

MADRAS RECORD OFFICE.

Government of Madras.

Revenue. DEPARTMENT.

G.O. No. 2666A

Press

~~Mis.~~

586A-586c

Dated

31-10-1865.

Not to be folded or roughly handled

*Proceedings of the Madras Government, Revenue Department,
31st October 1865.*

Read the following letters:—

No. 586A. From the Superintendent Government Chinchona Plantations, to the Acting Secretary to Government, Revenue Department, Fort Saint George, dated Ootacamund, 25th September 1865, No. 79.

With reference to my letter No. 59, dated 16th August 1865, submitting the Report on the Government Chinchona Plantations and Botanical Gardens for 1864-65, I have the honor to inform you that in consequence of the result of Mr. Howard's analysis of the bark forwarded in May last, I beg to withdraw paragraphs 29 and 30 of the Report above alluded to, as the views set forth in these paragraphs now appear immature, and will require further consideration, and more experience prior to their being laid before the public.

No. 586B. From the Superintendent Government Chinchona Plantations, to the Private Secretary to His Excellency the Governor, Ootacamund, dated Ootacamund, 3rd October 1865, No. 81.

I have the honor to enclose a copy of a detailed analysis by J. E. Howard, Esq., of Neilgherry Chinchona barks submitted in June last, and request the favor of your being so good as to submit the same to His Excellency the Governor, in order that it may be printed as an Appendix to my Report for 1864-65 on the Government Chinchona Plantations and Botanical Gardens.

Analysis of Chinchona Bark and Leaves. (Received June 21st, 1865.)

From the Superintendent of the Government Chinchona Plantations, Ootacamund, to the Secretary to Government, Revenue Department, dated Ootacamund, 3rd May 1865.

1. I have the honor to forward, by banghy, a box containing a further supply of Chinchona Bark, as per Memorandum annexed, for transmission to the Right Honorable the Secretary of State for India, in order that it may be submitted to Mr. Howard for analysis and report.

2. The bark now forwarded was removed from the plants in the early part of April last, or as the sap begins to rise, as at this season the bark separates freely from the wood.

3. Specimens Nos. 2 and 3 are renewed barks; these attain extraordinary thickness in a short period of growth; and if they contain a proportionate quantity of alkaloids, this system of treating the plants appears to offer greater advantages than the other methods proposed.

4. I may observe, that further observation seems to establish that this system of removing strips of bark from the stems of the plants can be practised without injury, provided the wound is instantly covered with damp moss; inattention to covering the wounds having produced the bad effects detailed in my letter of the 17th March 1864.

MEMORANDUM.

Chinchona Succirubra.

No. 1. Bark of three years and five months' growth, thickened by the application of moss.

No. 2. Renewed bark of one year and five months' growth, being re-produced on the same portion of a stem which produced the bark given to Doctor de Vry in November 1863, and from which that gentleman obtained 8.409 per cent. of alkaloid.

No. 3. Renewed bark of one year's growth, and gathered from portions of the stem which yielded No. 1 bark, submitted to Mr. Howard in the spring of 1864.

No. 4. Bark of two years and five months' growth, not thickened by the application of moss.

Chinchona Calisaya.
No. 5. Bark of two years and five months' growth.

Chinchona Condaminia.
No. 6. Bark of one year and seven months' growth.

Chinchona Micrantha.
No. 7. Bark of two years and five months' growth, thickened by the application of moss.

No. 8. Ditto of same growth, but not thickened by the application of moss.

(Signed) W. G. McIVOR,
Superintendent of the Government Chinchona Plantations.

Report of an Analysis of the Fourth Remittance of Bark from India.

From J. E. HOWARD, Esq., F.L.S., to the Under Secretary of State for India,
dated August 1st, 1865.

I have the honor to report that I received, and have during the past month devoted much careful attention to the analysis of eight specimens of Bark, referred to in a letter from Madras, dated 3rd May 1865.

The whole of the samples were in excellent condition, shewing the care and skill bestowed on their cultivation. They contrasted most favorably with specimens from South America, of bark used at the present moment in the extraction of quinine.

The mode of analysis I have followed, in the present instance, is that which is employed to ascertain the *commercial value*, which rests almost entirely with the *crystallizable sulphates*, with perhaps some slight loss of the residuary product. The results will compare well with those given in Delondre's *Quinologie*.

No. 1 gave of crystallized sulphate, per 100 parts ... 6.00
of alkaloid soluble in extra light ether ... 0.94
of alkaloid insoluble in the above (therefore Chinchonine) ... 1.06

Memo.—The sulphate refined into white sulphate of quinine in appearance, but this did not stand the test used for commercial sulphate of quinine.

No. 2 gave of crystallized sulphate ... 5.00
of alkaloid sol. in E. L. ether... ... 0.90
of alkaloid insol. in E. L. E. (Chinchonine)... 1.80

Memo.—Refined as above.

No. 3 gave of cryst. sulphate ... 2.72
of alkaloids, sol. in *alcohol*. ... 7.00

Memo.—As I could only submit to examination 165 grains of the bark, the above result must be taken with reserve.

No. 4 gave of cryst. sulphate ... 2.43
of alkaloid sol. in E. L. E. ... 2.03
of alkaloid insol. in E. L. E. (Chinc.) ... 0.60

Memo.—This specimen gave a product not refining quite so well as No. 1.

No. 5 gave of cryst. sulphate ... 0.70
of alkaloid sol. in E. L. E. ... 0.10
of do. do. but crystallized by evaporation. 0.26
of do. insol. in E. L. E. (Chinc.) ... a trace.

Memo.—This sulphate did not stand the ether test.

No. 6 gave of cryst. sulphate ... 0.90
of alkaloid sol. in E. L. E. ... 0.60
of do. insol. (Chinc.) ... a trace.

Memo.—The tests shewed Quinine and Chinchonidine.

No. 7 gave of cryst. sulphate ... 5.82
of alkaloid sol. in E. L. E. (Aricine) ... 0.29
of alkaloid insol. in E. L. E. (Chinc.) ... 0.39

Memo.—This sulphate is that of *commercial* Quinine, and contains probably no Quinine.

No. 8 gave of cryst. sulphate ... 1.26
of alkaloid sol. in E. L. E. ... 0.60
of alkaloid insol. in E. L. E. (Chinc.) ... a trace.

Memo.—The product similar to that of No. 7.

I beg to direct special attention to the remark, that the fine white crystallized *Sulphate of Quinine* (apparently) made from the bark of *C. Succirubra* will not stand the test which is employed to distinguish the pure article in commerce. The cause of this I stated in my first Report, viz., that "the crystallizations obtained are mixed with some Sulphate of Chinchonidine, which is commercially (but not medicinally) a disadvantage, and one which always attends the products of Red Bark." It is, of course, possible to separate the Chinchonidine, but then this must very seriously diminish the per-centage of six per cent. I obtained from this gross product little more than four per cent. refined in the first instance (though more subsequently), and of this I ascertained about 10 per cent. as Chinchonidine. This difficulty must be looked steadily in the face, and I would suggest that it may be obviated, either by a change being wrought in the opinion of the medical world as to the value of Chinchonidine as a medicine, or by the plant being encouraged to produce Quinine instead of Chinchonidine.

The first might be, very probably, the result of a commission of inquiry composed of competent medical practitioners. I may mention that the late Dr. Royle entered zealously, at my suggestion, into the question, and satisfied himself by experiment as to the value of Chinchonidine, but I am not aware that he left any written record of the result he attained. My own experiments confirm this view of the question, and I have shewn* that this alkaloid (which must not be confounded with Chinchonine) must have constituted (in whole or in part) the thera-

* "Illustration of Nueva Quinologia sub. voc. Chatnuarjuera."

peutic agent in the cure of the Countess of Chinchon, as also that it was the alkaloid successfully employed at Philadelphia. The second alternative may seem visionary at first sight, but when we consider the results at which Mr. McIvor has arrived, and further the circumstances under which Chinchonidine is produced, this view of the case may be altered.

In No. 7, we have an illustration of what careful cultivation will do, as the plant, *C. micrantha*, which (with its congeners the Grey Barks) produces largely and chiefly Chinchonine in its native climate of Huanuco,* now produces a very small portion of Chinchonine, and a large quantity of the allied alkaloid Quinine. This is, then, a hopeful change, if time should confirm the observation.

Then Chinchonidine seems almost always to accompany Quinine in greater or less abundance. It does so in the *Culisaya* of Bolivia, in the *Lancifolia* barks of new Granada, and in various barks of Ecuador and Peru, and markedly in the best of the barks of Loxa. It is highly probable that a very slight circumstance in the growth may determine the production of one or other alkaloid. Dr. Hera- path has shewn, in a communication to the Royal Society "Researches on the Chinchona Alkaloids,"† that the Quinine and Chinchonidine salts agree closely among themselves, and differ widely from the Quinine and Chinchonine compounds.

I may further remark, that the *Chinchona Succirubra* is a tree which varies greatly in its products in its native forests, and that the *Chinchona Micrantha*, in Bolivia, approaches to the character of a *Culisaya*, as I have noticed under that head; its bark has a different appearance from that of Huanuco, and again this now sent home varies widely from either of the above. I noticed in examination, the peculiar yellow coloring matter common, it seems, to all the forms of the plant, as I have before noticed.

The *Culisaya* bark sent this time by Mr. McIvor is, I fear, an illustration of the possibility of change in the wrong direction, as it contains far too large a per-centage of Chinchonidine in proportion to the Quinine. The appearance of the bark indicates a not very vigorous growth, or at all events it differs from that it assumes in its native locality. It would never be recognized as the bark of *Chinchona Culisaya*.

The bark of No. 6 is recognized by an experienced dealer as "thin rusty crown, worth 1s. 3d. to 1s. 4d. per lb.‡ It is, I presume, the bark of the variety *Bonplandiana*, i. e., the *colorada del Rey*, as brought home by Cross; it is remarked as more red than is customary with rusty crown.

As the quantity of bark in No. 1 and No. 4 was not exhausted in my experiments, I have returned 1,000 grains of each of these, thinking that it would be a satisfaction to the Government to engage Dr. de Vry, whose chemical skill and experience are so well known, in further researches on the subject.

*A peculiar climate, of which I have recorded Mr. Pritchett's description under head *C. micrantha*.

† Dated 19th June 1857.

‡ From Messrs. Jenkin and Phillips to Mr. J. E. Howard.—"51, Lime Street, 21st July 1865.—

"The sample of bark you left with us appears to be thin rusty crown, worth 1s. 3d.—1s. 4d. per lb.
"We thank you for the sight of it."

No. 586c.

ORDER THEREON, 31st October 1865, No. 2,666A.

Miscellaneous.

Ordered that the above letters be printed as Appendices to Mr. McIvor's letter No. 59, dated 16th August 1865, submitting his Report on the Government Chinchona Plantations for 1864-65, recorded in G. O. dated 27th September 1865, No. 2,325.

(True Extract.)

(Signed) W. HUDLESTON,
Acting Secretary to Government.

To the Superintendent Government Chinchona Plantations.
„ the Board of Revenue.
„ the Collector of Coimbatore.
„ the Conservator of Forests.
„ the Department Public Works.

Exd. T. O'Connor.

4881

Government Land Office
Washington 15th October 1865
K 11

Sir,

H. C. McLean Esq
Supt. Govt. Clinchona Plantations
Columbus

Captain A. H. Bentley
Private Secretary to the Excellency the Governor
Columbus

Sir,
I have the honor to enclose a copy of a detailed analysis by J. G. Howard Esq of Kilgberry Clinchona bark submitted to me last, and request the favor of your being so good as to submit the same to the Excellency the Governor in order that it may be printed as an appendix to my report for 1865-66 on the Government Clinchona Plantations and Botanical Gardens.

I have the honor to be
Sir
Your most obed^t servant

J. B. McLean
Supt. Govt. Clinchona Plantations

H. 2666 A.

Ordered that the above
letters be printed as appendices to
Mr. McQuinn's letter N^o 59 dated
16th Aug^r /65, submitting his Report
on the Gov^t Chinchorua Plantations
for 1864-65, recorded in G. O. dated
27th Sept^r 1865 N^o 2325.

- 11 To the Sup^t of Post Chancery
- 14th the Board of Revenue
- 3rd the College of Commerce
- 4th the Conservator of Forests
- 21 the Department of Public Works

31st Oct^r /65.

Recd = 1865. O/O of the
N^o 2826.
McQuinn's

McQuinn

From the Gov^t of
Chinchorua Plantations

Dated 32nd Oct^r /65
Recd 2nd Oct^r /65

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Forwarding a copy
of the above by
Mr. J. S. Howard of the
Chinchorua Works
regarding that it may be
printed as an appendix to
his Report for 1864/65.

Aug 25/65