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(2) Date of repair 12-2-38

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MADRAS RECORD OFFICE.

Government of Madras.

Revenue DEPARTMENT.

G.O. No.	634	Press Mis.
Dated	4-7-	1887.

Not to be folded or roughly handled

GOVERNMENT OF MADRAS.

REVENUE DEPARTMENT.

READ—the following letter from M. A. LAWSON, Esq., Government Botanist and Director of Cinchona Plantations, Nilgiris, to the Secretary to Government, Revenue Department, dated Ootacamund, 21st June 1887, No. 15 :—

In continuation of my letter No. 13, dated 15th June 1887, I have the honor with reference to G.O., No. 1111, dated the 21st December 1886, Revenue, to forward Mr. Hooper's report on the result of the experiments made with different kinds of manure on cinchona trees.

ENCLOSURE.

From D. HOOPER, Esq., Government Quinologist, Ootacamund, to the Government Botanist and Director of Cinchona Plantations, dated Ootacamund, 18th June 1887.

I have the honor to inform you of the results of experiments in manuring *Cinchona officinalis* trees on the plantations at Dodabetta.

2. Plot XI, Dodabetta, was in April of last year divided, as near as possible, into five equal portions. Four portions were respectively treated with cattle, stable, lime and stable, and bone manures; the fifth portion in the centre was left in its natural state. In April of this year the entire plot was harvested by means of the stripping process, and the green bark from each portion was collected and dried separately, and its weight ascertained. The trees in each portion were counted, so that the average amount of bark from a number of trees could be calculated, and compared with the weight of others differently manured.

3. The results of the harvest proved that the amount of bark per tree was highest in the portion containing cattle manure, and the next, that from prepared bones, but the quantities of bark from the stable, and lime and stable manured portions did not materially exceed the amount of natural bark from the unmanured trees.

4. Turning now to the effect of manuring trees in order to increase the alkaloidal yield of the bark, the following analyses of the five samples will show how that object has been attained. It will be seen that all the manures have raised the value of the barks, but in different degrees; the analyses are therefore arranged according to the following order, the best being placed first :—

	Quinine.	Cinchoni- dine.	Quinine.	Cinchoni- dine.	Amor- phous Alkaloids.	Total.
Bone manure	3.30	1.59	.10	.38	.43	5.80
Cattle do.	3.25	1.50	.13	.35	.41	5.64
Lime and stable manure	3.18	1.40	.08	.21	.48	5.35
Stable manure	3.05	1.41	.12	.32	.38	5.28
Unmanured manure	2.88	1.45	.11	.24	.25	4.93

5. The increase in each instance is not very great; if the unmanured be compared with the highest in the table, the quinine will be found to have an addition of only 14.58 per cent., and the rest smaller in proportion. In last year's report, it was shown that a *Succirubra* and a Hybrid gave a much superior yield of quinine under the influence of cattle compost than these did, and the manure applied to them had been down only six months before the samples were taken for analyses. It is well known that *Officinalis* is one of the slowest growing of all the cinchonas; so that it is very probable that manure requires a longer period to stimulate the yield of alkaloids in this, than it would in other species. The experiments at Dodabetta point to cattle manure and bones as the best agents (of the series tried) for manuring cinchonas; the one increased the bark per tree more than the rest, and the other increased the alkaloids in the bark, and, as both these objects are sought for by all scientific cultivators, it is very likely that the application of a mixture of the two would have still more favorable results than if they were used separately.

Cattle manure is organic, and contains ammonia compounds; bones are phosphatic and consist principally of phosphate of lime, a combination of these typical manures is found in "Guano," the excrement of sea-fowl; it might in consequence be inferred that the use of this substance in cinchona plantations would be attended with an excellent outturn. The prepared bones were made by breaking up the bones to a coarse powder, and treating them with 10 per cent. of the weight of sulphuric acid; this would cause the insoluble phosphate to become soluble, and therefore more readily absorbed by the plants when put in the soil. In the absence of the more expensive artificial manures, it is satisfactory to find such good bark resulting from the use of cattle manure, one that is more available on these Hills than any other.

ORDER—dated 4th July 1887, No. 634, Revenue.

Miscellaneous.

Recorded.

(True Extract.)

(Signed) J. F. PRICE,
Ag. Secretary to Government.

To the Government Botanist.
 „ the Commissioners of Land Revenue.
 „ the Commissioner of Revenue Settlement, Land Records and Agriculture.
 „ the Chamber of Commerce.
 Copy to Messrs. Arbuthnott and Co.
 „ to Editors' Table.

Exd. W. H. French.

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Original

Govt. of (1887) Madras.
REVENUE.

Issued

Recd.

Encl.

G.O., 4th July 1887, No. 634.

JULY.

Manuring Cinchonas.

Letter from the Government Botanist and
Director, Cinchona Plantations, forwarding Mr.
Hooper's report on the result of experiments in
—, recorded.

Endorsement The Laboratory 3
From Cutchamund 18th June 1887
A. Hooper Esq.
Government Botanist
Cutchamund
M. A. Lawson Esq.
Govt Botanist and Director of
Cinchona Plantations
Nilgiris

I have the honor to inform
you of the results of experiments in
manuring Cinchona officinalis trees,
on the plantations at Cutchamund.

2. Plot XI, Cutchamund was
in April of last year divided, as was
possible, into five equal portions.
Two portions were respectively treated
with cattle, stable, lime and stable, and
bone manures; the fifth portion, in the
centre, was left in its natural state.
In April of this year the entire plot was
harvested by means of the stripping
process, and the green bark from each
per tree

portion was collected and dried, separately, and its weight ascertained. The trees in each portion were counted, so that the average amount of bark from a number of trees could be calculated, and compared with the weight of others differently manured.

3. The result of the harvest proved that the amount of bark per tree was highest in the portion containing cattle manure; and the next, that from prepared houses; but the quantities of bark from the stable, and lime and stable manured portions did not materially exceed the amount of natural bark from the unmanured trees.

4. Turning now to the effect of manuring trees in order to increase the alkaloidal yield of the bark, the following analyses of the five samples will

will show how that object has been ^{highly} attained. It will be seen that all the manures have raised the value of the barks; but in different degrees; the analyses are therefore arranged according to the following order, the best being placed first:

	Quinine	Quinine- base	Quinine	Quinine- base	Alkaloids	Total
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Cattle "	3.25	1.50	.13	.35	.41	5.64
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Unmanured "	2.88	1.45	.11	.24	.25	4.93

5. The increase in each instance is not very great; if the manures be compared with the highest in the table, the quinine will be found to have an addition of only 4.58 per cent; and the rest smaller in proportion. In last year's report, it was shown that a *Succubra* and a Hybrid gave a much superior yield of

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compost than these did, and the manure
applied to them had been down only
six months before the samples were
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847
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10 per cent. of the weight of sulphuric acid,
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to become soluble, and therefore more
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part in the soil. In the absence of the more expensive artificial manures, it is satisfactory to find such good bank resulting from the use of cattle manure, one that is more available on these hills than any other.

I have 76
807. D Hooper
Gen. Quinologist

True Copy!
M. R. Lawson
Genl Post Office & Director

Enclosure to letter from the
Govt. Botanist and Director of
Cinchona Plantations, Nilgiris
to the Secretary to Government
Revenue Department, Cochin.
No. 15 of 21st June 1887

Mrs. Hooper's report
on the result of experiments
on manuring Cinchonas.

Mrs. Hooper



No. 15
From

Director's Office
Cochin 21st June 1887
M. A. Lawson Esq.
Govt. Botanist and Director of
Cinchona Plantations
Nilgiris
The Secretary to Government
Revenue Department
Cochin

Sir,

In continuation of my
letter No. 13 dated the 15th June 1887, I
have the honor with reference to G. O.
No. 1111 dated the 21st December 1886,
Revenue - to forward Mr. Hooper's
report on the result of the experiments
made with different kinds of manure
on Cinchona trees.

I have the honor to be
Sir,

Your Most Obedient Servant
M. A. Lawson
Govt. Botanist and Director

Revenue Sept.

N^o 4929.

Россиа (1887) Сибирь

From
The Govt. Botanist & Director
Ceylonese Plantation
Nigeria
To, The Secretary to Government
Revenue Department
Cottacamund

2/10/15

Laid 21st June 1881
 Laid 21st June 1881
 RD 22

Carlsruhe. 1790.

Subject

Herring Gulls

According to his report on the result of experiments on —.

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 29 Extors Table

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