

(1) Number of pages 38(2) Date of repair 3-8-38(3) Initials of the Referencer J

MADRAS RECORD OFFICE.

Government of Madras.

Revenue DEPARTMENT.

G.O. No.	<u>1105</u>	Press Mis.
Dated	<u>25-7-1881</u>	

Not to be folded or roughly handled

3/8/38

GOVERNMENT OF MADRAS.
REVENUE DEPARTMENT.

25th July 1881, No. 1,105.

READ THE FOLLOWING PAPER :—

No. 267. Despatch from the Most Honorable the Secretary of State for India, to His Excellency the Honorable the Governor in Council, Fort St. George, dated India Office, London, 16th June 1881, No. 17 (Revenue).

I TRANSMIT herewith, for the information of your Government, a copy of a letter from Mr. John Eliot Howard, enclosing an analysis of the samples of Chinchona bark sent home from the Government Nilgiri Plantations by Mr. Robert Cross.

2. Mr. Howard's report, as to the richness in quinine of the bark, is very satisfactory, and his suggestion, that the trees, whose superior quality is thus ascertained, should be reserved for seed, seems worthy of consideration.

3. I shall be glad to receive any remarks that your Government may deem necessary with regard to Mr. Howard's observations, and especially with reference to his remark, that the quantity of bark sent home from the Dodabetta Plantation in recent years "seems disproportionate and exhaustive."

ENCLOSURE No 1.

From JOHN ELIOT HOWARD, Esq., F.R.S., to the Under Secretary of State for India, dated Lord's Meade, Tottenham, 21st May 1881.

I BEG to transmit, for the information of the Marquis of Hartington and of the Government of Madras, the report of the examination, which I was asked to undertake, of 30 samples sent home by Mr. Cross.

I must, in the first place, offer my congratulations to the Government on the value thus shown of the plantations, the average yield of the best alkaloids being second only to that of the most useful sort of Chinchona (the *Ledgeriana*) in the Island of Java.

It is, therefore, of great importance that the trees, whose superior quality is thus ascertained, should be reserved for seed. I am asked by private cultivators where they can procure a supply of seed on which they can depend, and have mentioned to them the Dodabetta Plantation as a most secure source of supply. I hope that the liberality of the Government will prove that I have directed them to the right quarter.

The first object mentioned by Mr. Cross in obtaining these specimens is to test "the relative excellence of each species in the production of quinine." It is, therefore, unfortunate that he includes more than two-thirds of his samples under the head of "*Crown Condaminea*." I conclude that he saw no difference of species amongst these, and, if so, I must conclude from previous knowledge that the whole must belong to the true "*Chinchona officinalis*," as defined by Sir Joseph D. Hooker in the *Uritusinga* form. This latter was the name conferred by the first Spanish Botanists employed in the study of its characteristics and retained by Mr. McIvor and myself. I have reason to plead for the retention of the original name, as a large portion of the trees of the above plantation are the descendants of one raised from seed sent me "from the mountain of Uritusinga" in the year 1859, which I gave to the Indian Government.

Mr. McIvor wrote me in 1875 as follows :— "The extent planted with *C. Uritusinga*, the plant you sent out by Mr. Lyall, is over 70 acres, and originally 65,000 plants were planted, but, of course, the failures thereof should be deducted, and this will leave, in round numbers, 60,000 plants, the progeny of the one you gave to the Indian Government."

Mr. McIvor sent me samples from the branches of these trees, from which I obtained an extraordinary result in quinine.

This is now confirmed by these samples of trunk bark obtained by Mr. Cross, and the examination proves that the Uritusinga is as much superior to the more commonly cultivated varieties of *C. officinalis* as the Ledgeriana is to the common *C. Calisaya*.

It is to be regretted that more attention has not been paid to the selection of the best seed. I have frequently pointed out the superior quality of the importations from the Doda-betta Plantation especially, from which a quantity that seems disproportionate and exhaustive has been sent home in recent years. I am glad to speak in almost equally favorable terms of the Pitayo bark, No. 15. I have before urged special attention to the cultivation of this species, because it is the quinidine-producing sort, thus yielding, in addition to a fair quantity of quinine, another valuable medicine, which sells easily at more than half the price of quinine, and can, no doubt, be passed off as such by those who regard more the cheapness than the exact chemical composition of their medicines; but, if sold as quinidine, it is of service to the community, and involves no breach of commercial morality.

The value of this specimen of bark would be at this moment 9s. per lb. Under No. 18 I find valuable information. This is called Red Bark, but is, indeed, not red bark at all, but, as described by the Spanish Botanists, "cinamon colored bark" (*acanelada*). According to these authorities, when the bark is wounded, a clear juice flows out which changes to a golden color. Under similar circumstances the *C. Succirubra* yields a milky juice which changes to an intensely red color, from which the species derives its designation.

I have shown in my Quinologia the chemical cause of this, and the bad effects resulting to the alkaloids in red bark from the tendency thus manifested.

Mr. Cross has rightly called this sample *Pata de Gallinazo*. It is the *C. Coccinea* of the Nueva Quinologia of Pavon. After inspecting my plate of this species, and the description in the above work, Mr. Spruce, the collector of the seed, left me the following note:—

C. Coccinea Pavon Pata de Gallinazo (Ecuador). "Plainly the true *Pata de Gallinazo* of the Quitensian Andes, and seen by me in the very same localities. I could not distinguish it by the leaves alone from the *Ouchicara* (*C. Erythranthe*) growing along with it, but the Indians say they can always tell it. Its bark has some commercial value, that of the *Cuchicara* none."

I omit further botanical details; but wish the produce to be compared with that of No. 19, No. 20. Both these are most characteristic specimens of Red Bark, *C. Succirubra*, and the produce well illustrates the mistake (which I have constantly pointed out) of the excessive cultivation of this latter species. The bark of such trees as these can only be made serviceable by "renewing;" otherwise, the oxidising process goes forward to the destruction, in old trees, of almost all the alkaloids.

No. 21 is erroneously called red bark, being evidently taken from a tree of the "*Uritusinga*" sort.

Nos. 22 and 23 show the good effect of renewing the bark in the *C. Succirubra*.

No. 25, taken from "a shrub-like tree of Calisaya," is suggestive; the fact being that this sort will not thrive well at Ootacamund, either from want of adaptation in the climate or the soil.

Nos. 26 and 27 compared with No. 7 show pretty conclusively that no injury results as to the quality and amount of alkaloids from the trees being "wrought," that is to say, from the bark being renewed.

No. 16 is not adapted for the purpose named by Mr. Cross in consequence of the portion scraped off not having been sent. This is, however, of small importance, as Wyand's theoretical assumptions have been abundantly disproved by many careful analyses of the outer and inner bark.

Nos. 28, 29, and 30 are useful, especially in showing the diminution of quinine and the increase of quinidine in the root formation in the same tree.

I subjoin the remarks of my nephew, Mr. David Howard F.C.S., who conducted these analyses with the greatest care. I presume they will be considered highly important, and that it will be the desire of the Government that the greatest publicity should be given them. They will thus tend to fill up (in so far) a deficiency in our information which has been very apparent and much regretted ever since the departure of Mr. Broughton. This cannot be obtained without exact chemical research, and, if not given gratuitously, these analyses would have cost the Government at least 60 guineas.

It is not perhaps my business to suggest that a successor to Mr. Broughton might yield the Government most important service.

ENCLOSURE No. 2.

ANALYSIS of samples of Chinchona Bark collected by Mr. R. Cross.

	Quinine.	Chinchoni-dine.	Chincho-nine.	Quinidine.	Amorphous Alkaloid.
	PER CENT.	PER CENT.	PER CENT.	PER CENT.	PER CENT.
No. 1. Crown Condaminea. Original Bark taken from the stump of a cut down tree planted in 1863, which was found over-grown with grass in an old fence of the Government Garden at Ootacamund. Collected 11th November 1880.	4.58	0.30	1.08	0.67	0.49
No. 2. Crown Condaminea. Original Bark taken from the root of the stump from which bark No. 1 was collected. Collected 11th November 1880	4.60	0.76	1.39	2.20	0.91
No. 3. Crown Condaminea from Government Plantations, Dodabetta. Original Bark taken from a tree of very robust healthy aspect, growing in the bottom of the ravine, planted in 1869. Collected 13th November 1880	2.01	0.35	4.04	1.65	1.32
No. 4. Crown Condaminea from Government Plantations, Dodabetta. Original Bark taken from a tree growing in rocky debris, planted in 1869. Collected 13th November 1880	6.52	0.23	2.09	1.39	1.01
No. 5. Crown Condaminea from Government Plantations, Dodabetta. Original Bark from tree growing on the brink of the ravine, planted 1869. Collected 13th November 1880	3.83	0.25	2.54	1.29	1.58
No. 6. Crown Condaminea from Government Plantations, Dodabetta. Original Bark taken from an unwrought tree, planted 1869. Collected 13th November 1880.	4.63	0.60	2.31	1.19	1.14
No. 7. Crown Condaminea from Government Plantations, Dodabetta. Original Bark from base of tree which had been several times wrought by the renewing process, planted 1863. Collected 13th November 1880	5.16	0.40	1.72	1.56	0.76
No. 8. Crown Condaminea from Government Plantations, Dodabetta. Original Bark taken from base of a tree which had been wrought					

Analysis of samples of Chinchona Bark collected by Mr. R. Cross—(Continued).

	Quinine.	Chinchoni- dine.	Chincho- nine.	Quinidine.	Amorphous Alkaloid.
	PER CENT.	PER CENT.	PER CENT.	PER CENT.	PER CENT.
by the renewing process, planted 1863. Collected 13th November 1880	3.49	1.22	2.18	1.25	1.12
No. 9. Crown Condaminea from Govern- ment Plantations, Dodabetta. Original Bark taken from a young sapling four or five years old. Collected 15th November 1880 .	4.04	0.30	0.85	0.35	1.15
No. 10. Crown Condaminea from Govern- ment Plantation. Renewed Bark, three years old, under moss, plant- ed 1863. Collected 15th Novem- ber 1880	4.79	0.24	0.44	0.48	0.86
No. 11. Crown Condaminea from Govern- ment Plantations, Dodabetta. Renewed Bark, three years old, under moss, planted in 1863. Collected 14th November 1880 .	7.69	0.09	0.14	0.16	0.64
No. 12. Crown Condaminea from Govern- ment Plantations, Dodabetta. Renewed Bark, three years old, under moss, planted in 1863. Collected 15th November 1880...	6.60	0.14	0.20	0.22	1.00
No. 13. Crown Condaminea from Govern- ment Plantations, Dodabetta. Renewed Bark, three years old, under moss, planted in 1863. Collected 15th November 1880 .	4.01	0.05	0.40	0.76	1.05
No. 14. Crown Condaminea from Govern- ment Plantations, Dodabetta. Renewed Bark, three years old, under moss, planted in 1863. Collected 15th November 1880...	4.69	0.05	0.42	0.38	0.97
No. 15. Pitayo Bark from Government Plantations, Dodabetta. Original Bark from saplings which were planted near the close of the year 1871. Collected 20th Nov- ember 1880	3.98	Trace.	1.67	2.01	1.17
No. 16. Crown Condaminea from Govern- ment Plantations, Dodabetta. Original Bark from a tree planted					

Analysis of samples of Chinchona Bark collected by Mr. R. Cross—(Continued).

	Quinine.	Chinchoni- dine.	Chincho- nine.	Quinidine.	Amorphous Alkaloid.
	PER CENT.	PER CENT.	PER CENT.	PER CENT.	PER CENT.
in 1879. The original outer surface was paved off in order to ascertain the value of the opinion expressed by Wyand, who con- siders the under fibrous portion of the bark as the chief source of quinine. Collected 13th Novem- ber 1880	5.31	1.56	1.02	0.27	1.49
No. 17. Crown Condaminea from Govern- ment Plantations, Dodabetta. Original Bark from a tree of stunted aspect, planted 1863. Collected 29th November 1880 .	5.08	1.88	1.02	0.58	0.59
No. 18. Red Bark from Government Plan- tations, Naduvatam. Original Bark from a tree planted in 1862. This is the "Pata de Gallinazo" variety of the South American Bark. Collected 8th December 1880	2.27	3.21	3.17	0.00	0.93
No. 19. Red Bark from Government Planta- tions, Naduvatam. Original Bark from the largest and best devel- oped tree that could be found in the Plantations, planted in 1862. Collected 7th December 1880 .	0.86	2.08	3.66	0.00	1.06
No. 20. Red Bark from the Government Plantations, Naduvatam. Original Bark from one of the largest trees met with, planted in 1862. Collected 7th December 1880 ...	0.91	1.43	3.84	0.00	1.14
No. 21. Red Bark from Government Planta- tions, Naduvatam. Original Bark from a tree planted in 1871. Collected 7th December 1880 ...	4.54	0.31	0.70	...	0.82
No. 22. Red Bark from Government Plan- tations, Naduvatam. Renewed Bark, three years old, under moss, planted 1862. Collected 7th December 1880	3.08	1.63	1.14	0.05	1.48
No. 23. Red Bark from Government Planta- tions, Naduvatam. Renewed Bark, three years, under moss, planted 1862. Collected 7th December 1880	2.04	1.20	1.78	0.20	0.65

Analysis of samples of Chinchona Bark collected by Mr. R. Cross—(Continued).

	Quinine.	Chinchoni- dine.	Chincho- nine.	Quinidine.	Amorphous Alkaloid.
	PER CENT.	PER CENT.	PER CENT.	PER CENT.	PER CENT.
No. 24. Crown Condaminea from Govern- ment Plantations, Naduvatom. Original Bark from a tree planted in 1863. Collected 8th December 1880	2.63	Trace.	3.05	1.92	1.82
No. 25. Calisaya Bark from Government Plantations, Naduvatom. Original Bark from a shrub-like tree. Date of planting uncertain. Col- lected 8th December 1880 ...	4.98	0.58	0.83	0.16	0.50
No. 26. Crown Condaminea, Government Plantations, Doddabetta. Original Bark from tree planted in 1865 which had been wrought. Col- lected 10th December 1880 ...	4.43	1.35	2.15	1.20	0.95
No. 27. Crown Condaminea from Govern- ment Plantations, Doddabetta. Original Bark from a tree planted 1865 which had not been wrought. Collected 10th December 1880 .	4.78	0.82	2.38	1.12	1.15
No. 28. Crown Condaminea from Govern- ment Plantations, Doddabetta. Tree planted in 1863. Growing on a high bank from which the earth had fallen away. Was removed and Narrainaswamy sawed the root off for me just above where the roots divide A from the collar B from the longer primary roots C from the lesser secondary roots. Collected 11th December 1880	2.62	1.55	2.98	1.22	1.20
No. 29. Crown Condaminea from larger roots. See No. 28 B	2.32	Trace.	3.75	3.10	2.12
No. 30. Crown Condaminea lesser roots. See No. 28 C	1.41	0.38	2.80	3.45	1.45

Analyses made in duplicate.

17th May 1881.

(Signed) DAVID HOWARD.

Remarks on the Analyses of samples of Chinchona Bark collected by Mr. R. Cross.

The samples have the appearance of being taken from the lower part of the stem of the tree; if this is the case, our experience would show that the average bark of the whole tree

would give a lower test; the small and young bark from branches of Crown Bark in the last sale of Doddabetta Bark yielded less than 1 per cent. of quinine.

The same cause may explain in measure the high percentage of quinidine in many of the samples; this alkaloid appears to increase in a marked degree in the bark near the root.

Sample No. 15 is the very finest quality of Pitayo Bark. This sort of bark sells freely at prices exceeding those given for good South American Calisaya.

Sample No. 21, though marked "Red Bark," both in appearance and test resembles fine Crown Bark.

Sample No. 25 appears from the analysis to be true Ledgeriana; the small percentage of Cinchonidine which it gives is generally found in that variety both from Java and from South America.

(Signed) DAVID HOWARD.

To compare the above analyses with those in which quinine is returned as sulphate, one-third must be added to the percentage: thus 6 per cent. of quinine is equal to 8 per cent. of sulphate of quinine.

No. 268. ORDER THEREON, 25th July 1881, No. 1,105.

Miscellaneous.

COMMUNICATED to the Conservator of Forests, who will forward with his own observations Mr. Cross's remarks on the

analyses of Chinchona Bark now submitted by Mr. John Eliot Howard.

2. Particular attention should be paid to the points raised in the Secretary of State's despatch.

(True Extract.)

(Signed) E. F. WEBSTER,
Offg. Secretary to Government.

To the Conservator of Forests.
" the Superintendent, Government Central Museum.
" the Commissioner of the Nilgiris.
" the Board of Revenue.

Exd. F. R. Bantleman.

55 Copies.

21-100
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Original

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REVENUE.

THE CONSERVATOR OF FORESTS.
Sd/-, Sd/-, Sd/-

Date: July 25th.

Printed at

Recl.

Recl.

G.O., 25th July 1881, No. 1,105.

JULY.
Nos. 267-268.

SECRET.
Analysis of the samples of Cinchona Bark sent Home from the Government Nilgiri Plantations by Mr. Robert Cross. — Communicating to the Conservator of Forests despatch from the Secretary of State forwarding copy of a letter from Mr. John Elliot Howard enclosing —, and directing him to forward Mr. Cross's reports on the analyses now received from Mr. Howard.

Encl. 10759
Lord's Meade, Tottenham.
21st May 1881

Sir

I beg to transmit, for the information of the Marquis of Hartington, and of the Government of Madras the report of the examination, which I was asked to undertake, of 30 samples sent home by Mr. Cross.

I must, in the first place, offer my congratulations to the Government on the value thus shown, of the Plantations, the average yield of the best Alkaloids being second only to that of the most useful sort of Cinchona (the Rutgeriana) in the island of Java.

It is therefore of great importance that the trees, whose superior quality is thus ascertained, should be reserved for seed. I am asked by private cultivators where they can procure a supply of seed on which they can

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the
plantation ^{are} descendants, of one raised from
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Mr. Mc Ivor wrote me in 1875, as
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the Plant you sent out by Mr. Ryall, is over 70 acres,
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The value of this specimen of bark, would be, at this moment, 9^s per lb.

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Under no. 18 I find valuable information. This is called Red Bark, but is, indeed, not red bark at all; but, as described by the Spanish Botanists, "Cinnamon coloured bark" (Ca canelada). according to these — authorities when the bark is wounded a clear juice flows out which changes to a golden colour. Under similar circumstances etc. Succituba yields a milky juice which changes to an intensely red colour, from which the species derives its designation.

I have shown in my Quinologia the chemical cause of this, and the bad effects resulting to the alkaloids in red bark from the tendency thus manifested.

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17 7
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I am &c

(Signed) John Eliot Howard F. R. S.

Analysis of samples of Cinchona Bark

Collected by M. R. Cross

<u>N^o 1</u>	Quinine %	Cinchonidine %	Cinchonine %	Quinidine %	Amorpha alkaloid %
Crown Condaminca, original bark taken from the stump of a cut down tree planted in 1863, which was found overgrown with grass in an old fence of the Government garden at Cotacambur.	4.58	0.30	1.08	0.67	0.49
Collected 11 th November 1880					
<u>N^o 2</u>					
Crown Condaminca, original Bark taken from the root of the stump from which bark N ^o 1 was collected	4.60	0.76	1.39	2.20	0.91
Collected 11 th November 1880					
<u>N^o 3</u>					
Crown Condaminca from Government Plantation, Dodabetta, original Bark taken from a tree of very robust healthy aspect, growing in the bottom of the ravine planted in 1869.	2.01	0.35	4.04	1.65	1.32
Collected 13 th November 1880					
<u>N^o 4</u>					
Crown Condaminca from Govt Plantation, Dodabetta, original bark					

Bark taken from a tree growing in rocks,
dried, planted in 1869
Collected 13th November 1880

No. 5

Croton Condaminia from
Government Plantations, Dodabetta,
original bark from the growing on the trunk
of the tree, planted 1869.

Collected 13th November 1880

No. 6

Croton Condaminia from Government
Plantations, Dodabetta, original bark
taken from an unwrought tree planted
1869.

Collected 13th Nov 1880

No. 7

Croton condaminia from Government -
Plantations, Dodabetta; original bark from
base of tree which had been several times
wrought by the renewing process, planted
1863 -

Collected 13th Nov 1880

No. 8

Croton Condaminia. From Government
Plantations, Dodabetta; original bark taken from
base of a tree which had been wrought by
the renewing process, planted 1863

Collected 13th Nov 1880

Resinine %	Cinchonidine %	Cinchonine %	Quinine %	Amorphous alkaloid %
6.52	0.23	2.09	1.39	1.01
3.83	0.25	2.54	1.29	1.58
4.63	0.60	2.31	1.19	1.14
5.16	0.40	1.72	1.56	0.76
3.49	1.22	2.18	1.25	1.12

No. 9

No. 9

Croton Condaminia, from Government
Plantations, Dodabetta; original bark taken
from a young sapling 4 or 5 years old
Collected 15th November 1880

No. 10

Croton Condaminia, Government
Plantations. Renewed bark, three years old
under moss, planted 1863

Collected 15th November 1880.

No. 11

Croton condaminia from
Government Plantations, Dodabetta.
Renewed bark, three years old, under
moss. Planted in 1863

Collected 14th November 1880

No. 12

Croton Condaminia from Government
Plantations, Dodabetta. Renewed bark
three years old, under moss. Planted
in 1863.

Collected 15th November 1880

No. 13

Croton Condaminia from Government
Plantations, Dodabetta. Renewed bark
three years old under moss. Planted in
1863, Collected 15th November 1880

Resinine %	Cinchonidine %	Cinchonine %	Quinine %	Amorphous alkaloid %
4.04	0.30	0.85	0.35	1.15
4.79	0.24	0.44	0.48	0.86
7.69	0.09	0.14	0.16	0.64
6.60	0.14	0.20	0.22	1.00
4.01	0.05	0.40	0.76	1.05

No. 14

	Quinine	Cinchonidine	Cinchonine	Quinidine	Amorphous alkaloid
	o/o	o/o	o/o	o/o	o/o
<u>Nº 14</u> Crown Condaminea. From Government Plantation, Dodabetta. Renewed bark three years old, under moss. Planted in 1863. Collected 15 th Nov ^r 1880	4.69	0.05	0.42	0.38	0.97
<u>Nº 15</u> Pitayo Bark from Government plantation, Dodabetta; original bark from saplings, which were planted near the close of the year 1871. Collected 20 th Nov ^r 1880	3.98	Trace	1.67	2.01	1.17
<u>Nº 16</u> Crown Condaminea. From Government plantation, Dodabetta. Original Bark from a tree planted in 1879. The original outer surface was pared off in order to ascertain the value of the opinion expressed by Wajand who considers the under fibrous portion of the bark as the chief source of Quinine. Collected, 13 th Nov ^r 1880	5.31	1.56	1.02	0.27	1.49
<u>Nº 17</u> Crown Condaminea Government — plantation, Dodabetta, original bark from a tree, of stunted aspect. Planted 1863. Collected 29 th Nov ^r 1880	5.08	1.88	1.02	0.58	0.59
<u>Nº 18</u> Red bark from Government Plantations Nidivuttum; original bark from a tree planted in 1862. This is the "Pata de Linago" variety, of the South American bark					

	Quinine	Cinchonidine	Cinchonine	Quinidine	Amorphous alkaloid
	o/o	o/o	o/o	o/o	o/o
bark. Collected 8 th December 1880	2.27	3.21	3.17	0.00	0.93
<u>Nº 19</u> Red bark from Government plantations Nidivuttum, original bark from the largest and best developed tree that could be found in the plantation planted in 1862. Collected 7 th Dec ^r 1880	0.86	2.08	3.66	0.00	1.06
<u>Nº 20</u> Red Bark from the Government Plantations Nidivuttum original bark from one of the largest trees met with. Planted in 1862. Collected 7 th December 1880	0.91	1.43	3.84	0.00	1.14
<u>Nº 21</u> Red Bark from Government Plantations Nidivuttum, original bark from a tree — planted in 1871. Collected 7 th December 1880	4.54	0.31	0.70	-	0.82
<u>Nº 22</u> Red Bark Government plantations Nidivuttum, renewed bark three years old under moss planted 1862. Collected 7 th December 1880.	3.08	1.63	1.14	0.05	1.48
<u>Nº 23</u> Red bark from Government plantation Nidivuttum					

Nedivittum. Renewed bark three years, under
moss, Planted 1862.

Collected 7th Dec^r 1880

No 24

Crown Condaminea. From Government
Plantations Nedivittum, Original bark
from a tree planted in 1865

Collected 8th Dec^r 1880

No 25

Calisaya Bark, from government plan-
tations Nedivittum, original bark
from a shrub like tree, date of planting
uncertain

collected 8th Dec^r 1880

No 26

Crown Condaminea, Government —
plantations Dodaletta. Original Bark from
tree planted in 1865 which had been wrought

collected 10th Dec^r 1880

No 27

Crown Condaminea from Government
plantation Dodaletta, original bark from a
tree planted 1865 which had not been wrought

collected 10th Dec^r 1880

Quinine o/o	Cinchonidine o/o	Cinchonine o/o	Quinidine o/o	Amorphous alkaloid o/o
2.04	1.20	1.78	0.26	0.65

2.68	Trace	3.05	1.92	1.82
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4.98	0.58	0.83	0.16	0.50
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4.43	1.35	2.15	1.20	0.95
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4.78	0.82	2.38	1.12	1.15
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No 28

Crown Condaminea from Government
plantations Dodaletta, tree planted
in 1862, growing on a high bank from
which the earth had fallen away
was removed, and Narainaswamy
sawed the root off for me just above
where the roots divide A from the
collar B from the longer primary
roots C from the lesser secondary roots

Collected 11th Dec^r 1880

No 29

Crown Condaminea from
longer roots, see No 28, B.

No 30

Crown Condaminea, lesser
roots, see No 28, C.

Quinine o/o	Cinchonidine o/o	Cinchonine o/o	Quinidine o/o	Amorphous alkaloid o/o
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2.62	1.55	2.98	1.22	1.20
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2.32	Trace	3.75	3.10	2.12
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1.41	0.38	2.80	3.45	1.45
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Analyses made in Duplicate

(Signed) David Howard

17. May 1881

Remarks on the analyses of samples of
Cinchona Bark collected by M. F. R. Cross

The samples have the appearance of being taken from the lower part of the stem of the tree; if this is the case, our experience would show that the average bark of the whole tree would give a lower test, the small, and young bark from branches of Crown Bark in the East sale of — — Adalberta Bark yielded less than 10% of quinine.

The same cause may explain in measure the high percentage of — — Quinidine in many of the samples; this alkaloid appears to increase in a marked degree in the bark near the root.

Sample no. 15 is the very finest quality of Pitaya Bark. This sort of Bark sells freely at prices exceeding those

quain for good South American Calisaya.

Sample no. 21, though marked "Red Dark", both in appearance and test resembles fine crown bark.

Sample no. 25 appears from the analysis to be true Redgerinda; the small percentage of Cinchonidine which it gives is generally found in that variety both from Java and from South America.

(Signed) David Howard

To compare the above analysis with those in which Quinine is returned, as Sulphate, one third must be added to the percentage -

- Thus 6% of Quinine is equal to 8% of Sulphate of Quinine

1075

N^o 7.

Copy Letter from Mr. J. E. Howard,
dated 21st Mar. 1881. & Enclosures

Recd

Referred to in Revenue Letter to
Madras, N^o 17, dated 16th June 1881
Para. 1.

1075

25th June 1881

31 /

India Office,

London, 16th June 1881.RevenueN^o 17

Sir,

I transmit herewith,
for the information of your
Government, a copy of a
letter from Mr. John Eliot
Howard, enclosing an --
analysis of the samples
of Cinchona Bark sent
home from the Government
Nilgiri Plantations by --
Mr. Robert Cross.

2 Mr. Howard's report, as
to the richness in quinine
of the Bark, is very --
satisfactory, and his
suggestion

His Excellency,
The Honourable,

The Governor in Council,
Fort St. George.

suggestion that, the trees whose superior quality is thus ascertained should be reserved for seed, seems -- worthy of consideration.

3 I shall be glad to receive any remarks that your Government may deem necessary with regard to Mr Howard's observations, and especially with -- reference to his remark that the quantity of Bark sent home from the Dodabetta plantation in recent years "seems disproportionate, and -- "exhaustive."

I have the honour to be,
Sir,

Your most obedient,

Humble servant,

Pattington

Revenue
16th June 1881.

The
Letter to Lord St George
No 17
Recd 11 July

Print-

En!

Transmitting for information
with certain observations
a copy of a letter from Mr.
John Elliot Howard enclosing
an analysis of the samples of
Chinchona Bark sent home from
the Selgiri Plantations by Mr. Robert
Crook.

with an order.

35 New Dept.

Draft (No 1105-8/25-July 1881)

Despatch from the Secretary
of State for India, dated 16th June
1881, No. 17.

Communicated to
the Conservator of Forests who will
forward with his own observa-
tions. Mr. Cross's remarks on the
analysis of *Chimboriza* Warts
now submitted by Mr. John
Eliot Howard. 8240.

2. Particular ^{care} attention should be paid to the points raised in the Secretary of State's despatch

Em
Wm

Copies
to the Canadian Board of Trade,
the McGill-Edinburgh Medical Bureau,
" Society of Missions,
" Board of Revenue.

13

W. H. C. C.

26

On August 16-
Chenopodium of
L. B. H. M.
J. H. Howard.

Picot
25/7