbs. against 936 lbs. in the latter case. The figures speak for themselves, and yet there are other considerations favourable to mossing. They are, first, that mossed bark is richer in quinine than natural bark; second, that the 1,000 mossed trees will shortly give a further harvest, whereas the 240 coppiced trees will not give an additional harvest for a very long time.

8. I desire to call attention to the support the views I expressed on the coppicing system received from Mr. McIvor's present report. At paragraph 12 Mr. McIvor, referring to the trees already coppiced, and speaking of them as in selected sites, states: "A large extent of land coppiced without selection could not but add fresh testimony to the already unsatisfactory results obtained by this system."

9. With regard to the coppicing directed in the Government Order under reference, I believe it has already been done; but I shall report specifically on this subject, and submit some remarks on the last paragraph of the Government Order when I hear from Mr. McIvor.

10. In paragraph 4 of the report, it will be observed by Government that Mr. McIvor has furnished 83,894 lbs. of wet bark, equal to 33,000 lbs. of dry bark, to Mr. Broughton during the past year, and that he has collected 25,000 lbs. of dry bark for sale in the home market, and proposed to collect 50,000 lbs. more. Upon the latter point the instructions of Government have not yet been received. In all, then, the harvest of bark for the past year, if all taken, amounted to 108,000 lbs. of dry bark, worth, at 2*s.* a-pound net all round, and this is a low price, Rs. 1,08,000. Further on in his report, Mr. McIvor refers to the number of trees on the Government properties capable of yielding commercial bark, and shows that not one-twentieth of the trees are fit to be cropped. Mr. McIvor, however, tells me that, notwithstanding, he expects a crop of dry bark in the current year,



amounting to the crop available in the past year, and in 1874-75 a crop of double the quantity. After that, Mr. McIvor expects the annual yield will be very large.

11. The Government will observe that Mr. McIvor is not of opinion that manure will increase the alkaloids in the barks of Cinchona trees. He is, however, experimenting with manure, and will report upon the subject in due time.

12. Mr. McIvor, under the head Cultivation in his report, urges that the amount at present allowed is not sufficient for the proper up-keep of the Cinchona plantations. I have conferred with Mr. McIvor on the subject, and suggested his placing his views in detail on paper, when the matter can be considered. This he will do. He tells me that he is of opinion a staff of gardeners is urgently necessary to take, under the mossing system, the large harvests of bark available and expected. He declares that, had it not been for the unskilled manner in which the bark was removed from the 2,000 trees referred to by Mr. Broughton in paragraph 35 of his mossing report, there would have been no room for Mr. Broughton's strictures. Had the bark been skilfully removed, he believes the fresh bark would have appeared long ago. His general assertion is that clumsy removal of bark by untrained men causes great injury to the Cinchona trees.

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From W. G. McIVOR, Esq., Superintendent Government Cinchona Plantations, to J. R. COCKERELL, Esq., Commissioner of the Nilgiris, dated Ootacamund, 28th June 1873, No. 29.

I HAVE the honour to forward herewith the Annual Administration Report of the Government Cinchona Plantations on the Nilgiris for 1872-73.

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*Report on the Government Cinchona Plantations on the Nilgiris for* 1872-73.

IN submitting this report I have much satisfaction in being able to state that the season has been favourable for the growth of all the species of Cinchona. The health and vigour of the plants have never been finer than they are at present. The *C. officinalis*, as it attains age, assumes a fine-tree-like habit, with increased growth; the bark also continuously increases in thickness, and improves in appearance.

2. Our propagating operations are now entirely confined to the new species and varieties of Pitayo barks and *C. angustifolia*; the average monthly increase of these varieties during the year being 1,050; the total number of plants propagated being 12,602. The number of plants in permanent plantations, including the young plants in the nurseries and propagating houses on 1st April 1873, was 2,640,081. The number of plants issued to the public during the year is 9,200; the quantity of seed issued gratuitously being $25\frac{3}{4}$ oz., making a gross total of $407\frac{1}{2}$ oz., or seeds sufficient to raise 8,150,000 seedlings. The number of plants permanently planted out during the year is 13,885; there being planted on the Hooker Plantation at Pykara 4,961 plants of *C. angustifolia* and 7,394 of *C. Pitayo*, and on the Dodabet Plantation 1,000 *C. angustifolia* and 500 *C. Pitayo*; making the total number of plants in permanent plantations 1,170,029 on 30th April 1873.

3. Among the oldest plants which were planted in permanent plantations in the Autumn of 1862, a small block of 58 plants selected by Mr. Broughton for the

coppicing experiment were cut down. Among these was a plant 36 feet in height. The largest of the twelve measured plants of *C. Succirubra* planted out at the same time measure 30½ feet in height, with a circumference of stem of 28 inches. The largest of the twelve measured plants of *C. officinalis* planted on the Dodabet, Plantation in September 1863 measure 23 feet in height, with a circumference of stem of 7½ inches.

4. The quantity of green bark supplied to Mr. Broughton during the year for the manufacture of Amorphous qtinine is 83,894 lbs. in all, viz., 33,391 lbs. stem-bark and 50,503 lbs. of branch-bark. During the official year 2,072¼ lbs. of green tea-leaf has been supplied to Captain Jennings from the Government Experimental Tea Plantation at Dodabetta.

5. In the Autumn and Spring 25,000 lbs. of dry bark was collected for sale in the European market in compliance with G. O., No. 1,433, dated 16th October 1872. On completing this quantity of bark, it was found that not more than one-third of the whole quantity of bark available had been taken; I therefore, in my letter No. 161, dated 14th March 1873, recommended that a further supply of from 40,000 to 50,000 should be collected and despatched to Europe for sale in the home market. The whole of the stem-bark collected during the last official year has been taken by the mossing process. A large supply of bark is now available for the local manufactory.

Recorded in G. O., No. 427, dated 22nd April 1873.

6. In June 1871 the cultivation of the Malakoondah Plantation was abandoned or "converted into a wild Cinchona wood," in compliance with G. Os., No. 1,011, of 8th June 1871, and No. 1,193 of 11th July 1871. No expense has been incurred on this plantation since July 1871. Notwithstanding the fact that this plantation has not been cultivated for nearly two years, the stronger plants have maintained a fair growth, but the smaller plants have been over-grown and smothered by the weeds and growth of jungle-trees. In many instances, the jungle-growth is now beginning to over-top the larger plants, and, if not removed, will, I fear, shortly destroy many of them. The result of the experiment of leaving Cinchona to develop themselves into a forest does not promise to be successful, at least at Malakoondah. It is quite evident on the Nilgiris that true economy demands an expenditure sufficient to keep down weeds and under-growth until the Cinchona plants have attained a growth of eight or ten years, or until they so entirely cover the ground that their shade destroys the natural vegetation under them.

7. In previous reports I have observed that red bark plants do not become productive until their eighth or tenth year of growth, and that from the tenth to the twelfth year, according to situation and exposure, the crown-barks become productive. To remove bark from young trees, except in very favourable situation, is no doubt injurious.

8. It is not generally understood that at present there is not one-twentieth part of the plants on the Government Plantations on the Nilgiris which have attained sufficient age to produce bark. The number of red bark plants planted in 1862-63 was 12,500; in 1863-64, 7,700; in 1864-65, 38,500. It will thus be seen that we have now only 58,700 red bark plants old enough to be productive, while the present year is the first that the crown-barks are capable of yielding bark in



any considerable quantity. I append a table to this report, showing the number of plants in permanent plantations and the dates on which they were planted. This table gives a fair idea of the quantity of bark we may expect from the Government Plantations year by year; but in forming an estimate it is necessary to take into consideration the various circumstances affecting the yield of the trees. Plants placed in rich soil and sheltered situations will produce three or four times as much bark as plants of the same age planted on poor land and in exposed places. It is also necessary to make a deduction from the total number of plants planted out in any given year of about 30 per cent. for failures subsequently filled in.

9. In May 1871 a block of 200 *C. Succirubra* trees of the planting of 1862-63, also a block of 40 plants of the planting of 1864-65, were selected by Mr. Broughton and coppiced. These blocks were on some of the best land and in sheltered localities. The total yield of bark from these plants was 720 lbs. of green stem-bark and 324 lbs. of green branch-bark, or in all a total of 1,044 lbs. green bark, equal to about 255 lbs. dry stem-bark and 100 lbs. of dry branch-bark; in all 355 lbs. The shoots from the roots of these coppiced plants made unsatisfactory growth for the first two years. Now, however, they are becoming more healthy.

10. In my report of last year I informed the Government that from the 1,000 experimental *C. Succirubra* trees, planted in 1862-63, 2,980 lbs. of *dry bark* had been taken by the mossing process. We have now taken the first strip of renewed bark from these trees, and find it to be 764 lbs. of dry bark. The original bark from the same spaces having weighed 1,030 lbs. In the Autumn and Spring of next year the entire quantity of renewed bark will be removed from these trees. When this is completed the cost of removal per pound of dry renewed bark will be given. Originally it was believed that renewed bark could be taken at eighteen months' growth, but now it is found that twenty months to two years' growth is necessary for the easy removal of the renewed bark.

11. As before noticed the whole of the barks produced this year has been taken by the mossing process only. The experience gained by Mr. Broughton has led that gentleman to consider that mossing is not the most profitable way of harvesting red bark.

12. In my letter, No. 48, of the 26th June 1871 to the late Commissioner of the Nilgiris, I recommended that, while this matter was undecided one-half of the bark collected from the plantations be procured by mossing, and the other half by coppicing. In compliance with G. O., No. 1,213, dated 13th July 1871, the whole of the stem-bark, both for England and the supply of Mr. Broughton's manufactory, was procured by the mossing process alone. Mr. Broughton complains that all the trees of an age to produce bark have been mossed and that few remain on which the coppicing experiment can be fairly tested. This is an error, as, in fact, of our oldest red bark trees (12,500 of the planting of 1862-63), there are fully one-half unmossed. Should the Government consider it desirable, in order to test the value of the two systems, and to arrive at definite conclusions, an extensive experiment can be carried out by coppicing on this portion of the plantation that half of the trees which has not been mossed. These trees are now in their eleventh year of growth, and of an age most favourable for the coppicing experiment.

Mr. Broughton also represents that the coppicing process has not had a sufficiently extensive trial fairly to test its value. This is no doubt correct: the few trees coppiced have been selected in favourable situations, and consequently do not give any idea of the result which would be obtained from a large extent of land coppiced without selection. Were such an extent of land coppiced, the yield of bark per tree would turn out to be from one-half to two-thirds less than that obtained from the patches already coppiced. In fact, a large extent of land coppiced without selection could not but add fresh testimony to the already unsatisfactory results obtained by this system.

13. In compliance with G. O., No. 584, 10th April 1872, on Mr. Broughton's report on the effects of manure in increasing the production of alkaloids in Cinchona barks, arrangements have been made during the year for the extensive application of manure to our plants especially to the crown-barks. I however consider it necessary to bring to the notice of Government that there are certain circumstances connected with the production of alkaloids especially in the various varieties of crown-barks which tend to deprive the results obtained by Mr. Broughton of much of their value. The best results obtained by manure in increasing the alkaloids was when applied to *C. officinalis* and Mr. Broughton attributes the effects produced on this species to a sensitiveness to the effects of manure. There are other causes which Mr. Broughton slightly notices which, to some degree, explains the results he obtained. The *C. officinalis* is the richest of all the species in quinine. Mr. Broughton has explained that it is very variable in its yield of alkaloids. In order that we may not be disappointed in the results likely to be produced by manure, I beg to draw attention to the fact that the variability in the bark of the different varieties of this species is almost beyond belief. On the first Dodabetta Plantation, consisting entirely of plants raised from imported seeds of *C. officinalis*, may be taken samples of bark identical in appearance from similar trees growing under equal conditions. One sample of which will, on analysis, yield the extraordinary quantity of 11·4 per cent. crystallized sulphate of quinine, and the other yield not a trace.

14. Varieties are found varying in every degree between these extremes. Such being the fact, it will be easily understood that samples of bark gathered from the manured and unmanured rows of trees might, on analysis, have pointed to any conclusions, and it would be equally possible to show results proving the application of manure to be highly injurious instead of beneficial. In short, with plants varying in their alkaloids as crown-barks do, unless the selection of bark be made with very careful reference to the different varieties, any result may be obtained and proved by a perfectly accurate investigation and analysis. I may mention that the red barks do not vary so much in the yield of quinine as the crown-barks do; and this may account for Mr. Broughton having found that the manure applied to these plants produced comparatively insignificant results. The variation in the yield of alkaloids, especially quinine, in the red barks is from half to two per cent. according to the variety. The red flower and large-leaved variety produces most, the white flower variety less, and the small leaf variety in some situations contains no quinine or merely a trace. Not only does the variety of the plant vary in its yield of quinine but these also again vary according to the situation in which they are grown.

*Proceedings of the Madras Government, Revenue Department,*
*13th September* 1873.

15. Our manuring operations have been pressed forward as rapidly as possible. Five thousand trees of *C. officinalis* have been manured at Neddiwuttum, and 485 of the same species at Dodabetta with farm-yard manure. The artificial manure so kindly supplied for trial by Messrs. J. MacMeikan & Co., Melbourne, has been applied to 355 plants of *C. officinalis* on the Dodabetta Plantation. The artificial manure indented for, and sanctioned in G. O., No. 858, dated 1st June 1872, has not been received.

G. O., No. 1,428, dated 16th October 1872.

*Cultivation.*—During the preceding and the present official year the expenditure having been reduced to the lowest possible point, the high system of cultivation previously maintained in our plantations has not been carried out. I would, however, again bring to the notice of Government that the results of the last two years' cultivation makes it evident beyond doubt that, if the plantations are to be fully developed, it is indispensable that a more liberal system of cultivation be maintained, at least for three or four years on the younger portions of the plantations.

16. Appended is a table giving the rain-fall at Neddiwuttum, and a table of expenditure from 1860 to the 31st March 1873; also a table showing the number and date of the plants placed in permanent plantations.

*Establishment.*—Up to the end of March 1871, the Cinchona Plantations were worked by a permanent establishment of well trained gardeners, additional hands being merely called in to perform rough work. For objects of economy the late Commissioner recommended that the plantations should be worked on an estimate of 10 Rs. per acre, exclusive of superintendence. The Government approved of this system being adopted and sanctioned 12½ Rs. per acre per annum. In consequence of this, it was impossible to maintain permanently our trained establishment, and the men not having constant employment sought other situations; and we have since been obliged to work our plantations with such coolies as we are able to engage at the seasons when their labour can be applied to the greatest advantage. This system has been in operation for two years, and it has been found impossible to perform with accuracy any operation requiring care and attention by the untrained and inexperienced men we are obliged to employ. This system has no doubt reduced expenditure, but the absolute loss and injury done to the plants greatly exceeds any saving which has been effected. Experience has convinced me that whatever may be the sum sanctioned for the working of the Cinchona plantations, it would be very beneficial to maintain a fixed establishment of well trained gardeners, their number being limited to the expenditure proposed to be incurred. The establishments on the plantations have now been reduced to one Assistant Superintendent, three Overseers, and three Maistries. Even in the higher grades all of our experienced men have left the department, with the exception of Narrainsawmy Naidu, who joined at the commencement of the undertaking. With the zeal, application, and energy displayed by the Assistant Superintendent, Overseers, and Office Manager, I have every reason to be well satisfied.

G. O., 8th June 1871.

OOTACAMUND,
28*th June* 1873.

(Signed) W. G. McIVOR,
*Supt. Govt. Cinchona Plantations.*

*Statement of Expenditure, 1872-73, of the Government Cinchona Plantations on the Nilgiris.*

| Particulars. | Superintendent and Office Establishment. | | Propagation and Nursery Department. | | Dodabetta Plantation. | | Neddiwuttum Plantation. | | Pykara Plantations. | | Mailkoondah Plantation. | | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1860 to 1871-72. | 1872-73. | 1861 to 1871-72. | 1872-73. | 1860 to 1871-72. | 1872-73. | 1861 to 1871-72. | 1872-73. | 1862 to 1871-72. | 1872-73. | 1863 to 1871-72. | 1872-73. | |
| | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. |
| Establishment, salaries, etc... | 81,200 | 8,127 | 40,397 | 240 | 42,716 | 1,620 | 84,675 | 3,132 | 13,496 | 1,020 | 9,605 | .. ... | 2,86,228 |
| Buildings ... ... ... | ..... | 185 | 14,218 | 43 | 20,621 | 195 | 23,015 | 330 | 3,583 | 53 | 3,138 | ..... | 65,381 |
| Tool and Store-rooms ... | ..... | ..... | ..... | ..... | 675 | ..... | 1,618 | ..... | 893 | ..... | 320 | ..... | 3,506 |
| Coolies' quarters ... ... | ..... | ..... | ..... | ..... | 1,593 | 150 | 4,240 | 58 | 2,233 | 24 | 545 | ..... | 8,843 |
| Felling ... ... ... | ..... | ..... | ..... | ..... | 4,568 | ..... | 9,227 | ..... | 7,576 | ..... | 4,952 | ..... | 26,323 |
| Clearing and weeding ... | ..... | ..... | 1,000 | 459 | 19,599 | 2,420 | 30,401 | 2,712 | 1 .437 | 1,960 | 11,191 | ..... | 89,179 |
| Pitting ... ... ... | ..... | ..... | ..... | ..... | 9,650 | 70 | 15,585 | 140 | 6,627 | 199 | 4,623 | ..... | 36,894 |
| Carriage of plants ... ... | ..... | ..... | ..... | ..... | 3,415 | 12 | 5,004 | 44 | 1,699 | 124 | 786 | ..... | 11,084 |
| Planting and shading ... | ..... | ..... | ..... | ..... | 6,894 | 40 | 7,349 | 70 | 2,080 | 142 | 1,117 | ..... | 17,692 |
| Trenching ... ... ... | ..... | ..... | ..... | ..... | 3,759 | ..... | 6,642 | ..... | 2,065 | ..... | 575 | ..... | 13,041 |
| Enclosing ... ... ... | ..... | ..... | 548 | ..... | 5,337 | ..... | 4,552 | ..... | 1,845 | ..... | 1,080 | ..... | 13,362 |
| Road-making... ... ... | ..... | ..... | ..... | ..... | 7,149 | 100 | 5,757 | 198 | 3,441 | 100 | 2,371 | ..... | 19,116 |
| Tools ... ... ... ... | ..... | ..... | 566 | 193 | 5,091 | 210 | 5,952 | 340 | 3,850 | 255 | 1,981 | ..... | 18,438 |
| Contingencies ... ... ... | 831 | 195 | 2,423 | 137 | 5,897 | 155 | 7,829 | 160 | 1,873 | 143 | 1,104 | ..... | 20,747 |
| Excavating ... ... ... | ..... | ..... | 172 | ..... | 1,094 | ..... | 1,195 | 24 | ..... | ..... | ..... | ..... | 2,289 |
| Clothing ... ... ... | 169 | 32 | 365 | ..... | 250 | ..... | 381 | ..... | 158 | ..... | 85 | ..... | 1,284 |
| Various ... ... ... | ..... | ..... | ..... | ..... | 2,570 | 225 | 3,092 | 416 | 660 | 180 | 303 | ..... | 7,798 |
| Collection of bark and mossing. | ..... | ..... | ..... | ..... | 57 | 215 | 1,836 | 1,624 | 20 | 1,005 | ..... | ..... | 4,757 |
| Carriage of do. ... ... | ..... | ..... | ..... | ..... | ..... | ..... | 708 | 54 | ..... | 49 | ..... | ..... | 811 |
| Manure and Manuring trees ... | ..... | ..... | ..... | ..... | ..... | 40 | ..... | 28 | ..... | 3 | ..... | ..... | 71 |
| Total... | 82,200 | 8,539 | 59,689 | 1,072 | 1,40,935 | 5,452 | 2,19,058 | 9,330 | 71,536 | 5,257 | 43,776 | ..... | 6,46,844 |

Ootacamund,
1st *April* 1873.

(Signed) W. G. McIVOR,
*Superintendent Government Cinchona Plantations.*

*Sanctioned Estimate, Results of Expenditure, and Outturn of the Government Cinchona Plantations for the year* 1872-73.

| Particulars. | Superintendent and Office Establishment. | | Propagation and Nursery Department. | | Dodabetta Plantation. | | Neddiwuttum Plantation. | | Pykara Plantation. | | Total Estimate. | Total Expenditure. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Estimate. | Expenditure. | Estimate. | Expenditure. | Estimate. | Expenditure. | Estimate. | Expenditure. | Estimate. | Expenditure. | | |
| | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. |
| Establishment including salaries ... ... ... ... | 8,012 | 8,127 | 240 | 240 | 1,620 | 1,620 | 3,132 | 3,132 | 1,020 | 1,020 | 14,024 | 14,139 |
| Buildings ... ... ... ... ... ... ... | ... | 185 | 200 | 43 | 300 | 195 | 300 | 330 | 200 | 53 | 1,000 | 806 |
| Tool and Store-rooms... ... ... ... ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. |
| Coolies' quarters ... ... ... ... ... ... ... | ... | ... | ... | ... | 50 | 150 | 200 | 58 | 100 | 24 | 350 | 232 |
| Felling ... ... ... ... ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | 300 | ... | 300 | ... |
| Clearing and weeding... ... ... ... ... ... ... | ... | ... | ... | 459 | 2,500 | 2,420 | 3,811 | 2,712 | 2,500 | 1,960 | 7,811 | 7,551 |
| Pitting... ... ... ... ... ... ... | ... | ... | ... | ... | 50 | 70 | 50 | 140 | 100 | 199 | 200 | 409 |
| Carriage of plants ... ... ... ... ... ... ... | ... | ... | ... | ... | 25 | 12 | 25 | 44 | 50 | 124 | 100 | 180 |
| Planting and shading... ... ... ... ... ... ... | ... | ... | ... | ... | 10 | 40 | 10 | 70 | 25 | 142 | 45 | 252 |
| Road-making... ... ... ... ... ... ... | ... | ... | ... | ... | 50 | 100 | 50 | 198 | 50 | 100 | 150 | 398 |
| Tools... ... ... ... ... ... ... | ... | ... | ... | 193 | 100 | 210 | 150 | 340 | 100 | 255 | 350 | 998 |
| Contingencies ... ... ... ... ... ... ... | 150 | 195 | 50 | 137 | 250 | 155 | 450 | 160 | 250 | 143 | 1,150 | 790 |
| Clothing ... ... ... ... ... ... ... | 30 | 32 | 50 | ... | 10 | ... | 20 | 24 | 10 | ... | 100 | 56 |
| Contingencies ... ... ... ... ... ... ... | ... | ... | ... | ... | 100 | 225 | 150 | 416 | 100 | 180 | 1,350 | 821 |
| Various... ... ... ... ... ... ... | ... | ... | ... | ... | 500 | 215 | 1,500 | 1,624 | 500 | 1,005 | 2,500 | 2,844 |
| Collection of bark and mossing trees ... ... ... ... | ... | ... | ... | ... | 50 | ... | 150 | 54 | 50 | 49 | 250 | 103 |
| Carriage of do. ... ... ... ... ... ... | ... | ... | ... | ... | ... | ... | ... | 28 | ... | 3 | ... | 71 |
| Manure and manuring trees... ... ... ... ... ... | ... | ... | ... | ... | ... | 40 | ... | ... | ... | ... | ... | ... |
| Total... | 8,192 | 8,539 | 520 | 1,072 | 5,615 | 5,452 | 9,998 | 9,330 | 5,355 | 5,257 | 29,680 | 29,650 |

| | | | | |
|---|---|---|---|---|
| 83,894 lbs. Cinchona fresh bark supplied to Government Qninologist, at Rs. | 0-4-0 | per lb. | ... ... ... ... ... ... ... | 20,973 8 0 |
| 25,000 ,, ,, dry bark for sale in England ... ... at ,, | 1-0-0 | ,, ,, | ... ... ... ... ... ... ... | 25,000 0 0 |
| 2,336¾ ,, green tea-leaf distributed to the public ... ... at ,, | 0-1-4 | ,, ,, | ... ... ... ... ... ... ... | 194 11 8 |
| 9,200 Cinchona plants ,, ,, .. ... at ,, | 0-0-2 | each ,, | ... ... ... ... ... ... ... | 95 13 4 |
| 25¾ Ounces Cinchona seeds ,, ,, gratuitously ... at ,, | 0-4-0 | per oz. | ... ... ... ... ... ... ... | 6 7 0 |
| | | | Total ... | 46,270 8 0 |

Ootacamund,
1st *April* 1873.

(Signed) W. G. McIVOR,
*Superintendent Government Cinchona Plantations.*

*Cinchona Plants permanently planted out, Dates of planting and Number of Acres by Base and Surface Measurement under Cultivation on the Government Plantations on the Nilgiris.*

| Date. | Total Number of the Species of Cinchona Plants planted. | | | | | | | Denison, Kilgraston, and Napier Estates, Neddiwuttum. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Crown-barks. | Red Barks. | Yellow Barks. | Grey Barks. | Other Species. | Total. | Acres. | Crown-barks. | Red Barks. | Yellow Barks. | Grey Barks. | Other Species. | Acres, Surface. | Acres, Base. |
| 1862-63 ... | 18,550 | 12,500 | 500 | 3,100 | 350 | 35,000 | 63 | 4,200 | 12,000 | 500 | 3,000 | 300 | ... | ... |
| 1863-64 ... | 20,432 | 7,700 | 1,000 | 2,500 | ... | 31,632 | 55 | 16,000 | 4,700 | 1,000 | 1,500 | ... | ... | ... |
| 1864-65 ... | 56,700 | 38,500 | ... | 3,519 | ... | 98,719 | 99 | 10,000 | 23,500 | ... | 2,500 | ... | ... | ... |
| 1865-66 ... | 45,500 | 34,020 | ... | ... | ... | 79,520 | 80 | 2,000 | 22,720 | ... | ... | ... | ... | ... |
| 1866-67 ... | 67,000 | 77,000 | 9,200 | 3,140 | ... | 1,56,340 | 156 | 5,000 | 49,000 | 8,000 | 1,140 | ... | ... | ... |
| 1867-68 ... | 1,50,701 | 1,63,800 | 9,600 | 14,000 | 1,600 | 3,39,701 | 340 | 15,000 | 94,800 | 6,200 | 9,000 | ... | ... | ... |
| 1868-69 ... | 65,000 | 77,945 | 7,700 | 2,500 | ... | 1,53,145 | 153 | 20,000 | 72,000 | 7,700 | 2,500 | ... | ... | ... |
| 1869-70 ... | 84,995 | 1,68,473 | ... | ... | 899 | 2,54,367 | 254 | 3,550 | 70,680 | ... | ... | ... | ... | ... |
| 1870-71 ... | ... | ... | 3,500 | ... | ... | 3,500 | 2 | ... | ... | 3,500 | ... | ... | ... | ... |
| 1871-72 ... | ... | ... | 2,350 | ... | 1,900 | 4,250 | 5 | ... | ... | 2,350 | ... | ... | ... | ... |
| 1872-73 ... | 5,961 | ... | ... | ... | 7,894 | 13,855 | 15 | ... | ... | ... | ... | ... | ... | ... |
| Total... | 5,14,839 | 5,79,938 | 33,850 | 28,759 | 12,643 | 1,170,029 | 1,222 | 75,750 | 3,49,400 | 29,250 | 19,640 | 300 | 455 | 37·24 |
| | | | | | | | | | 4,74,340 | | | | | |



*Cinchona Plants permanently planted out, Dates of planting and Number of Acres by Base and Surface Measurement under Cultivation on the Government Plantations on the Nilgiris.*

| Date. | Dodabetta. | | | | | | | Wood and Hooker Estates, Pykara. | | | | | | Stanley Estates, Malakondah. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Crown-barks. | Red Barks. | Yellow Barks. | Grey Barks. | Other Species. | Acres, Surface. | Acres, Base. | Crown-barks. | Red Barks. | Grey Barks. | Other Species. | Acres, Surface. | Acres, Base. | Crown-barks. | Red Barks. | Other Species. | Acres, Surface. | Acres, Base. |
| 1862-63 ... | 14,350 | 500 | ... | 100 | 50 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 1863-64 ... | 2,432 | ... | ... | ... | ... | ... | ... | 2,000 | 3,000 | 1,000 | ... | ... | ... | ... | ... | ... | ... | ... |
| 1864-65 ... | 32,000 | ... | ... | ... | ... | ... | ... | 14,700 | 15,000 | 1,019 | ... | ... | ... | ... | ... | ... | ... | ... |
| 1865-66 ... | 39,000 | ... | ... | ... | ... | ... | ... | 4,500 | 11,300 | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 1866-67 ... | 55,000 | ... | 1,200 | ... | ... | ... | ... | 7,000 | 28,000 | 2,000 | ... | ... | ... | ... | ... | ... | ... | ... |
| 1867-68 ... | 1,05,000 | ... | 3,400 | ... | 1,600 | ... | ... | 25,701 | 54,000 | 5,000 | ... | ... | ... | 5,000 | 15,000 | ... | ... | ... |
| 1868-69 ... | 40,000 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 5,000 | 5,945 | ... | ... | ... |
| 1869-70 ... | 49,048 | ... | ... | ... | ... | ... | ... | 18,297 | 78,483 | ... | ... | ... | ... | 14,100 | 19,310 | 899 | ... | ... |
| 1870-71 ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 1871-72 ... | ... | ... | ... | ... | 800 | ... | ... | ... | ... | ... | 1,100 | ... | ... | ... | ... | ... | ... | ... |
| 1872-73 ... | 1,000 | ... | ... | ... | 500 | ... | ... | 4,961 | ... | ... | 7,394 | ... | ... | ... | ... | ... | ... | ... |
| Total... | 3,37,830 | 500 | 4,600 | 100 | 2,950 | 378 | 287·25 | 77,159 | 1,89,783 | 9,019 | 8,494 | 314 | 226·50 | 24,100 | 40,255 | 899 | 75 | 40·28 |
| | | 3,45,980 | | | | | | | 2,84,455 | | | | | | 65,254 | | | |

Ootacamund,
1st *April* 1873.

(Signed) W. G. McIVOR,
*Superintendent Government Cinchona Plantations.*

*Register of the Rain-fall on the Government Cinchona Plantations at Neddiwuttum for the official year* 1872-73.

| Date. | | Rain-fall. Inches. | Cents. |
|---|---|---|---|
| April | 1872 ... ... .... | 1 | 67 |
| May | ,, ... ... ... | 3 | 39 |
| June | ,, ... ... ... | 20 | 12 |
| July | ,, ... ... ... | 31 | 71 |
| August | ,, ... ... ... | 19 | 34 |
| September | ,, ... ... ... | 13 | 92 |
| October | ,, ... ... ... | 5 | 31 |
| November | ,, ... ... ... | 3 | 71 |
| December | ,, ... ... ... | 2 | 19 |
| January | 1873 ... ... ... | ... | ... |
| February | ,, ... ... ... | ... | 72 |
| March | ,, ... ... ... | ... | 40 |
| | Total ... | 101 | 58 |

(Signed) W. G. McIVOR,
*Superintendent Government Cinchona Plantations.*

OOTACAMUND,
1*st April* 1873.

No. 99. ORDER THEREON, 15th September 1873, No. 981.

Miscellaneous.

WITH the foregoing letter the Commissioner of the Nilgiri Hills submits the annual report of the Superintendent of the Government Cinchona Plantations. During the year 15 acres seem to have been planted out with 13,855 plants, making up the total number of trees in the plantations to 1,170,029. A large quantity of bark has been supplied to the Government Quinologist for the manufacture of Amorphous quinine, and 25,000 lbs. have been forwarded to England for sale.

2. From the statements attached to the report it appears that the total expenditure on the plantations up to the close of the past official year was a little under £65,000, and that the gross returns during the year under report are valued at a little over £4,600, which must be viewed as a fairly satisfactory result, considering the age of the trees.

3. The experimental abandonment of all expenditure on the Malakoondah Plantation does not promise to be successful from Mr. McIvor's report of the state of the trees. The Commissioner will be good enough to take the matter into his consideration, and to report whether he would propose to incur a small annual outlay in order to clear the under-growth.

4. It appears that the mossing process has not been carried out to the extent supposed, and that fully half of the oldest red bark trees are unmossed. The remarks of the Superintendent and of the Commissioner on the superiority of the system are, however, out of place in an annual report of progress, and should be submitted in a separate communication.

5. The application of manure to the plants has been extensively carried out. As observed by Mr. McIvor, however, it will be difficult to arrive at accurate results,



owing to the great variation in the samples of bark taken from trees apparently under precisely the same circumstances, but the experimen must be continued, and results carefully observed and recorded.

6. The cessation of high cultivation and the reduction of establishment, though resulting in a considerable diminution of expenditure is stated to involve a sacrifice of efficiency. This matter should be specially brought forward for consideration as proposed by the Commissioner without delay.

(True Extract.)

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

To the Commissioner of the Nilgiris.
,, the Government Quinologist.
,, the Board of Revenue.

Exd. F. R. Bantleman.

Govt. of India 1873 Madras.
REVENUE.
To
THE COMMISSIONER OF THE
NILGIRIS.
&c., &c., &c.
Dated September 13th.
Read
Encl.
G. O., 30th September 1873, No.
SEPTEMBER.
Nos. 93-99.

*Government Cinchona Plantations.*—Reviewing the Administration Report of the — for 1872-73; requesting the Commissioner to report on the propriety of incurring a small annual outlay on the Malakoondah Plantation, and directing the continuance of the experimental application of manure to the plants and the careful observation and record of the results.

11

5 (8)

# Report on the Government Chinchona Plantations on the Neilgherries for 1872/73.

In submitting this Report I have much satisfaction in being able to state that the season has been favorable for the growth of all the species of Chinchona. The health and vigor of the plants have never been finer than they are at present. The C. Officinalis as it attains age assumes a fine tree like habit with increased growth. the bark also continuously increases in thickness, and improves in appearance.

2. Our propagating operations are now entirely confined to the new species and varieties of Pitayo barks & C. Augustifolia. The average monthly increase of these varieties during the year being 1050. The total number of Plants propagated being 12,602. The Number of Plants in permanent Plantations including the young Plants in the Nurseries and propagating houses on 1st April 1873 was 2,640,081. The number of Plants issued to the Public during the year is 9200. The quantity of seed issued gratuitously being 25 3/4 oz: making a gross total of 40 1/2 oz

407½ oz: or seeds sufficient to raise 8,150,000 seedlings - The number of Plants permanently planted out during the year is 13,885 - there being planted on the Hooker Plantation at Pykara 4961 Plants of C. Augustifolia & 7394 of C Pitayo, and on the Dodabet Plantation 1000 C. Augustifolia & 500 C Pitayo - making the total number of Plants in permanent Plantations 1,170,029 on 30 April 1873 -

3. Among the oldest Plants which were planted in permanent Plantations in the Autumn of 1862, a small block of 58 Plants selected by Mr Broughton for the Coppicing Experiment were cut down - Among these was a Plant 36 feet in height - The largest of the 12 measured Plants of C. Succirubra planted out at the same time measure 30½ feet in height, with a circumference of stem of 28 inches - The largest of the 12 measured Plants of C officinalis planted on the Dodabet Plantation in September 1863 measure 23 feet in height with a circumference of stem of 7½ inches -

4. The quantity of green bark supplied to Mr Broughton during the year for the manufacture of Amorphous quinine is 83894 lbs in all - viz 33391 lbs stem bark & 50,503 lbs of branch bark - During the official year 2072¼ lbs of green Tea leaf has been supplied to Capt: Jennings from the Govt Experimental Tea Plantation at Dodabetta

5. In the Autumn & Spring 25,000 lbs of dry bark was collected for sale in the European Market in compliance with G.O No 1433 dated 16 October 1872 - On completing this quantity of bark it was found that not more than one third of the whole quantity of bark available had been taken, I therefore in my letter No 161 dated 14 March 1873 recommended that a further supply of from 40,000 to 50,000 should be collected and despatched to Europe for sale in the home market - The whole of the 427 stem Bark collected during the last official year has been taken by the mossing process - A large supply of bark is now available for the local Manufactory -

6. In June 1871 the cultivation of the Malakondah Plantation was abandoned or "Converted into a wild Chinchona wood" in compliance with G.O. No 1011 of 8th June 1871 & No 1193 of 11th July 1871 - No expense has been incurred on this Plantation since July 1871 - Notwithstanding the fact that this Plantation has not been cultivated for nearly two years the stronger

stronger Plants have maintained a fair growth, but the smaller Plants have been overgrown and smothered by the weeds and growth of jungle trees. In many instances the jungle growth is now beginning to overtop the larger Plants and if not removed will I fear shortly destroy many of them. The result of the experiment of leaving Chinchona to develop themselves into a forest does not promise to be successful, at least at Malakondah. It is quite evident on the Nilgiris that true Economy demands an Expenditure sufficient to keep down weeds & undergrowth until the Chinchona Plants have attained a growth of 8 or 10 years, or until they so entirely cover the ground that their shade destroys the natural vegetation under them.

7. In previous Reports I have observed that Red bark plants do not become productive until their Eighth or tenth year of growth that from the tenth to the twelfth year according to situation and exposure the Crown barks become productive. To remove bark from young trees except in very favorable situations is no doubt injurious.

8. It is not generally understood that at present there is not one twentieth part of the Plants on the Govt. Plantations on the Nilgiris which have attained sufficient age to produce bark. The number of Red bark Plants planted in 1862/63 was 12,500 in 1863/64 - 7700 in 1864/65 38,500. It will thus be seen that we have now only 58700 red bark plants old enough to be productive, while the present year is the first that the Crown barks are capable of yielding bark in any considerable quantity I append a table to this Report shewing the number of Plants in permanent Plantations and the dates on which they were planted. This Table gives a fair idea of the quantity of bark we may expect from the Govt Plantations year by year, but in forming an Estimate it is necessary to take into consideration the various circumstances affecting the yield of the trees. Plants placed in rich soil and sheltered situations will produce 3or4 times as much bark as Plants of the same age planted on poor land and in exposed places. It is also necessary to make a deduction from the total number of Plants planted out in any given year of about 30% for failures subsequently filled in.

9. In May 1871 a block of 200 C

Succirubra

Succirubra trees of the planting of 1862/63, also a block of 40 Plants of the planting of 1864/65 were selected by Mr Broughton and coppiced. These blocks were on some of the best land and in sheltered localities - The total yield of bark from these Plants was 720 lbs of green stem bark and 324 lbs of green branch bark or in all a total of 1044 lbs: green bark equal to about 255 lbs: dry stem bark and 100 lbs of dry branch bark in all 355 lbs - The shoots from the roots of these coppiced Plants made unsatisfactory growth for the first 2 years. Now however they are becoming more healthy.

10. In my Report of last year I informed the Govt that from the 1000 experimental C. Succirubra trees planted in 1862/63 - 11 2900 lbs of dry bark had been taken by the mossing process. We have now taken the first strip of renewed bark from these trees and find it to be 761 lbs of dry bark - The original bark from the same spaces having weighed 1030 lbs: In the Autumn and Spring of next year the entire quantity of renewed bark will be removed from these trees - When this is completed the

8 D

the cost of removal per lb: of dry renewed bark will be given. Originally it was believed that renewed bark could be taken at 18 months growth, but now it is found that 20 months to 2 years growth is necessary for the easy removal of the renewed bark -

11. As before noticed the whole of the barks produced this year has been taken by the mossing process only - The experience gained by Mr Broughton has led that gentleman to consider that mossing is not the most profitable way of harvesting Red bark.

12 In my letter No 748 of the 26th June 1871 to the late Commissioner of the Nilgiris I recommended that while this matter was undecided that one half of the bark collected from the Plantations be procured by mossing and the other half by coppicing. In compliance with G.O. No 1213 dated 13th July 1871 the whole of the stem bark both for England & the supply of Mr Broughton's manufactory was procured by the mossing process alone. Mr Broughton complains that all the trees of an age to produce bark have been mossed and that few remain on which the coppicing experiment can be fairly tested. This is an error, as in fact, of our oldest Red bark trees (12,500 of the planting of 1862/63) there are fully one half unmossed

Should

Should the Govt: consider it desirable, in order to test the value of the 2 systems and to arrive at definite conclusions, an extensive experiment can be carried out by coppicing on this portion of the Plantation, that half of the trees which has not been mossed. These trees are now in their eleventh year of growth and of an age most favorable for the coppicing experiment. Mr. Broughton also represents that the coppicing process has not had a sufficiently extensive trial fairly to test its value. This is no doubt correct, the few trees coppiced have been selected in favorable situations & consequently do not give any idea of the result which would be obtained from a large extent of land coppiced without selection. Were such an extent of land coppiced the yield of bark per tree would turn out to be from one half to two thirds less than that obtained from the patches already coppiced. In fact a large extent of land coppiced without selection could not but add fresh testimony to the already unsatisfactory results obtained by this system.

13. In compliance with G.O. No 584 dated 10 April 1872 on Mr Broughton's Report on the effects of manure in increasing the production of alkaloids in Chinchona barks, arrangements have been made during the year for the extensive application of manure to our plants especially to the Crown barks. I however consider it necessary to bring to the notice of Govt that there are certain circumstances connected



nected with the production of alkaloids especially in the various varieties of Crown barks which tend to deprive the results obtained by Mr Broughton of much of their value. The best results obtained by manure in increasing the alkaloids was when applied to C. officinalis and Mr Broughton attributes the effects produced on this species to a sensitiveness to the effects of manure. There are other causes which Mr Broughton slightly notices which to some degree explains the results he obtained. The C. Officinalis is the richest of all the species in quinine. Mr Broughton has explained that it is very variable in its yield of alkaloids. In order that we may not be disappointed in the results likely to be produced by manure, I beg to draw attention to the fact that the variability in the bark of the different varieties of this species is almost beyond belief. On the first Dodabetta Plantation consisting entirely of Plants raised from imported seeds of C. officinalis may be taken samples of bark identical in appearance from similar trees growing under equal conditions. one sample of which will on analysis yield the extraordinary quantity of 11.4 per cent Crystallized Sulphate of Quinine & the other yield not a trace.

14. Varieties are found varying

in

in every degree between these extremes - Such being the fact it will be easily understood that samples of bark gathered from the manured & unmanured rows of trees might on analysis have pointed to any conclusions, and it would be equally possible to shew results proving the application of manure to be highly injurious instead of beneficial - In short with Plants varying in their alkaloids as Crown barks do, unless the selection of bark be made with very careful reference to the different varieties, any result may be obtained and proved by a perfectly accurate investigation & analysis - I may mention that the Red barks do not vary so much in the yield of Quinine as the Crown barks do & this may account for Mr Broughton having found that the manure applied to these Plants produced comparatively insignificant results. The variation in the yield of alkaloids especially quinine in the red barks is from ½ to 2% according to the variety - The Red flower and large leaved variety produces most - the white flower variety less, & the small leaf variety in some situations contains no quinine or merely a trace - Not only does the variety of the Plant vary



vary in its yield of quinine, but these also vary according to the situation in which they are grown -

16. Our manuring operations have been pressed forward as rapidly as possible. 5000 trees of C. officinalis have been manured at Neddiwatthum & 1485 of the same species at Dodabetta with Farm yard manure - The artificial manure so kindly supplied for trial by Messrs J. MacMeikan & Co Melbourne has been applied to 353 Plants of C. officinalis on the Dodabetta Plantation - The artificial manure indented for & sanctioned in G.O. No 858 dated 1st June 1872 has not been received -

**Cultivation** - During the preceding and the present official year the expenditure having been reduced to the lowest possible point, the high system of cultivation previously maintained in our Plantations has not been carried out - I would however again bring to the notice of Govt that the results of the last 2 years cultivation makes it evident beyond doubt that if the Plantations are to be fully developed it is indispensable that a more liberal system of cultivation be maintained at least for 3 or 4 years on the younger portions

portions of the Plantations.

16. Appended is a Table giving the rainfall at Neddiwattum and Table of Expenditure from 1860 to the 31st March 1873. also a Table shewing the number and date of the Plants placed in permanent plantations.

Establishment. Up to the 2nd of March 1871 the Chinchona Plantations were worked by a permanent Establishment of well trained gardeners, additional hands being merely called in to perform rough work. For objects of economy the late Commissioner recommended that the Plantations should be worked on an Estimate of 10 Rs: per acre exclusive of Superintendence. The Govt. approved of this system being adopted & sanctioned 12½ Rs per acre per annum. In consequence of this it was impossible to maintain permanently our trained Establishment and the men not having constant employment sought other situations, and we have since been obliged to work our Plantations with such Coolies as we are able to engage at the seasons when their labor can be applied to the greatest advantage. This system has been in operation for 2 years and it has been found impossible to



to perform with accuracy any operation requiring care & attention by the untrained and inexperienced men we are obliged to employ. This system has no doubt reduced Expenditure, but the absolute loss and injury done to the Plants greatly exceeds any saving which has been effected. Experience has convinced me that whatever may be the sum sanctioned for the working of the Chinchona Plantations it would be very beneficial to maintain a fixed Establishment of well trained gardeners their number being limited to the Expenditure proposed to be incurred. The Establishments on the Plantations have now been reduced to 1 Asst: Superintendent 3 overseers and 3 Maistries. Even in the higher grades all your experienced men have left the Department with the exception of Narrainswamy Naidu who joined at the commencement of the undertaking. With the Zeal, application & energy displayed by the Asst: Superintendent overseers & Office Manager I have every reason to be well satisfied.—

W. S. M. Doo

Supt. Govt. Chinchona Plantns

Govt. Gardens
Ootacamund
28th June 1873

# Statement of Expenditure 1872.73 of the Government Chinchona Plantations on the Neilgherries.

| Particulars | Supt. & Office Establishment | | Propagation & Nursery Dept. | | Dodabetta Plantation | | Neddiuttum Plantation | | Pykara Plantations | | Malakoondah Plantation | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1860 to 1871.72 | 1872.73 | 1861 to 1871.72 | 1872.73 | 1860 to 1871.72 | 1872.73 | 1861 to 1871.72 | 1872.73 | 1862 to 1871.72 | 1872.73 | 1863 to 1871.72 | 1872.73 | |
| Establishment, salaries &c. | 81,200 | 8127 | 40,397 | 240 | 42,716 | 1620 | 84,675 | 3,132 | 13,496 | 1,020 | 9,605 | " | 2,86,228 |
| Buildings | " | 185 | 14,218 | 43 | 20,621 | 195 | 23,015 | 330 | 3,583 | 53 | 3,138 | " | 65,381 |
| Tool and Store-rooms | " | " | " | " | 675 | " | 1,618 | " | 893 | " | 320 | " | 3,506 |
| Coolies Quarters | " | " | " | " | 1,593 | 150 | 4,240 | 58 | 2,233 | 24 | 545 | " | 8,843 |
| Felling | " | " | " | " | 4,568 | " | 9,227 | " | 7,576 | " | 4,952 | " | 26,323 |
| Clearing and Weeding | " | " | 1,000 | 459 | 19,599 | 2,420 | 30,401 | 2,712 | 19,437 | 1,960 | 11,191 | " | 89,179 |
| Pitting | " | " | " | " | 9,650 | 70 | 15,585 | 140 | 6,627 | 199 | 4,623 | " | 36,894 |
| Carriage of plants | " | " | " | " | 3,415 | 12 | 5,004 | 44 | 1,699 | 124 | 786 | " | 11,084 |
| Planting and Shading | " | " | " | " | 6,894 | 40 | 7,349 | 70 | 2,080 | 142 | 1,117 | " | 17,692 |
| Spreching | " | " | " | " | 3,759 | " | 6,642 | " | 2,065 | " | 575 | " | 13,041 |
| Enclosing | " | " | 548 | " | 5,337 | " | 4,552 | " | 1,845 | " | 1,080 | " | 13,362 |
| Road-making | " | " | " | " | 7,149 | 100 | 5,757 | 198 | 3,441 | 100 | 2371 | " | 19,116 |
| Tools | " | " | 566 | 193 | 5,091 | 210 | 5,952 | 340 | 3,850 | 255 | 1,981 | " | 18,438 |
| Contingencies | 831 | 195 | 2,423 | 137 | 5,897 | 155 | 7,829 | 160 | 1,873 | 143 | 1,104 | " | 20,747 |
| Excavating | " | " | 172 | " | 1,094 | " | 1,195 | 24 | " | " | " | " | 2,289 |
| Clothing | 169 | 32 | 365 | " | 250 | " | 381 | " | 158 | " | 85 | " | 1,284 |
| Various | " | " | " | " | 2,570 | 225 | 3,092 | 416 | 660 | 180 | 303 | " | 7,778 |
| Collection of Bark & moossing | " | " | " | " | 57 | 215 | 1,836 | 1,624 | 20 | 1005 | " | " | 4,757 |
| Carriage of do | " | " | " | " | " | " | 708 | 54 | " | 49 | " | " | 811 |
| Manure & manuring trees | " | " | " | " | " | 40 | " | 28 | " | 3 | " | " | 71 |
| Total | 82,200 | 8539 | 59,689 | 1072 | 1,40,935 | 5,452 | 2,19,058 | 9,330 | 71,536 | 5,257 | 43,776 | " | 6,46,844 |

Government Gardens
Ootacamund 1st April 1873

Supt. Govt. Chinchona Plantns

Register of the Rain fall on the Government Chinchona Plantations at Neddivattum for the official year 1872.73

(13)

| Date | Rain fall Inches | Rain fall Cents | Remarks |
|---|---|---|---|
| April 1872 | 1 | 67 | |
| May — " | 3 | 39 | |
| June — " | 20 | 12 | |
| July — " | 31 | 71 | |
| August — " | 19 | 34 | |
| September — " | 13 | 02 | |
| October — " | 5 | 31 | |
| November — " | 3 | 71 | |
| December — " | 2 | 19 | |
| January 1873 | " | " | |
| February — " | " | 72 | |
| March — " | " | 40 | |
| Total | 101 | 58 | |

Govt. Gardens
Ootacamund
1st April 1873

Supt. Govt. Chinchona Plantns

# Sanctioned Estimate, Results of Expenditure & Outturn of the Govt. Chinchona Plantations for the year 1872-73

| Particulars | Supt. & Office Establishment | | Propagation & nursery Dept. | | Dodabetta Plantation | | Neddivattum Plantation | | Pykara Plantation | | Total Estimate | Total Expenditure |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Estimate | Expenditure | Estimate | Expenditure | Estimate | Expenditure | Estimate | Expenditure | Estimate | Expenditure | | |
| Establishment including Salaries | 8,012 | 8,127 | 240 | 240 | 1,620 | 1,620 | 3,132 | 3,132 | 1,020 | 1,020 | 14,024 | 14,139 |
| Buildings | " | 185 | 200 | 43 | 300 | 195 | 300 | 330 | 200 | 53 | 1,000 | 806 |
| Tool and Store rooms | " | " | " | " | " | " | " | " | " | " | " | " |
| Coolies quarters | " | " | " | " | 50 | 150 | 200 | 58 | 100 | 24 | 350 | 232 |
| Felling | " | " | " | " | " | " | " | " | 300 | " | 300 | " |
| Clearing and weeding | " | " | " | 459 | 2,500 | 2,420 | 3,811 | 2,712 | 2,500 | 1,960 | 7,811 | 7,551 |
| Pitting | " | " | " | " | 50 | 70 | 50 | 140 | 100 | 199 | 200 | 409 |
| Carriage of plants | " | " | " | " | 25 | 12 | 25 | 44 | 50 | 124 | 100 | 180 |
| Planting and Shading | " | " | " | " | 10 | 40 | 10 | 70 | 25 | 142 | 45 | 252 |
| Road making | " | " | " | " | 50 | 100 | 50 | 198 | 50 | 100 | 150 | 398 |
| Tools | " | " | " | 193 | 100 | 210 | 150 | 340 | 100 | 255 | 350 | 998 |
| Contingencies | 150 | 195 | 50 | 137 | 250 | 155 | 450 | 160 | 250 | 143 | 1,150 | 790 |
| Clothing | 30 | 32 | 30 | " | 10 | " | 20 | 24 | 10 | " | 100 | 56 |
| Various | " | " | " | " | 100 | 225 | 150 | 416 | 100 | 180 | 1,350 | 821 |
| Collection of Bark & mossing trees | " | " | " | " | 500 | 215 | 1,500 | 1,624 | 500 | 1,005 | 2,500 | 2,844 |
| Carriage of do | " | " | " | " | 50 | " | 150 | 54 | 50 | 49 | 250 | 103 |
| Manure & manuring trees | " | " | " | " | " | 40 | " | 28 | " | 3 | " | 71 |
| Total... | 8,192 | 8,539 | 520 | 1,072 | 5,615 | 5,452 | 9,998 | 9,330 | 5,355 | 5,257 | 29,680 | 29,650 |

| | | | |
|---|---|---|---|
| 83,894 lbs Chinchona fresh Bark supplied to Government Quinologist | @ Rs. 0-4-0 | per lb | 20,973. 8. " |
| 25000 lbs " dry Bark for sale in England | @ " 1- " -" | " | 25,000 " " |
| 2336¾ lbs green Tea leaf distributed to the public | @ " -" 1- 4 | " | 194. 11. 8 |
| 9,200 Chinchona plants do do | @ " " " 2 | @ | 95. 13. 4 |
| 25¾ Ounces do Seeds do do gratuitously | @ " " 4- " | per oz | 6. 7. " |
| | | Total | 46270. 8. " |

Government Gardens
Ootacamund 1st April
1873

Supt. Govt. Chinchona Plantns

# Chinchona plants permanently planted out, dates of planting and number of acres by base and surface measurement under Cultivation on the Government Plantations on the Neilgherries

| Date | Total No. of the Species of Chinchona plants planted. | | | | | | | Denison, Hilgraston & Napier Estates, Neddimtham | | | | | | | | Dodabetta | | | | | | | | Wood & Hooker Estates Pykara | | | | | | | | Stanley Estate Malakoondah | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Crown Barks | Red Barks | Yellow Barks | Grey Barks | Other Species | Total | Acres | Crown Barks | Red Barks | Yellow Barks | Grey Barks | Other Species | Acres Surface | Acres Base | | Crown Barks | Red Barks | Yellow Barks | Grey Barks | Other Species | Acres Surface | Acres Base | | Crown Barks | Red Barks | Grey Barks | Other Species | Acres Surface | Acres Base | | Crown Barks | Red Barks | Other Species | Acres Surface | Acres Base | | | |
| 1862. 63 | 18,650 | 12,500 | 500 | 3,100 | 350 | 35,000 | 63 | 4,200 | 12,000 | 500 | 3,000 | 300 | " | " | | 14,350 | 500 | " | 100 | 50 | " | " | | 6,000 | 2,000 | 1,000 | " | " | " | | " | " | " | " | " | | | |
| 1863. 64 | 20,432 | 7,700 | 1000 | 2,500 | " | 31,632 | 55 | 16,000 | 4,700 | 1000 | 1,500 | " | " | " | | 2,432 | " | " | " | " | " | " | | 2,000 | 3,000 | 1,000 | " | " | " | | " | " | " | " | " | | | |
| 1864. 65 | 56,700 | 38,500 | " | 3,519 | " | 98,719 | 99 | 10,000 | 23,500 | " | 2,500 | " | " | " | | 32,000 | " | " | " | " | " | " | | 14,700 | 15,000 | 1019 | " | " | " | | " | " | " | " | " | | | |
| 1865. 66 | 45,500 | 34,020 | " | " | " | 79,620 | 80 | 2,000 | 22,720 | " | " | " | " | " | | 39,000 | " | " | " | " | " | " | | 4,500 | 11,300 | " | " | " | " | | " | " | " | " | " | | | |
| 1866. 67 | 67,000 | 77,000 | 9,200 | 3140 | " | 156,340 | 156 | 5,000 | 49,000 | 8,000 | 1,140 | " | " | " | | 55,000 | " | 1,200 | " | " | " | " | | 7,000 | 28,000 | 2,000 | " | " | " | | " | " | " | " | " | | | |
| 1867. 68 | 150,701 | 163,800 | 9,600 | 14,000 | 1,600 | 339,701 | 340 | 15,000 | 94,800 | 6,200 | 9,000 | " | " | " | | 105,000 | " | 3,400 | " | 1,600 | " | " | | 25,701 | 54,000 | 5,000 | " | " | " | | 5,000 | 15,000 | " | " | " | | | |
| 1868. 69 | 65,000 | 77,945 | 7,700 | 2,500 | " | 153,145 | 153 | 20,000 | 72,000 | 7,700 | 2,500 | " | " | " | | 40,000 | " | " | " | " | " | " | | " | " | " | " | " | " | | 5,000 | 5945 | " | " | " | | | |
| 1869. 70 | 84,995 | 168,473 | " | " | 899 | 254,367 | 254 | 3,550 | 70,680 | " | " | " | " | " | | 49,048 | " | " | " | " | " | " | | 18,297 | 38,483 | " | " | " | " | | 14,100 | 19,310 | 899 | " | " | | | |
| 1870. 71 | " | " | 3500 | " | " | 3,500 | 2 | " | " | 3500 | " | " | " | " | | " | " | " | " | " | " | " | | " | " | " | " | " | " | | " | " | " | " | " | | | |
| 1871. 72 | " | " | 2,350 | " | 1,900 | 4,250 | 5 | " | " | 2,350 | " | " | " | " | | " | " | " | " | 800 | " | " | | " | " | " | 1100 | " | " | | " | " | " | " | " | | | |
| 1872. 73 | 5,961 | " | " | " | 7,894 | 13,855 | 15 | " | " | " | " | " | 455 | 371.24 | | 1000 | " | " | " | 500 | " | 287.25 | | 4961 | " | " | 7,394 | " | 226.50 | | " | " | " | " | 40.28 | | | |
| | 5,14,839 | 579,938 | 33,850 | 28,759 | 12,643 | 1,170,029 | 1222 | 75,750 | 349,400 | 29,250 | 19,640 | 300 | | | | 327,830 | 500 | 4,600 | 100 | 2,950 | 378 | | | 77,159 | 189,783 | 9,019 | 8,494 | 314 | | | 24,100 | 40,255 | 899 | 75 | | | | |
| | | | | | | | | | | | | | | | 474,340 | | | | | | | 348,980 | | | | | | | 284,455 | | | | | | 65,254 | | |

Govt Gardens
Ootacamund
1st April 1873

W. S. Wilson
Supt. Govt Chinchona Plants

No. 29

Government Gardens
Ootacamund 28th June 1873

(16)

From,

W. G. Mc. Ivor Esqre.
Supt. Govt. Chinchona Plantations

To,

I. R. Cockerell Esqre.
Commissioner of the Neilgherries
Ootacamund

Sir,

I have the honor to forward herewith the Annual Administration Report of the Government Chinchona Plantations on the Neilgherries for 1872-73.

I have the honor to be
Sir,
Your most obdt. Servt.

W. G. Mc. Ivor

Supt. Govt. Chinchona Plantns

1881
C 8732 6
2033 73

From Commissioner Nilgiris
Forwarding Report
for 1872-73

Rec'd 28 Sept 1873
No. 29
Ans No 115

Report
by
Commissioner Nilgiris
relative to the Forest
Administration of the
Nilgiris for the
year 1872-73.

1

Commissioner's Office
Ootacamund 10th July 1873

(17)

No 29

No 98 Read the following letter from J. R. Cockerell Esq
Commissioner Nilgiris
Ootacamund

To

The Secretary to Government
Revenue Department
Ootacamund

Sir

I have the honor to submit the Administration Report of the Government Cinchona Plantations on the Nilgiris for 1872-73. I take the opportunity to reply at the same time to Government Order No 549 dated 29th May last, Revenue Department, upon the report of Dr Brough upon the respective merits of the mossing and coppicing systems. The Government Order remarks upon a statement of Dr Broughton that 85 per cent of 2000 trees from which the bark was stripped in October 1871 have failed to renew their bark, that this instance of the failure of the mossing process should receive the Commissioner and Dr Dr. Jones's gravest consideration.

2. Dr Broughton's Report is dated the 19th April

19th April 1873 or about 17 months after the removal of the bark. In para 10 of his present Report Dr Dr Cross says "Originally it was believed that renewed bark could be taken at 18 months growth, but now it is found that 20 months to 2 years growth is necessary for the easy removal of the renewed bark.

3. Dr Dr Cross informs me that the 2000 trees referred to by Dr Broughton are at the present moment in the most luxuriant possible health and that he has already commenced to remove the renewed bark. I suspect that Dr Broughton in referring to these trees intended to point out that they had been tardy in putting on the renewed bark and not that he feared the Bark would not renew. I infer this from the circumstance, well known, that no tree could survive if it was stripped of bark as Chinchona trees are stripped and did not at once commence a more or less rapid reparatory process.

4 The observation is made in para 1 of the Government Order that the Government consider the Commissioners remarks in paras 9 and 10 of his covering letter to Dr Broughton's Report "show almost



almost conclusively (if his figures are correct) that the mossing system is likely to be more profitable than the coppicing system which Dr Broughton advocates".

5. They estate that my figures were under, not over the mark. The present report of Dr Dr Cross proves this to be the case by facts. Para 9 says that 200 C. Succirubra of 1862/63 and 40 plants of 1864/65 were coppiced in May 1871 and yielded 355 lbs of dry bark and para 10 states that 1000 C. Succirubra of 1862/63 were stripped also in 1871, but in the month of February. These trees yielded at that time, though this information is not in the report, 1030 lbs of dry bark. In October last year the second harvest of natural bark was removed amounting to 1950 lbs of dry bark and recently the first harvest of renewed bark; that is to say the renewed bark from the 3 spaces yielding the 1030 lbs of natural bark amounting to 764 lbs of dry bark. These 1000 trees planted in 1862-63 have therefore already yielded 3744 lbs of dry bark and in October next the renewed bark will be taken from the 3 spaces which yielded the 1950 lbs of dry bark.

bark and this harvest will probably amount to 1200 lbs of dry bark because the trees have expanded in size since the 1950 lbs was stripped. In my calculation I will exclude the latter renewed bark amounting to 1200 lbs.

6. The coppiced trees above mentioned were 240 in number and 40 of them were when coppiced 2 years younger than the 1000 trees. I do not know what bark the 200 trees gave and I shall therefore consider the 240 trees as equal to 1/4 of the 1000 trees and all as of the same age. The calculation is not fair to the coppiced trees but it is not so unfair as to vitiate altogether the argument. I found on the calculation; because the comparison is so immensely in favor of the mossing process that small errors are unimportant. The 240 trees then yielded 355 lbs of dry bark and the trees though in selected localities, that is to say selected in order that the results might be favorable to coppicing, have as yet, as I am personally aware, only thrown up shoots as thick as a walking stick covered with bark which when dry curls and is no thicker than blotting paper. I saw these shoots early in



in the year. Dr McIvor in his present report says that the South west Monsoon has rendered them more vigorous but he does not mean to say that the growth hitherto arrested has suddenly become luxuriant. He uses the modified phrase at para 9 of his report the shoots are "becoming more healthy". These coppiced trees at all events will not be fit for a harvest of bark to be taken for a long term of years.

7. I put then the hitherto yield of the 240 coppiced trees against the hitherto yield of 1/4 of the 1000 mossed trees. The result is that the former yield is 355 lbs against 936 lbs in the latter case. The figures speak for themselves and yet there are other considerations favorable to mossing. They are. 1 That mossed bark is richer in quinine than natural bark. 2nd That the 1000 mossed trees will shortly give a further harvest whereas the 240 coppiced trees will not give an additional harvest for a very long time.

8. I desire to call attention to the support the views I expressed on the coppicing system received from Dr McIvor's present report. At para

para 12 Mr Mc Ivor referring to the trees already coppiced and speaking of them as in selected Situations. A large extent of land coppiced without selection could not but add fresh testimony to the already unsatisfactory results obtained by this System."

9 With regard to the coppicing directed in the Government Order under reference I believe it has already been done, but I shall report specifically on this subject and submit some remarks on the last para of the Government order when I hear from Mr Mc Ivor.

10. In para 4 of the report it will be observed by Government that Mr Mc Ivor has furnished 838[illegible] lbs of wet bark, equal to, 33000 lbs of dry bark to Mr Broughton during the past year and that he has collected 25000 lbs of dry bark for sale in the Home Market and proposed to collect 50,000 lbs more. Upon the latter point the instructions of Government have not yet been received. In all then the harvest of bark for the past year; if all taken; amounted to 108000 lbs of dry bark worth at 2 shillings a lb net all round and this is a low price, a lac and 8000 Rupees. Further on in his report Mr Mc Ivor refers to the number of trees on the Government properties capable of yielding commercial bark and shows that not one twentieth of the trees are fit to be cropped. Mr Mc Ivor however tells me that notwithstanding he expects a crop of dry bark in the current year amounting to the crop available in the past year and in 1874-75 a crop of double the quantity. After that Mr Mc Ivor expects the annual yield will be very large.



11. The Government will observe that Mr Mc Ivor is not of opinion that manure will increase the alkaloids in the barks of Cinchona trees. He is, however, experimenting with manure and will report upon the subject in due time.

12. Mr Mc Ivor, under the head Cultivation in his report, urges that the amount at present allowed is not sufficient for the proper up keep of the Cinchona Plantations. I have conferred with Mr Mc Ivor on the subject and he suggested his placing his views in detail on paper when the matter can be considered. This he will do. He tells me that he is of opinion that a staff of gardeners is urgently necessary to take, under the mossing system, the large harvests of bark available

available and expected. He declares that had it not been for the unskilled manner in which the bark was removed from the 2000 trees referred to by Dr Broughton in para 35 of his missing report, there would have been no room for Dr Broughtons strictures. Had the bark been skilfully removed he believes the fresh bark would have appeared long ago. His general assertion is that clumsy removal of bark by untrained men causes great injury to the Chinchona trees.

Sheet No 4½ to follow

I have the honor to be
Sir
Your most obedt Servt

E. M. Cockerell
Commissioner

Revenue Dept. 17

No. 981

(22)

# Pros of the Madras Govt

Under date the 13th August 1873

Read the following letter from the Commissioner of the Nilgiris.

Submitting the Administration Report of the Govt Cinchona Plantations for 1872-73 & applying for G.O. No. 549 of 29th May 1873 upon Mr Broughton's Report.

Dr. — with your address letter dated 5th instant and respecting the disentitlement order.

J. D.

I should like to dispose of this point of Madras that this be made a Provincial Service — to a person [illegible] Concan [illegible]

1. With the foregoing letter the Commissioner of the Nilgherry Hills submits the annual report of the Dept of the Govt Cinchona Plantations. During the year 15 acres seem to have been planted out with 13,855 plants, making up the total number of trees

F.C. 10 July 1873, No. 12

Rec'd 15th Sept 1873 No. 1037

From The Commissioner Nilgiris

To The Secretary to Govt Revenue Dept Ootacamund

Dated 10th July 1873 Received 11th do No. 99 Enclosures (6)

Submitting the Report of the Administration of the Govt Cinchona Plantations for 1872-73 and applying for the sanction of Government to the disentitlement order passed by the Collector of Nilgiris in G.O. No. 549 of 29th May 1873 upon Mr Broughton's report.

Gs 13 September 1873 No. 961

8 Issues 72 Rs 8-14-6 Refd 6-14-0 = 114-12
18 — 0-0-0 = 157-8-3
10 Issues 72-0-0 = 93-7-4
1 Issue 72-0-0 = 3-12
26 Issues 72-0-0 = 182-8
16 Retrenchment 72-0-0 = 132-3
22 Issues 73-0-0 = 194-5
29 Issues 73-0-0 = 252-9

c. 25 Aug-23 Rs 5-15-3

No. 98-99

in the plantations to 1,179,029.

A large quantity of bark has been supplied to the Govt. Quinologist for the manufacture of Amorphous quinine, and 25,000 lbs have been forwarded to England for sale.

2. From the Statements attached to the Report it appears that the total expenditure on the plantations up to the close of the past official year was a little under £65,000 and that the returns during the year under report are valued at a little over £2,600, which must be viewed as a ~~fairly~~ satisfactory

? The Net income appears to be about £1600 (Expenditure 3000 - Receipts £1600) This is unsatisfactory result

I cannot agree with Mr Iris - the estate has cost £3000 Rp - bore a proper Capital acct. including interest &c made up probably 5000 to 6000 would be found to be true state of the acct - the result of the experiment - recorded Swift - declared a prospect - claim record - ation of a tentative character - the matter seems to me to require decision and I do not refer it -

I understood that this expenditure had been provided in connection with the Cinchona Plantations and was to be looked upon as part of the cost of the abandonment of experimental

Considering the age of the trees

satisfactory result ~~and the present state of the Cinchona Plantations~~

3. The experimental abandonment of expenditure on the Malakoondah Plantation does not promise to be successful ~~but the~~ state of the trees. The Govt will ~~Govt see no reason to~~ be good enough to take the matter into ~~consider Mr Iris order~~ his consideration, and to report whether he would propose to incur a further annual expenditure to clear the undergrowth -

4. It appears that the mossing process has not been carried out to the extent supposed, and that fully half of the oldest Red Bark trees are un-mossed. The remarks of the Supt and of the Commissioner on the superiority of the system

in an annual report of progress, and should be submitted in a separate communication.

5. The application of manure to the plants has been extensively carried out, ~~but~~ as observed by Mr. McIver, it will be difficult to arrive at accurate results owing to the great variation in the samples of bark taken from trees apparently under precisely the same circumstances.

6. The cessation of high cultivation and the reduction of establishment though resulting in a considerable diminution of Expenditure is stated to involve a sacrifice of efficiency. This matter should be specially brought forward for consideration as proposed by the Commissioner.

It is not right, if it can possibly be avoided, for Officers paid to go on leave to engage in Chemical trading in Quinine or anything else.

As a temporary measure for the purpose of introducing Cinchona cultivation into India the Chemical industry, there was defensible: it is not to when produced remunerated for some 12 or 14 years.

It is open to question if it is desirable to allow Officers of Government to engage in private business of this kind. What was done at Darjeeling?

Letter to be sent for the present

To Commissioner of Madras
Govt. Quinology &c
Ootacamund

Copy 22-9

6/50

Ex. 5

On report of the Sec'y
Cuckoo plantation
for 1872-73.

Cuke

Counsel

Immediate