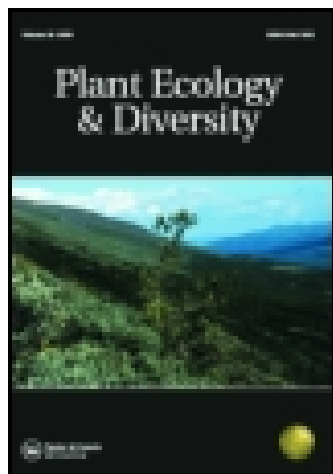


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Transactions of the Botanical Society of Edinburgh

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/tped18>

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Indian Correspondent

Published online: 01 Dec 2010.

To cite this article: Indian Correspondent (1868) II. On the Progress of Cinchona Cultivation in India , Transactions of the Botanical Society of Edinburgh, 9:1-4, 133-136, DOI: [10.1080/03746606809468998](https://doi.org/10.1080/03746606809468998)

To link to this article: <http://dx.doi.org/10.1080/03746606809468998>

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the exceeding abundance of the colouring matter present in the cells we have, I think, a fact of much importance in assigning them to their proper kingdom. This would point very strongly to the exogenæ which are so rich in dyes, and to one of the many African dye-trees I am disposed to think that most of these forms belong.

We may conclude with apparent probability that we have in the Zambesi deposit a mixture of endogenous and exogenous tissues, which have become silicified; that the predominating forms are cuticle and parenchymatous cells of the leaves; and that there is a large amount of endochrome, which renders it probable that the leaves are derived from some species of dye-tree.

I shall be glad to send a supply of material to any one who may be desirous of further investigating the subject.

II. *On the Progress of Cinchona Cultivation in India.* By an Indian Correspondent. Communicated by Professor BALFOUR.

This valuable quinine-yielding plant may now be considered to be as much naturalised in India as the coffee and tea shrubs. A voluminous Parliamentary blue-book has lately been published "relating to the introduction of the cinchona plant into India, and to proceedings connected with its cultivation from April 1863 to April 1866." A large portion of this paper is devoted to the cultivation in the Neilgherry Hills. The successive reports of Mr M'Ivor are given, with Mr Howard's analysis of the bark of the different species. There is also the correspondence relating to the establishment of a quinine manufactory upon the Neilgherry Hills, which has terminated in the selection of Dr Broughton, who has been seven years assistant to Dr Frankland, at the Royal Institution, and is said to be an excellent analytical chemist. This gentleman is expected immediately at Madras, and has been allowed funds for the necessary apparatus. We have also in this volume Mr Markham's interesting narrative of his visit in 1866,

accompanied by Dr Cleghorn, to the various plantations on the Wynaad Plateau, or the Pulney range, and along the Coorg and Travancore Ghats. There are also notices of the progress of this new culture on the Mahabaleshwur Hills, upon an extensive scale in British Sikkim, and, the most northern point of all, in the Kangra Valley.

By the latest accounts received from Madras there were growing at the Neilgherry Hills alone 1,690,000 plants, distributed over four plantations, which at present consist of 1200 acres cultivated and 100 in reserve. Of this vast number of plants the botanical species most cultivated are—

	No.
<i>Cinchona succirubra</i> , red bark,	739,545
„ <i>Calisaya</i> , yellow bark,	40,421
„ <i>uritusinga</i> , crown bark,	87,509
„ <i>Condaminea</i> , loxa bark,	787,903

The cultivation of cinchona appears to be passing through the same phases as that of coffee in South and tea in North India. The Secretary of State is gratified at the readiness with which planters, both European and native, undertake the growth of cinchona in many cases in connection with coffee plantations. The skill and energy of Mr M'Ivor are acknowledged by all as having conduced to this result. The object of the Madras Government in undertaking these extensive plantations is likely to be realised. Up to the end of October last (1866) the total number of plants distributed was 125,747. These were sold at a trifling charge, lately reduced to one anna ($1\frac{1}{2}$ d.) a plant.

Not only India, but all the tropical colonies of the East and West Indies, Australia, and even Algeria, are being covered with the plant. Regarding the total cost of the cinchona plantations upon the Neilgherry Hills, nothing can be clearly made out from the blue-book; but the budget charges of the last two years are given, which may be considered approximate:—

	1865-66.	1866-67.
Charges,	Rs. 91,500	81,500
Receipts,	„ 11,200	20,000
	<hr/> 80,300	<hr/> 61,500

This does not seem to be an excessive outlay, considering the great annual saving, estimated at L.30,000, expected to accrue from the supply of quinine to the Indian army alone. There has not yet been a merchantable consignment of bark, but the results of the experimental cultivation up to date are very satisfactory, and a vast field is opened out for private enterprise. At Hakgalle, in Ceylon, the expenditure is limited to L.500 a-year, which, under the management of Mr Thwaites, Director of the Botanical Garden at Peradenia, secures the minor object of issuing young plants to the settlers.

At Darjeeling the cinchona experiment is under the superintendence of Dr T. Anderson, Superintendent of the Botanical Gardens, and the cultivation is conducted by a gardener who resides upon the spot. The culture commenced in the Himalaya in June 1862. The Government plantations at Rungbee are five in number. The elevation above the sea and the temperature in October at the different plantations are—

Plantations.	Elevation.	Mean maximum.	Mean minimum.	Mean temp.
1st Plantation, . .	5321	58·3	50·1	54·2
2d do. . . .	5000	72·0	54·6	63·3
3d do. . . .	4410	74·4	57·9	66·15
4th do. . . .	3332	69·4	61·2	65·3
5th do. . . .	2556	82·4	63·6	73·5

The area under cultivation is much smaller than on the Neilgherries, but the progress of the trees planted out appears to be most satisfactory, and bark is now being despatched for analysis. The number of plants, cuttings, and seedlings on 1st December last (1866) was 593,808. The species most largely propagated are the same in both places. From Dr Anderson's latest report we take the following:—

136 *Notice of Cinchona Planting in the Kangra Valley.*

“The largest plant of *Cinchona succirubra* was 10 feet in height on the 15th of October, two years after the date of planting. It was between 6 and 8 inches high when planted. This growth of 10 feet in two years in the open ground is not an extraordinary and exceptional case, as there are many other trees of *Cinchona succirubra*, planted on the 15th October 1864, which are now 8 feet high. In the 5th plantation two plants of *C. succirubra* have produced flower buds abundantly, and panicles of flowers are also appearing on the largest plant of *C. officinalis* in the 4th plantation. These flowers were first observed in October. Rain fell plentifully during the month; the amount was 17·8 inches, while the amount in the corresponding month of the previous year was 1·5 inches.”

It is impossible to calculate the benefit which will be bestowed upon the masses of India by providing, at a cheap cost, the febrifuge alkaloids, which, from their high price, have hitherto been accessible only to the richer classes.

III. *Notice of Cinchona Planting in the Kangra Valley.*

By WILLIAM COLDSTREAM, Esq., B.A.

The Kangra Valley is situated at the foot of the lofty Chumba Hills, whose peaks rise, within four or five miles of this, to the height of 14,000 or 16,000 feet. The first experiment at cinchona was begun some two years ago in a sheltered ravine about 5000 feet above the sea, in the midst of a forest of “chil.” There they grew luxuriantly; but last winter a heavy fall of snow covered the plants, which had grown several feet high, and killed them all. In the beginning of this year (1866) ground was bought some six miles lower down the slope of the valley, at an elevation of about 4000 feet, where the snow never lies. Ten acres have been planted, and a large number of the plants are looking most vigorous.