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MADRAS RECORD OFFICE.

Government of Madras.

Revenue DEPARTMENT.

G.O. No. 1134 Press Mis.

Dated 10-9 1880.

Not to be folded or roughly handled

GOVERNMENT OF MADRAS.

REVENUE DEPARTMENT.

10th September 1880, No. 1,134.

READ THE FOLLOWING PAPER:—

No. 191. Despatch from the Most Honorable the Secretary of State for India, dated India Office, London, 8th July 1880, (Revenue) Miscellaneous No. 28.

MY LORD DUKE,—With your letter No. 2, of the 16th January 1879, your Government sent home an invoice of Crown Bark from the Dodabetta plantations, wherein the respective ages of the trees from which it had been taken were noted.

2. The account sale of this consignment was transmitted with Despatch No. 14, of the 8th May 1879. I now enclose for your Grace's information an extract from the "Pharmaceutical Journal and Transactions" of the 6th September last, containing notes by Mr. David Howard on the effects of age upon bark as shown by an analysis of these several barks. From this it appears that the bark from the oldest plantations, both "natural" and "renewed," is superior to that from those of more recent growth. Mr. Howard also furnishes some interesting remarks relative to the process of renewing bark.

I have, &c.,

(Signed) HARTINGTON.

His Excellency the Most Noble
The Governor in Council, Fort St. George.

ENCLOSURE.

Notes on Chinchona Bark by David Howard.

Recent importations of East Indian Chinchona bark have thrown light on several points worthy of the notice of those interested in the subject.

The Officinalis bark from the Government Plantation at Dodabetta gives us some valuable information as to the effect of age on the value of the bark. The date of the plantation from which each parcel was obtained was given, and we thus have a series of barks, classed as natural, mossed, and renewed from trees planted each year from 1863 to 1867.

As "natural" bark from the lower stems is only obtained from trees not yet treated for "renewing," it is evident that in the older plantations the natural bark will be chiefly from the upper stem or from saplings and inferior trees, and thus, as Dr. De Vrij has shown, will be of inferior quality.

The result shows this to be the case, the best parcel of natural bark being from the plantation of 1867, that from the other plantations being of uneven quality showing no regular variation. The mossed bark on the other hand may fairly be taken to represent the oldest bark from the main stems in each plantation, and therefore is the best guide as to the influence of age on the quality of the bark.

The result is highly satisfactory, showing that as yet the bark from the oldest plantations, so far from deteriorating, continues to improve. Both the quinine and the total crystallizable alkaloid steadily increase from the bark of the 1867 plantation to that of 1864, that of the 1863 plantation yielding the same quinine as that of 1864, and slightly more chinchonidine and quinidine.

It is certainly more likely that so regular a progression is the result of greater maturity than that the difference should be caused by any variety in the *C. officinalis* cultivated.

This is a most important point, for recent importations of the bark of *C. succirubra* confirm the opinion so often expressed by my uncle, J. E. Howard, F.R.S., and by Mr. Broughton, the late Quinologist to the Indian Government ("Quinology of the East Indian Plantations," p. 71), that in this species the bark deteriorates beyond a certain age. It is difficult to say exactly

what that age may be, and it probably varies according to the growth of the tree, but some of the very finest of the red bark now coming from India, as far as appearance goes, certainly seems to have passed its maximum of richness in quinine.

As to the "renewed" Officinalis bark, the time during which the different parcels have been forming is not given, nor is it stated whether it is from the first, second, or later crops, and therefore the comparison may not be accurate; but it is interesting to see that here also the older plantations show no deterioration, the best being from the 1863 plantation.

From a private plantation I have received a sample of root bark of *C. officinalis* from trees which were coppiced three years ago. It gives quinine 2·2 per cent., chinchonidine, ·2 per cent., quinidine, 1·5 per cent., and chinchonine, 3·3 per cent.

The stem bark from this plantation, at the time when the trees were cut down, gave: quinine, 2·6 per cent., chinchonidine, ·6 per cent., chinchonine, 1· per cent., and but a trace of quinidine.

We find, therefore, that in this sample the ordinary tendency of root bark to produce the dextrogyrate alkaloids is developed to a most unusual degree, the percentage of quinidine is a most extraordinary one for bark from *C. officinalis*.

I have also received from Darjeeling a very interesting sample of the bark of *C. succirubra* accidentally renewed. It is entirely the produce of accidental injuries to the trees (not deep enough to injure the cambium, and prevent the bark forming over the whole surface), no protection whatever having been given where the bark was removed.

The result is as successful as could have been expected from renewing under the most favorable conditions, the contained alkaloids being, quinine, 2·3 per cent., chinchonidine, 1·5 per cent., chinchonine, 1·2 per cent., quinidine, ·1 per cent.

Two parcels of the stem bark sent over at the same time from this plantation gave, first, quinine, ·8 per cent., chinchonidine, 1·2 per cent., chinchonine, 1·2 per cent., and secondly, quinine, ·9 per cent., chinchonidine, 1·1 per cent., chinchonine, 2·0 per cent.

The improvement in value in renewed bark is therefore not owing to the covering, but is found equally in this accidently renewed bark, and it would seem that the mossing is valuable chiefly as enabling the tree to produce the renewed bark with as little injury to its health as possible. It will probably be found that a less perfect shelter than moss may in some circumstances be sufficient to preserve the health of the tree under this process.

It has been proposed by M. Moens to shave off the outer layers of bark without cutting quite through the bark. No doubt the cellular portion of the bark is richer in alkaloids than the inner fibrous layer (*vide* 'Quinology of the East Indian Plantations,' by J. E. Howard, F.R.S., pp. 23, 24 and 38), although the corky excrescences thrown out by the variety of *C. officinalis*, the "knotty bark of Jussieu," contain but little alkaloid (*Pharmaceutical Journal*, third series, No. 454, p. 769; 'Quinology of the East Indian Plantations,' p. 70). The inner and outer portions of a sample of the bark of *C. succirubra* gave the following results:—

	Quinine.	Chinchonidine.	Chinchonine.
Inner	·6 per cent.	1·2 per cent.	1·4 per cent.
Outer	1·2 „	1·4 „	1·7 „

It will be noted that not only is the total alkaloid more in the outer bark, but the quinine is in greater proportion, and therefore the outer bark would be of much greater value per pound to a manufacturer than the whole bark.

The practical value of the process chiefly depends on the effect on the tree. If when thus treated the tree throws out fresh bark of a similar quality to that produced in the old method of renewing without greater injury to its health, the process may be successful, but of course it is essential not to cut so deeply as to injure the cambium, and thus destroy the recuperative power of the bark.

No. 192. ORDER THEREON, 10th September 1880, No. 1,134.

Miscellaneous.

COMMUNICATED to the Commissioner of the Nílgiris.

2. The length of time during which the renewed Officinalis bark referred to by Mr. Howard had been forming should, if possible, be reported and be duly noticed in future.

3. Mr. Howard's paper will be published as a supplement to the *Fort St. George Gazette*, and extra copies struck off for distribution.

(True Extract.)

(Signed) C. G. MASTER,
Secretary to Government.

To the Commissioner of the Nílgiris.
„ the Superintendent, Government Central Museum.
„ the Superintendent of the Gazette Press.

Exd. W. H. French.

20 Copies

Reprinted from the Pharmaceutical Journal and Transactions" containing Notes by Mr. D. Howard on Cinchona Bark — Communicating, with remarks, to the Secretary of State enclosing an extract from the — on the effects of age upon bark as shown by an analysis of Crown Bark from the Dodabetta plantations, and directing that Mr. Howard's paper be published as a supplement to the Port St. George Gazette, and extra copies struck off for distribution.

Reprinted from Cobt. of 1880 Cinchona.

REVENUE.

To

THE COMMISSIONER OF THE NILGIRIS,

&c, &c, &c.

Dated September 10th.

Printed 21st.

Read.

Encl.

G.O., 10th September 1880, No. 1,134.

SEPTEMBER.

Nos. 191-192.

NOTES ON CINCHONA BARK.

BY DAVID HOWARD.

Recent importations of East Indian cinchona bark have thrown light on several points worthy of the notice of those interested in the subject.

The officinalis bark from the Government Plantation at Dodabetta gives us some valuable information as to the effect of age on the value of the bark. The date of the plantation from which each parcel was obtained was given, and we thus have a series of barks, classed as natural, mossed and renewed from trees planted each year from 1863 to 1867.

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AN IMPROVED METHOD OF MAKING PHOSPHORUS PILLS.

BY E. F. CUERRY.

Many have been the methods proposed for making phosphorus pills; most of them however, have something in the process to which objection may be made.

I believe the following process will be found free

No. 16.

Notes by Mr. David Howard.

Referred to in Revenue Letter to Madras, No. 20, dated 8th July 1880. Para. 2.

Revenue
(Miscellaneous)

No. 28.

India Office, London.
8th July, 1880.

My Lord Duke,

1. With your letter No. 2, of the 16th January 1879, your Government sent home an Invoice of Crown Bark from the Dodabetta Plantations wherein the respective ages of the trees from which it had been taken were noted.-

2.- The Account sale of this Consignment was transmitted with despatch No. 14 of the 8th May 1879.- I now enclose for your Graces' information an extract from the "Pharmaceutical Journal

His Excellency
The Most Noble
The Governor in Council
Fort Saint George.

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bark from the oldest plantations,
both "natural" and "renewed"
is superior to that from those
of more recent growth.— Mr.
Howard also furnishes some
interesting remarks relative
to the process of renewing
Bark.—

I have the honour to be,
My Lord Duke,
Your Graces' most obedient
humble Servant

Nassington

No 15

Revenue
(Miscellaneous)
8th July 1880.

No 1104

Communicated to the Comptr. of the Nd pins.

2. The length of time during which the Revd Officials have been employed &c.

3. Mr. Howard's paper with be published as a Supplemental-ble Govt. Gazette & Extra copies of Mr. Duff for distribution.

Lee

The
Letter to Lord Kt George
No 28.

Sir Honoured & Mr W. Howard &c.

Reed. 5th August 1880.

E. I. PRINT

13 · 7 · 80

20 copies of S.O embody-ing this despatch
100 of enclosure estimate

Enclosing with remarks an extract from the "Pharmaceutical Journal and Transactions" of the 6th Sept. last, containing notes by Mr. David Howard on the effects of age upon Bark as shown by an analysis of Crown Bark from the Dodabetta Plantations.

Entd Order

1. To the Commissioners 10 September 1880
2. The Supt Govt Central Museum &c
3. The Superintendent Govt Botanical Garden &c
4. The Superintendent Govt Gazette Bangalore &c
5. Copy to Honble Sir John Strachey &c &c

Encl. 191-192

H.S.