

MADRAS RECORD OFFICE.

Government of Madras.

Revenue DEPARTMENT.

G.O. No.	988	Press Mis.
398-79 Dated	30-6-1820	19

Not to be folded or roughly handled

Proceedings of the Madras Government, Revenue Department,
30th June 1870.

No. 398. Read the following letter from J. BROUGHTON, Esq., Government Quinologist, Ootacamund, to the Acting Secretary to Government, Revenue Department, Fort Saint George, dated 6th June 1870:—

CERTAIN chemical researches which I have made on an indigenous febrifuge have just been completed. I herewith beg to communicate the broad results of the inquiry according to G. O., No. 241, of 22nd January 1870.

2. The large forest-tree "*Hymenodictyon excelsum*" is a native febrifuge of considerable interest, not so much from its proved efficacy in medicine as from its history and botanical relations. It belongs to the same natural order as the true *Cinchona*, and it so greatly resembles them in appearance that it was named for many years *Cinchona excelsa*. Being thus considered a *Cinchona* indigenous to India, very considerable expectations were entertained that it would be found at least a most valuable febrifuge, if not an actual source of quinine.

3. Writers on Indian *Materia Medica* allude in doubtful terms to the bark of this tree.

4. Ainslie, speaking of the various substitutes that had been recommended for Peruvian bark, mentions the bark of *Cinchona excelsa* as having been ascertained to possess powerful tonic and antifebrile virtues.

5. O'Shaughnessy* speaks of the bark as follows:—

"The two inner leaves of the bark possess great bitterness and astringency; the bark is used by tanners, and also as a medicine among the Hindoos in cases requiring astringents."

"We have analyzed the bark of *Cinchona excelsa* from the Botanic Gardens of Calcutta, but could not detect any alkaline ingredient: nevertheless, the trees of hilly regions may furnish the valuable desideratum. The stamina being contained within the tube affords much ground for expecting the discovery of a febrifuge alkaline in this species.†"

The writers of the New Indian Pharmacopœia mention the bark as follows:—

"Considering the natural order to which the tree belongs, and the sensible properties of its bark, it is not improbable that it may prove a valuable remedy. In all future inquiries into the subject of Indian anti-periodics, this bark should be one of the first to which attention should be directed."

6. These circumstances, therefore, led me to make a full investigation of the chemical constituents of the bark, in the hope that I might be fortunate enough to discover a proximate principle, whose constitution might perhaps throw light on that of the true *Cinchona* alkaloids.

7. By the kindness of Lieutenant-Colonel Morgan, Deputy-Conservator of Forests, I obtained a supply of the fresh bark from the neighbourhood of Mudumullay in Wynaad. The bark possesses the remarkable property of being bitter when quite fresh, but of this bitterness diminishing on keeping, so that after a few days, it has so decreased that the bark becomes nearly tasteless.

8. After much labour I was enabled to obtain the bitter principle in a pure crystalline state. A full examination and analysis of this substance showed me

* Bengal Dispensatory, 1842, p.p. 394—395.

† I may mention that this structure of the flower does not appear to be coincident with any special excellence in the bark of the *Cinchonas* of the Neilgherry Plantations.

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that it was identical with æsculin, the fluorescent and crystalline principle of Horse-chesnut bark discovered by Frischmöm, and subsequently analyzed by Fromsdorff in 1835. The chemical details of the investigation and the data for this conclusion are scarcely suitable for detail here. They are to be found in the Pharm. Journal, Volume. IX., page 418.

9. It is a somewhat singular circumstance that the bitter principle of this Indian tree should be the same as that of the Horse-chesnut. It is also remarkable that the bark of the latter has obtained a certain reputation of being like the Hymenodictyon in India a good substitute for Cinchona bark. Lindley and other authors mention that it has been recommended as a valuable febrifuge in intermittents.

10. The very general impression that this Indian false Cinchona contained quinine receives explanation from the properties of æsculin. The solutions this substance like those of quinine are fluorescent, and are even more beautifully so. An observer, who did not examine the other very dissimilar re-actions of the two substances, might thus be misled by the coincidence of so peculiar a property.

11. The loss of bitterness undergone by the bark on keeping is now also readily explained, since æsculin in contact with decaying organic substances is decomposed, and produces a comparatively insoluble substance, æsculetin, which has but a slight bitter taste.

12. Being informed that there were certain differences in the Hymenodictyon of South India, and that of the mountain ranges of Bengal, I was desirous of testing the latter before communicating my results as being perfectly general. By the kindness of Mr. C. B. Clarke I was supplied with some bark of the original Hymenodictyon bark of Roxburgh from the Calcutta Botanic Gardens. This enabled me to prove that there was no essential chemical difference in the bark of the Bengal tree and that from South India.

13. The bark of *Hymenodictyon excelsum* thus differs entirely in its chemical character and products from Cinchona bark. Containing no trace of quinine or related alkaloid, the expectations once entertained of its medicinal value appear to have little support in fact.

14. As æsculin will eventually be both a dearer and less plentiful product in this country than the alkaloids of Cinchona, and is certainly of inferior therapeutic value, it appears to me to be scarcely necessary to make any medical trials with it. Should it, however, be thought desirable to do so, I shall of course be ready to supply the necessary material in a pure state.

No. 399.

ORDER THEREON, 30th June 1870, No. 983.

Miscellaneous.

MR. BROUGHTON's experiment shows that the bitter principle inherent in the bark of the tree "*Hymenodictyon excelsum*"

is identical with "æsculin," which is also obtainable from the Horse-chesnut tree, but is of little therapeutic value where the alkaloids of Cinchona are procurable.

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30th June 1870.

2. The report of the Government Quinologist will be communicated to the Supreme Government and to the Inspector-General, Indian Medical Department, and a copy of it will be transmitted to the Secretary of State.

(True Extract.)

(Signed) H. E. STOKES,

Under-Secretary to Government.

To J. Broughton, Esq.

„ the Inspector-General, Indian Medical Department.

Exd. F. R. Bantleman.

Rev^d Department
 1870
 Proceedings of the Madras Government
 Under date the 30 June 1870.

Read the following
 letter from the Gov^t Quinologist

Reporting the results of his
 investigation of the indigenous
 medicinal plants of India with
 reference to G. O. dated 22nd Jan^y
 1870 No. 118. (J. B. 6th June 1870)

Mr. Broughton's
 experiment shows that
 the bitter principle in-
 herent in the bark of the
 tree "Pymenodictyon ex-
 celsum" is identical with
 "Esculin" which is also ob-
 tainable from the Horse chestnut
 tree

J. D. L.
 I would communicate
 also to the Gov^t

Referred to England
 11th 25th July 1870

Govt. of 1870 Madras.
 REVENUE.
 To J. BROUGHTON, Esq.,
 Secy. to Govt.
 Dated June, 30th.
 Recd. G. O., 30th June 1870, No. 988.
 JUNE.
 Nos. 398-399.

Part of the "Pymenodictyon excelsum".
 -Mr. Broughton's report on its medicinal pro-
 perties, communicated to Government of India
 and Inspector-General, Indian Medical Depart-
 ment, and a copy ordered to be sent to the Secre-
 tary of State.

tree but is of little
value where the alkaloids
of Cinchona are procurable.

2. The report of the
Government Quinologist
will be communicated
to the Supreme Govt
to the Inspector General,
Indian Medical Depart-
ment, and a copy of
it will be transmitted
to the Secretary of State.

W. H. Ball

1 To J. Broughton Esq. Sept. 10 July
2 Inspector Genl. India Medical Dept.
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W. H. Ball