

(1) Number of pages 7(2) Date of repair 27-8-87(3) Initials of the Referencer JK**MADRAS RECORD OFFICE.****Government of Madras.***Revenue* **DEPARTMENT.**

G.O. No.	6362	Press- Mis.
Dated	23-10-1887.	

Not to be folded or roughly handled*JK*

7.11.87

No. 109 (Revenue), dated India Office, London, the 2nd December 1886.

From—Her Majesty's Secretary of State for India.

To—The Government of India.

With reference to paragraph 2 of the Earl of Kimberley's despatch of the 28th August 1884, No. 29 (Revenue), I forward herewith

From Colonial Office, 9th February 1886.
To " " 26th " "
From " " 9th November "
(with enclosures).
To Colonial Office, 26th November 1886.

copy of a correspondence with the Colonial Office, as noted in the margin, relative to the preparation of a febrifuge suitable for use in the West Indian Colonies.

2. As Dr. Armstrong has not yet presented his long promised report relative to the method pursued in the Bengal Cinchona Plantations for extracting the alkaloids from the bark, I shall be glad to receive from you any suggestions which you may have to offer, after communication with the various local authorities interested in the matter. It is possible that the Government of Madras may be in a position to afford some useful information based upon the researches recently made by their Quinologist regarding the preparation of a febrifuge suitable for general use.

Dated Colonial Office, London, the 9th February 1886.

From—E. WINGFIELD, Esq., Under-Secretary of State for the Colonies.

To—The Under-Secretary of State for India.

I am directed by the Secretary of State for the Colonies to inform you that from correspondence which has taken place with Kew Gardens, it appears that Dr. Armstrong has been engaged by the India Office to investigate the methods employed in Sikkim in the production of the cinchona febrifuge.

As the cinchona barks grown in several of the Crown Colonies have been, by the liberality of the India Office, derived from the same source as those grown in Sikkim, the results of Dr. Armstrong's enquiry would be of interest and use to this Department, and I am to request you to move the Earl of Kimberley to cause the Colonial Office to be furnished with a copy of any report which may have been or may be made by Dr. Armstrong.

Dated India Office, London, the 26th February 1886.

From—J. A. GODLEY, Esq., Under-Secretary of State for India.

To—The Under-Secretary of State for the Colonies.

In reply to Mr. Wingfield's letter of the 9th February asking to be furnished with a copy of a report which, it was understood, Dr. Armstrong has been engaged in preparing for this Office in regard to the method employed in Sikkim in the production of cinchona febrifuge, I am directed by the Secretary of State for India to inform you that the gentleman in question has not presented the report which it was hoped that he would draw up. But it is believed that it will be received without much further delay; then a copy shall be forwarded as desired.

Dated Colonial Office, London, the 9th November 1886.

From—E. WINGFIELD, Esq., Under-Secretary of State for the Colonies.

To—The Under-Secretary of State for India.

With reference to your letter of the 27th (sic) of February last respecting a forthcoming report by Dr. Armstrong on the method employed in Sikkim in the production of cinchona febrifuge, I am directed by Mr. Secretary Stanhope to transmit to you, to be laid before Viscount Cross,

* No. 341, dated 2nd October.

a copy of a despatch* from the Governor of Jamaica reporting the result of the trials of the cinchona febrifuge prepared in the Jamaica Laboratory in that Colony, and the Colonies of Trinidad and Barbados.

Mr. Stanhope would be obliged to Lord Cross if he can furnish him with any information or observations which might be of use to the Colonial authorities in connection with this subject.

No. 341, dated Kings House, Jamaica, the 2nd October 1886.

From—His EXCELLENCY SIR H. W. NORMAN, Governor of Jamaica.

To—The Secretary of State for the Colonies.

In continuation of Governor Sir A. Musgrave's despatch No. 90 of the 15th of March 1882, reporting the result at that date of experiments made with cinchona febrifuge obtained from India, I have the honour to submit the result of the trial of the drug prepared in the Government Laboratory here, in the hope that by your aid I may be supplied with such further information in regard to the drug and the best method for its preparation as may lead to an improvement in the quality of that prepared here.

2. The result of the use of the febrifuge obtained from India, as communicated in the despatch above referred to, was reported to be highly favourable. Arrangements were then made for the purpose of manufacturing the drug from cinchona bark grown in Jamaica, and the Government Analytical Chemist, Mr. Bowney, F.C.S., F.I.C., prepared a small quantity according to the directions given by Mr. C. H. Wood, Government Quinologist, Bengal, in his description of the process used at the Sikkim Plantation. A sample of this manufacture was subjected to an authoritative analysis by Dr. Paul, a copy of whose report was transmitted to this Government in Sir Robert Herbert's letter of the 12th April 1884; and the result was considered to be very satisfactory.

3. Fifty pounds of the preparation was then manufactured of a character similar to the sample submitted to Dr. Paul, and forwarded to some of the other West Indian Colonies, with a view to steps being taken to test the value. From the answer received it appears that in Barbados, so far as opportunity allowed of a test being made, the results were satisfactory. In Trinidad this was not so, as will be seen from the enclosed copy of a letter* from the Surgeon General of that Colony.

* 5th July 1886.

4. The result of trials of febrifuge in this Colony have not, I am sorry to say, been satisfactory. I enclose a copy of the Superintending Medical Officer's report† on the matter.

† 2nd September.

5. I am not disposed to relinquish, without some further effort, trials which may exercise a very important influence on the fortunes of this Island, or be of great service to other tropical islands in these seas, and I would be glad to obtain any information which may go to show whether the want of success may be the result of the mode of preparation of which I enclose a detailed account‡ furnished by Mr. Bowney, or of the employment of the drug. The Indian Government having taken so much interest in the adoption of the preparation as a substitute for quinine, I venture to suggest that a reference be made to that Government for such information as may be of use here in the carrying out of further trials of this febrifuge.

‡ 30th September.

Dated Trinidad, the 5th July 1886.

From—SURGEON GENERAL S. L. CRANE, Trinidad.

To—The Secretary of State for the Colonies.

In reply to your memorandum of the 3rd instant received to-day, I beg to forward the reports from Dr. Alston, of the San Fernando Hospital, and from Drs. Bennett and Doyle, of the Colonial Hospital, of the experiments made by them in the treatment of fever with the cinchona febrifuge received from the Government of Jamaica.

From the few experiments that have been made, no very decisive conclusions can be drawn, but so far they tend to shew that the "cinchona febrifuge" from Jamaica resembles in its action the "cinchona alkaloids" received from time to time from India.

It has been found valuable as a tonic, and answers fairly well in mild cases of intermittent fever, but in the fever of a remittent type it has not proved so satisfactory as quinine.

Its tendency to produce nausea and derangements of the stomach makes its use objectionable to patients, and a difficulty has been experienced in its administration either in the form of a pill or mixture.

Dated San Fernando Hospital, the 20th March 1886.

From—DR. H. ALSTON, Resident Surgeon, San Fernando Hospital.

To—The Surgeon General, Trinidad.

I have the honour to reply to your memorandum of 17th February, No. 620, requesting me to use a certain sample of cinchona febrifuge (which you forwarded) in the treatment of selected cases, and to acquaint you with the result.

I found it impossible to administer in a mixture, as portions of the powder were with difficulty dissolved.

I tried it in the form of pills; but as a pill mass could be formed only with gummy substances, it was found that the pill mass became too hard to be of service. It was administered in the form of powder in certain selected cases, and some of the patients begged me to discontinue it, as it produced nausea. I found that its effect was inferior to that of sulphate of quinine which I regard as the most reliable anti-malarial remedy.

Dated Colonial Hospital, the 22nd June 1886.

From—DR. R. C. BENNETT, Assistant Surgeon, Colonial Hospital,

To—The Surgeon General, Trinidad.

I have the honour to submit the following report on the use of the cinchona febrifuge prepared at the Laboratory of Jamaica which was forwarded by the Surgeon General for experiment and report. Circumstances have prevented my furnishing a report before now.

To a great extent the drug was used at a disadvantage, as it was unknown how much of the alkaloid "quinia" a given quantity of cinchona febrifuge contained.

To determine this chemically would be unreliable, if not unscientific.

The following cases, with remarks, are submitted:—

Case A.

Clotilde Peter, a female, aged 40 years, residing at Maraval, admitted on the 20th March 1886, with the history of having daily attacks of fever preceded by shivers.

Patient was a fairly developed woman. On admission the patient had no fever.

A mixture containing 4 grains of cinchona febrifuge to 1 oz. of water ordered every four hours.

On 21st (next day) temperature as follows:—

Morning	:	:	:	:	:	102.8°
Evening	:	:	:	:	:	98.4°
On 22nd Morning	:	:	:	:	:	} Normal.
Evening	:	:	:	:	:	

This patient had no recurrence of fever and was discharged on the 31st (11 days after admission) well.

Remarks.—A simple and uncomplicated case of intermittent fever. The cinchona febrifuge acted satisfactorily.

Case B.

William Edward, aged 45 years, residing in town, admitted on the 9th April 1886, with history of intermittent fever and pains for 10 days. Patient a well developed man.

On the day of admission patient had a slight attack of fever; 4 grains mixture cinchona febrifuge ordered every fourth hour.

April 17th.—No recurrence of fever since the day of admission.

April 19th.—Discharged at his own request, well.

Remarks.—A simple and uncomplicated case of intermittent fever, cinchona febrifuge being used and proving beneficial.

Case C.

Eugenia Huggins, aged 19 years, residing in town, admitted on the 10th March 1886, with history of three weeks' fever.

Patient apparently a well-built young woman, but weak.

On admission temperature 102.4°; a 4 grains mixture of cinchona febrifuge ordered every fourth hour. At 10 p. m. on the day of admission the temperature was reduced to 101°.

March 11th,	temperature 11 a. m.	.	.	.	100°
"	"	4 p. m.	.	.	101
"	"	9 p. m.	.	.	100
"	12th	8-40 a. m.	.	.	100
"	"	2-40 p. m.	.	.	101.5
"	"	8-40 p. m.	.	.	101.4
"	13th	2-20 a. m.	.	.	100.4
"	"	5 a. m.	.	.	100.2
"	"	8-40 a. m.	.	.	99.2
"	"	11 a. m.	.	.	99
"	"	2-40 p. m.	.	.	101.4
"	"	5-40 p. m.	.	.	101.1
"	14th	3 a. m.	.	.	99.2
"	"	6 a. m.	.	.	99
"	"	8-40 a. m.	.	.	98.4
"	"	2-40 p. m.	.	.	98.4
"	"	5-40 p. m.	.	.	98.4
"	15th	8-40 a. m.	.	.	98.4
"	16th	normal, but patient reduced and weakened.			
"	23rd	patient continues to improve, but slowly; no recurrence of fever.			

On the evening of 24th the temperature, however, rose to 104°.

"	25th.	This morning temperature	.	.	102.8°
"		Evening	.	.	102

Mixture, cinchona febrifuge, continued.

"	26th,	temperature morning	.	.	101°
"	"	evening	.	.	102
"	27th	morning	.	.	101
"	"	evening	.	.	102
"	28th	morning	.	.	101
"	"	evening	.	.	101
"	29th	morning	.	.	100.6
"	"	evening	.	.	102.4
"	30th	temperature morning	.	.	99.4
"	"	evening	.	.	101
"	31st	morning	.	.	98.8
"	"	evening	.	.	100
April	1st	morning	.	.	99
"	"	evening	.	.	100
"	2nd	morning	.	.	99
"	"	evening	.	.	100
"	3rd	morning	.	.	Normal.
"	"	evening	.	.	

Patient very weak.

" 19th. Patient has continued to improve, and is now on the mend.

Remarks.—In this case the cinchona febrifuge was used regularly, and throughout the case not a single grain of sulphate of quinine was given.

This case was an uncomplicated one of remittent fever, and although the temperature eventually yielded to the influence of cinchona febrifuge, still any fall in temperature was not only not marked but very slow and prolonged, and the patient became very weak.

On 15th the temperature became (*sic*) nominal, and remained so until 24th, when it suddenly rose to 104°.

During the interval between 15th and 24th the cinchona febrifuge was regularly administered, but in spite of this the fever recurred and continued until April the 3rd, when the patient was left very weak and prostrate.

Case D.

Elmina J. Gill, aged 12 years, a native of Trinidad, and residing in town, was admitted to hospital on the 30th March 1886, with history of having had fever for six days.

On day of admission she was pretty bright and lively, and had no fever.

On the following day she had slight fever, and mixture, cinchona febrifuge, was ordered.

On the two following days she still had slight fever (temperature not recorded), and on the 3rd April (5th day after admission) her temperature was 102.4°.

April 5th,	temperature morning	.	.	.	103.4°
"	"	evening	.	.	104.6°
"	6th	morning	.	.	104.8°
"	"	evening	.	.	105°

Reported to have been delirious during the night, and this morning skin hot and dry, lips parched and cracked, tongue clean. Patient's conditions too unfavourable to admit of the cinchona febrifuge being used any longer; discontinued and sulphate of quinine substituted.

On 7th—Restless and in state of muttering delirium with dry skin and quick small pulse—

Temperature morning	.	.	.	.	104°
" evening	.	.	.	.	104.6°

8th—Condition of patient worse than on previous day—Delirium subsultus, weakness, urine albuminous—

Temperature morning	.	.	.	.	105°
" evening	.	.	.	.	103°
9th—Temperature	.	.	.	.	104.8°

Patient unconscious, weak and prostrate, and with difficulty swallows.

Gradually grew worse and died at 5.45 p.m., with lung complications.

Remarks.—This case on admission was a mild and uncomplicated one, but became alarming and proved fatal. Cinchona febrifuge was administered on admission, but with negative results, the temperature being in no way reduced.

On the 7th day there being no fall of temperature and patient's condition becoming alarming, the cinchona febrifuge was discontinued and sulphate of quinine substituted, but with no better results, the patient gradually becoming worse—delirium subsultus, albumen in urine, and coma ending the case on the 10th day after admission.

Probably the substitution of quinine was delayed too long, but this case makes me doubtful as to the advisability of using cinchona febrifuge in severe cases of fever.

Conclusions.—Having used the cinchona febrifuge in the four cases reported, I am of the following opinion, *viz.* :—

I.—That the drug is only suitable in very mild cases of fever.

II.—That in severe cases it should never be used as long as sulphate of quinine is obtainable.

III.—The cinchona febrifuge seems to have little action as an antipyretic, the temperature showing no marked fall after its use.

IV.—It probably has a germicide action on the malarial poisons circulating in the system, and more likely eventually reducing the temperature by this action than any other (similar to quinine in this respect).

V.—The drug seems to act slowly, and perhaps does not cinchonise the patient as readily as sulphate of quinine.

VI.—In case C it will be found that after an interval of eight days, free from fever, the temperature rose to 104° and only gradually fell to normal ten days after. This, however, sometimes occurs when sulphate of quinine is used.

VII.—In this case the patient was reduced and weakened and convalescence prolonged. No sulphate of quinine was used.

In case D the cinchona febrifuge failed utterly, the temperature in spite of its regular administration rising. Sulphate of quinine was then resorted to, but patient rapidly grew worse and died.

VIII.—From my experience of the cases C, and especially D, I am of opinion that the use of the cinchona febrifuge should in no case be persisted in, but should at once yield to sulphate of quinine.

IX.—I use the cinchona febrifuge as a tonic in convalescence, and find that it answers that purpose fairly well.

X.—Further experiments might be made with the drug.

Dated the 21st June 1886.

From—Dr. E. A. E. DOYLE, Colonial Hospital.

To—The Resident Surgeon, Trinidad.

I have the honour to inform you that, in accordance with your request, I have tried the cinchona febrifuge, prepared in Jamaica, on such suitable cases as have been under my care since receiving your instructions—

I.—In cases of slight intermittent fever the patients did well soon after admission, but I attribute this principally to change of locality and diet and not to medicinal treatment.

II.—In one case of remittent fever, 4 grain doses had but a slight effect on the temperature, the gastric disturbances were of great disadvantage, and cinchonaism appeared early, and in ten grain doses was so marked that the drug had to be discontinued. Whereas 5 grains of sulphate of quinine given at the same intervals produced no such effect.

Taken altogether, I consider cinchona febrifuge useless as an antipyretic; the marked constitutional disturbances produced such as cinchonaism noticed in every case, and gastric irritation render it of no reliable value.

As a tonic, probably, it has some beneficial effect in mild cases, but more trial of the drug is required before an opinion can be given as to its value as such.

Dated the 2nd September 1886.

From—The Superintending Medical Officer, Jamaica.

To—The Secretary of State for the Colonies.

The delay in submitting my remarks on the action of cinchona febrifuge has been occasioned by the difficulty experienced by some of the District Medical Officers to whom samples of the drug were sent in, securing suitable cases to experiment upon. The febrifuge has proved unreliable as an antiperiodic and antipyretic agent. It was successful only in some mild cases of fever, and even in these instances the fever soon recurred; hence it is unreliable and of comparatively small value in the treatment of malarial fevers. It possesses tonic properties, but not in a degree superior to some of the cheap vegetable tonics, such as quassia, &c. It can only be administered in powder or mixture, and the bulk of the dose is so large owing to its lightness and inertness that it frequently nauseates the patient. As a therapeutic agent, it is much inferior to quinine, and cannot be regarded as an economic or reliable substitute for the latter, and at the present price of quinine would prove more expensive owing to the larger dose required and the necessity for its more prolonged administration; moreover, it would be valueless in ordinary or severe fevers. The remarks of the Surgeon General of Trinidad based on the reports of its use in that Island fully support the result of the experiments in this Colony.

Dated Kingston, the 30th September 1886.

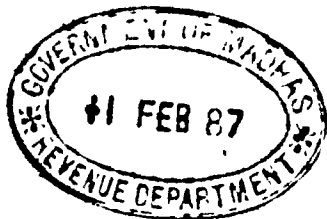
From—J. J. BOWNEY, Esq., F.C.S., F.I.C., Govt. Analytical Chemist.

To—The Secretary of State for the Colonies.

In reply to your letter of the 25th instant, No. 5231, I beg to report the process by which I prepared the cinchona febrifuge referred to in my letter of the 9th February.

Extraction of the alkaloids.

The dry bark is first coarsely powdered, then macerated in a dilute solution of hydrochloric acid formed by mixing one gallon of the strong acid (Sp. Gr. 1.160) with 100 gallons of water. The maceration is continued for three or four days, the liquid is then drawn off on to a fresh lot of bark (2) and fresh dilute acid put on (1), and both are allowed to macerate for three or four days. Again the liquid is drawn off, that from (2) going on a fresh lot of bark, that from (1) on to (2), while fresh acid goes on (1). After the usual period of maceration the liquid from (3) is drawn off into a tub for precipitation, while liquor from (2) goes on (3) and from (1) on (2), and (1) is washed with pure water, the various washings being used for mixing with hydrochloric acid to keep up the store of dilute acid. After being washed, (1) bark is thrown away and fresh bark (4) substituted, which in due time receives the liquor from (3), while (3) gets that from (2) which receives fresh dilute acid, and so on. Thus each portion of bark is macerated in three liquors, first in a pretty strong extract of bark, then in a weaker extract, and finally in fresh dilute acid, after which it is washed with water to remove the last of the adhering extract before being thrown away. The maceration is conducted in clean porter casks, into which enough bark is placed to allow about six inches of liquid to cover it.



1029 1637

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No 71.

Copy forwarded to the Government of Madras with a request that the Government of India may be favoured with any remarks which His Excellency the Governor in Council may have to offer on the subject.

Home Department-

(Medical)

Calcutta the 23rd Jan'y 1884

By order,

J. P. Bennett.

Offg. Under Secy. to the Govt of Ind

OPM

If after the third maceration any lot of bark is still unexhausted, it is again treated with dilute acid before being washed with water.

Precipitation and purification of the alkaloids.

A strong solution of caustic soda is mixed with the clear acid extract as long as a precipitate is produced, the whole is then allowed to stand for a night, the clear liquid is then syphoned off, and the sediment drained on calico filters, and washed once or twice with water. After draining, the sediment (crude febrifuge) is dried in the air. When quite dry, it is powdered and treated with dilute sulphuric acid made by mixing 14 gallons of water with two pints of oil of vitriol of good quality; this quantity is sufficient to act on 20 lbs. of the crude febrifuge.

A considerable quantity of inert matter, remains undissolved, which, after being thoroughly washed with water, is thrown away, while the wash-liquors are added to the sulphuric acid solution. The clear sulphuric acid solution is now treated with a small quantity of a solution of sulphate of soda, enough to produce a slight precipitate which is allowed to settle, and is removed by filtration through calico; a solution of caustic soda is now added to the clear liquid as long as it produces a precipitate, which is allowed to settle. The clear liquid above it is then syphoned off, the sediment collected on calico filters and washed with pure water; it is then dried in the air or with the aid of a slight heat, and finally powdered; yielding the amorphous cinchona febrifuge.

Dated India Office, London, the 26th November 1886.

From—J. A. GODLEY Esq., Under-Secretary of State for India.

To—The Under-Secretary of State for the Colonies.

I am directed by the Secretary of State for India in Council to acknowledge the receipt of Mr. Wingfield's letter of the 9th instant, reporting the results of the trials of the cinchona febrifuge prepared in Jamaica and other West Indian Colonies. In reply, I am to state, for the information of Mr. Secretary Stanhope, that Dr. Armstrong has not yet presented the report referred to in my letter of the 26th February last. The correspondence, however, enclosed in your letter under acknowledgment will be forwarded to the Government of India, who will be called upon to furnish a report upon the subject.

Exd.—T. C. S.

11 Directors office
Ootacamund
12th October 1887

No 77-A
From
The Govt. Botanist & Director
Govt. Cinchona Plantations
Ootacamund

To
The Secretary to Government
Revenue Department
Ootacamund

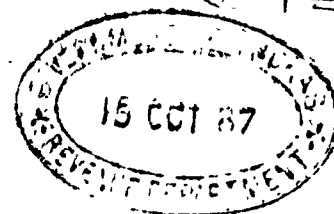
Sir, I have the honor to return
the enclosure to G.O. No 705 of 2nd
February 1887; Miscellaneous Revenue.
regarding the preparation of a febrifuge
suitable for use in the West Indian
Colonies.

I have the honor to be
Sir,
Your most obedient servant
M. L. Lawson
Govt. Botanist & Director

No. 2-2-85 No 705

Revenue Dept
Revenue (1887) Cienfuegos

No 8394



His Geo. No 622 of 22-10-85
lodged in

From
The Govt Botanist and Director
Cienfuegos Plantations

To,
The Secretary to Government
Revenue Department
Fort St George

10350
126
1022-10-87
No 37-A.

Date 13th
10350 13th October 1887
No 17

Enclosure. One

Subject

Enclosure to No 705 of
2^d February 1887.

Returning the—
regarding the preparation of a
febrifuge suitable for West
Indian Colonies