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ANNUAL REPORT OF THE QUINOLOGIST FOR 1884-85.

No. 5, dated Royal Botanic Garden, Seebpore, near Calcutta, the 15th May 1885.

From—GEORGE KING, Esq., M.B., L.L.D., F.L.S., &c., Superintendent, Royal Botanic Garden, Calcutta and of Cinchona Cultivation in Bengal, and Offg. Government Quinologist,

To—The Secretary to the Government of Bengal, Financial Department.

I HAVE the honour herewith to submit the annual report of the Quinologist for the year ending 31st March 1885.

QUINOLOGIST'S REPORT FOR 1884-85.

THE work done at the factory during the year may be briefly summarized as follows. For an expenditure of Rs. 82,352-13-6 (including the cost of the bark used) there were produced 6,079 pounds of ordinary and 385 pounds of crystalline febrifuge at a cost for the former of Rs. 12-5-11, and of the latter of Rs. 18-8-11 per pound.

2. The budget allotment for the year was Rs. 28,300, but of this only Rs. 24,635-8-9 were spent, so that there was a saving of Rs. 3,664-7-3. The details of the expenditure are as follows:—

Manufacture Account, 1884-85.

	Rs.	A.	P.
Paid for muriatic acid 17,543 lbs. ...	3,289	5	0
" packages for ditto ...	196	8	0
" carriage of ditto ...	1,525	3	0
" " of empty jars ...	462	7	0
" " and storage of soda ...	270	15	0
" charcoal ...	518	12	0
" casks and other plant ...	4,484	1	7
" carriage of other stores ...	1,048	1	0
" sundry expenditure ...	935	3	6
" labour in factory ...	2,624	15	9
" Quinologist ...	3,867	13	9
" carriage of cinchona and crystalline febrifuge ...	413	9	0
" tins for ditto ditto ...	418	13	3
" advertisement charges ...	883	0	6
" labour in packing, &c. ...	1,398	1	9
" stores from England ...	2,298	10	8
Total ...	24,635	8	9
Rs. A. P.			
Cost of bark, 80,630 lbs (crop of 1883-84) at annas 3 pies 5-61 per pound ...	17,474	0	6
Cost of bark, 197,130 lbs. (crop of 1884-85) at annas 3 pies 3-196 per pound ...	40,243	4	3
	57,717	4	9
	82,352	13	6
By cinchona febrifuge produced, 6,079 lbs, at Rs. 12-5-11-384 per pound ...	75,208	2	0
By crystalline febrifuge produced, 385 lbs., at Rs. 18-8-11-076 per pound ...	7,144	11	6
	82,352	13	6

3. It thus appears that the net cost of each pound of febrifuge turned out was Rs. 12, annas 5, pies 11, while that of the crystalline febrifuge was Rs 18, annas 8, pies 11, which is higher than the rate for last year. This is accounted for partly by the rather inferior quality of the bark used this year, and partly by the smaller quantity worked, there being certain charges on the factory which it is impossible to reduce, and which must remain pretty much the same whatever the outturn may be. But the chief cause is the unusually large expenditure (Rs. 4,484) on new fittings for the factory.

4. The issues of ordinary and crystalline febrifuge for the year amounted to 7,152½ pounds, as will be seen by the following table. This is a great falling off from last year, during which the issues amounted to 9,144½ pounds. The diminution is owing chiefly to the medical depôts, which took 1,656½ pounds less than last year. The Madras depôt took no ordinary febrifuge whatever and only 20 pounds of crystalline; and as the Madras Government

has now fairly established a factory on its cinchona plantations on the Nilgiris, it is not likely that much of the Bengal product will in future be taken for that presidency. The decrease in sales to the public is 310½ pounds; and in this case the diminished consumption of febrifuge is no doubt due to the great cheapness of quinine, the price of which during the year has ruled lower than it has done for many years. Fever was also considerably less prevalent in the presidency than in the previous year.

Details of the distribution of Cinchona and Crystalline Febrifuge during the Financial year 1884-85.

				Lbs.	oz.
To Medical Depot, Calcutta, viz.—					
Cinchona febrifuge	...	...	...	2,000	0
Crystalline	...	...	...	24	8
„ Medical Depot, Bombay, viz.—					
Cinchona febrifuge	...	...	...	500	0
Medical Depot, Madras, Crystalline febrifuge	...	...	...	20	0
„ Inspector-General of Civil Hospitals, Bengal (for district medical officers of Bengal), viz.—					
Cinchona febrifuge	...	...	...	543	12
Crystalline	...	...	...	27	4
„ Inspector-General of Jails, Bengal (for jails and lock-ups in Bengal), viz.—					
Cinchona febrifuge	...	...	...	52	0
Crystalline	...	...	...	9	0
Sold to the public, viz.—					
Cinchona febrifuge	...	...	...	3,573	4
Crystalline	...	...	...	392	4
Given as samples, viz.—					
Cinchona febrifuge	...	...	...	6	4
Crystalline	...	...	...	4	0
Total	...	...	...	7,152	4

5. By the addition of the outturn of the year to those of previous years, the total production of the factory since its commencement nine years ago is brought up to a total of 70,490½ pounds. The details are given in the following table:—

Table showing the amount of Cinchona and Crystalline Febrifuge produced from the commencement to 31st March 1885, and the stock at the latter date.

		Lbs.	oz.			Lbs.	oz.
Manufactured in 1874-75	...	48	11	Supplied to Medical Depot, Calcutta, viz.—			
Ditto in 1875-76	...	1,940	6	Cinchona febrifuge	...	25,460	3
Ditto in 1876-77	...	3,750	12	Crystalline	...	24	8
Ditto in 1877-78	...	5,152	0	Supplied to Medical Depot, Bombay, viz.—			
Ditto in 1878-79	...	7,007	0	Cinchona febrifuge	...	8,700	0
Ditto in 1879-80	...	9,431	13	Supplied to Medical Depot, Madras, viz.—			
Ditto in 1880-81	...	9,206	0	Cinchona febrifuge	...	2,830	0
Ditto in 1881-82	...	8,010	0	Crystalline	...	20	0
Ditto in 1882-83, viz.—				Supplied to Straits Settlements	...	30	0
Cinchona febrifuge	...	10,363	4	Supplied to Colonial Government, Mauritius	...	150	0
Crystalline	...	300	0	Supplied to Inspector-General of Civil Hospitals, Bengal (for district medical officers of Bengal), viz.—			
Manufactured in 1883-84, viz.—				Cinchona febrifuge	...	2,961	0
Cinchona febrifuge	...	8,464	0	Crystalline	...	27	4
Crystalline	...	250	0	Supplied to Inspector-General of Jails, Bengal (for jails and lock-ups in Bengal), viz.—			
Manufactured in 1884-85, viz.—				Cinchona febrifuge	...	125	12
Cinchona febrifuge	...	6,070	0	Crystalline	...	9	0
Crystalline	...	385	0	Sold for cash, viz.—			
Total	...	70,490	13	Cinchona febrifuge	...	27,336	8
				Crystalline	...	662	4
				Samples, &c., viz.—			
				Cinchona febrifuge	...	129	2
				Crystalline	...	0	0
				Stock in hand on 31st March 1885, viz.—			
				Cinchona Febrifuge	...	1,834	4
				Crystalline	...	183	0
				Total	...	70,490	13

6. The stock account at 31st March stands as follows:—

Stock on 31st March 1884.	Rs.	A.	P.	Stock on 31st March 1885.	Rs.	A.	P.
Chemicals and stores	...	4,000	0 0	Chemicals and stores	...	4,000	0 0
Cinchona febrifuge 2,430½ lbs., at Rs. 10 annas 4 pies 7-6843 per pound	...	25,009	14 0	Cinchona febrifuge 1,834½ lbs., at Rs. 12 annas 5 pies 11-384 per pound	...	22,692	15 4
Crystalline febrifuge 275 lbs., at Rs. 15 annas 6 pies 11-5264 per pound	...	4,244	10 0	Crystalline febrifuge 183 lbs., at Rs. 18 annas 8 pies 11-076 per pound	...	3,396	11 4
Bark 149,548 lbs., at annas 3 pies 5-61 per pound	...	32,409	13 8	Bark 209,723 lbs., at annas 3 pies 3-196 per pound	...	42,814	1 2
	...	65,664	5 8		...	72,903	11 10
Increase in value	...	7,239	6 2		...	72,903	11 10
Total	...	72,903	11 10	Total	...	72,903	11 10

7. The figures above given enable me to show the financial results for the year in the form of a balance sheet which I now give.

Dr.	Rs.	A.	P.	Cr.	Rs.	A.	P.
To value of stock on 31st March 1884	65,664	5 8		By value of stock on 31st March 1885	72,903	11 10	
„ cash received from treasury during 1884-85 for expenditure on old plantations, viz. Rungbee, Mungpoo, and Sittong	69,246	8 9		„ cash receipts from sale of cinchona and crystalline febrifuge, seed, plant, and bark	69,250	6 0	
„ cash received from treasury during 1884-85 for factory	22,336	14 1		„ credit from medical depôts for cinchona febrifuge, viz:—			
„ stores from England (equivalent as adjusted by Accountant-General)	2,298	10 8		Calcutta	33,000		
Profit on the year's working	37,582	6 8		Bombay	8,250		
					41,250	0 0	
				„ credit from medical depôts for crystalline febrifuge, viz:—			
				Calcutta	588	8 0	
				Madras	480	0 0	
					1,068	8 0	
				„ credit from medical depot, Calcutta, for cinchona bark	1,927	12 0	
				„ credit from Inspector-General of Civil Hospitals, Bengal, for cinchona febrifuge and crystalline febrifuge supplied to district medical officers of Bengal, viz:—			
				For cinchona febrifuge	8,980	8 0	
				For crystalline febrifuge	663	0 0	
					9,643	8 0	
				„ credit from Inspector-General of Jails, Bengal, for cinchona febrifuge and crystalline febrifuge supplied to jails and lock-ups in Bengal, viz:—			
				For cinchona febrifuge	860		
				„ crystalline febrifuge	220		
					1,080	0 0	
Total	...	1,97,128	13 10	Total	...	1,97,128	13 10

8. From this balance sheet it appears that the net profit on the year's working is equal to a dividend of about three and a half per cent. on the capital of Rs. 10,84,202-6, which has been sunk on the plantation, the factory itself having no separate capital account. Such is the result in actual cash. But in addition to this, Government has benefited to the extent of at least Rs. 20,000 by reason of the saving effected by the use in its medical institutions of 3,176½ pounds of ordinary and crystalline febrifuge in place of the quinine that used formerly to be supplied by purchase in Europe.

9. Mr. Gammie has had charge of the factory during the year, the affairs of which he has conducted with his well-known accuracy and energy.

10. I append a table showing the actual cash received from sales of febrifuge and paid into the Bank of Bengal as Government revenue, as also the credits taken for issues to Government Departments. As a matter of fact, however, the final adjustment for the quantities supplied to the Inspector-General of Civil Hospitals and Dispensaries in Bengal has not yet been actually made in the Accountant-General's office.

Cash Income for 1884-85.

	Rs.	A.	P.
Cash received from sale of cinchona febrifuge and paid into the Bank of Bengal and Buruckabad Treasury ...	50,365	8	0
Cash received from sale of crystalline cinchona febrifuge and paid into the Bank of Bengal ...	9,610	8	0
Cash received from sales of seed and bark and paid into the Bank of Bengal ...	274	6	0
Credit for cinchona febrifuge supplied to Medical Depôts viz:—			

	Rs.	A.	P.
Calcutta	33,000		
Bombay	8,250		
	41,250	0	0

Credit for cinchona bark supplied to Medical Depôt, Calcutta	1,927	12	0
Credit for crystalline cinchona febrifuge supplied to Medical Depôts, viz:—			

	Rs.	A.	P.
Calcutta	588	8	0
Madras	480	0	0
	1,068	8	0

Credit for cinchona febrifuge supplied to Inspector-General of Civil Hospitals, Bengal (for district medical officers of Bengal)	8,980	8	0
Credit for cinchona febrifuge supplied to Inspector-General of Jails, Bengal (for jails and lock-ups in Bengal)	860	0	0
Credit for crystalline cinchona febrifuge supplied to Inspector-General of Civil Hospitals, Bengal (for district medical officers of Bengal)	668	0	0
Credit for crystalline cinchona febrifuge supplied to Inspector-General of Jails, Bengal (for jails and lock-ups in Bengal)	220	0	0

Total credit in India	1,24,225	2	0
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GEORGE KING, M.B., Surgeon-Major,
Superintendent, Royal Botanic Garden, Calcutta,
and Offg. Govt. Quinologist.

ANNUAL REPORT ON THE GOVERNMENT CINCHONA PLANTATION
IN BENGAL FOR THE YEAR 1884-85.

No. 22C, dated Royal Botanic Garden, Seebpore, near Calcutta, the 15th May 1885.

From—SURGEON-MAJOR GEORGE KING, M.B., LL.D., F.L.S., Superintendent, Royal Botanic Garden, Calcutta, and in charge of Cinchona Cultivation in Bengal,

To—The Secretary to the Government of Bengal, Financial Department.

I HAVE the honour herewith to submit the annual report on the Government Cinchona Plantations in Bengal for the year ending 31st March 1885.

Twenty-third Annual Report of the Government Cinchona Plantation in British Sikkim for the year 1884-85 by SURGEON-MAJOR G. KING, M.B., LL.D., F.L.S., Superintendent of the Royal Botanic Garden, Calcutta, and of Cinchona Cultivation in Bengal.

THE most noteworthy feature in the operations of the year is the addition to the plantation of 174,800 trees of the quinine-yielding cinchonas known in South America as *Calisaya Verde* and *Calisaya Morada*. These are forms of *Calisaya* not hitherto cultivated in India, but well-known in Bolivia as yielding some of the finest of the yellow barks of commerce. These 174,800 trees are the produce of seed obtained at my suggestion, through the India Office, about two years ago. It would be rash, in the case of plants so capricious as cinchonas, to predict anything as to the ultimate success of these varieties in Sikkim; but the present appearance of the young plants leads me to hope that they will do well. Reference has frequently been made in former reports to the remarkably rich variety of yellow bark known as *Ledgeriana*, and the efforts to increase this valuable sort have been recorded time after time. I am happy to say that, during the year, Mr. Gammie was able to plant out no less than 231,900 plants of this variety. The hybrid cinchonas on the plantation were also increased by 64,600. By these additions (amounting in all to 471,300) the proportion of yellow to red barks has been greatly increased, and a considerable step has been made towards the substitution of quinine-producing trees for the sorts yielding the less acceptable alkaloids. The total number of trees of all kinds on the three plantations on 31st March is shown in the following table, while the exact details will be found in the appendices to this report:—

	Red cinchona, <i>Succirubra</i> .	Yellow cinchona, <i>Calisaya ledgeriana</i> .	Yellow cinchona, <i>Calisaya verde</i> and <i>morada</i> .	Hybrid unnamed variety.	Other kinds.	Total of all sorts.
Mungpoo Division	2,132,000	861,118	134,300	345,100	25,503	3,498,111
Sitabong ditto	1,100,000	70,000	15,000	40,000	.....	1,225,000
Bungjung ditto ... ..	.....	215,000	84,000	.....	.....	249,000
Grand Total of all kinds	3,232,000	1,086,118	183,300	385,100	25,503	4,912,111

The bark harvesting operations of former years had left a number of weak red bark trees and of rather feeble coppice in the old plantation, and it was deemed advisable to make a clean sweep of a number of these, so as to clear the ground for future replanting. About 300,000 small trees were thus removed, and their bark formed the greater part of the harvest of the year.

2. *Details of the year's crop.*—The crop for the year consisted in all of 339,201 pounds of dry bark, of which 325,125 pounds were red and 14,076 were yellow. When this is added to the crops of former years, the total yield of the plantation from its commencement is brought up to 3,256,927 pounds of dry bark. The sales and issues of bark during the year were, as usual, very small (only about 460 pounds), and only 766 pounds were required for the Medical Depôt in Calcutta. Practically therefore the whole crop was made over to the factory.

3. *Expenditure for the year.*—The total budget allotment for the year amounted to Rs. 97,805, but it was found necessary to spend only

Rs. 81,726-14-9; a saving of Rs. 16,078-1-3 was therefore effected. The expenditure divides itself into two heads, viz., into *capital expenditure* on the young trans-Teesta plantation at Rungjung, which as yet yields no crop; and into *working expenditure* on the older plantations at Rungbee, Mungpoo, and Sittong. These charges are as follows—

	Rs.	A.	P.	Rs.	A.	P.
Total expenditure for the year 1884-85	.....			81,726	14	9
<i>Capital expenditure.</i>						
On Rungjung (new plantation)	10,480	6	0			
Proportion of European establishment, office, &c.	2,000	0	0			
Total	12,480	6	0			
<i>Working expenses.</i>						
On up keep of plantations of Rungbee, Mungpoo, and Sittong, and in production of 339,201 pounds of bark	69,246	8	9			
				81,726	14	9

The item of Rs. 12,480-6 being added to the capital account brings the latter up to Rs. 10,84,202. This capital account represents the entire amount sunk by the Bengal Government on cinchona plantations and factory since 1862—an amount which, as has been shown in previous reports, has been more than twice covered by the saving effected by the substitution in Government medical institutions of cinchona febrifuge for quinine. The item of Rs. 69,246-8-9 for working expenses is covered by the bark crop, which amounted to 339,201 pounds, and which therefore cost 3 annas 3-196 pies per pound. The whole of this crop was, as usual, made over to the factory, and will be found to be accounted for in the Quinologist's report.

4. *Carthagenia and Cuprea Bark.*—I regret to say that Carthagenia bark is still a very unpromising sort. During the year two out of our three plants died. The survivor is however healthy. I have no hope that this kind of bark will ever be grown to advantage in Sikkim. This, however, need be a matter for comparatively little regret, as the bark is by no means very rich in alkaloids. *Cuprea* bark (the produce of a species of *Remija*) is a kind that for some years past has been poured into the London market in very large quantities. It is not very rich in quinine, but its quinine is easily extracted. And, being produced near the coast, it has been possible to put this bark upon the home market at a small cost, and thus to a large extent to oust the cinchona barks which had hitherto been exclusively used in quinine manufacture. I had long been anxious to try to grow *Cuprea* bark in Sikkim; but the difficulty was to get seed. Thanks however to the kind intervention of Sir J. D. Hooker and Mr. Thiselton Dyer, of the Royal Garden, Kew, a bag of *Remija* seed was last summer obtained from South America and was sent out to the plantation, and from this about forty seedlings have been raised. These seedlings do not, I regret to say, look very vigorous; and I fear the climate of Sikkim will turn out to be unsuitable for them. It is, however, yet too early to form a decided opinion on the point.

5. *Distribution of plants and seeds.*—The low prices that have ruled for bark during the past year or two have considerably diminished the popularity of cinchona cultivation with the planters of India and Ceylon. The demand for seeds and seedlings has therefore greatly fallen off. Seeds of *Ledgeriana* have, however, been given gratis to all applicants; and only a nominal price (little more than sufficient to pay for the cost of collection) has been as usual charged for red-bark seed. The sum of Rs. 261-6 realised from this source was paid into the treasury during the year.

6. *Land rent and grazing dues.*—From settlers within the reserve, rents and cattle dues to the amount of Rs. 1,743-4 were collected. This sum was paid into the Darjeeling Treasury as land revenue, no credit being taken for it amongst the plantation receipts.

7. *Estimated crop of 1885-86.*—As in former years, the crop to be taken during the current year will depend entirely on the requirements of the factory, and these in turn depend on the demand for febrifuge. From 250,000 to 300,000 pounds will probably be required, and this amount can easily be obtained.

8. *Fuel plantation.*—A considerable amount of fuel being required in the factory, and the original forest having nearly disappeared from the plantation, it became advisable to make some provision for a fuel supply for the future. Accordingly, during the year 1881-82, fifty acres of land just above the factory were planted out with the most suitable kinds of timber. This fuel plantation has been gradually increased, until it now extends to more than 200 acres. Mr. Gammie has taken this matter up with his usual skill and energy, and the fuel plantation promises to be a great success both as regards growth and cost. This is an experiment to which I attach great importance.

9. During seven months of the year under review I was absent in Europe on furlough, and my duties were performed by Mr. Gammie, whose good service is so well known to Government. Messrs. Pantling, Parkes, Crofton, Kennedy and Gammie junior have carried out their duties to my own and Mr. Gammie's satisfaction.

10. The usual returns (six in number) are appended.

Table showing the number and distribution of Cinchona Plants in the Government Plantations Sikkim, on 1st April 1885.

MUNGPOO DIVISION.

	PLANTATION.			NURSERY.			
	Number in permanent plantation on 1st April 1884.	Uprooted during the year 1884-85.	Planted during the year 1884-85.	Number in permanent plantation on 1st April 1885.	Number of stock plants for propagation on 1st April 1885.	Number of seedlings or rooted cuttings in nursery beds for permanent plantation.	Number of rooted plants in seed or cutting beds.
Cinchona Hybrid	280,500		34,600	345,100	4,000	100,000	104,000
<i>Succirubra</i>	2,432,000	500,000		2,132,000			
<i>Calimaya Ledgeriana</i>	764,218		34,500	801,118		100,000	100,000
<i>Calimaya Verde and Morada</i>	7,000		27,000	134,300	5,000		5,000
<i>Micrantha</i>	63			20,000			
<i>Officinalis</i>	20,000						
<i>Pahadiana</i>	5,000			5,000			
Hard Carthagenia	1			1			
Total	3,499,611	500,000	28,600	3,438,111	9,000	200,000	209,000

Table showing the number and distribution of Cinchona Plants in the Government Plantations, Sikkim, on 1st April 1885.

SITTONG DIVISION.

	PLANTATION.			NURSERY.			
	Number in permanent plantation on 1st April 1884.	Uprooted during the year 1884-85.	Planted during the year 1884-85.	Number in permanent plantation on 1st April 1885.	Number of stock plants for propagation on 1st April 1885.	Number of seedlings or rooted cuttings in nursery beds for permanent plantation.	Number of rooted plants in seed or cutting beds.
Cinchona Hybrid	40,000			40,000		20,000	20,000
<i>Succirubra</i>	1,100,000			1,100,000			
<i>Calimaya Ledgeriana</i>	50,000		11,000	70,000		15,000	15,000
<i>Calimaya Verde and Morada</i>			10,000	10,000			
Total	1,190,000		20,000	1,220,000		35,000	35,000

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Table showing the number and distribution of Cinchona Plants in the Government Plantations, Sikkim, on 1st April 1885.

RUNGJUNG DIVISION.

	PLANTATION.			NUMBER.			
	Number in permanent plantation on 1st April 1884.	Unrooted during the year 1884-85.	Planted during the year 1884-85.	Number in permanent plantation on 1st April 1885.	Number of stock plants for propagation on 1st April 1885.	Number of seedlings or cuttings in nursery beds for permanent plantation.	Number of rooted plants in seed or cutting beds.
Cinchona Calisaya Ledeburiana ...	41,000	.....	174,000	215,000	.....	180,000	.....
Ditto Calisaya Verde and Morada ...	1,800	.....	32,500	34,300	.....	.....	.....
Total ...	42,800	.....	206,500	249,300	.....	180,000	180,000

Account of Dry Cinchona Bark collected during season 1884-85.

	Root.	Stem.	Branch.	Total.	
	Rs.	Rs.	Rs.	Rs.	
SUCCIRUBRA—					
Sittong, thinning and pruning ...	5,584	4,862	27,755	38,199	
Rungbee ditto ditto ...	6,664	8,503	8,724	23,891	
Mungpoo ditto ditto ...	34,882	28,128	44,344	107,354	
Ditto, uprooting ...	20,614	80,422	16,936	117,972	
Upper Rishap ditto ...	84,115	32,968	13,953	131,036	
Total Succirubra ...	146,441	104,883	110,811	362,135	325,125
CALISAYA—					
Labdah, thinning and pruning ...	94	835	824	1,653	
Mungpoo, ditto ditto ...	3,38	3,633	2,852	6,863	
Total Calisaya ...	4,32	4,518	3,676	12,523	12,523
HYBRID—					
Mungpoo, thinning and pruning ...	24	804	411	1,039	
Sittong ditto ditto ...	12	125	185	322	
Total Hybrid ...	43	929	596	1,568	1,553
Total of all sorts ...	.....	.....	.....	.....	339,201

Stock of Bark on 1st April 1885.

	lbs.
Succirubra bark ...	127,229
Calisaya " ...	62,614
Officinalis " ...	6,010
Micrantha " ...	3,977
Pahudiana " ...	600
Hybrid " ...	9,293
Total ...	209,723

(5)

Table showing the produce of the Government Cinchona Plantations in British Sikkim since their beginning.

MUNGPOO DIVISION.

	lbs.
Dry bark collected by pruning and thinning during 1869-70 ...	2,400
Ditto ditto ditto 1870-71 ...	12,500
Ditto ditto ditto 1871-72 ...	39,000
Ditto ditto ditto 1872-73 ...	N7.
Ditto ditto ditto 1873-74 ...	16,000
Ditto ditto ditto 1874-75 ...	39,405
Crop of 1875-76 ...	211,931
" of 1876-77 ...	207,781
" of 1877-78 ...	344,225
" of 1878-79 ...	261,659
" of 1879-80 ...	345,740
" of 1880-81 ...	348,560
" of 1881-82 ...	298,780
" of 1882-83 ...	358,100
" of 1883-84 ...	253,270
" of 1884-85 ...	500,125
Total ...	3,039,476

SITTONG DIVISION.

	lbs.
Dry bark collected by pruning and thinning during 1879-80 ...	15,850
Ditto ditto ditto 1880-81 ...	28,965
Ditto ditto ditto 1881-82 ...	42,790
Ditto ditto ditto 1882-83 ...	38,880
Ditto ditto ditto 1883-84 ...	51,890
Ditto ditto ditto 1884-85 ...	39,076
Total ...	217,451

GEORGE KING, M.B., Surgeon-Major,

Superintendent, Royal Botanic Garden, Calcutta, and of Cinchona Cultivation in Bengal.

Rev. Secy.

6

MUNICIPAL DEPARTMENT.

AGRICULTURE.

DARJEELING, THE 13TH JUNE 1885.

RESOLUTION.

READ—

The Annual Report of the Government Cinchona Plantation in Bengal for the year 1883-84, and the Annual Report of the Quinologist for the same year.

The addition to the plantation of 174,800 trees of the quinine-yielding cinchonas known as *Calisaya Verde* and *Calisaya Morada* is the most interesting feature in the operations of the year. These trees have been raised from seed supplied in 1882-83 by the Secretary of State, and the varieties are known in Bolivia to produce some of the finest of the yellow bark of commerce. It would be premature to say whether the plants would be equally successful in Sikkim, although their present appearance is healthy. Another satisfactory feature is the extension of the cultivation of the rich variety of yellow bark known as *Ledgeriana*. Of this variety no less than 231,900 trees were planted out, while the hybrid cinchonas were increased by 64,600. Altogether a considerable advance has been made towards the substitution of quinine-producing trees for the sorts yielding the less valuable alkaloids.

2. The total number of trees of all kinds on the plantation at the close of the year was 4,912,111, namely, red (*Succirubra*) 3,232,000, yellow (*Calisaya Ledgeriana*) 1,086,118, yellow (*Calisaya Verde* and *Morada*) 183,300, hybrid 385,100, and other kinds 25,593. The crop of the year amounted to 339,201 lbs. of dry bark, of which 325,125 lbs. were red and 14,076 were yellow. The whole of this crop, with the exception of a small quantity, was as usual made over to the Febrifuge Factory for disposal.

3. The expenditure on the plantation amounted to Rs. 81,726-14-9 against the budget allotment of Rs. 97,805. Of this, Rs. 12,480-6 represented the capital expenditure on the new plantation at Rungjung, and the balance (Rs. 69,246-8-9) the working expenses of the old plantations at Rungbee, Mungpoo, and Sittong. The total amount sunk by the Bengal Government on cinchona plantations and factory since 1862 aggregates Rs. 10,84,202, which has been recouped more than twice over by the saving effected by the substitution of cinchona febrifuge for quinine in Government medical institutions.

4. Dr. King again notices the continued failure of the Carthagena bark, which he thinks will never be successfully grown in Sikkim. A quantity of *Remija* seed, which produces a quinine-yielding bark under the name of *Cuprea*, was obtained from South America, and some 40 seedlings have been raised. The plants do not look altogether healthy, and it is feared that the climate of Sikkim will not suit their growth.

5. The demand for cinchona seeds and seedlings has greatly fallen off in consequence of the low prices that have ruled for bark during the last two years. The surplus seed of the *Calisaya Ledgeriana* was as usual distributed during the year gratuitously among applicants.

6. The cost of manufacture during the year was Rs. 12-5-11 per pound of ordinary febrifuge, and Rs. 18-8-11 per pound of crystalline febrifuge. The rates are higher than those of the previous year, and this is attributed partly to the large expenditure incurred on new fittings for the factory, and partly to the inferior quality of the bark used, as well as to the smaller quantity

Recd from Mr. Secy.

7/7

worked up during the year under review. The issues also fell considerably below those of 1883-84, as will be seen from the following table:—

		1883-84.		1884-85.	
		lbs.	oz.	lbs.	oz.
To Medical Depot, Calcutta	.. ..	2,620	0	2,024	8
Ditto, Bombay	.. ..	1,000	0	500	0
Ditto, Madras	.. ..	580	0	20	0
To Inspector-General of Civil Hospitals (for district medical officers of Bengal)	.. ..	618	4	571	0
To Inspector-General of Jails (for jails and lock-ups in Bengal)	.. ..	32	4	61	0
Sold to the public	.. ..	4,276	0	3,965	8
Given as samples	.. ..	18	4	10	4
Total	.. ..	9,144	12	7,152	4

The great decline in the issues is chiefly owing to the medical depôts taking 1,650½ pounds less than in the previous year; while the decrease in sales to the public is attributed to the great cheapness of quinine, the price of which during the year has ruled lower than it has done for many years.

7. The revenue derived from the sale of the febrifuge, seed, plants, and bark amounted to Rs. 1,24,225-2:—

		Rs.	A.	P.
By sale of febrifuge, seed, plants, and bark to the public	.. ..	69,250	6	0
By credits from the Medical Depot of Calcutta	.. ..	35,516	4	0
Ditto ditto Bombay	.. ..	8,250	0	0
Ditto ditto Madras	.. ..	480	0	0
Ditto Inspector-General of Civil Hospitals, Bengal	.. ..	9,618	8	0
Ditto Inspector-General of Jails, Bengal	.. ..	1,080	0	0
Total	.. ..	1,24,225	2	0

The operations of the year resulted in a profit of Rs. 37,582-6-8, which is equal to a dividend of about 3½ per cent. on the capital outlay of Rs. 10,84,202-6. It must, however, be borne in mind that these profits do not represent the whole of the gain of the year. The saving effected by the substitution of the febrifuge in Government medical institutions for an equal quantity of quinine which would otherwise have been used amounted to Rs. 20,000.

8. The thanks of the Lieutenant-Governor are again due to Dr. King for his efficient management of the department, and to Mr. Gammie who performed Dr. King's duties for seven months during the absence of the latter on furlough. Mr. Gammie also held charge of the factory throughout the year. The other assistants are well spoken of.

ORDER.—Ordered that a copy of this Resolution, and of the Reports referred to, be submitted to the Government of India in the Home Department, to the Superintendent of the Cinchona Plantation, to the Government of Madras, and to the Inspector-General of Civil Hospitals, Bengal, for information.

By order of the Lieutenant-Governor of Bengal,

J. WARE EDGAR,

Offg. Secretary to the Government of Bengal.

No. 667—M.

COPY, with copies of the Reports, forwarded to the Government of Madras for information.

By order of the Lieutenant-Governor of Bengal,

Offg. Under-Secretary to the Govt. of Bengal.

DARJEELING.

The 19th June 1885.

W. LeD.—Reg. No. 723T—24-6-85.

SP Com? to the Dirch

Sub. Cinchona
Plantation

17-55

REVENUE (1885) DEPARTMENT.

No.

From *the Govt of Bengal*

Dated *17 June*
Recd. *17 July* / 83.

No. *655 T-118*.

SUBJECT.

*Forwarding for in-
formation a summary of
the statistics of the
Cin. Cult. in the
Bengal Prov.*

*C.O. No 3496
Communicated to the
Director of Cinchona Plant.
the Director of Cult. with
the Govt of Madras, and
the Govt of Mysore.*

*1. In the Govt. Cin. Plant.
Cult. & Administration
1. a copy of the report of the
1. a copy of the report*

*Note -
Send a copy to the
Director of Cult.*