M.R.O. 1—77,006—8-6-37.

(1) Number of pages 10

(2) Date of repair 2-1-43

(3) Initials of the Referencer

MADRAS RECORD OFFICE.

Government of Madras.

Public works DEPARTMENT.

G.O. No. 56 Press / Mis.

118-19

Dated 6 1 1866.

Not to be folded or roughly handled

Proceedings of the Madras Government, Public Works Department,
6th January 1866.

No. 118. Read the following Proceedings of the Madras Government in the Revenue Department :—

Calling for plans and estimates for the construction of a bridge over the Pykara river between the upper and lower falls, and for roads to the different Chinchona Plantations in the Coimbatore District, and intimating that provision will be made in the Public Works Budget for pushing on the works. } (Here enter 22nd December 1865, No. 3,102.)

No. 119. ORDER THEREON, 6th January 1866, No. 56.

CIVIL WORKS, No. 22.

Communicated to the Superintending Engineer of the 7th Division, who will be requested to instruct Major Farewell to give his early attention to the orders in paragraph 6.

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

To the Superintending Engineer of the 7th Division.

Exd. S. T. Augustin.

Read the following :—

No. 237. MINUTE BY THE HONORABLE THE PRESIDENT.

1. During my visit to the Hills I have inspected the different Chinchona Plantations, have made myself acquainted with the position, extent, present state, and means of development of each, and have, with the aid of the facts brought before the Government in the annual reports of Mr. McIvor, and especially in that of 1864-65, been able to arrive at the actual amount expended upon each of the Plantations, while the analysis, by Mr. Howard, of the specimen of bark furnished to him from the different Plantations, afford fair evidence of the *quality* of the material which the Government will be able to furnish. The only question, therefore, which remains undetermined, is the probable *quantity* of the yield per acre, and the return which the cultivation of the plant, under favorable condition as regards soil, exposure, moisture, &c., is likely to make for the capital expended upon it.

2. I will now proceed to lay before the Government the results of my observations, and to make such suggestions as may lead to the determination of the facts as regards the quantity of the annual returns, which remain as yet hypothetical, and to recommend the adoption of measures which will, I think, tend to encourage the application of private capital to the cultivation of Chinchona.

3. The first plantation which I visited was that in connection with the Botanic Garden at Ootacamund. It will be remembered that, at the commencement of the experiments upon the cultivation of Chinchona, there was a difference of opinion between Mr. McIvor, and Drs. Anderson and Macpherson, as to the proper treatment of the plant; these latter gentlemen affirming that, in accordance with the example set by the Dutch in Java, the young plants should be placed under the shelter of older trees, while Mr. McIvor expressed an opinion that they would flourish better in situations exposed to the ordinary influences of the sun and atmosphere. The Government, in the absence of any positive information, decided that the two theories should be tested; that a certain number of acres of forest should be planted with Chinchona ; while, as a general rule, the cultivation in the open should be adopted.

4. This was accordingly done. About 50 acres of forest, or what is termed the Dodabet plantation, in the immediate vicinity of the gardens, were planted with different species of Chinchona, while elsewhere the forest has been felled and burned, and the young Chinchona plants have been substituted for the forest trees. The present state of the Dodabet plantation is conclusive as to the propriety of adopting the system advocated by Mr. McIvor, for while in those portions of it where the Chinchona has been planted under the shelter of the forest, the plants are dwarfed, stunted, and exhibit but a very slight tendency to develope into trees: in situations identical as regards soil, height, and aspect, but where the only difference is the absence of shelter, they are growing rapidly, and are strong, healthy and well developed. The result, therefore, of my observation is conclusive as to the propriety of the course adopted by the Government at the suggestion of Mr. McIvor, in ordering the clearance of the forest from this plantation, a few acres, say ten, being left as evidences of the working of the two systems.

5. On the opposite slope of the same range of Dodabet hills, and consequently with a different aspect, upwards of 700 acres of land have been reserved by the Government for the extension of this Plantation, of these 350 acres have been cleared of timber, a portion of which has been planted with Chinchona, while at the bottom of the forest land a portion of grass land has been pared, cleaned, and planted, and the plants there appear to be doing as well as those which occupy the cleared portion of the forest.

6. The second Plantation which I visited was that at Mailkoondah, on the eastern or north-eastern slope of the Koondahs. I experienced a good deal of difficulty in reaching the site of this Plantation, which is in the heart of a forest of about 10,000 acres. When I arrived at the site, I found that little had been done beyond clearing about 170 acres of land, building a house for the Superintendent, some huts for the laborers, and commencing a Jail for the prisoners by whose labor, principally, it is proposed to bring this plantation into cultivation. Were it the sole object of the Government to procure a supply of Chinchona bark for its own purposes, I should not have been disposed to recommend the maintenance of this plantation; but looking to the fact that the soil is far more rich than that of any of the other plantations; that there are several thousand acres of equally valuable land in the immediate vicinity; that the plantation will form a nucleus round which planters will congregate, I am inclined to recommend that it should be maintained, and that a good road should be opened to it with as little delay as possible. The Government has reserved at this site some 2,500 acres, but this is far in excess of its wants. I should recommend the retention of 500 acres, and that the rest should be thrown open to the public.

7. The third plantation which I visited was that at Pykara. In its present state this consists—

First.—Of 40 acres, planted to the right and left of the road leading down by the side of the river from the upper to the lower falls. The difference of level, between the Superintendent's house at the top of the hill, and the dwellings of the laborers at the garden is said to be about 2,000 feet.

Second.—Of about 100 acres of land on the eastern and north-eastern slopes of the Neilgherries, looking into Mysore, of which about 60 are planted, and the remainder are cleared and in a state to be planted early next season.

Third.—Of a tract of land on the opposite or left bank of the Pykara river, which Mr. McIvor has commenced to clear, and a portion of which will be ready for planting early next year. The land on the right bank of the river is very stony, and portions of it are dry, the plants however seem to be doing well. I was not able to get across the river to the ground under clearance, but I was told by Mr. McIvor that the soil was superior to that on the opposite bank.

8. The fourth plantation which I visited was the principal one at Neddivuttum. This was commenced in 1861, and about 27,000 plants were put out during the rainy season of 1862. The quantity of land actually planted with Chinchona is about 300 acres, but additional portions have been cleared, much of which is ready to receive plants. The whole plantation, where the land now cleared is occupied, will comprise an area of 500 acres. Nothing can look better than the plants

which have been three years in the ground. They were placed at distances of 10 and 12 feet apart, which experience has shewn to be farther than necessary; 7 feet apart, which including the area taken up by drains, path-roads, &c., will give about 800 plants to the acre, is the distance now adopted. The three year old plants are 10 or 11 feet high, have stems 9 or 10 inches in circumference, and they throw out branches forming a large head. Notwithstanding the effects of a violent gale and a hail storm, which had visited the plantation a few days before my arrival, and which had stripped off a good many leaves, the plants looked remarkably well. Where however the wind had the power of sweeping up the valleys it shewed evidence of its action in branches broken, and bark rubbed off.

9. I inspected carefully several plants which had been cut down last year, a few days previous to my visit, and was gratified to find that most of them had thrown up fresh shoots, which in the course of twelve months had attained a height of full three feet, and exhibited a joint circumference very much in excess of that which the parent plant would have attained to. I was the more gratified to see this as it strengthened an opinion I had already formed as to the possibility of treating the Chinchona plantations as Coppice-wood is dealt with in England, that is, by cutting it down when the annual development of bark has arrived at its maximum, say, every five or six years. The period during which the Coppice-wood must be allowed to grow would of course have to be determined by experience, and I now suggest that a series of experiments should be made for the purpose of furnishing the Government with data upon which the probable annual returns may be calculated.

10. It has already sanctioned an experiment suggested by Mr. McIvor, viz., that of stripping off a portion of the bark of each tree over an area of about ten acres, and I think it would be advisable to cut down this year, say, three acres of the three year old plants, allowing them to throw up shoots from the stools, and to carry on the process annually over about the same area, so as to arrive, by direct experiment, at satisfactory information—

1st. As to the value of the yield in favorable situations of an acre of a given species of Chinchona, three or four years' old.

2nd. As to the annual rate at which the bark increases on the tree.

3rd. As to the per-centage of alkaloids in bark of different ages.

4th. As to the most profitable mode of treating the plant as a produce of bark.

11. Mr. McIvor is experimenting largely upon the effect of covering the bole of the trees with moss, both as a means of increasing the thickness and weight of bark, and of adding to the quantity of the alkaloids contained in a given weight. He deserves every credit for the zeal and energy with which he has applied himself to the study of the subject of the production of these alkaloids, and for the skill with which he has devised experiments for the purpose of illustrating his views. The result of these experimental enquiries will, in all probability, be evidenced by a large increase in the annual value of the return from the plantations.

12. I will now say a few words as to the work which remains to be done, both at the plantations themselves and in improving the means of communication

with them; before, however, I can express any opinion as to the work which remains to be done, the Government must come to some decision as to the extent of land which it is prepared to bring under cultivation.

13. I have said before that at Neddiwuttum about 300 acres of land are planted, and 200 more will be ready to plant in the course of next year, and the year after; these 500 acres will absorb nearly all the land within the existing limits, and I should not be disposed to add to this quantity. At Pykara 100 acres are planted, 60 acres are prepared, and some 80 or 90 acres are in course of preparation, while there is land of good quality which would admit of an extension of 200 acres, without pushing the clearance beyond the spot which it has now reached; if thus the plantation at Pykara be limited at present to 250 acres of Chinchona and, say, 300 acres of land additional to this, it will, in my opinion be quite sufficient, and I should recommend that the land reserved by Mr. McIvor in excess of this amount should be thrown open for selection to the public. At the Dodabet plantation there are 75 acres already planted, there are the means of extending this to 250 acres, and this would be sufficient for all the purposes of the experiment. The reserve of 750 acres to the east of the hill is more than can be ever required, and I should be disposed to recommend that 300 acres, in addition to the 250 acres planted, should be reserved by the Government, and that the rest should be sold. Mr. McIvor should be called upon to mark out the boundaries of the land he wishes to reserve to the amount of 300 acres or thereabout, in addition to the planted land, and the remainder should be sold in one or two blocks, as convenient, without reference to its position, should it be within the limits of the Cantonment. At Mailkoondah, as stated above, 2,500 acres have been reserved; I should limit the amount of cultivation here to 200 acres, and the whole area of land within the Government boundary to 500 acres.

14. It will be seen, with reference to the above figures, that the amount of land under cultivation will be as follows :—

	Acres.
Neddiwuttum	500
Pykara	250
Dodabet	250
Mailkoondah	200
	1,200
to this will be added, say, as a reserve	
Neddiwuttum	100
Pykara	300
Dodabet	300
Mailkoondah	300
	1,000
The total area will be of—	
Neddiwuttum	500+100 = 600
Pykara	250+300 = 550
Dodabet	250+300 = 550
Mailkoondah	200+300 = 500
Making a total of Acres	2,200

The first thing to be done as soon as the area of the different plantations, present and future, is decided, is to have a *plan* on a large scale made of each. The Government ought to be in possession of a plan of its own estate, and the public ought to know where the appropriated land ends, and that begins which is open to selection. Instruction should be given to the Surveyor to enclose the plantation within straight lines, and to give the figure of the enclosed portion as few sides as possible, his work will be rendered much easier by this, which ought to be laid down as a rule to guide Surveyors in general. The boundaries will be more easily marked, and any man will be able to determine for himself the area of land which will include the amount which he wishes to purchase.

15. The next thing to be done is to lay out roads, by which the produce of the plantation and the stores for the maintenance of the men can be easily conveyed to and from the market. From Neddiwuttum for instance, when the plantation is in full bearing, about 100 acres will be cut down every year, and the produce of each acre may be put roughly at one ton of bark, so that 100 tons will have to be moved to market every year; the same rule will apply to the other plantations. The new trace from Neddiwuttum to Ootacamund, which will answer as the line from the Goodaloor Ghaut, will answer every purpose of the establishment, and should be completed as fast as the means at the disposal of the Government will permit; from Pykara a branch requires to be made to join the above new trace, it may be a matter of question whether this should be carried upon the right or the left bank of the river; a bridge must at all events be made at some point between the upper and the lower fall, to enable the Superintendent to cross the river at all seasons.

16. To Mailkoondah a new road must be opened *with as little delay as possible.* I have been told that there is a fair line from the Devi Shola, following down a line of water-shed to the stream which flows into the Bowaney, and that a similar water-shed will be found on the opposite side leading up to the Koondahs. I have spoken on the subject to Major Farewell, and directed him to turn his attention to this line of road at once, as it is of special importance that it should be opened out with as little delay as possible. It would be advisable to place on the estimates for the next year, such a sum as would be sufficient to push forward such of these roads as are of the most importance, and specially to provide for the construction of the bridge over the affluent of the Bowaney, which should be of a solid description, for the floods come heavily down this river, and the whole communication with the Government and the other plantations will depend upon this bridge.

(Signed) W. T. DENISON.

30*th October* 1865.

No. 238. MINUTE BY THE HONORABLE H. D. PHILLIPS.

I have perused with much interest the notes of His Excellency's examination of the Chinchona Plantations, which are contained in the above Minute. Personally I have no knowledge of any of the places where these Plantations have been formed, but referring to the Superintendent's last official report, and to the observations now made by His Excellency, I cordially concur as to the propriety of adopting

the several suggestions made in the above Minute, and of carrying them into execution at the earliest possible date that may be feasible with the means at the disposal of the Government.

1*st November* 1865. (Signed) H. D. PHILLIPS.

No. 239. MINUTE BY THE HONORABLE T. PYCROFT.

1. I concur generally in His Excellency the President's proposals, but I must own that I entertain great doubts as to the expediency of carrying out a Chinchona Plantation at Mailkhondah.

2. The object of Government in establishing, at their own sole expense, Chinchona Plantations on the Neilgherries was to shew, practically, that the plant could be successfully cultivated there; that the soil and climate are congenial to it; that the culture would in all probability prove remunerative, and the prospects generally be such as to encourage private enterprise.

3. This, I conceive, has been fully demonstrated. Chinchona gardens have been laid out at Ootacamund, at or rather under Dodabettah, at Pykara, and Neddivuttum. Owing to Mr. McIvor's intelligence, energy, and fertility of resource, the plant has flourished at each of these four places. Its mode of cultivation is now thoroughly well understood, and private individuals are eager to embark in it, not on the Neilgherries only, but in many other parts of India and in Ceylon. It is a great success, *un fait accompli*.

See Mr. McIvor's last Report, 16th August 1860, paragraphs 14-15.

4. Here then the Government may, it seems to me, fitly pause. I cannot see that, as regards the legitimate object of Government in connection with Chinchona cultivation, or that of acting as pioneers, shewing the way, and keeping the field until private enterprise steps in to occupy it, anything would be gained by establishing a fifth Plantation at Mailkhondah.

5. To open this Plantation would involve considerable expense at the onset. It is a wild part of the country, some 15 or 16 miles at least from Ootacamund, not easily accessible, there is no labor procurable on the spot, and supposing that the work be done by convicts—for whom, by the way, there is already a very large demand for the Lawrence Asylum works, the hill roads, and the other Chinchona gardens—the superintending, provisioning, and giving medical aid to a body of prisoners so far from Ootacamund would be a matter of no small difficulty and expense.

6. That the Plantation would ultimately be remunerative, and the original outlay be fully repaid, is like enough, but this does not appear to me to affect the question. It is not the province of Government to make a profit by growing Chinchona more than anything else.

7. I would therefore recommend that the land at Mailkhondah, already marked out and partially cleared by Government, be sold under the Neilgherry waste land rules with the buildings on it, either at once, or as soon as the new road is opened. The execution of that road should be pushed on quite irrespective of the establishment of any Government Plantation there. Some lands have, I

believe, already been taken up there by private persons. The road would throw open, to private enterprise, an extensive tract of very valuable land, and the cost of forming it would be soon re-imbursed by the sales of land, the revenue derived from the lots purchased, and the indirect advantages resulting from the opening out that part of the Neilgherry plateau.

8. As respects the four (4) present Chinchona Plantations, I would proceed as advised by His Excellency the President. As regards the extension of the Pykara Plantation I would, however, suggest that, when the limits of the additional space to be cleared have been marked out, the spot should be visited by the Collector, with whom, for that particular duty, I would associate Colonel D. Hamilton, who should ascertain beyond all doubt and certify to us that the felling of the timber in the plots demarcated would not in any way injure the scenery about the Pykara falls.

2*nd November* 1865. (Signed) T. PYCROFT.

No. 240. ORDER THEREON, 22nd December 1865, No. 3,102.

Miscellaneous.

1. Ordered that the foregoing Minutes be transmitted to the Home Government.

2. The thriving condition of the Chinchona Plantations visited by His Excellency, is most satisfactory, and affords the best proof of Mr. McIvor's intelligence, energy, and fertility of resource.

3. Mr. McIvor will practically test the expediency of treating the Chinchona plantations in the same way as Coppice-wood is dealt with in England, by cutting down this year (say) three Acres of the three years' old plants.

4. Orders will be issued hereafter regarding the extent of land to be planted out and reserved on behalf of Government. Meanwhile, no land will be cleared in excess of the sanctioned extent of each Estate.

5. The Superintendent of Revenue Survey will communicate with Mr. McIvor, and arrange for the survey of the different Estates, and the preparation of plans on a sufficiently large scale.

6. Captain Farewell will be instructed, in the Public Works Department, to prepare the necessary plans and estimates for a bridge over the Pykara river between the upper and lower falls, and for the construction and completion of good roads to the different plantations. Provision will also be made in the Budget of that Department for vigorously pushing on these works.

(True Extract.)

Secretary to Government.

To the Superintendent Government Chinchona Plantations.
,, the Officiating Superintendent of Revenue Survey.
,, the Public Works Department.

Exd. S. T. Augustin.

P.W. 1866 Departt
Bd of Govt for Jany/66
No 5480

Pro: of Govt
in the Revenue Departt

Dated 22d } December/65
Read 29th } No 3102

Calling for plans and estimates for the construction of a bridge over the Bykara river between the upper and lower falls, and for roads to the different Chinchona Plantations in the Coimbatore Dist & intimating that provision will be made in the P.W. Budget for pushing on the works -

Mem Order
dated 5th January 1866.

A? 118. 119

Civil Officer
No 56.

Communicated to the Superintending Engineer of the 1st Division, who will be requested to instruct Major Farewell to give his early attention to the orders in favor

6.

Fort St George
5th January 1866

To The Supg Engineer
of the 1st Dn

No 87 Dated 8th January