

MADRAS RECORD OFFICE.

Government of Madras.

Revenue DEPARTMENT.

G.O. No.	2734	Press
		Mis.
68-69		
Dated	6 th October 1869	

Not to be folded or roughly handled

2734 my

*Proceedings of the Madras Government, Revenue Department,
6th October 1869.*

No. 68. Read the following letter from J. BROUGHTON, Esq., Quinologist to Government, to the Acting Secretary to Government, Revenue Department, Fort Saint George, dated Ootacamund, 15th September 1869 :—

I HAVE had the honour to receive G. O., No. 2,527, bearing date September 7, 1869, in which I am directed to furnish information on all the points mentioned in the letter of C. B. Clarke, Esq., Officiating Superintendent, Botanical Gardens, dated 31st July 1869. I therefore reply *seriatim* to those inquiries.

2. With reference to the results of my analyses of the bark sent from Rungbee, I subjoin a statement of the per-centages of alkaloids and their sulphates obtained, calculated for the dried bark.

I.—Bark of *C. Succirubra* from trees planted at Rungbee 15th October 1864, bark taken 1st March 1869; altitude 2,556 feet.

II.—Bark of *C. Officinalis* planted 22nd May 1866, bark taken 31st March 1869; altitude 3,332 feet.

	I.	II.
Total alkaloids	6.65	3.13
Quinine	1.93	1.53
Cinchonidine and cinchonine	4.72	1.60
Total crystalline sulphates obtained from above*...	5.25	2.82
Pure crystallized quinine sulphate obtained ...	1.13	1.42
Pure crystallized cinchonidine sulphate obtained...	4.12	1.40

As these barks do not greatly differ from the same kinds grown on the Neilgherries, the soil on which they grew was not analysed. I take this opportunity of expressing my thanks for the carefully and accurately prepared set of specimens I received.

3. In the subsequently appended series of inquiries made by Mr. Clarke, I am unable in some cases to supply answers. Mr. Clarke has doubtless just reasons for the adoption of the unusual mode of manufacture, which I understand to be indicated by his questions; but the use of chalk as a precipitant of the alkaloids† is, under the conditions of my experience, scarcely a practicable method.

Inquiry A.—“ In the first stage of the manufacture (*i.e.*, the precipitation of all the alkaloids mixed with chalk), what is the most economical acid to use on the large scale? ”

Sulphuric acid is the most economical acid to use for the extraction of alkaloids in the vast majority of cases. Hydrochloric acid on account of its yielding very soluble salts with the Cinchona alkaloids, is occasionally useful. The economy in the employment of sulphuric acid depends on the fact that weight for

* Excluding Cinchonine sulphate.

† It is thus that inquiries A. and D. must be interpreted.

*Proceedings of the Madras Government, Revenue Department,
6th October 1869.*

weight, it will do more effective work than hydrochloric acid. Bulk for bulk, the advantage is still greater.

Inquiry B.—"In the practical manufacture, what is the minimum per-centage of such acid (with respect to the quantity of water and weight of bark) which can be employed?"

It is scarcely possible to give a general answer, since the amount of acid required depends on the nature and state of the bark. The amount should be the theoretical quantity to form acid sulphates with the alkaloids contained in the bark plus a constant quantity. The latter element can be only found by trial, since it is affected by the other organic constituents of the bark. A very few trials generally indicates the desired minimum.

Inquiry C.—"With this minimum per-centage of acid, how near the total absolute quantity of alkaloids in the bark can the exhaustion of the bark of its alkaloids be carried with practical economic advantage?"

About ninety-five per cent. of the whole has hitherto been my practice; but if Cinchona barks become of less cost, it may eventually be economy to exhaust less perfectly.

Inquiry D.—"And working with this minimum per-centage of acid, in what proportion ought the alkaloids to be mixed with chalk as the results of the first process, if conducted in the most approved manner?"

Inquiry E.—"Any other details which Mr. Broughton's experience can furnish for the economic carrying out of this first stage of manufacture."

These inquiries (D. and E.) I am unable to answer for the reasons given in para. 2 of this letter.

Inquiry F.—"Whether Mr. Broughton is now aware of, or thinks it probable there will be discovered any improvement in the subsequent alcoholic and sulphuric processes which will materially reduce the present great expense of those processes."

If a judicious system of management be adopted, a very small waste of alcohol occurs, especially if the alcohol be unpalatable. Thus nearly the whole of the spirit is recovered after it has done its work. The amount of sulphuric acid required to form alkaloid sulphates is comparatively small. Hence, these processes are not of great expense, though, from the inflammability of the spirit and the considerable attention required to ensure success, they entail a certain risk in the hands of Natives. There are several patent processes for the purpose of obviating the use of alcohol, but they appear to me to be of dubious value. I have also employed another process which dispenses with spirit, but I have not yet had sufficient experience with it on a large scale to ascertain fully its merits, or to justify me in making it public. When satisfied on these points, I shall, of course, have much pleasure in communicating it, through Government, to Mr. Clarke.

*Proceedings of the Madras Government, Revenue Department,
6th October 1869.*

No. 69.

ORDER THEREON, 6th October 1869, No. 2,734.

Miscellaneous.

ORDERED to be forwarded to the Government of Bengal, with reference to the letter from that Government, dated 9th August 1869, No. 2,844.

(True Extact.)

(Signed) R. A. DALYELL,
Acting Secretary to Government.

To the Government Quinologist.
,, the Commissioner of the Neilgherry Hills.

Ed. F. R. Bantleman.

REVENUE DEPARTMENT,
FORT ST. GEORGE,
6th October, 1869.

No. 2,735.

No. 70.
To

THE SECRETARY TO THE GOVERNMENT OF BENGAL,

SIR,

Miscellaneous.

WITH reference to Mr. Under-Secretary Beadon's letter, dated 9th August 1869, No. 2,844, I am directed to forward the accompanying letter from Mr. Broughton, the Government Quinologist, containing information on all the points specified in the letter from the Officiating Superintendent of the Bengal Botanical Gardens to your address, dated 31st July, 1869, No. 137.

I have the honour to be,

Sir,

Your most obedient servant,

(Signed) R. A. DALYELL,

Acting Secretary to Government.

Ed. F. R. Bantleman.

GOVERNMENT OF BENGAL.

REVENUE.

THE GOVERNMENT QUINOLOGIST.

No. 2, 735.

Mr. Under-Secretary.

10.

GOVERNMENT OF BENGAL.

GOVERNMENT.

No. 2, 735.

Chief and Sub-Commissioners of Revenue—
The Government of Bengal is directed to
forward a report to the Revenue Secretary,
containing information on all the points specified
in the letter from the Officiating Superintendent
of the Bengal Botanical Gardens to your address,
dated 31st July, 1869, No. 137.

712-2734-

60. Oct. / 69

Out. of 1869, *Estimate*

REVENUE.

To

THE SECY. TO THE GOVT. of ENGLAND.

Dated October, 1869.

Recd.

G. O. (440) 100, No. 2, 703.

OCTOBER.

170. 70.

FORWARDED: from Govt. of India-
legis, report on the results of the
elections held from 1869 to 1870.

Ordered to be
forwarded to the G.O.
of Bengal with refce
to the letter from that
Govt dated 9th Augt.
1869 No 2644. —

3 This Govt. Secretary's Desk.
Comm. Secretary, Hillson

27/9

40.
 Analysis of Pungbee
 Chichana Bark Tea

7 Oct 1867

No. 2735-
 6 Oct 1867

To The Secy to the Govt of Bengal

Sir,
 With reference to the
 letter from Mr. Radon's letter
 dated 4 Aug. 1867 No. 2844,
 I am directed to forward
 the accompanying
 letter from Mr. Radon
 the Govt. Geologist, con-
 taining information
 on all the points spe-
 cified in the letter
 from the Off. Secy.
 of the Bengal Botanical
 Garden to your address
 of 31st July 1867 No. 137.

Wm. L. ...
 (Signature)

20

127/4

H. H. H. H. H.

Revenue 1069 Sept

A 3193.

*From
The Quindologist to
Government*

*Dated 15th
Recd 20th 3 Sep. 189.*

Oct 2734. 6 Oct 189

*Furnishing in-
formation as regards the
result of the analysis
of the Chinchona
bark from a sample*

*5-2734-5
68. L*