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MADRAS RECORD OFFICE.

Government of Madras.

Revenue DEPARTMENT.

G.O. No.	198	Press Mis.
Dated	13-12	1880.

Not to be folded or roughly handled

Read the following letter from J. R. COCKERELL, Esq., Commissioner of the Nilgiris, to the Secretary to Government, Revenue Department, dated Ootacamund, 27th August 1875, No. 58:—

I HAVE the honor to submit a letter to my address from the Superintendent of the Cinchona Plantations in reference to the despatch of the Secretary of State embodied in G. O., dated 1st April 1875, No. 501, Revenue Department.

2. The despatch inquires why the bark taken from the trees has been obtained by the mossing process contrary to the advice of the Quinologist, given so far back as 1871, that resort should be had to coppicing. The reply is that the Quinologist himself interfered and put a stop to the coppicing experiment he recommended, because, while it was being carried out, the results showed it was a failure. These facts are clearly set forth by Mr. McIvor in his present communication and the references on the subject noted.

3. At the end of paragraph 5 of his letter, the remark made by Mr. McIvor is: "Had we coppiced in 1871, by the end of 1872 every tree on our plantations, which had reached productiveness, would have fallen under the axe to supply the bark required by the Quinologist alone." I annex a statement showing the number of pounds of dry bark supplied to the Quinologist in the years 1869-70 to 1874-75, inclusive—

1869-70	5,931 lbs.
1870-71	17,114 "
1871-72	11,690 "
1872-73	26,763 "
1873-74	30,591 "
1874-75	28,590½ "

Total .. 120,680

In G. O., dated 2nd September 1874, No. 1,122, Revenue Department, there is a list of the trees planted out. Cinchona are fit for coppicing in the eighth year of growth at the earliest. Crown barks will, at this age, yield $\frac{1}{4}$ lb. of dry stem bark; red barks, $\frac{3}{4}$ of a pound. In 1870-71 there were 18,550 of such crown barks; 12,500 of red barks. If these trees had been coppiced, the putturn would have been 4,637 lbs. of crown bark and 9,375 lbs. of red bark. I do not take into consideration the yellow and grey barks, because the trees were few of the year 1862-63, and both species have more or less failed.

4. The net quantity of bark, therefore, available by coppicing in 1870-71 was 14,012 lbs., and the Quinologist received 17,114 lbs. of bark in that year. If the coppiced trees had regrown, a second crop of bark could not have been expected for eight years, and the second harvest would still be three years off from the present time. Applying the same process to the plantings of 1863-64 and the two succeeding years, it will be seen the result is similar; and, as Mr. McIvor remarks, by coppicing "every tree which had reached productiveness would have fallen under the axe" by this time. The whole yield of the plantations has not, in round numbers, exceeded 210,000 lbs

5. In connection with this subject it may not be inappropriate to draw attention to my letter in G. O., dated 19th September 1874, No. 1,193, in which the relative merits of the mossing and coppicing systems are fully discussed. It may be proper to state further that coppiced trunk bark sent from the Himalayas last year brought from 11d. to 15d. per lb., and that 28,659 lbs. of mossed bark recently despatched from the Nilgiris to the London market have realised an average of 4s. per lb., and been pronounced "the finest lot of bark ever placed in the London market."

6. Mr. McIvor refers to the superiority of mossed to coppiced bark, and gives a table at foot of paragraph 6 of his letter showing conclusively this to be the case. He remarks at paragraph 9 in reference to a fear expressed by Mr. Broughton that the rich quality of mossed bark might possibly arise from a transference of the alkaloids of contiguous natural bark; that Mr. Broughton himself, in a paper in the "Philosophical Transactions" for June 1870, attributed the higher quality of mossed bark to other considerations than transfer, inasmuch as he stated the alkaloids were found in the cells *in situ*. (L)

7. In paragraph 4 of his letter in G. O., dated 15th December 1873, Revenue Department, No. 1,428, Mr. Broughton intimated a similar conclusion, for he reported his opinion that natural bark unmossed deteriorated after reaching its maximum yield.

8. It is now generally believed that the value of mossed bark is entirely owing to the moss which preserves the bark from the action of light, pronounced to be deleterious, and increases the size of the cells where the alkaloids deposit. Larger cells hold larger quantities of alkaloids and of better quality,—points of primary importance. In my report on mossing and coppicing quoted above, I intimate, at paragraph 23, the opinion of Mr. Howard on the subject. He writes: "If decorticated trees are mossed, the operation of mossing may be repeated with advantage, increasing, as it would seem, for every time of renewal. Not only is the gross percentage of alkaloids larger in the last decortication, but of this a more considerable percentage consists of quinine, and that less intimately combined with the yellow coloring matter, so as to be more easily purified." T

9. Mr. McIvor proceeds to dwell on the difficulties that have surrounded the introduction and propagation of the Cinchona plant from the interference with his operations that has very naturally resulted from the anxiety of Government to omit no steps to advance the progress of the enterprise. Upon this point, it is merely necessary to remark that Government, in their order, dated 19th September 1874, No. 1,193, Revenue Department, have left the management of the plantations very much to the discretion of the local officers. The truth, however, of Mr. McIvor's observations will be apparent when it is stated that, if his process of mossing had been followed according to his wishes, 401,211 trees, ranging between the ages of eight and twelve years, and which have not been mossed, would be under crop, and would have yielded 200,000 lbs. of bark each worth at least one Rupee per pound. TT

10. Mr. McIvor suggests that as Superintendent he should be restored to a position of complete independence. It seems to me that the chief Revenue authority of a district ought to be the channel through which all communications connected with his charge should reach Government, otherwise he cannot be informed of what

(L). This paper is not among the Govt. records, but as it was written in 1870 it was of course open to correction by facts ascertained in 1874, when Mr. Broughton considered the transference established.

O-O. red bark, and he said "this deterioration is however but slight".

T This is what Mr. McIvor desires to establish. Mr. Howard and Mr. Broughton both show that moss improves the bark very slightly. "moss has no influence on the quality of the bark except that it prevents a certain waste of alkaloid by its exclusion of light", and bark that naturally remains without its (moss) application has the qualities of mossed removed bark from the simple reason that quinine is the alkaloid first formed in young tissues. para 12 of Mr. Broughton's letter dated 9: Sep: 1873 in G.O. 11: April 1874 - N. 434.

TT. This was written early in 1867. Mr. Howard has since, on several occasions, said his hopes had been disappointed. (See top of page 16 & bottom of page 30 of 112)

TTT. This point is entered in the memo for orders.

is going on, and he ought to be informed. A judicious officer will never seek to hamper a Special Department, and intrude his opinions in opposition to the department, unless on well-ascertained grounds. Had Mr. Broughton's reports passed through the Commissioner's Office, errors that arose and caused difficulty would have been avoided. The Government looks to the head of the district as an impartial authority to place before it all sides of a question. This object would be defeated if every department was made independent.

11. Mr. McIvor touches upon the question of the Government disconnecting itself with the plantations altogether. I am aware that an offer has been made to the Secretary of State for the plantations. The subject no doubt will come before the Government for definite solution. Meanwhile, a few remarks may not be out of place. As far as I am at present informed, the most important point in connection with the Cinchona experiment is that of hybridisation. Mr. McIvor has bestowed great pains on the subject, and the labor undergone has been immense. Mr. McIvor has obtained analyses from year to year from Messrs. Howard and DeVry of every bark that has been produced, and has acted on the information thus secured to put together the most promising kinds of Cinchona. The result is that he has introduced hybrids yielding bark containing, according to official reports, 10 per cent. of sulphate of quinine as in the *C. Pubescens*, and has even better hybrids upon which a report will shortly be submitted. He has further discovered that some of the most reputed kinds of Cinchona, such, for instance, as the Calisaya, are worthless to cultivate, because they develop canker at an early age; and he possesses generally a mass of information on the habits of the Cinchona plant known in its entirety by no one else. This knowledge is convenient for the Government to utilise, and much will have to be said on the subject when the question of the severance of the Government from the plantations comes to be discussed.

ENCLOSURE No. 1.

[Extract.]

From W. G. McIVOR, Esq., Superintendent of the Government Cinchona Plantations, to J. R. COCKERELL, Esq., Commissioner of the Nilgiris, dated Ootacamund, 27th March 1875, No. 19.

* * * * *

4. On the subject of expenditure it is necessary to remark that since 1870 the sum allowed for the up-keep of the plantations has been altogether inadequate for their maintenance, consequently only the plants (165,351 in all) which were planted in the earlier part of our operations, or from 1862-63 to 1865-66, have made vigorous and satisfactory growth. Those planted subsequently, or from 1866-67, to the present time, have been comparatively neglected and overgrown with weeds; their growth has thus been retarded, and the plants stunted and gnarled. It will, therefore, now be difficult to secure for these plants, even by a liberal expenditure, the same vigor which has marked the growth of those planted during the period when a liberal system of cultivation was adopted. Thus the saving in expenditure during the past five years will materially affect the yield of bark during the coming five years, as the plants planted subsequently to 1865-66 will not yield, when in full bearing, one-fourth of the bark they otherwise would have done.

T. This is clearly a mistake. The analysis is given by Mr. McIvor as a fort. note to para 12 of the accompanying letter. 6.00 & 6.54 were the per-centages of quinine and these are very extraordinary.

The object of thus reducing the expenditure on Cinchona cultivation will be found in detail, together with my remonstrance, in Proceedings of Government, Revenue Department, dated 8th June 1871, No. 1,011.

ENCLOSURE No. 2.

STATEMENT showing the Amount of Expenditure incurred and Receipts on account of Government Cinchona Plantations on the Nilgiris from 1860 to March 1875.

Particulars.	Total Expenditure.			Total Receipts.			Total Cost.		
	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.
Charges for direction and office establishment.	275,388	0	0	...	...	...	275,388	0	0
Propagation and Nursery Department ...	61,997	0	0	24,402	2	4	37,594	13	8
Expenditure at Neddivuttum Plantation ...	153,069	0	0	112,138	9	0	40,930	7	0
Do. at Dodabetta do. ...	111,388	0	0	40,284	10	3	71,103	5	9
Do. at Pykara do. ...	69,736	0	0	41,154	15	0	28,581	1	0
Do. at Malakoondah ...	34,171	0	0		...	...	34,171	0	0
Total ...	705,749	0	0	217,980	4	11	487,768	11	5

OOTACAMUND,
12th October 1875.

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

ENCLOSURE No. 3.

STATEMENT showing the Number of Cinchona Plants on the Government Plantations to come into productiveness from 1876-77 to 1882-83.

Number of Plants on the Government Cinchona Plantations.	Number planted.	Deduct for failures subsequently filled up at 30 per cent.	Number remaining.	Remarks.
From 7 to 8 years of age Red Bark.	163,800	49,140	114,660	Will yield 1st crop in 1876-77.
" " " " Crown "	150,701	45,210	105,491	" " 1876-77.
" 6 to 7 " " Red "	77,945	23,383	54,562	" " 1877-78.
" " " " Crown "	65,000	19,500	45,500	" " 1877-78.
" 5 to 6 " " Red "	168,473	50,541	117,932	" " 1878-79.
" " " " Crown "	84,995	25,499	59,496	" " 1878-79.
" 4 to 5 " " " "				" " 1880-81.
" 3 to 4 " " Crown "	700	210	490	" " 1881-82.
" 2 to 3 " " " "	5,961	1,788	4,173	" " 1882-83.
" 1 to 2 " " " "	15,743	4,723	11,020	" " 1882-83.
Total ...	733,318	219,994	513,324	

OOTACAMUND,
October 1875.

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

x W. G. McIVOR includes in this statement the trees on the Malakondah Plantation, abandoned under G.O. -

* Includes trees in the
Maitland's St. etc.
Should be struck out
H

STATEMENT showing the Number of Cinchona Trees which have reached productiveness on the Government Plantations distinguishing mossed from unmossed Plants.

Number of Plants on the Government Cinchona Plantations.	Number planted.	Deduct for failures subsequently filled at 30 per cent.	Deduct total Number of Plants subjected to mossing Process.	Number of Plants unmossed.	Remarks.
From 12 to 13 years of age Red Bark...	12,500	3,750	5,400	3,350	The yellow and grey barks also the varieties classed in the Reports under head "Of Other Species" are not included in this List, because the yellow and grey barks are unsuited to this climate, and it is uncertain when the other species will become productive.
12 to 13 " Crown " ...	18,550	5,565	5,400	7,585	
11 to 12 " Red " ...	7,700	2,310	3,700	1,690	
11 to 12 " Crown " ...	20,432	6,129	9,000	4,303	
10 to 11 " Red " ...	38,500	11,550	6,000	20,950	
10 to 11 " Crown " ...	56,700	17,010	8,000	31,690	
9 to 10 " Red " ...	34,020	10,206	2,000	21,814	
9 to 10 " Crown " ...	45,500	13,650	1,500	30,350	
8 to 9 " Red " ...	77,000	23,100		53,900	
8 to 9 " Crown " ...	67,000	20,100		46,900	
Total ...	377,902	113,370	41,000	222,532	

OOTACAMUND,
October 1875.

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

STATEMENT showing the Bark supplied from Government Cinchona Plantations to the Factory and shipped for sale to England.

Years.	lbs.	Amount, Value.	Years.	lbs.	Amount, Value.
1870-71	51,352	Rs. A. P. 12,838 0 0	1870-71		Rs. A. P.
1871-72	35,072	Do. do. do. 8,768 0 0	1871-72	7,294 1/2	Do. do. do. 7,294 8 0
1872-73	83,894	Do. do. do. 20,978 8 0	1872-73	23,646	Do. do. do. 34,900 0 0
1873-74	91,773	Do. do. do. 22,943 4 0	1873-74		Do. do. do.
1874-75	85,771	Do. do. do. 21,442 12 0	1874-75	28,659 1/2	Do. do. do. 55,616 12 0
Total...	347,862	Total... 86,965 8 0	Total...	59,600	Total... 97,811 4 0

OOTACAMUND,
12th October 1875.

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

* Value at rate adopted & converted
(80. 11. Feb. 75. 217) 47 R 74,095
Quantity Trunk - 53,227 lb
Branch 75,472 lb
128,699

ENCLOSURE No. 1.

Statement showing the Expenditure and Receipts of the Government Cinchona Plantations for five years.

Receipts.				Disbursement.			
Rs. A. P.				Rs. A. P.			
1870-71 ...	To Amount realised by sale of plants, bark, &c.	12,838	10 0	1870-71	By Expenditure as per particulars given.	29,490	0 0
1871-72 ...	Do. do. do.	16,195	9 4	1871-72	Do. do. do.	30,000	0 0
1872-73 ...	Do. do. do.	56,170	8 0	1872-73	Do. do. do.	29,650	0 0
1873-74 ...	Do. do. do.	23,079	3 7	1873-74	Do. do. do.	28,182	0 0
1874-75 ...	Do. do. do.	64,962	14 8	1874-75	Do. do. do.	30,723	0 0
Total ...				Total ...			
173,296, 13 7				143,045 0 0			
				Amount in favor of Sales...			
				25,251 13 7			

Ootacamund,
12th October 1875.

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

ENCLOSURE No. 2.

From W. G. McIVOR, Esq., F.R.G.S., C.M.B.S.E., Superintendent, Government Cinchona Plantations, to J. R. COCKERELL, Esq., Commissioner of the Nilgiris, dated Ootacamund, 2nd August 1875, No. 91.

I HAVE the honor to acknowledge the receipt of G. O., dated 1st April 1875, No. 501, forwarding a despatch from the Right Honorable the Secretary of State for India, together with your endorsement of the 3rd April.

2. In the 2nd paragraph of the despatch, the Right Honorable the Secretary of State remarks, "that only a small amount of bark has been collected from coppiced trees, while the bulk was harvested under the mossing process; I shall be glad to be informed why so early as in July 1871 the supply of bark for the alkaloid manufactory was ordered to be obtained by mossing, while, contrary to the advice of the Quinologist, the coppicing system has been tried to so small an extent."

3. A misapprehension appears to have led to this inquiry. Your letter, recorded in G. O., of 19th September 1874, conveys information on this subject. I however beg to draw attention to the fact that the record is clear, and shows that, in conformity with the advice of the Quinologist, bark could not be profitably collected by coppicing earlier than June 1873. The Quinologist, in his letter of the 2nd June 1871, recorded in G. O., Revenue Department, 13th July 1871, states at paragraph 5: "There are, of course, plenty of trees which might be cut down, but I am of opinion that at least two more years should elapse before coppicing can be profitably conducted. The results obtained by the taking of the bark this Spring support this conclusion." The late Commissioner, in paragraph 2 of his letter, recorded in the above Proceedings, after quoting Mr. Broughton's views, adds: "Under these circumstances, I am of opinion that it will be best not to cut down the trees, but to get the bark by the mossing process." Thus the sponsors of the coppicing process put a stop to its application. Under these circumstances, if bark was to be collected prior to 1873, the Government had no option but to take it by the mossing process. In the 1st paragraph of my letter, recorded in the same Proceedings, I state: "Should you" (the Commissioner) "not feel satisfied as to the best mode of harvesting the bark, it would then be more satisfactory to Mr. Broughton and myself if the one-half of the bark

TT. A mis. quotation. The word used by Mr. Broughton was "coppicing"

Q. The late Commissioner, Mr. Beale, was not a "sponsor" of the coppicing system. As the words quoted by Mr. McIVOR show, it was at his suggestion that such trials be made as the factory required was supplied under the mossing system. It is further admitted that no one was a sponsor of the coppicing system. Mr. Broughton distinctly repudiated such a position and the papers abstracted in the "Note" show that he advocated its trial, not its adoption, and until his last report, when he concluded the mossing process because of the supposed transference of alkaloids, he had advocated it for crown bark.

"I have
mainly stated
the necessity of
experimenting
therein."
(para 6 of letter
in G.O. No. 104,
1873 Oct. 7/16)

TT. They stated that renewing or reforming bark was much more valuable than natural bark

TTT This is an assertion which the recorded papers show to be incorrect. The comparative experiment was suggested by Mr. Burtis in March 1871 (See G.O. 19th April 1870) and was heartily desired by Mr. Broughton who was and was again pointed out that it had not been carried out, and, as always shown, Mr. Broughton did not stay the coppicing experiment, but thought "coppicing" should be postponed

- a. - Mr. Broughton did not add "this - it occurs in a different para and was an objection to a G.O. talking of 'the coppicing system which Mr. Broughton advocates'."
- x. Not quite this. He wished a "further supply of bark" from these 30,000 trees because "the effects of the loss of bark are already partially entailed on the trees and they become unsuited for coppicing with advantage" (See letter in G.O. 10th July 1873 N. 716)
2. Neither system could supply what he required to make 800 tons of amorphous gummi-economically. As a fact, Mr. Broughton in that year received 23,494 tons of fresh trunk bark.

* The average yield per tree of these two coppicings is 4.78 lbs. Mr. McIlvor admits that he had coppiced 41,000 trees to end 1/75 - The total yield of trunk bark up to that date was 1,12,827 lbs - almost entirely obtained by mossing - This gives 2.7 lbs only per tree mossed - altho' much of this was from gathered a year later, the yield should have been proportionately greater

required were produced by mossing, and the other half by coppicing" The Right Honorable the Secretary of State will thus observe that the views expressed in the 3rd paragraph of his despatch are in conformity with the system I advised to be adopted so early as 1871.

4. Had my recommendation been carried out and half of the bark taken by mossing, and the other half by coppicing even for one season, the result would have been decisive, as the wail which would have followed the destruction of a portion of our plantations would have swept away coppicing for ever. This result seems to have been anticipated, as the promoters of coppicing would not allow the plan to be subjected to a practical test. A show of testing the matter was made by cutting down a few fine selected trees, but the nature of this trial rendered the results deceptive*. The selected trees yielding 4.79 lbs., while inferior trees gave only 0.75 lbs. of dry bark per tree. The advocates of coppicing had admitted that mossing produced a much more valuable bark. The only point, therefore, that remained to be determined was the bark producing power of the two systems. By taking the same quantity of bark by coppicing that we obtained by mossing, we start with the balance even, and the greater weight would soon turn the scale, and definitely settle the only point at issue; but this is a trial from which the advocates of coppicing recoil. Yet the fairness of such a trial cannot be questioned.

5. Mr. Broughton, in the concluding sentence of the preceding quotation, merely hints at the reason why he and the late Commissioner put a stop to coppicing in 1871. I would, therefore, explain that, in compliance with G. O., 19th April 1871, I met the Quinologist and the Commissioner at Neddivuttum in May of that year with the intention of coppicing 400 trees of *C. Succirubra*. When we had cut down 240 trees the result was so unsatisfactory that the Commissioner and Mr. Broughton would not allow more trees to be felled, and postponed coppicing for at least two more years. We again met on several occasions in 1873 with the intention of renewing this experiment, but Mr. Broughton would only sanction the following limited number of trees being cut:—

58 trees of *C. Succirubra* at Neddivuttum on 30th May 1873.

57 " of " " at " " on 14th Oct. "

53 " of *C. officinalis* at Dodabetta on 2nd June "

or in all 168 trees only. Thus the cause of the coppicing system being "tried to so small an extent" was in compliance with the Quinologist's specific desire and instructions. Again, when, as I understood, the Government stopped the collection of the crops of bark from the 30,000 mossed trees (G. O., No. 549, dated 29th May 1873), Mr. Broughton writes: "As far as I am aware small gain will accrue to the trees from the stoppage of the process commenced under the directions of Government, while the ceasing of the supplies of bark will cause inconvenience and loss;" and adds: "I have never advocated coppicing as a constant method of taking crop, as I possessed no comparative experience of its results." Hence, it was also in accordance with the wish of the Quinologist that so much bark was harvested under the mossing process. The above vacillation was the result of necessity, as coppicing is essentially a destructive process. Had we coppiced in 1871 by the end of 1872 every tree on our plantations, which had reached productiveness, would have fallen under the axe to supply the bark required by the Quinologist alone. As to mossing it possesses one feature in common with all the plans I have recommended; it may be condemned, but it must be practised.

Outturn of Coppicing.		lbs.
* 58 Fine selected Red bark trees, coppiced in May 1873, yielded	of dry stem bark.	236.50
* 57 Fine selected Red bark trees, coppiced in October 1873, yielded	of dry stem bark.	261.25
115 Inferior unselected Red bark trees, coppiced in May 1875, yielded	of dry stem bark.	87.75
The above trees were all coppiced in one block, and were the planting of 1862-63, and about 12 years of age when coppiced.		
This gives the average yield of Red bark trees of 12 years age per tree		
† 240 Fine selected Red bark trees coppiced in May 1871, when 8 years of age, yielded	of dry stem bark, or an average per tree of	2.77
This result corrected by the yield of inferior trees as above gives the average yield at 8 years of age per tree		1.06
		0.75

† The contrast is so great (with the result in 1873) that it supports the possibility of a suitable

6. I urged a fair trial of coppicing, as I knew this to be necessary in order to place all the benefits to be derived by the mossing process beyond doubt. Careful observation indicates that mossing will, under fair management, yield at least from thirty to forty times the quantity of bark that can be obtained by coppicing. This may not be admitted until such a trial be given to coppicing as I have from the first recommended. I have said that mossing will produce from thirty to forty times the quantity of bark that can be obtained by coppicing. We find the yield of trees eight years old, when the first harvest of mossed bark was taken, to be, in four years crops, 872 lbs. per tree against 1.06 lbs. in fine selected coppiced trees, and 0.75 in average coppiced trees of the same age. It will be ten years more before the coppiced trees can yield another crop. While the mossed trees will yield every year an increasing crop. True we cannot see into the future, but we are justified in believing that what has existed for years will continue. On this data the estimate* at foot is based, and will be, I believe, with certainty realised.

7. Not only does mossing produce a much greater quantity of bark, but it yields bark of over three times the market value of natural Red bark. As it costs more to collect inferior bark and more for freight, because it is light, the renewed bark produced under moss becomes to the cultivator fully eight times the value of natural Red bark. A bark realising 1s. 3d. to 1s. 6d. per lb. costs 1s. per lb. to place it in the market, including all charges. The profit on this bark is only ½d. and ¾d. per lb. On a bark realising 5s. the profit is 4s. per lb. The discovery of mossing is, therefore, one of the most important I have made in this cultivation. It is destined to convey the blessing of health to millions. Yet, what a misfortune has it been to myself. The promulgation of this discovery in 1866 raised against me a storm of opposition, which has blighted my prospects ever since. But this cannot much longer continue. The impartial arbiters, time, and commerce, already throw a ray of light on this subject, which must soon dispel delusions.

8. A reference to paragraph 9 of the Minute by the Honorable the President, recorded in G. O., 22nd December 1865, will show that I gave coppicing a trial so early as 1864, or at the time I commenced my mossing experiments. Thus coppicing was tried three years before Mr. Broughton arrived in India. The system was abandoned, because it failed, and would not again have been renewed but for an unfortunate error† on the part of the Quinologist.

*1,000 Red bark trees were subjected to the mossing process in May 1871. The actual outturn is 8,727 or 872 per tree up to date. In ten years more the coppiced trees will yield another crop. During this time the mossed trees will yield on an average 3 lbs. dry bark annually, or in all 3872 lbs. In the second period of coppicing the advantage will be still greater as then the mossed trees will yield from 4 to 6 lbs. annually.

†RESULTS OF THE SALES OF NILGIRI BARK IN 1874.

Deva Shola.		s. d.	s. d.
No. 1.—First strips of natural bark removed from the trees immediately before mossing realised per lb. ...	...	...	...
" 2.—Second strips of old bark left on the trees when the first strips were removed, and being subjected to the influence of mossing and renewing bark on each side from 8 to 12 months realised ...	...	1 0 to 2 0	...
Kartairy Bark.		s. d.	s. d.
" 3.—First strips taken as at No. 1, realised ...	...	1 6 to 3 0	...
" 4.—Second strips " " 2, realised ...	...	1 1 to 1 6	2 6
Sales of Crop of 1875—Deva Shola.		s. d.	s. d.
" 5.—First strips taken as at No. 1, realised ...	...	1 3 to 1 7	...
" 6.—Second strips " " 2, realised ...	...	...	2 6
" 7.—Bark renewed under moss ...	...	...	3 5
Ossington Red Bark.		s. d.	s. d.
" 8.—First strips taken as at No. 1, realised ...	...	9 0 to 1 6	...
" 9.—Second strips " " 2, realised ...	...	...	2 3
" 10.—Bark renewed under moss ...	...	...	3 3
Neddivuttum Red Bark.		s. d.	s. d.
" 11.—First strips taken as at No. 1, realised ...	...	...	1 6
" 12.—Second strips " " 2, realised ...	...	...	2 3
" 13.—Bark renewed under moss, 2nd crop ...	...	4 3 to 4 5	...

†See Superintendent's letter, paragraph 10, recorded in G. O., dated 11th April 1874, No. 434; paragraph 9 of the Quinologist's letter, recorded in the same Proceedings. Also paragraph 13 of the Commissioner's letter, recorded in G. O. of 19th September 1874, No. 1,193.

x White kind - N. L. or crown 2 in for N. L. this is too low - much -
side note to para 3. unimproved letter - 17

† - Pure assumption - Every gardener knows, that if a tree will stand
coppicing, - the shoots grow much quicker than the young tree -

T. Regarding the trees mossed in 1870-71, it must be borne in mind that
at the time Mr. Buckle considered them "the best trees in the plan."

-tation": See para 8 of letter in G. O. 15 April 1871 N 701

Another point is this:-

3000 red bark trees, two years groups, were similarly mossed at the
same time, but their yield in the four years has only been the 2.695 per
tree (of dry bark).

TT. It is to be noted that Mr. McLennan is speaking of red bark
The value of renewed Crown bark has not yet been tested. No doubt it is
valuable, but the question, is, is the increase in value proportionate to the outlay
and delay necessitated by the renewal which in this species is very slow.
Natural brown bark is more valuable than red bark renewed under moss.

TTT. Its failure is not on record.

T. There are always upper strips and branch bark.
 No analysis showing the value of the second crop of renewed bark seems to be on record.
 The value of these upper strips & branch bark - cannot be overlooked (vide para. 10 of Committee's report - Proc. Soc. 11.64-75)
 To arrive at a proper estimate, it must be ascertained, how much the gain in quality of renewed bark, is balanced by the quantity of the yield from unremoved trees. The inferior quality of the branch bark supplied to the ~~renewed~~ ~~factory~~ ~~may have been due to the fact that it was to~~ ~~be considered that the bark for removal was~~
 vide also para 11 & 12 of his Annual Report 85/86 -
 where W. B. Norton proposed his theory of moribund bark, & abandoned logging & coppicing. H

T.T. See on this point page 32 of the "Note". The analyses were comparative, and of bark from numerous trees.

(a) See para 13 of Dr. Bidie's letter in 20.17. March 70 vol. 384.

9. The Secretary of State notes in the latter part of paragraph 2: "If, as Mr. Broughton reports, the appearance of the alkaloids in the renewed bark is attended with a considerable impoverishment in the alkaloid content of the old bark remaining on the tree, it is a very serious matter that so large an extent of the plantations should have been given up to the mossier system." In the above quotation the italics are mine. As is well known to Dr. Bidie and Mr. Broughton, when a tree is first subjected to the mossier process, one-half of all the mature bark is removed in strips, and within the year the other strips, or the whole of the mature bark, is removed; and as all the mature bark is thus removed year by year there is no longer, or at any future period, old bark remaining on the tree to be impoverished by the renewing bark. Thus the theory of the transference of the alkaloid, if existing, has no practical application. With these observations I proceed to trace the origin of this theory. Dr. Bidie, in the 22nd paragraph of his report, recorded in G. O., No. 434, dated 11th April 1874, observes: "Here another question arises, as various facts appear to me to point to the conclusion that mossier does not increase the alkaloid by exercising a fostering influence on the process by which they are eliminated from the crude sap, but that the increase is possibly obtained at the expense of the original bark." So early as March 1861 I had to call attention to the danger attending the use of the language here employed. When we view the consequences which follow, the promulgation of an unfounded theory becomes a very serious subject. The occasion was important, and Dr. Bidie should have stated the "various facts" to which he refers. If he could not state the facts, their existence should not have been suggested, as doing so led to the belief that such facts did exist; while the truth is, Dr. Bidie had not a fact, nor is there a fact known to the scientific world which supports his suggestion. Moreover, the suggestion is gratuitous, as there is no mystery as to why renewed bark is rich in alkaloids. As is well known, renewed bark is composed of cellular tissue, and all recent investigations, including those of the Quinologist, show cellular tissue to be the seat of the alkaloids. Mr. Broughton's investigations do more than this,* and show that the "very cells which contain" the alkaloids also "formed them."

10. Viewed in the abstract, Dr. Bidie's suggestion is both brilliant and sensational. Mr. Broughton at once acts on it, and details, at paragraph 10 of his letter, published in the same Proceedings, the results of five analyses, confirming, with marked precision, Dr. Bidie's anticipations, and with a precision equally marked, giving a direct contradiction to the Quinologist's prior investigations.

11. I have already brought to notice† that a correct analysis can, by selection of the bark, be made to give any result that may be desired. Had I selected the bark under the same conditions as Mr. Broughton describes, the result of his analysis would have shown (equally erroneously of course) that the renewing bark on the lower part of the tree had added greatly to the alkaloid in the bark upon the upper part of the tree. This would have been the result had there been no objection to the manner in which the analysis was conducted; but as Mr. Broughton himself shows his five-labored analyses do not, in the most remote degree, touch the point they are intended to establish. The matter to be established is clearly put by the Quinologist, at paragraph 9, whether "the alkaloid in the renewing (bark) might possibly be derived from the old untouched bark of the same tree." But Mr. Broughton does not proceed to investigate the condition of "the old untouched bark upon the tree," but proceeds to analyse certain immature bark near the top of the tree, which, according to his own statement, is not the best means of arriving at the desired result. The excuse for adopting this extraordinary course, he puts at paragraph 10 in these words: "But as much of this latter" (bark) "was covered with moss which itself might cause alteration of yield, it was necessary that I should examine the untouched bark above the

* Mr. Broughton's contribution to the Philosophical Transactions, dated June 1870, page 7: "Furthermore, the very local character of these peculiar changes seems to render it highly probable that the alkaloids are really formed in situ in the very tissues in which they are found; that is, the very cells which contain them also have formed them." See also paragraphs 37 and 38 of Mr. Broughton's letter recorded in G. O., 22nd September 1863, No. 2,453.

† See Superintendent's Annual Report, paragraph 14, recorded in G. O., dated 13th September 1873, No. 981.

moss, though, in this case, the hypothetical transference, if existing, would probably take place in a less degree." Mr. Broughton's apology for not using the *best* means at his command to ascertain the truth is perplexing. The alternative strips or old bark left on the tree when the first strips were taken, being surrounded by renewing bark during the first year of the process, formed the only material Mr. Broughton had at command to ascertain the facts. If the covering of moss produced an alteration in this bark, this alteration was the result of, and must either have been in favor of, or against the mossaing process, and should have been investigated and recorded, as this alone could determine the point at issue. Thus, if the Quinologist intended to establish facts, his proceedings become mysterious. If he wished to maintain one fiction by another, the course he adopted becomes intelligible.

12. I shall now draw attention to the circumstance, that the transference of material once formed and deposited in one part of a vegetable tissue to that of another part is unknown. A notable example of this is found in the graft: here two plants differing in their nature are placed in the closest combination. Yet in the experience of over 2,000 years, and with almost every species of plant, the stock has not been found to communicate to the graft, or the graft to the stock, in the minutest degree, any of those subtle influences on which depend the size and flavor of a fruit or the color of a flower. Both the stock and graft retaining, throughout their existence, their separate qualities, though the stock is built up by the sap elaborated by the leaves of the graft, and the graft supplied with its sap by the roots of the stock. (Prior to the promulgation of this theory of the transference of alkaloids, or on the 2nd October 1873, I had removed from a tree of a hybrid variety of *Cinchona* (*C. pubescens*, Howard) the first strips or one half of all the matured natural bark; after these strips of bark were taken, the tree, as usual, was immediately covered with moss. This bark was forwarded to J. E. Howard, Esq., and the result of that gentleman's analysis is given in detail at foot.* It shows the exact condition in which this bark was, prior to being subjected to the mossaing process, and the influence of renewed bark. On the 25th June 1874, I removed from the same tree and forwarded to Mr. Howard the other strips of bark or all the old bark left upon the tree when the first strips were removed on the 2nd October 1873. Thus, the narrow strips of old bark had at that time been subjected for nearly nine months to the so-called "deteriorating influence" of renewing bark on each side; yet the analysis at foot† shows this bark had not deteriorated; on the contrary, it had improved. We

* Letter from J. E. Howard, Esq., Tottenham, London, dated 20th February 1874.

"We make the contents of the bark of the individual tree growing at N.-E. exposure to be a little better than that examined by Dr. deVry at N.-W. exposure, but it is possible that if tried by the same person the difference would not be much.

"That sent me gives the following astonishing result:—

Sulphate Quinine...	6.00
" Cinchonidine...	5.00
" Cinchonin ...	0.60
" Amorphous ...	0.60

12.20

"Very accurate testing would doubtless diminish a little the quinine and increase the Cinchonidine, so that it might be safer to divide the 11 per cent. between them, but even with this deduction it is clear that you have an extraordinary bark, and one with its other good qualities which throws the *C. Mirabilis* (*Angustifolia*) quite into the shade."

† Letter from J. E. Howard, Esq., Tottenham, London, dated 4th September 1874.

"I have delayed replying to your letter of the 27th June till I could send a full answer to your questions. Having since received by post your parcel containing narrow strips of bark of *C. officinalis* var. *Pubescens*, I have devoted my attention to re-solve the interesting problem, whether the renewed bark draws the alkaloids away from the old, and have secured the assistance of my nephew (who examined the bark) in addition to my own experiments. You may rely upon the conclusion arrived at, viz., that the sum total of the alkaloids in the two barks is the same; consequently, there has been no such action on the part of the tree as supposed:—

"The bark now sent, Sulphate of Quinine ...	6.94
" of Cinchonidine...	6.49
" of Cinchonine ...	0.20
" of Quinidine ...	0.14
" Amorphous ...	1.14

12.90

"The difference, such as it is, is slightly in favor of the bark last sent, thus not differing from some previous trials which generally seem to show the proportion of quinine increased by the process."

Note

T This, I am informed, is a mistake. *Stychnine* is an alkaloid. It is formed in the *Nuxvomica* tree, but is found also in the *Torantia* or parasitical plants attached to that tree, whereas the *Torantia* do not naturally possess it.

(S) Z. A. C.
(a) On these points see Dr. Bridges' *unpublished paper* (12) in *J. C. P.* March 70, p. 584.

TT. This analysis was not a comparative one between the bark on stripped and unstripped trees

II This yield however was exceeded as for a *Guianine* (amorphous) is increased in *C. lanceolata*, vide W. Knight's analysis of the *J. W. M.* Nov 4 13 p. of the *Ann. & Report* 67/68.

alkaloid 11.40 p.c. total sulphate crystallised 10.57 p.c.

Guianine 9.75 — cinchonidine 1.65 p.c.

This bark on apparently unmossaed.

In the following year it yielded 10.13 p.c. quinine vide *J. C. P.* 21 Dec. 70 page 6.

X. It is believed that Mr. MacLennan is connected with all of these. Coppicing has been adopted on others. e.g. the State of Baluchistan, referred to by Dr. Bidie and Mr. Broughton.

T. It is a little difficult to understand what is meant. Probably the aggregate amount of bark from the four years harvests. If so, the comparison is scarcely a useful one, and no one has any knowledge as to what 4,000 trees cut down say at six years of age, and then again cut four years afterwards, would yield.

find the natural bark taken from this tree for the first time, or before it was subjected to the mossing process at all, gave 12.20 per cent. of total alkaloids. That the old bark of the same tree after being subjected to the mossing process and the effects of renewing bark from 2nd October 1873 to the 25th June 1874, gave 12.90 per cent. to total alkaloids. This is a considerable improvement, especially when the greatly-increased quantity of quinine is taken into account, the market value of this bark being enhanced at least one shilling and four pence per lb. Thus we see by the most distinct evidence that the renewed bark *does not* draw its alkaloids from the old bark. Here, also, we have the improvement effected by the mossing process apart altogether from the renewal of the bark.

X. 13. Even commerce, in impartial might, rises to crush this theory. From all the large private plantations on these Hills bark has been systematically collected by the mossing process, and these plantations have already sent into the market bark from upwards of two hundred thousand trees. The whole of this bark was collected in the same way as the bark analysed by Mr. Howard, i.e., the first strips of natural bark were taken, and the trees immediately covered with moss; the remaining or second strips of old bark being removed at from eight to twelve months after. These second strips of old bark were thus subjected to the influence of renewing bark on each side for from eight to twelve months, yet we find this bark has, in every instance, realised in the open market from 9d. to 15d.* per lb. the more than the first strips of natural unmossed bark from the same tree. While renewed bark also from the same trees has realised fully three times the price of natural unmossed bark.

T. 14. In the preceding quotation the Right Honorable the Secretary of State concludes his remarks on Mr. Broughton's theory of the transference of alkaloid in these words: "It is a serious matter that so large an extent of the plantations should have been given up to the mossing system." Including the experimental trees, the whole number on the Government plantations, given up to the mossing system, is under 40,000 out of a total of 1,190,000 trees. Hence, the number of trees under moss are comparatively insignificant. True, these trees have given a large quantity of bark as *practically the whole†* of the bark produced by our plantations has been obtained from these mossed trees; therefore, if they die to-morrow, there will be no loss. But these trees are not likely to die; on the contrary, we may expect them to continue in that vigor that has hitherto marked their growth. Were we, at the present time, to take by coppicing the same quantity of bark that these 40,000 mossed trees annually produce in four years, the whole of the 1,152,000 unmossed trees would fall under the axe to produce this quantity of bark. This is a momentous, but that it is an accurate statement all our results confirm.

15. Fully six years ago it was predicted that mossing "would kill within a year" the trees subjected to this process. The fulfilment of this prediction seems as far off now as it was then, as the trees longest subjected to the process are certainly among the most healthy and vigorous on our plantations.

16. The foregoing observations, I submit, indicate that the true condition of our operations are apparently not quite understood by the authorities who control this truly beneficent national undertaking. The time is approaching when my career as a servant of Government must terminate; if, therefore, the true condition of this undertaking is not understood, the labor of years may be rendered unproductive. Under these circumstances, I feel that the time has arrived when it becomes a duty to bring to your notice, for the information of Government and the Right Honorable the Secretary of State, a brief outline of the main features of this cultivation from the commencement up to the present time, so as to direct attention from ideal or hypothetical considerations to the substantial position of facts.

17. The first Cinchona plants grown in India were raised from seeds in March 1861. In the growth of these seedlings I carefully observed their habits and requirements, and soon

* See foot-note marked thus (†) at paragraph 7.

† Since 1867 the whole quantity of dry stem bark collected by coppicing amounts to only 1,079 lbs.

learned from unmistakable evidence in the growth of the plants that the system of cultivation I was directed to carry out would end in failure. This circumstance made me anxious to be placed in such a position as to be able to apply the knowledge I obtained, and was daily obtaining, to the benefit of the undertaking, or to be relieved from all connection with it. This desire I submitted to Government in paragraphs 19, 20, and 21 of my letter of the 30th March 1861, recorded in G. O., dated 16th April 1861. I there pointed out "the utter impossibility of conducting operations either to the satisfaction of Government or myself when constantly interfered with by parties possessing no practical knowledge of the matter in which they would direct. Should the Government think fit to place the Cinchona plantations on the Nilgiris entirely in my hands, I would accept the responsibility of their success or failure," adding "I did not promise to conduct the experiment throughout without mistakes." The Government, in paragraph 5 of the order above noted, "resolve to entrust to Mr. McIvor the operations on both the sites fixed on;" but did not definitely fix the degree of control I was to exercise. I therefore, on the 9th May 1861, reiterated my request, and showed that *I could not continue to be connected with the undertaking*, unless "the full and entire control" was placed in my hands "without interference." By G. O. of 3rd July and 7th September 1861 the Government invested me with "full and entire control." Placed me in an independent position and in direct communication with Government. Paragraph 4 of the Secretary of State's despatch, dated 31st May 1862, runs thus: "I have, therefore, only to repeat the expression of my desire that no interference should take place on the part of Dr. Anderson or any one else with the prosecution of the experiment now proceeding in the Madras Presidency under the charge of Mr. McIvor".

18. In my communications at the commencement of the undertaking I laid clearly before Government that it was indispensable to success "that the officer in charge of the experiment should be left to the free exercise of his own judgment, and not required to follow any prescribed method of cultivation, which could not lead to other than bad results".* I submitted, for the consideration of Government, "the desirableness of giving time to develop our results prior to gentlemen being deputed to report on the position of our experiment," showing "that, unless the gentlemen so commissioned had themselves gained greater results in the cultivation of the plants than we have, together with long experience of our climate, their reports can only confuse and embarrass the Government, while they are discouraging to those entrusted with the responsible and arduous duty of bringing the experiment to a successful issue." That in experiments of this sort the preliminary "operations are the most difficult to accomplish, because every day adds to our experience and knowledge of the nature of the plants. Our success in the preliminary operations is indisputable, and it is mere trifling to argue that we shall fail in the future stages; for, if we were successful when we possessed only a slight knowledge of the nature of the plants, it is only reasonable to expect that we shall be more successful when our knowledge becomes perfected by long observation and practical experience." These remarks were called for to allay the anxiety of Government in consequence of its being represented that every important step I took in this undertaking would end in failure. These gloomy predictions had one redeeming feature. They invariably acknowledged that so far as our operations had progressed, our success was unequalled. This alone would have removed their dangerous tendency, had they not been advanced by the highest authorities in India.

19. By the order of Government, dated 11th January 1861, Dr. Macpherson, Inspector-General of Hospitals, was deputed to Ootacamund to report on the condition of the experiment, to select sites, and draw up "rules for" my "guidance in the cultivation." The reason for deputing Dr. Macpherson to this duty was that he "had seen the cultivation in successful operation in Java." In compliance with that gentleman's report, the Government Order of the 9th March 1861 directed that the "site at the back of the Government Gardens should be abandoned," and that a stop be put to all "attempts to raise Cinchona plants and seeds at the

* See Superintendent's letter, dated 4th June 1861, paragraph 10.

† See Superintendent's letter, dated 9th May 1862, paragraph 11.

garden at Ootacamund." This order was issued in consequence of Dr. Macpherson having stated that we were "risking our seeds and plants" by attempting to "raise and propagate them in the green-houses at Ootacamund." This statement alarmed the Government, and the operations were stopped.

20. Dr. Anderson, late Superintendent, Government Gardens, Calcutta, was the next officer deputed to report on this experiment. That gentleman, writing on the 11th February 1862, describing the condition of our plants in December 1861, remarks: "All the Cinchona plants on the Nilgiris are growing in the conservatories in the Government gardens at Ootacamund, were protected from the vicissitudes of the weather, and in a recently-erected house even under the influence of the artificial heat they are growing luxuriantly * * *." "The great success that has followed and the result compared with the early efforts of the Dutch show that this is the wisest plan that could have been adopted." Thus, within ten months, Dr. Anderson finds predicted "failure" developed into a "great success." Yet Dr. Anderson, also, predicted "complete failure" in the next important step I was about to take, *viz.*, "planting a shade-loving tree in such an unnatural condition as that of a cleared garden." Here, again, within a still shorter period the success attending the growth of the plant in the "cleared garden" was "so complete" that Dr. Anderson, in his operations in Bengal, never made the attempt to cultivate the plant under shade. In Java, also, the cultivation under shade was abandoned, in consequence of the great success attending my open system of cultivation.

21. Such predictions appear still to cause anxiety. It, therefore, becomes important to inquire if it is, in the interests of Government, that such interference should be permitted. It has not secured for Government *even a fragment* of sound advice. On the contrary, so conspicuous have been the errors advanced that, on confirmatory orders being passed, they had to be rescinded. How prejudicial this has been to the undertaking will presently appear. Perhaps the last important objection to this interference is that it is discouraging and *unfair* to myself, being at variance with the *specific terms* on which I undertook, this cultivation. On the receipt of G. O., dated 6th April 1869, No. 913, I would have retired from the undertaking, had I not seen a bright future for what had been accomplished if it could but be protected from total wreck. I felt, also, that sooner or later *facts must obtain respect*. Therefore, as I knew every danger likely to befall this cultivation, when the helm was *taken away out of my hands*, I was content to post myself at the "look out." In this position I also did my duty, giving due warning of every danger.

22. If this interference has been perplexing to Government, prejudicial to the undertaking and discouraging to myself, it has been still more unsatisfactory to the gentlemen themselves; as in *every instance* they have been driven off the field convicted of error. The nature of the circumstances must, I submit, always render this result inevitable. At the best, Government can only appoint inexperienced men, and it possibly places such gentlemen in a false position to call upon them to direct in a matter in which they have no practical knowledge. On the other hand, it is important to note that the records testify I have not fallen into error in even one instance in conducting the whole of the important operations connected with this cultivation. So carefully have I examined all facts and circumstances bearing on every point to be determined that the records also show I have not even formed a wrong opinion, as every system I condemned or described as doubtful has proved ruinous in practice; while every method or process I have recommended has proved, in practice, to be eminently successful. This, I admit is no guarantee that I may not fall into error in the next step I take. But the caution which protected me when I had no practical knowledge of the operations I had to carry out being now combined with mature experience renders the probability of error extremely remote. It should also be considered that as our operations advanced all gloomy predictions were shattered by developed facts; so completely has this been the case that our most ardent opponents were the first to adopt my practice, *even while they condemned it*.

15

25. By G. O., dated 6th April 1869, No. 913, I was removed from that independent position I previously occupied, and placed subordinate to the Commissioner of the Nilgiris. The record does not give the reason for adopting this measure, although, from the context, it may be inferred that it was in consequence of my holding private property in this district. This, however, could not have been the cause, as since 1848 I have, with the full knowledge of Government, been in possession of private property in this district.

27. The difficulties now forced upon me were inconceivable. In place of marked regularity in the performance of our operations, we had now confusion and disorder; my Assistants had previously been reduced, and the only experienced one remaining in the department left in May 1871, in consequence of an increase of salary being refused. Here labor is scarce, and "gangs

"2. No further extension of Government Cinchona cultivation is contemplated on the Nilgiris, with the exception of small experimental patches of the rarer varieties.

"On these and other grounds I considered that a saving could be effected in the Budget for 1871-72 if the Superintendent instead of maintaining a large permanent establishment of gardeners all the year round, whether there was work for them or not, engaged gangs of coolies when he wanted them, and made out his estimate every year on the principle of a fixed sum per acre for working expenses, retaining on the permanent establishment only those whose duties were in the nature of supervision or office.

"3. In the interests of economy and audit the charges in—

"4. In G. O., 8th June 1871, No. 1,011, paragraph 5, this alteration was sanctioned, and accordingly a revised estimate for 1871-72 framed on the principle of Rs. 16 per acre for working charges was sent up with my letter, dated 10th August 1871, No. 63.

"The revised estimate came into operation on the 1st September last, in accordance with G. O., 16th December 1871, No. 2,120."

1871, No. 2,120." The revised estimates came into operation on the 1st September last, in accordance with G. O., 16th December

x This can ~~hardly~~ ^{not} derive from the case, as Mr. Buckle in para 9 of his letter states that although the estimate should be based on an average allowance of £ 10. yet a part of such sum to be appropriated to the maintenance of a permanent staff of gardeners in each estate - in fact he merely reduced the ^{no. of} gardeners from 211 - to 119 -

N.B. Mr. Leeson in his ^{letter} to Mr. Buckle regarding the reduction says not a word about the loss of skilled labour - nor is the loss of skilled labour referred to in the G.O. - in fact the rate of pay to these gardeners was only the ordinary work, viz. 87 per annum, & so the same of gardeners left, yet there wd not have been a complete evodus as represented by Mr. Leeson. (I will also Mr Leeson's letter published inserted in G.O. 29th Nov. 69 on same subject) - I will also Mr Leeson's letter [his manuscript] with G.O. 5th Sept. 71 - where he states that he cannot in that year do with less than 16 1/2 per acreage at this was allowed.

T. One word has been omitted - viz: "more"
 Mr. McIvor was to give "attention" "to the more extended cultivation!"
 The object of the first was to experiment with everything, and it is the
 having been compelled to experiment against his own wishes that Mr.
 McIvor objects to.

of coolies" could not "be engaged when wanted," and such men as could be secured were bad workmen, who could not obtain permanent employment elsewhere. Moreover, our establishment was dismissed at a time when their services were of the utmost importance in the interests of this undertaking.

23. By G. O., No. 1,213, dated 13th July 1871, we were directed to obtain our first harvest of bark "under the mossaing process." This work had to be done in October and November, while on the 1st September our trained establishment had been dismissed. The Right Honorable the Secretary of State for India in the 3rd paragraph of his despatch, dated 16th December 1873, recorded in G. O. of the 2nd March 1874, writes: "It must be borne in mind that the mossaing process is not likely to be successful, unless skilled scientific management is available, and that, under other circumstances, an ordinary cultivator must resort to coppicing." It will be observed that in a Government undertaking I was compelled to perform this work requiring skill and care by the worst possible workmen,—such men, indeed, as no private planter would employ. Out of this act endless complications arose, in consequence of an attempt being made to impute the defects of this imperfect work to the mossaing process. Nor is this all; but the direct interference* with collecting the mossaed bark was also injurious. In removing bark by the mossaing process, it is important that the cambium should not be allowed to dry. This makes it necessary that the bark be removed in moist or wet weather. By the letter given at foot, it will be seen that my Assistants were directed to collect the bark from the experimental mossaed trees during the months of February and March,—the driest and most arid months of the whole year. The consequence of this was that the cambium, in some cases, dried up, and the injury thus caused was also imputed to the mossaing process. These facts are not given as an apology for mossaing, as this process has advantages that no blundering can obliterate; but I think it should be known that it is on the produce of this imperfect work that all calculations of the yield by mossaing is based by the advocates of coppicing.

29. I have now to notice that it is essential to success to consider every matter in all its bearings on the object we wish to attain. If we look to cause and effect from one point of view only, error is likely to follow. The Government Quinologist arrived in India in January 1867 and paid his first visit to our plantations at the end of that month. In paragraph 13 of that gentleman's report, dated 13th July 1867, the extended cultivation of "grey bark" is recommended on the ground "that, although the grey barks do not contain quinine, they are among the richest we possess in their yield of total alkaloid." Paragraph 4 of the Government Order thereon, dated 26th July 1867, No. 1,711, directs the "extended cultivation of the grey bark

COMMISSIONER'S OFFICE, OOTACAMUND,
 28th January 1871.

* No. 6.

From J. W. BREEKS, Esq.,
 Commissioner of the Nilgiris,
 To W. JAMIESON, Esq.,
 Deputy Superintendent, Cinchona Plantations.

SIR,—With reference to Mr. McIvor's letter of the 23rd instant, No. 276, please at once instruct Mr. Dawson at Neddivittam and Mr. Rowson at Dodabett to take the bark from all the trees that have been under moss (in accordance with Mr. McIvor's process) for a period of 18 months as weather permits, and retain and house all the bark so taken in the jails at Neddivittam and Dodabett, in order that Mr. Broughton may ascertain the weight as well as the quality of the bark.

"2. A memorandum should, at the same time, also be carefully taken by Messrs. Dawson and Rowson of the age and number of trees from which the mossaed bark is taken. Mr. Broughton assures me that the amount of alkaloid does not appreciably decrease for the next two months as stated in Mr. McIvor's letter, and will make no difference as to the value of the experiment.

"3. Please send a copy of this letter to Messrs. Dawson and Rowson with your order."

I have, &c.

(Signed) J. W. BREEKS,
 Commissioner.

varieties." Some years' experience is necessary to enable any one to form an opinion as to whether a species can or cannot be profitably cultivated. Prior to the introduction of this species, it was known that it did not yield quinine, and, consequently, its cultivation from the first was limited. A few years' experience of the growth of this plant showed it to be unsuited to our climate, and this was another reason why I had not expended large sums in the extended cultivation of this species. In the fourth year of growth, the "grey barks" become less healthy; in the seventh year, the plants begin to die out, at the end of eleven or twelve years this species so completely disappears that out of 3,000 grey barks permanently planted out in 1862-63 only five or six plants now remain. The same facts* which procured the above order to extend the cultivation of "grey barks" urged from another point of view, procured G. O., dated 19th June 1869, No. 1,740, and G. O., 22nd February 1870, No. 268, stopping the cultivation of "red bark" (*C. Succirubra*). Paragraph 4 of G. O., dated 22nd June 1874, No. 759, runs thus: "Mr. McIvor would appear to contest Mr. Broughton's low estimate of the value of *C. Succirubra* for export purposes, probably on the ground that *Succirubra* is still worth exporting, as it fetches 3s. 6d. per lb. (not that it is better than *Calisaya* or *Officinalis*). Mr. Howard, however, has already remarked that it cannot be looked upon as the quinine-tree of the future, and on Mr. McIvor's own showing the highest price obtained at the recent sales for stem bark of this species was less than the lowest obtained for stem bark of *C. officinalis*." Here the facts are correctly stated, and no doubt to every one (except the very few thoroughly conversant with the subject) the sentence is conclusive. Had it been inferred that iron was no longer worth working, because it did not realise the same price as silver, the inference would have been rejected; because the general public know the cost of production of iron to be much less than that of silver. True the natural bark of *C. officinalis* is more valuable to the quinine manufacturer than natural red bark; it is, however, not more valuable than renewed red bark. What we have to consider is not the value of material alone, but its value in connection with the cost of production. *C. Succirubra* is a rapid-growing tree; it yields at an early age a very valuable bark. Hence, this bark is produced in a much shorter space of time and at one-fourth the cost at which an equal quantity of crown bark is produced.

30. At the time Government definitely stopped the cultivation of this very valuable plant, attention was drawn to the fact that much of this alkaloid was Cinchonidine "which is commercially but not medicinally a disadvantage." In other words, Cinchonidine as a medicine is as valuable as quinine, but, in the mean time, prejudice retards its use. In stopping the cultivation of this plant, the improvement which I stated would be effected in this bark by mossing was ignored. The sales of our last consignment of the second crop of renewed *Succirubra* bark show this to be even of higher value to the quinine manufacturer than natural *Officinalis* bark, and each succeeding sale will show this more plainly, as the renewed bark is not yet fairly known in the market, and the high prices realised at the last sales were not more than from two-thirds to three-fourths its value. It may, also, have been overlooked that the world has advanced to that stage of intelligence when prejudice cannot long hold its sway, when it becomes profitable and advantageous that it should give way to fact. Since the date of the above Proceedings the market value of Cinchonidine has nearly doubled.

31. This partial consideration of the subject also led to the utmost importance being attached to the extension of other varieties which never can be profitably cultivated. Take for instance, the *C. lanceolata* (*Angustifolia*). In G. O., dated 19th June 1869, No. 1,740, this plant

* Quinologist's Opinion on *C. Succirubra* or red bark recorded—

In G. O., 12th April 1867: "It should be stated that the richness entitling them to the first place among our Indian barks is not, in many respects, a true measure of their intrinsic value for manufacturing purposes."

In G. O., 26th September 1871, paragraph 8: "In total yield the bark of *C. Succirubra* is the richest, but in its natural state at least this consists mainly of Cinchonidine, Cinchonine, and occasionally quinidine."

Again, in G. O., 15th December 1873, paragraph 7: "Though I quite recognise the fact, that *C. Succirubra* is the Cinchona which produces the largest amount of alkaloids in the shortest time; it appears to be the worst species for the production of bark for export."

T. This is one of the points that has to be settled by time. It is certainly no valuable, as the expense of mossing need not be incurred, as it can probably be felled closer together than Red barks which are bushy trees, and, as Mr. Howard says it may be cut down very young, the cost of production is probably less. Lastly, then is the point viz: How long will renewed red bark retain its good qualities. Will it not deteriorate as the tree does?

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is referred to in these words: "The Right Honorable the Governor in Council fully concurs with the Commissioner in considering that, in the future extension of the Cinchona Plantations, special attention should be paid to the varieties to which Mr. Broughton refers. The Commissioner should issue the necessary instructions to the Superintendent of the Plantations." The first analysis of the bark of this variety was made by Mr. Howard in 1866. Even at that early period the extraordinary yield of quinine attracted attention, but the plant was entirely destitute of the essentials necessary to profitable cultivation. It is of slow growth, delicate constitution, and, above all, the great variation in the quality of its bark, when growing under the same conditions, renders it not only an unprofitable but an unsafe plant to cultivate. As early as 1865, this plant was applied to the only profitable use that could be assigned to it, viz., to hybridise strong and vigorous species, so as to secure in some of their progeny vigorous growth, strong constitution, and high quality of bark. All these qualities have already been obtained in a marked degree in *C. pubescens Howard*.

32. Another danger lies in applying at the wrong time rules otherwise beneficial and desirable. In paragraph 70 of the letter of the Commissioners appointed under G. O., No. 759, dated 22nd June 1874, recorded in G. O., dated 11th February 1875, No. 217, the following observation occurs:—"The original instructions of the Secretary of State that the Superintendent of the Plantations and the Government Quinologist should work together in intimate communication cannot be too strongly insisted upon as regards all the great scientific questions connected with the improvement of the Cinchona for yield of alkaloid. We regret to observe that there is not at present that cordiality and harmony in the working of these public officials (both eminent in their several spheres) which we think conducive to the best interests of Government, and we notice the subject simply because we are anxious that these gentlemen should, in the interests of the State, unite to shed new lustre on their scientific reputations by a patient and thorough investigation of the qualities of artificially and naturally produced new varieties of the febrifuge-yielding plants." To insist on harmony of opinion in a counsel of war would be to frustrate the main object of this institution. In like manner, harmony of action in the instance to which the Commissioners refer would have cut off the path by which we hope to reach the main objects of this undertaking. In experimental investigations, instituted with a view of ascertaining the best plan permanently to adopt to secure the object in view, harmony of action may become fatal. In this condition safety demands that we accept nothing for granted. We cannot even consider apparent facts, until tested in every possible direction, and divested of every covering under which deception may lurk. In this stage, also, diversity of opinion leads to inquiry, and inquiry to the establishing of facts. All this is changed when a plan is once fixed, and a definite course of operations arranged. Then every sensible man will throw his whole will, talents, and utmost exertions, into carrying out the plan, though it may not be, in his opinion, the best means of attaining the object in view.

33. Selection and hybridisation has secured for our domestic plants those wonderful improvements which now make it difficult to recognise in our large and prolific grain, in our fine fruits, and splendid flowers, their worthless progenitors. Cinchona belongs to a tribe of plants highly susceptible of improvement by these means. This circumstance, combined with a short observation of the growth of this species under cultivation, encouraged the hope that equally great improvement might be secured by the same means in this plant which we had just transferred from a wild to a domestic condition. So soon as our plants flowered, or early in the Spring of 1865, I made a vigorous attempt to attain this object. The result was that in 1866 a number of hybrid seedlings were produced. Among these six distinct varieties possessing remarkable vigour of growth were selected, and the weakly-growing sorts destroyed. The selected varieties were planted here and there in every soil, exposure, and elevation available. Under all these conditions our new seedlings maintained that remarkable vigour of growth which at first distinguished them. This raised my hopes still higher. A fresh batch of promising hybrids were produced and selected with great care. When suddenly *all hope of improvement* in this direction was consigned to oblivion by the announcement of the Quinologist "that these

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hybrids combine the bad qualities of both their parents," I took no official action in this matter, as it was not within my province to decide. I admit that privately I may have received this announcement ungraciously. It was opposed to the experience of ages; it cut away what I believed to be a well-grounded hope. I suggested the possibility of error and the desirableness of further investigation; but the statements with which I was met shook confidence in my own opinion, and for nearly ten months caused the prosecution of further investigations to cease. It is well understood that, under certain conditions, hybrids may and frequently do degenerate, but this defect is corrected by "selection."

34. Circumstances, however, soon arose which clearly indicated that under certain conditions these seedlings produced a bark of great value. Subsequent investigation showed that the same variety maintained nearly equal value in its bark in all the conditions under which the plants were placed. Evidence was clear, also, that in these vigorous-growing hybrids we had secured in *a marked degree the good qualities of both parents*. This information I may have imprudently placed on record, but it is the only instance in which I placed on record any one of the numerous facts I had ascertained which gave a contradiction to the analysis advanced by the Quinologist. The wanderer has no difficulty in pointing the way to the person who has just shown him the road. Had I withheld this *important information*, that bright hope of *improvement by hybridisation* on which the Commissioners so eloquently dwell in paragraphs 67 to 71 of their report would not have inspired their breasts, because it would not have been redeemed from that oblivion to which Mr. Broughton consigned it on the 31st July 1871. In short, the Commissioners seem to overlook that my experience of the chemical constituents of the bark is coequal with my experience of the cultivation. For this department of inquiry I had no special training, but by the able assistance of Mr. Howard and Dr. DeVry I was enabled to conduct these investigations from the commencement of this undertaking until 1867, and with such conclusive results that seven years' subsequent labor of a specially trained officer has not advanced the inquiry one step beyond the point at which he found it; his labor, in fact, being confined to confirming the results we had previously obtained or distinctly indicated.

35. At intervals during the existence of this undertaking, we have seen advanced under cover of science a display of pitiful ignorance, existing in the minds of men on a subject in which they would direct. In the last forty years science has made gigantic strides. It has added enormously to our knowledge, and it has indicated or attained great practical successes. But these have been secured by a fair consideration of the true relation of science to practice. Science is not that philosopher's stone which turns everything it touches into gold. More frequently the touch turns matter into dross. Therefore, if we wish to lean with safety on this staff, we must not press it one point beyond the strain it will bear. If we do so, it must break, and may wound us. The science of chemistry may be said to be as yet in its infancy. Speaking without formal precision, the chemist can break down, but he cannot build up: he may decompose but he cannot combine. This process of destruction adds to our information. It enables us to ascertain, with certainty, the exact elements of which bodies are composed. How changed would the whole features of science be if it were possible for the scientific man to place these separate elements in chemical combination. It is this defect which places the most consummate skill, the most elaborate process and apparatus of the chemist, in despicable insignificance when compared with the results daily produced by the meanest weed we trample under foot. Here we find this humble organism secreting the various elements required to build up its system, and as carefully rejecting such as are not necessary, the stem, leaf, petal, and seed, each selecting and placing in chemical combination the peculiar elements of which they are composed. This certainly is a laboratory at which a wise man will not refuse to take a lesson. Yet it is the one at which our critics have scoffed. These observations are not intended to depreciate science. To this study I have devoted for upwards of thirty years a portion of my time. Such investigations have proved of great benefit by enabling me to balance and fairly decide complicated questions, which otherwise would have been unintelligible. Still, if we wish to avoid failure and disappointment, the first step necessary is to learn to estimate every means we employ at its *true* value but at nothing more.

36. It may be urged that Government has already accomplished all that is required to be performed in such undertakings. The plants have been introduced, the cultivation permanently established, and Cinchona bark henceforth for ever secured as a product of India. If this be all it is intended to accomplish, the time may have arrived when it would be expedient for Government to retire from this undertaking. From what has preceded it will appear that notwithstanding many great and special advantages Government is frequently heavily weighted in a race with private enterprise. It is, therefore, only under special circumstances that it can be desirable or profitable for Government to appear upon the course.

37. Unfortunately, there is no short cut even to do good. The operations necessary to place a cheap febrifuge in the hands of the natives of India must, I fear, be of such a nature as to place it in the hands of the population of the world. We cannot depress a portion of the ocean, and say to the surrounding waters "ye shall not flow in." The laws of commerce are almost as irresistible as the laws of gravitation, and, if we wish to secure our object, we must act in harmony with those laws. Were cheap quinine placed in the Indian bazaars, it would be at once purchased and sent where it would command a higher price. True, this could be modified by export duties, but would this be just or desirable. If the natives of India are to have a cheap alkaloid why should not Her Majesty's subjects throughout the world have a like advantage. Hence, the object the Government has in view is difficult to secure. Another difficulty is that no product can be sold, except at a profit on the cost of production, because if an article does not yield a fair profit it ceases to be produced. There is apparently but one way of attaining the object in view, and that is by so diminishing the cost of production that quinine can be sold cheap and yet sold to profit. From first to last my exertions have been directed to secure this object. The mossaing process was intended to remove one of the greatest barriers, i.e., the necessity of killing our goose to secure the first small golden egg. The extent to which mossaing is capable of securing this object time will shortly establish. In *O. pubescens* Howard we have a plant producing in the shortest space of time a large quantity of bark of the highest value. Thus much has already been done towards securing this end. Much still remains to be accomplished, and this possibly may form a field for the action of Government. This subject will require ventilation at no distant date.

38. It becomes instructive to note the effects of this undertaking on the position of the gentlemen employed in its development; Mr. Clements Markham, Mr. Cross, and Mr. Spruce, were the prominent agents employed in the introduction of the plants and seeds. The duty on which these gentlemen were employed was of a preliminary nature and of short duration, and the fruits of their labors depended on the judgment with which the plants and seeds were managed in this country. The great success I attained in the propagation and growth of these plants secured for these gentlemen a graceful and well-merited reward: Mr. Markham received a bonus of £2,000, and was created a companion of the Bath; to Mr. Spruce a pension was granted; and Mr. Cross received a bonus.

39. Cinchona plants and seeds were introduced to India so early as the Spring of 1853. In consequence of mismanagement these plants and seeds were entirely lost to the country. Even the great exertions of the Dutch in Java, undertaken in 1852, would probably have ended in a like unprofitable and unsatisfactory result* had it not been for my successful example of open cultivation. How different has been the effects on myself. Instead of being rewarded I have been degraded from that independent position I originally occupied. Even the ordinary increments of salary accruing from length of service in every position under Government has been denied to me; and for upwards of ten years I have labored in this department without receiving an increase of emoluments. I do not make this statement in the form of complaint,

* Report by K. W. VAN GORKOM, Esq., Superintendent of the Cinchona Plantations, Java, for 1870, page 57.

"Much injury too is done by falling trees, &c., so that the best and most vigorous trees are disappearing by degrees after having long overcome physical difficulties, viz., want of light and excess of moisture. On a recent survey of the melancholy vestiges of the costly and arduous work of nine years, it was again found that whatever benefit remained could only be set down as an accidental one."

This seems very questionable. Mr. Mc Lorn followed the method of cultivation adopted in all estates on the Nilgiris and that was supported by all the real authorities (see para VI of Nite). The fact that the propagation of Cinchona can be done by other gardeners is proved by the success of such raised by the gardeners in America.

There does not seem to have been any defraudation. The reasons for the stop will be found in the original papers with G.O. 6, dated 1865 N. 513 (see also para 6 of Nite).

Mr. Mc Lorn came out on 150 £ yearly. He now receives 550 Rs a month and has free quarters. Moreover, he is allowed a freedom in the way of holding land and managing estates for others, amounting to no other public servant, and it may fairly be said that his time is only partially devoted to Govt work.

because I am not entirely without my reward. I stemmed the torrent of error, which would have swept away all benefit from a great and good national undertaking, and my judgment and courage in doing this has met with the approbation of the civilised world. Still it is important that the illiberal treatment of myself and my department should be understood: it has retarded the development of the undertaking; it has caused all my experienced Assistants to leave and seek employment elsewhere.

40. In January 1848 I was appointed by the Honorable the East India Company Superintendent of the Ootacamund Gardens in the Uncovenanted Service. The extract from the editorial notice* by the late Dr. Lindley, at page 20 of the *Gardeners' Chronicle and Agricultural Gazette* of 8th January 1848, show the circumstance under which I came to the country. In India as elsewhere every enlightened mind views the attainment of success in all grades as worthy of credit and reward. Unfortunately, however, there may be some who view success in certain positions as an unpardonable offence to be put down and blotted out by every means that can be applied to the purpose. Such men for a time may do great harm, yet how vain is the field in which they toil. Ultimately, they must fall in their own net, as no power can bury truth; no persecution eradicate talent. How far the exertions of such men may have effected my position in this undertaking I leave for others to judge.

41. The question may arise, is this subject one of sufficient importance to occupy the time and merit the serious deliberation of the rulers of this vast Empire. It is admitted to be the first duty of every Government to protect the lives and health of their subjects, not only from open violence but from disease. Important departments,—Medical and Sanitary,—have been organised under Government to secure this object. In extensive districts in this country statistics show about one-half of the death-rate to be due to fever. These statistics may not be quite reliable, but our Madras Native Army is under efficient medical supervision, and the returns correct. They show in 1871 the total strength of the Madras Native Army to be 28,702; the total number of malarious fever-cases treated to be 8,168, all other cases of diseases treated being only 4,688. The total fever-cases in hospital which proved fatal were 40 against 81 from all other diseases. In fever-cases among the natives of India quinine acts as a charm. It is allowed by medical men to be the only known specific for our numerous prevalent types of fever. If this is the death-rate, who can compute the lingering suffering from this dread scourge and the thousands of homes rendered miserable and impoverished. Even when we shift the ground from a philanthropic to a political point of view, its importance does not abate. The wealth and prosperity of every country depends, in a great measure, on the number and labor of the population. The enormous death-rate from fever not only decreases the population, but this lingering disease for years incapacitates its victim from the labor which is so essential to the prosperity of the country and the wealth of its inhabitants. Therefore, from either point of view, the subject is perhaps the most important that has for some time attracted the attention of Government. It would thus appear that to place a cheap and abundant supply of this medicine within the reach of the native population of India will be to confer one of the most substantial blessings that has marked our administration of this Empire.

42. In this communication I may have referred to unpleasant facts; they are, however, all matter of record. My object in pointing to the blots of the past is in so far only as they enable us to correct the practice of the future. Moreover, I feel confident it is not the intention of Government that this undertaking should longer continue in its present condition. Such is unprofitable to Government and destructive of the best interests of the undertaking. It is a

* The important charge of the Ootacamund Garden has been confided by the East India Company to Mr. McIvor of the Royal Botanic Garden, Kew, who is already favorably known to the public by his very useful work on "British Liverworts and Sculimosses." It is, however, to be observed that this distinction has not been conferred upon him because of his botanical attainments only, although they gave him a decided advantage over other competitors. His appointment is that of a gardener, and his duties are such as none but a gardener can perform. His qualifications in that capacity are attested by the signatures of Mr. James McNab, of Edinburgh, Mr. Westwood, of Dollar, and Mr. Smith, of Kew; his scientific attainments are sufficiently evinced by his public reputation."

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waste of my knowledge and energy that I should have to struggle in controversy for years before I am able to apply to the benefit of the undertaking the knowledge obtained in conducting it, or even to apply methods as obviously advantageous, as light is to darkness. This experiment is now so complete that, I submit, the full time has arrived for Government to fix a clear and definite plan of administration; and the benefit which a correct decision on this point may convey to this and to future generations can hardly at present be estimated.

43. At the present time non-interference is as necessary to the prosperity of the undertaking as at the beginning. This cultivation is a special subject, requiring special knowledge, and it can only be successfully managed under special conditions. I would respectfully observe that placing this department under the local head of the district is an exceptional proceeding, which does not exist in any other department under Government where special knowledge is required. It has not been adopted with the Cinchona Department in Bengal. To place the head of a department possessing special knowledge under the control of an officer who does not possess that knowledge may be a proceeding fraught with danger. I therefore humbly submit, for the favorable consideration of Government, the desirableness of replacing myself and my establishment in the position originally occupied. If this is considered inconvenient or undesirable, then it may prove greatly to the advantage of the State and the community for the Government to retire from this cultivation, and leave its full development to private enterprise.

44. I do not apologise for the length to which these remarks have extended. I have omitted much that may be important, and I feel that this is probably the last exertion I may be able to make in the interests of an undertaking in which I have labored so zealously and devoted to it the best years of my life.

Revenue 1875 Depto
No 3373.

From The Commissioner
Nigeria

Dated 27. Aug 1875

Sub 198-13 January 1880

Submitting for his Lord's
Report regarding the position
of the mowing and coppicing
Experiments.

C. 4/12/77. R. 20/12/77
R.C. 28-6-78. R. 1-7-78
R.C. 12-6-78. R. 18-6-78
R.C. 6-5-78 R.C. 29-5-78 R. 30-5-78
C. 4-5-77 R. 26/3/78
S. 24-5-78 W.R. 30/5/78
C. 29 Jan/76. W. 11 Feb/76

No. 3373

From Compt. Higgins

Dated

27 August 1875.

FOR ORDERS.

I would ~~send~~ ^{reply} this letter
to the Secretary of State
It is - apart from the
personal matter - very
interesting - The
question of coppice
versus mof is well
explained and seems
to me conclusively

The question actually
the Sec. of S. is why
Coppicing has not been
resorted to more
extensively.
I think D. W. McLean
shows ample evidence
for the converse of what
has been adopted. For
my own part I never
considered the suggestion
of Coppicing as better
than a most improving

Para 1. The Secretary of State's despatch was answered at the time. It was not sent to the District
Authorities for report on this point but to ascertain from the Commr what he had done in the way of
investigating the different systems - a work which had been placed in his hands by G.O. 19th
Sep: 1874 N. 1193.

Para 2. This is not substantiated by official papers. It is an assertion of Mr. McLean.
Mr. Broughton constantly applied to have a coppicing experiment carried out (See Note
on Cinchona Plantations - para XIX).

Para 3. The statements in this would lead to the belief that all the bark supplied to the Govt. Quinsigami was taken
under the mossing process i.e. by taking strips of bark from the trees. The fact is that it was in fact
partly bark from pruning. In 1874.75 a total of 8,971 lbs of bark supplied to the
factory, 8,156 lbs were bark from pruning. See table with para XXIV of Note

T Four years old red barks were felled in 1867 and the bark sent home and sold. Three years
afterwards, Mr. Broughton noted that vigorous shoots 12 to 15 feet high had sprung up. See para XV of
Note. Page 22.

XX. It is to be noted that 240 red bark trees felled in 1871 when 8 to 9 years old yielded
according to Mr. Cockburn (para 17 of letter in G.O. 19th Sep/74 N. 1193) 1.48 lbs of dry bark.

our value & certainty in favor of making
consult in comparative It is very desirable
prudence. That we should come

I think we should to some conclusion
and the papers & the regarding the future
Sec. of A. with an expedition in operations. I think
of our entire approval we should divert
of the course that has our future action
been adopted.

As regards the then of all commercial
questions raised by the speculation - and
McEvoy, I am in the determine to what
the committee in opinion that...
the general supervision extent it may be
of the working of the desirable to continue
Special Dept. of A. scientific experiments
remain in the hands

in hybridization as
If as I understand,
there is a Company
forming, with McEvoy
as managing partner,
to buy up the Govt
plantation it is
probable that in
their own interest
the experiments will
be carried on. ^{without}
my intervention of
cheaper ~~exp~~ share
by Govt. -
Until we decide there

of the local representation
of Govt. It was never
intended that he should
interpose with technical
details was to impede
the action of the Dept.
& except in the matter of
substituting an accurate
estimate for working
expenses instead of
maintaining an army
of footless. I am as
aware that any such
interference has come
under the notice of Govt.
but in this I may have
mistaken as I have
not for some time had
any concern with the
Dept except as regards
budget estimates. I
think we may assume
Mr. McEvoy that while the

It seems it is perfectly continuous
the development of provision over
his life. & that the Council. 1871
in the channel of commerce
they have done in the past
him ample latitude in his
professional capacity. &
to leave in his hands the
technical working of the
cultivation & has been
to most that a national
success under his control.
The question of disposing of
the plant is left to him
as. Entering upon his
my own opinion is that as
far as they are becoming
a source of speculation with
the Govt. it is to be drawn from
it. But that experimental
cultivation should be continued
primarily in the direction of
improvement by hybridization.

FOR ORDERS.

Questions, matters must
remain as they are
but I would give
more or the assurance
that he will not be
hampered or interfered
with in technical
matters

P/E

29. Sept 76. L.H.
Dec 28-6-78. Nov 7-78
P.C. 6-5-78 P.C. 29-5-78 P.C. 20-5-78

I received the
packet from Mrs. Grace
the Governor - by request
through the Private Secretary
with reference to the papers
in circulation viz. Committee
letter of 13 October 1876 &c.

As the contents are
alluded to in my minute
recorded. I put them in

Circulation.

But I beg that when
done with, the packet may
be returned to its owner
with my best thanks, if
not otherwise desired.

22/7 M

Received for money

102
22/8/77

Tob kept, till 10.8.77
when for Ranchos

7



Government House.

I should prefer to
have this question discussed
& disposed of when in the
hills after I have had an
opportunity of seeing the
Plantations &c -
I do not think any harm
will result from its being

referred until then
B.C. 10/2/76

Revenue Secretariat, Madras,
10-10-1879.

Handwritten text, mostly illegible due to fading and bleed-through from the reverse side of the page.

31

✓

a

Utah

a
 I am the only
 one who has
 been - and I
 have left the
 up to the
 but when they go
 Mr. J. H. H. H.
 H. H. H.

Memorandum

Denison, Hilgrastin & Lapiet Estate Redwood

30

C. officinalis or Crown bark	75.75
C. — " — var Angustifolia bark	—
C. Succintra or Red bark	349.40
C. Calisaya or Yellow bark	29.65
C. Dieracantha & Peruviana or grey bark	19.64
C. Pilayusos, Pelays bark	—
Other species	300.
Total	474.74

Podabettah

C. officinalis or Crown bark	336.83
C. — " — var Angustifolia bark	1.00
C. Succintra or Red bark	500
C. Calisaya or Yellow bark	4600
C. Dieracantha & Peruviana or grey bark	100
C. Pilayusos, Pelays bark	1300
Other species	1650
Total	3459.80
	12.00
	3471.80

Wood and Hooker Estates, Pykara.

C. Officinalis or Crown bark.....	72,198
" " Var Angustifolia bark.....	21,404
C. Succirumba or Red bark.....	189,783
C. Calisaya or Yellow bark.....	
C. Dieracantha & Peruviana or grey bark....	9019
C. Pelagenses, Pelays bark.....	12080
Other species.....	
Total 304484	

Stanley Estate, Idarakondah

C. Officinalis or Crown bark.....	24,100
C. " " Var Angustifolia bark.....	
C. Succirumba or Red bark.....	40,255
C. Calisaya or Yellow bark.....	
C. Dieracantha & Peruviana or grey bark....	
C. Pelagenses, Pelays bark.....	
Other species.....	899
Total 65254	

Art. No. 2.

(31)

I am most ready to acknowledge
W. H. Dorr's valuable services
in this Cinchona industry. I shall
be glad to recommend a measure
of substantial recognition to
the Soc. of S. Am. the J. S. Dorr the
purpose comes. I. H. Dorr
has to the same he applies
for pension if as understood
he proposes to do this next year.
It need not necessarily be proper
until grant of pension. if a
further engagement is entered
into. but I do not understand
how W. H. Dorr is to obtain
pension before 78. Except on

Medical certificate Dr. Sedgwick
think he could obtain.

I am in no way anxious to
hurry the divorce of Gov. from
that has become in great
measure a purely commercial
enterprise. If as I think probable
N. M. S. has still 2 or 3 years
more or less for fusion I do not
wish to oppose the retention of
the plants for that period. I
do in no case contemplate the
taking of the plants here at once.
Dr. Sedgwick reserves for experimental
cultivation.

79. I think that the retention of the
Comm. as the channel for
communication with Gov. is very
desirable. His influence
at present in no way compares

H. W. S.

32
I do not think to much of
any harm has been done by not
"harvesting" a larger number of
trees at this time. I expect we have put up
as much bark as the market has
demand. But I have no objection
that we should add largely
to this supply. It comes by the
morning - no distinguished form!
The "Copping" process.

I am not convinced that harm
has been done by delay in taking
the bark from trees over 8 years
old. The S. American trees were
probably in fruiting older than
they were barked.

N. M. S. is entitled to the
credit for developing the natural
process of bark stripping by observing
that the first specimens of
S. A. bark in the market as

regards health of Allenbirds. I am always
thickly coated with moss & lichens.

It was an inspiration of genius &
appreciate & supply the natural instinct
thus taught. But I don't think
that the process was one more fit
to be made subject of patent. than
that of budding. or grafting. or
hybridizing. or that W. & A. J. is
entitled to compensation for special
services. If he does not take
genius shortly. I will bring his
claims & patent under question
prominently & the notice of
the Sec. of S. I. W. & A. J. think fit
to ask permission to modify the terms
of his letter. I will grant it. but I
do not mean to forgo. I take the
first step in the matter.

27 Oct 75

DC 28-6-78. R1-7-78

70-6-5-75 70-29-5-75 70-34-5-75

Hon. I saw Mr. H. on yesterday
 at his own request. He inter-
 view expressed me in the
 views which I am submitting
 for the consideration of my
 Colleagues.

Colleagues
I lost an opportunity
of telling Mr Palmer that I thought
that the malicious tone of his
paper deserved it & that
the press indictment proposed
against Mr. is neither fair or
deserved at this crisis. He
saw his mistake & in view of
an opportunity to correct it
aged as the paper went to
press. But he acknowledged error
merited & told him that I
submitted his work for the
disposal of my colleagues.
I think he might be told
more strongly that he was

Access a Supplementary Repu-
 nation of the work it is

1/10

1/10

State.

W.E. Mr. Lockrell's
letter d: 27th Aug^r
[15 class 8th volume.]

There appears to
be no reason why
Gov. should pass any
order on these papers.
They were purely
spontaneous contribu-
tions. The despatch

vide despatch to Sec. of State
d: 6th April 75-76
State. The despatch is not
quite correct in what it
says of Mr. Broughton's views
but it seems unnecessary
to reopen the matter.
It was dropped by an officer
new to the subject who
has failed to take notice
the real facts of the case.
L.S.

referred to was
considered at the
time & the point-
the Compt. had to
reply to he reported
on in a subsequent
letter which may
now be "recorded" as
it requires no orders.

These papers are of
course much out of

It appears that Mr.
Bridges report on the
plantations was sent

sent to the Sec. of
State as desired
by him (note from 4 of his letters in
J.C. 11th April 1860: 50)

It will be found in
J.C. 11th April 1860: 34.
together with the
papers that led
to his deputation.

Should it be sent
now? The blue
book containing
papers sent home
in 76 to 75 has
unfortunately
been made up
in England without
reference to this
for. & it is not quite
a complete record of
the papers relating
to Lincoln.

Edw

date. but they are in no
way "Spontaneous Contributions" they are full & im-
portant papers having re-
spect bearing on the Sec. of
State's despatches & some do
touch the for. of the times.

Intrinsically Mr. M. W.'s
paper is of very great value
as an exposition of the
opposing side of the mat-
ter and it must be put
on record & prominently
commended to the attention
of the Sec. of State.

I should wish
these & Dr. Piesche's reports
home together - with a
short covering letter

342
I had intended by letter
on them for a minute but
but shall not send to Mr.
Dawson that intention
& let the papers go home
as they stand.

Edw

I think at this distance
I have the impression
that the above papers
of some time under
consideration & it is well
in a script at least
times to be considered.

I can send copies
of them to Mr. P. for

RC 28-6-78. R. 1-7-78
C. 6-5-78 R. C. 29-5-78. R. 30-5-78

H.E. 27th Augt/75 Nos 8

do 8 Oct 75 476

Thank the great disorganizer
may with all our love be
presented to you by
Lillian - Ed

I have already States
my news in my note of 16/10th
(the revised & converted into
a minute) and reserved the
final discussion of this very
important matter until the
Prof. reach the Hills G.M.

*I follow with the papers Nov 2.
cin^d - from H. Bennett.*

It is to be regretted I
think has much larger pro-
vision for harvest & massing
was not made this year
budget

Since the earlier
of the accompanying
papers was received, the
question of the severance
of Govt from the Cin-
chona plantations, which
was merely hinted at
in them, has been dis-
tinctly raised by the
Secretary of State's
Despatch on Mr
Money's letter offering
to purchase them -
In

In consequence of this
Despatch, it became
necessary to review the
whole history of the
plantations; and these
papers are again cir-
culated, with the Note
which is the result of
that review. -

2- The papers are now
submitted in print, ac-
companied by margin-
al notes where the state-
ments made seem to be
at variance with recor-
ded facts or to require
explanation -

Para IX of the Note
(pages 8-10) contain the
history of the so-called
"moping process" -

It will be seen that
the Govt. caused the
patent for it to be
withdrawn

138
withdrawn and re-
fused to grant it.
Mr. Fox any special
remuneration for it un-
til its value was proved.

Para XX, pages
27-33, has been col-
lected all the informa-
tion available to form
a decision as to its
value. Apparently
mossed bark shows
a little, and renewed
bark a great improve-
ment over natural
bark; but neither to
the renewal of the
bark nor to its im-
provement in quality
is moss essential -

Para X, pages 10-12,
and para XIX, pages
23-26 of the Note
show all that has
been

been done in the way
of copying - Mr
Howard has recommen-
Pa. did it for Crown barks
(see page 24 of Note), but
Pa. up to the present time
only 465 trees have
been copied and 57
have been felled and
had their shoots re-
moved. The state-
ment that the Quin-
ologist stopped the
T copying experiment
is shown to be based
* on a mis-quotation, and
to be unsubstantiated
and at variance with
his repeated sugges-
tions for its being
carried out.

3. The Commissioner
and Mr. McIvor
write

3 wrote as if the Govt
had unduly restricted
the harvesting of the
bark; but from para.
XX, pages 26 & 27 of
the Note, it will be
seen that in 1872 the
Govt allowed Mr.
McIvor to ^{crop} ~~keep~~ under
his mowing process
all the bark he wanted,
that in 1873, he was
permitted to apply the
same process then and
thereforward to 3/4th
of the trees as nearly,
while the remaining
fourth might be crop-
ped under the cop-
ying system; that
the Commissioner
was allowed to use
his discretion in
Collecting
unwaxed

collecting the bark, the
only limit being the
requirements for it.

It is true that Mr.
Lee Iron said he had
not money enough
to collect in 74 75 all the bark
that he wanted

See in J.O. of Nov: 74
No 2483.

but out of his estimate
of Rs 8500 for carrying
"collection of bark &
carrying" he only spent
Rs 5,375.

See Statement
with report for 74 75

Yes.

The letter of the
Jr. Fletcher may
be lodged unless
the Government
wish more extended
& comparative
coppicing experiments
to be made

Lal

7/11/16

Sand

Handwritten notes at the top of the left page, including "Cinchona" and "R. 33718-3490".

R. 33718-3490
of 1875

Cinchona

RC 28-b-78 R-1-7-75
C 4: Sep 77 R 26: Mar 78
C 29 Jan 96 R 16: Feb 77
R. C. 6-5-78
R. C. 22-5-78
R. 36-5-78

The inquiry of the Secretary of State: Why the Government of Madras have so persistently preferred an artificial system of harvesting the Bark of our Cinchona plantations, to the natural one - why we have preferred to preserve the tree and take successive crops of the bark under the protection of moss, to cutting down the tree and barking it, and trusting to its regrowth for the further supply - is so conclusively

Handwritten notes on the right page, including "Cinchona" and "R. 33718-3490".

Answered in the able
paper before us that
I submit that the
Controversy which has
been technically known
as "Missing versus Copying"
must be considered
closed and fresh
Energy may be imparted
to the whole enterprize
from the certainty now
established

Both Systems have
now been examined and
practically tested on
a sufficient scale to
admit of conclusive
inference and to remove
all questions as to
superiority of the Scientific
process now pursued
under Mr. McEvers' judicious
direction. It has been
found that under the
natural

1922
natural process of
harvesting, the young
tree when cut down at
its best age, yields on
an average but a small
supply of natural
bark (Para 4 of Mr. McEvers
report) of poor quality,
which can only be repeated
after an interval of
8 years and upwards
if the reproduction
of the tree has been successful
as its first growth, a
point about which
well founded doubts
and uncertainties have
not yet been removed
by experience. Under
the artificial process
of harvesting (1) the
tree is preserved in
apparently unimpaired
growth & development
and

and yields a steadily
increasing crop (in two
installments) every 18 months
to 2 years for a period
which so far as we
can now judge is not
likely to be shortened
by the treatment. Mr.
McEwen estimates
the aggregate difference
of yield within the
period of reproduction
under natural conditions
as high as 30 to 40 fold.
(Para 6). Secondly, natural
deterioration in the
quality of bark as it
ages, is arrested by
the process and a renewed
bark is obtained which
is much more valuable
and marketable (Mr.
McEwen estimates the
difference

10
difference at 3 times and
8 times more so respectively
(Para 7). than bark in its
natural state. I think
further that Mr. McEwen
has conclusively shown
(Paras 9 to 14) that not only
can there be no impoverish-
ment - such as has been
suggested - of any part
of the bark during the
process of renewal under
more, but that the progressive
enrichment which is
obtained is all gain
due to a system which
is scientifically sound
and practically successful.

The conclusive estab-
-lishment of these facts
in connection with the
new and artificial in-
process of harvesting
has been gradual in

the hands of Mr. McEvoy
and the acceptance of
his conclusions has
naturally been somewhat
slow and uncertain -
even amongst
Scientific men. The
action of Govt. has
consequently been cautious
while sufficiently encouraging
and more than once
the varied processes
of this experiment have
been subjected to such
independent (perhaps
hostile) investigation
as circumstances admit
of. But for all practical
purposes Mr. McEvoy has
had the cordial support
and aid - and has enjoyed
the full confidence of
Govt. throughout the
Enterprise which has
been entrusted to his
care

Care & Skill in the business
of results in all respects
I think therefore that it
is to be regretted that
in the able & review of
the management of this
Enterprise from the
beginning now before
us Mr. McEvoy has
failed to recognize and
acknowledge those
advantages which he
has enjoyed - under no
doubt the natural and
not unexcusable irritations
caused by the prolonged
struggle (in the main
outside the Council Chamber)
to which every Scientific
man & process is happily
exposed before his views
are generally adopted. with
in their superiority.
On the other hand I
think that the time
has come when it
the the

To the Secretary of State
in Endorse our experienced
his judgment on the management
of this remarkable enter-
prise - we should
acknowledge to the
fullest the services of
Mr. McLean. In the
production, acclimatization
and domestication of
this exotic, Mr. McLean
has displayed remarkable
ability, energy and
perseverance; the success
already attained in
hybridization has added
to the value of the enterprise
and given it a future
rich in supervision;
and while the conservative
the method of harvesting
to the bank which is entirely
due to his skill, ingenuity
and scientific observations
has

has crowned the enterprise
with greatly enhanced value
and permanence. Mr. McLean's
merits, I submit, reassured
confidence and perhaps
substantial recognition.

The latter matter
- improved harvesting
is that which is immediately
under discussion and
it calls for, I submit, an
expression of our views
in regard to its discoverer's
merits and claims. The
records of the discussion
by which Mr. McLean's claims
to have his system of
harvesting recognized
as a patentable invention
were equitably disposed
of, are not before me;
but there is no doubt
that an ingenious method
which he has adapted with
so much success to this
special purpose is Mr. McLean's
own. If then it possesses
in any important degree
the

the merits & advantages
which we are prepared,
at least in some measure,
to concede to it, there is
much truth in Mr. McIvor's
observation that the discovery
of the process of harvesting
under moss is not the
least important of his
services in the cause of
science & humanity. And
his meritorious services
and inviolable integrity
probably deserve sub-
stantial recognition -
from the enhanced
profits which the enterprise
now derives from them.

I think therefore that we
should bring these services un-
der the consideration of the
Secretary of State in a very
prominent manner &
inform him that we pro-
pose in due course, to
offer Mr. McIvor a sub-
stantial honorarium
for his noteworthy services
in this interest.

Admitting then that
Mr. McIvor has established
an

a safe and excellent
method of restoring our
bark, is the best and
most energetic use being
made of it? Mr. McIvor
writes: (Para 14)

"the whole number on
the Government Plantations
given up to the mossing
system is under 40,000
out of a total of 1,190,000
trees. Hence the number
of trees under moss
are comparatively
insignificant. True
these trees have given
a large quantity of
bark as practically
the whole of the bark
produced by our
plantations has
been obtained from
these mossed trees."

The condition
of the plantations
is shown in the
following

225,000 above 8 years
 of age standing unharnessed
 and unmossed with a
 steadily advancing stock
 of no small magnitude
 before us. 50,000 additional
 trees will come into
 harvesting condition
 within 1878-79. Doubtless
 twice - if not three times
 the number of trees now
 under the harvesting
 process, should have
 already been supplying
 bark (partly renewed
 bark) to an advantageous
 market. Deterioration
 may be occurring from
 overage in some classes
 of trees already of full growth
 and certainly very con-
 siderable loss may
 be ascribed to dilatory
 action of the past two
 or three years, during
 which increasing numbers
 of trees has reached
 maturity

To the Factory:-

1872-73	—	83,894	
1873-74	—	91,773	
1874-75	—	85,771	261,438

To the English Market:-

1872-73	—	23,646	34,900
1874-75	—	28,659	53,617
		52,305	Rs. 90,517

maturity for harvesting.
 For it appears on the
 assurance of Mr. McEwen
 (Para 14) that the 4,000 trees
 under moss have practically
 yielded the whole of
 the bark produced by
 our plantations. I find
 that besides supplying
 the Factory with the 261,438
 of bark of sorts, Mr. McEwen
 has sent to England
 within the last 3 years
 the 52,305 of prime (chiefly
 renewed) bark, the last
 large lot of which realized
 nearly Rs 2 per lb; the
 non-utilization of so
 large a property ripe
 for use, is therefore
 a serious inconvenience

There can be no
 reason now for holding
 the

the hands. The accompanying
 Statement of Expenditure
 and receipts shows
 that during the last
 3 years of scarcely creditable
 dilatoriness, there has
 been a balance to credit
 of the undertaking of upwards
 of half a lakh of Rupees.
 The Enterprise is now
 free from the Factory and
 the whole of the supply to
 that institution - for
 which credit has been
 taken at as ^{only} 4 per cent - will
 now realize its full market
 value, so that there is now
 a certainty of being able
 to give the fullest and
 most profitable development
 of this great & philanthropic
 Enterprise without cost.
 The state in its present
 we must neglect these interests no longer
 While pointing
 out

Receipts:-	Expenditure:-
1872-73 = 56,670	1872-73 = 24,650
1873-74 = 23,679	1873-74 = 28,182
1874-75 = 64,963	1874-75 = 30,723
<u>144,212</u>	<u>88,555</u>
88,555	
Balance to credit 356,657	

out - under correction
 what appears to me that
 serious financial mis-
 management, by the
 failure to give to our
 operations that expansion
 which they urgently claim
 I must relieve Mr. McLean
 of participation of any
 blame that may attach
 to the administration in
 the matter. He is in no
 way responsible for the
 slow and hesitating growth
 of confidence in his
 admirable processes
 and he was thoroughly
 justified in leaving
 - while impressing his
 readiness to carry out
 orders - to others the
 responsibility of the
 destructive proposals
 of the local officers (the
 Commissioner & Mr. Droughton
 which

which doubtless ~~has~~
influenced the question
of expenditure on the
process of harvesting
under ~~man~~, and I
think that Mr. McEwen
has conclusively shown
that the action of the
Govt. under the advice
of the Commissioner of the
Hort. Perry Halls in 1872 -
in retrenching his means
of working "to such a figure
as" to use his own words
Exaggerated Expression
practically to amount
to the abundant "of cultivation
at the time when the facts
before us show assistance
was most wanted, and
in forcing the reluctant
desimical of his whole
trained Establishment
left Mr. McEwen in a position
from which far greater
disaster than has
occurred

N.B. The following Extract from
the Superintendent's letter dated
27 March 1875 is to the point.

On the subject of expenditure
"it is necessary to remark that
"since 1870 the sum allowed
"for the upkeep of the plantations
"has been altogether inadequate
"for their maintenance, con-
"sequently only the plants
(165,351 in all) which were
"planted in the earlier part
"of our operations or from
"1862/63 to 1865/66 have made
"vigorous and satisfactory
"growth. Those planted subsequently
"or from 1866/67 to the present
"time have been comparatively
"neglected and overgrown with
"weeds, their growth has thus
"been retarded and the plants
"stunted & gnarled. It will
"therefore now be difficult
"to secure, for these plants,
"even by a liberal expenditure
"the same vigor which has marked
"the growth of those plants during
"the period when a liberal
system

"System of cultivation was
"adopted, thus the saving
"in expenditure during the
"past five years will
"materially effect the yield
"of bark during the coming
"5 years as the plants planted
"subsequently to 1865/66 will
"not yield when in full
"bearing one-fourth of the
"bark they otherwise would
"have done."

occurred might have been
anticipated. Minor
local interferences and
influences must likewise
have proved very
discouraging. The
present Commissioner
has not interfered with
the operations of the
Superintendent in the
same manner but the
stagnation & discouragement
remain

It is I submit high
time that all possibility
of these local dangers and
discouragements should
be removed; that the
renewed stimulus of the
Confidence of, and direct
Communications with
Government should be
restored and that the
working of this important
Enterprise should be again
brought more immediately
under

under the observation
of its members. Mr. McJannet
claims to be replaced
at the head of his Dept.
and in that direct
subordination to Govt.,
which worked so well
up to 1869 and had the
approval of the Secretary
of State and I submit
that considering the
services he has rendered
through a long course
of years, his eminent
position as a successful
man of science and
the circumstances of
his enterprise, he is
entitled to indulgent
consideration in such
a matter. The mistake
of some paramount
advantage which the
experience of the past
conclusively refutes
and the prospect of the
future in no way suggests—

alone could justify the
continuance of a subordination
which we are assured
is irksome & discouraging,
and a circumlocution
which is needless, if not
mischievous. I would
make the well-earned
cession to Mr. McJannet
on this point and retain
the contented services of
a valuable man.

The question:—What
should be the future action
of Govt. in respect to the
enterprise & these valu-
able properties of the
State—now I am told
unique, & the experi-
ments in Bengal are
said to have failed—
is, I admit, brought de-
rectly & copiously under
the consideration of
Govt. for earlier decision
I directly have had it
before me in the varied
forms of canvass &
loss to our destruction
of property cheaply that

The labor of Government
and reap the credit of
their public motives.
Mr. Money's advice to
the Secretary of State about
competition with himself
is on my table, with his
invitation to transfer
the (almost) monopoly of
the market - in its "dark"
condition save to experts -
of Hill's curcuma produce
of the strongest. Devo Olok
Company on characteris-
tically moderate terms
as respects on philan-
thropic substitution. An
offer has been ~~presently~~ made
to me, to rent the Olok
concern for a term of years
at the moderate ~~of 7 1/2 %~~
(~~of 7 1/2 %~~) sum of 7 1/2 %
interest - on ~~total~~ the
concern has

led to go up to
date as per
margin, that
over has -
may be - a
modest offer

State mt. of expenditure
incurred on Kurunda plan
between 1870 & 1874 (month/)

	Expend	Receipt	Net Cost
Direction & nursery &c	2,75,688	-	2,75,688
Kurunda Plant.	51,997	24,402	37,595
Dodalet &c	153,064	1,12,139	40,930
Paycom &c	111,308	40,285	71,103
Mal Kurunda	64,736	41,165	28,581
Rep.	34,171	"	34,171
	1,05,749	2,17,981	4,87,768

Rs. Mr. Secretary does not

probably fully represent the
Capital & revenue and other interest
of a very extensive and successful
of a very extensive and successful
of a very extensive and successful

Supplied in 1874/75
to Factory Rs 85,771
" Market .. 28,649
Total Rs. 114,420

fully planted
in a project that is rapidly
improving in respect to the
quantity & quality of pro-
duce, and giving, I think
far less than half-far-
-water, 10000 lbs of rice -
able to be - what far
more than pays its working
expenses even in its in-
fancy as a financial
transaction. There is no
- thing in these things to prohi-
- bit excitement about an
decision as it seems to
me - an able Superin-
tendent has placed the
matter before us in its most
practical form and in-
vites our decision on the
following terms - "If this (pro-
- tectively) the placing the whole
enterprise on a national
policy of energetic manage-
ment & is considered
"inconvenient - or un-
"desirable, then it may
"prove great to the ad-
"vantage of the State and
"the community for the
"Govt. to retire from this
"cultivation & leave it
"full development to private
"enterprise" (P. 43) The al-
ternative is obvious &
coherent - but I do not

that there should be no
hesitation about the choice.
There is no public interest
in the success of the plan at
this crisis. With many
rich & convenient will
be courted & ~~considered~~ a
whole state undertaking
into a joint stock busi-
ness at an enormous
expense & long result.
We have a tried & unri-
valled agency at hand
with financial certainty
to back us. We have drawn
down the full
of our enterprise & do not
deserve the ^{reputation of} fair table
land to the uncertainty
& risk of "private enter-
prise" without our agent
as its manager - In dis-
missing their papers & the
deeds of state & in
from him and the
Govt of India, that he
has decided to prose-
cute this enterprise as
deserving claims of
our land. And if ne-
cessary offer & undertake
the service as a Govern-
ment charge with a moderate

G.O. I do not lose a week
in enabling him to har-
vest the work which is ready
for the knife.

assign-
ment - a man with a
grace on the foot of a
loan work as respects the
Capital account - rather
than abandon it - but
large increase in work
superintending salary &
conduct of a further ad-
vance - 5 years office
time a small percentage
on all net profit - the
peculiarly of the under-
taking will justify this
modification of the usual
practice - such under-
taking - But in limiting
Mr. W. W. old is at once
put in a position to de-
velop the enterprise & he
will not - ~~without~~ ^{without} ~~the~~ ^{the} ~~possibility~~ ^{possibility}
of customer ~~drastically~~ ^{drastically}
increasing ~~the~~ ^{the} ~~claims~~ ^{claims}
with his ~~claims~~ ^{claims} of the
harvested by ~~the~~ ^{the} ~~organization~~ ^{organization}
& the scientific opera-
tions which encourage
every means - Science
humanity - interest &
credit - ~~the~~ ^{the} ~~claim~~ ^{claim} his
energy and fair dealing
at our hands.
16 Oct 75

Note

It is submitted that if these letters are to go to England it is desirable that certain of the statements in them should not remain unnoticed or at all events that the Secy of State and the public should have at hand the means of correcting them.

After sending this to the Secy of the India Office I am of opinion that we cannot send the letters to the Secy of the India Office without stating its inaccuracies & I think the best plan will be to simply enclose as I before proposed - a list of errors in the letters that the Secy of the India Office is to state affecting the British part in the Ceylon & India Report.

2. To enable the Govt to do this the note on the Cinchona plantations or abstract of the records was prepared and certain of the incorrect or misleading statements were pointed out on the margin of the letters.
3. These letters are misleading
first

first in their facts, secondly as regards Mr. Broughton's views, thirdly as to Govt. treatment of the plantations.

4. Capt. Walker is bringing on to official record the true history of the plantations. His report will thus do for the clergy of State and the public what the Office "Note" was intended to do for the Govt. It is submitted therefore that it may be awarded and ^{by placing these papers} that some reference may be made to those paras of his report where the true facts are to be found. The report will moreover enable the views expressed by Messrs Cockfield and Mr. Ivor to be read in the light of later experience and their soundness will be

is admitted.
or I record in the annotated form in which it is now before us.

Or I then these notes in the form of an Office Note. It is appended to the G.O. according to paper I think perhaps this

x Note. It is sure to be printed in a blue book.

lasted. As to the most correct method of bringing the emendations before the Govt. of the matter. It is as appears the notes of Mr. Ivor. Who does they apply.

If the annotations are to be brought on record. then the letter must be referred to the Capt. Walker or to the Com. in order to

its inaccuracies being exposed. Because show this representations of the late Mr. Ivor's report of Mr. Broughton's report as an extract.

I do not disagree I print the annotations to the text of the letter.

The letter must be printed in a broad on record. It is in the hand of Howard & many others & is in itself a very valuable bearing the letter. Mr. B's last suggestion is of course the most correct but there is a difference.

Note. Mr. B's views of Mr. B's notices & actions are also incorrect & would be repudiated by any one who knew that gentleman.

detected or demonstrated. 5. It is only just to the late Quinologist that his views should be correctly stated & his letter correctly quoted.

Now in para 3 of Mr. Ivor's letter there is an extract from a letter of Mr. Broughton in which the word "copping" is given whereas Mr. Broughton used the word "cropping".

Again Mr. Broughton until his very last report had advocated the maning system for crown lands, and he was only led to alter his views by the transference of alkali. He believed he had detected and the length of time the bank took to renew. Mr. Ivor calls him a sponsor of coppicing.

6. Lastly Mr. McEwen
accuses the Govt. of
starving the plantations
and of not giving him power
or means to harvest enough
beats. These are grave
charges but as a fact
he did not fully utilize the
sums at his disposal.
This was pointed out in
paras 11 and 17, Ep. 10 July
1877 & 2273.

7. It will be seen
from Sir W. Robinson's note
of 17 Oct. 1875 that in
Mr. McEwen was ^{once} desirous
of altering what he had
written regarding Govt.

8 This letter & Mr.
McEwen's has been
printed & circulated
privately either by
himself or his widow.
I have seen a copy
of it thus circulated.

See

Ed. McEwen

vanity in
having the correction along-
side the misstatement
and I think the most ef-
fective way to deal with it
was to print it in the
annotes (under former
Campbell initials) form
we had it before us. It
is an informal course
but being a paper of the
last - I will forego a regular
formal proceeding on it.

Not the commun-
cated to the Comm. -
B. J. M.

The letter & Mr.
McEwen's has been
printed & circulated
privately either by
himself or his widow.
I have seen a copy
of it thus circulated.
See
Ed. McEwen

I think it is
entirely
justified in making
the statement that
the Govt. (Mr. McEwen) was
not in London
at the time of the
meeting of the
Committee. I am
not sure that
the delay in
reporting the
result of the
meeting is
a prejudicial
to the cause.

Chas. F. Smith

[Faint handwritten notes, possibly "The End of the World"]

[Faint handwritten notes, possibly "The ..."]

April 20th 1891
 My dear Mr. Brewster
 I have just
 received 27/4

3-12-1-78. 7-18-6-78.
12-5-6-78. 12-1-7-78

at once

misrepresentation and incorrect quotation. The remainder of the letter contains a so-called review of the history of the enterprise, but that has now been drawn up by Major Walker more fully and accurately.

This history is simply an assertion of the writer's superiority and an utterly misleading account of the treatment he had experienced at the hands of other officers & of Govt.

There is absolutely no information in the letter

In para. 33 reference is made to hybridization, but the writer gives no details and beyond the fact that Mr. McJor believed in hybridization (which fact has been noticed by the Cinchona Committee who have brought this paper on record), there is nothing in the letter worth noting or publishing.

53
It was written for a special purpose, and is in no sense an official document while the writer himself (as would appear from Sir W. Robinson's earliest note) wished to recall portions of it. It would seem best for the reputation of Mr. McJor ^{or perhaps} to let the letter lie lodged among the records and not send it forth to the world with the exposure of its misstatements of the words and motives of others that will be necessary if it is to go home.

J

Revenue Department.

No. 198.

PROCEEDINGS of the MADRAS GOVERNMENT.

Under date the

READ ~~the following~~

READ the following letter
from the Commissioner of the
Patent Office, dated 27th August 1876,
No. 58, submitting Mr. McIvor's
report regarding the positions
of the crossing and copying
experiments.

Miss F. C. 13 January 1888
No 198

Ordered to be re-
corded.

13. Jan. 80

1. *Fake Cammelfsa. nora* of Helgum, 21/1 Jan'y

C. 4/12/79 R. 20/12/79

✓

Miss G. 13 January 1880
No 198.