

REPORT

ON

THE PROGRESS AND CONDITION

OF THE

GOVERNMENT BOTANICAL GARDENS AND PARKS
ON THE NILGIRIS,

FOR THE YEAR

1883-84.

MADRAS:

PRINTED BY E. KEYS, AT THE GOVERNMENT PRESS.

1884.

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OFFICIAL YEAR 1883-84.

IN conformance with the desire expressed in G.O., No. 204-B, Revenue, 10th February 1883, and G.O., No. 443, Revenue, 14th April 1883, I took over charge of the several Government Gardens and Parks, Nilgiris, on the 18th June 1883, from Mr. Jamieson, who had been in control of them since the year 1871, and the following is a list of those horticultural establishments over which I now exercise supervision:—

I.—OOTACAMUND.

- (a) Government Gardens.
- (b) Government House Gardens with the Eucalyptus Forest attached.
- (c) Stonehouse Park.
- (d) Church Hill.
- (e) Crewe Hall Estate and adjoining grounds.

II.—COONOOR.

Sim's Park.

III.—BARLIYAR.

Experimental Garden.

IV.—KALHATTI.

Experimental Garden.

2. On my taking over charge, Government desired me to submit to them my views as to what was necessary in order that the gardens might be put into a perfect state of repair. This I did. The Government approved of my proposals, and granted the money, which was required for carrying into effect the many much needed alterations.

3. I. OOTACAMUND—(a) GOVERNMENT GARDENS.—The staff of officers is the same as heretofore. They have all performed their duties to my entire satisfaction, and I take this opportunity of thanking them for the heartiness with which they have responded to my demands for increased assiduity. I wish especially to record my obligations to the Curator, Mr. Jamieson, for the loyal manner in which he has on every occasion supported me in designing the alterations I wished to introduce, and for the skill and perseverance which he has evinced in carrying out those alterations to a satisfactory conclusion.

4. *Alterations*.—Of those changes which I stated in my letter to Government, dated 19th August 1883, as being desirable, the following have been already completed, or are now in the course of being carried out:—

- (1) The more swampy portions of the gardens have been thoroughly drained; and to this end open drains have for the most part been preferred to the closed ones, which were proposed in my letter of 19th August 1883, quoted above. The reason for making this change was that I could obtain drain-pipes of second-rate quality only, and these too at a cost much greater than I could approve.
- (2) All the old lawns between the entrance gates and the lower terrace have been levelled and the greater part of them re-grassed. The broad walk also, which formerly extended from the entrance gates to the lower conservatory, has been dug up and laid down in grass. All this portion of the gardens, with the exception of a few trifling works which have still to be executed, may be regarded as finally completed. The lawns to the left of the entrance gates as you approach the gardens, together with the environments of the old Cinchona Laboratory, are being proceeded with, and will, I hope, be finished before the end of the present year. Mowing machines and rollers have been purchased and the grass, though by no means yet in perfect order, is greatly improved in appearance. When these works connected with the lawns are completed, visitors on entering the gardens will have presented to their view a very much more extensive sweep of smooth sward than was to be had formerly.
- (3) All the roads and walks of the lower gardens have been re-made, and are now in good order. Some of them, however, will shortly need more gravel, and this will be supplied during the ensuing winter. The road and walks in front of the entrance gates will also be completed about the same time.
- (4) Nearly all the plants which have flowered during the past year have been identified, and the trees and shrubs have been labelled. Great difficulty was experienced in finding any one who could paint the labels properly, and this must account for the delay which took place in respect of their being put down.
- (5) Very little has yet been done in the way of making an *herbaceous botanical garden*, and nothing at all in the way of making the proposed *experimental kitchen garden*, as the labor which would have been required for these objects has been expended upon other more pressing works; but I hope that, during the course of next year, I shall be able to establish both.
- (6) Nothing has yet been done towards making the *meteorological observations* which are taken daily in the gardens more complete, beyond instituting preliminary inquiries as to the cost of instruments. At present the only observations which are recorded are those connected with the rainfall; these are punctually and trustworthily made.

5. *Repairs*.—The Arbor and Bandstand have been either rebuilt or substantially repaired, and some slight repairs have been done also to the lower conservatory. This latter building is, however, in a very bad condition; and it will be a matter for not distant consideration, whether or no it had not better be pulled down. If it should be determined to pull this building down, I would recommend that it should not be rebuilt on its present site, but in some other part of the gardens, as then there would be one unbroken sweep of lawn extending from the entrance gates to the lower terrace. The other two conservatories are in fair order. The Propagating houses are, on the other hand, in bad condition and need considerable alterations. The usual annual repairs have been made to the Curator's house as well as to those of the head and under Overseers, and all are now in good condition. It is, however, desirable that the present tile and matting roofs of these three houses should be replaced before long by iron ones. New cooly lines containing fifteen substantial brick-houses have been put up during the past year, and it is intended to supplement these by another set of lines which shall contain ten houses. The lines are intended to give accommodation to the more permanent laborers on the establishment.

6. *Nuisances*.—The chief annoyances in the maintenance of these gardens arise from the trespass of cattle, the depredation of porcupine, and the inveterate habit which the coolies have of making short cuts in every direction over the lawns and grass slopes. The first and second of these nuisances I hope to remedy; the one by fencing the more exposed boundaries of the gardens, and the other by the administration of poisoned favorite foods. To attempt a remedy for the third nuisance seems useless.

7. *Season*.—The light monsoon of last year and the, as yet, almost total failure of the present one has been very favorable for carrying on work connected with the alterations and repairs mentioned in paragraphs 4 and 5, but the want of rain has thrown the planting season back to an unusually late period. There was abnormally severe frost in January, the thermometer falling on more than one occasion to below 20° Fr. This extreme cold destroyed many of our more tender plants in the gardens and has temporarily spoiled the appearance of many others. So great was the intensity of the frost that even large shola trees were killed on the less sheltered parts of the hills. Water placed in an earthenware chatty is said to have frozen to the depth of more than two inches, and ice, the thickness of a rupee, was of constant occurrence in the early morning on shallow ponds.

(b.) *GOVERNMENT HOUSE GARDENS*.—These gardens and grounds, which were in a very rough and unfinished state, are now undergoing reconstruction. A large amount of work was got through during the past year, and it may be expected that the forthcoming season will see their completion. Little more remains now to be done beyond clearing the grass slopes of the more unsightly scrub and planting trees in clumps. The annexation of the Eucalyptus wood adjoining the house has added greatly to the charm of the grounds. The wood requires thinning and a few more walks might with advantage be made through it.

(c.) *STONEHOUSE PARK*.—Many of the isolated and more ungainly trees have been cut down and fresh ones planted in groups. I wish particularly to draw the attention of Government to the absolute necessity of protecting these young plantations from the ravages of straying cattle. Further plantations of trees and shrubs will be required when the builders and road-makers shall have completed their present works.

(d.) *CHURCH HILL*.—The usual upkeep has been maintained. No extra work has been carried out, and none is required.

(e.) *CREWE HALL ESTATE AND ADJOINING GROUNDS*.—This has only quite recently been placed under my superintendence. Propositions for its future management and ornamentation will be made in my budget estimate for next year.

II. *COONOR—SIM'S PARK*.—(1) *Alterations*.—Nothing of much importance has been carried out during the past year under this head in the old portion of the park. The general upkeep has been well maintained. Some few of the roads and paths have been re-made, and the remainder have been repaired. The summer houses have been rebuilt.

(2) *Private Lawn Tennis Ground*.—This has been taken back into the park as the club to whom it was lent had failed to carry out certain stipulated improvements.

(3) *Labelling*.—Most of the plants have been identified, and I am having labels painted for all the more conspicuous trees and shrubs. These labels I hope to put down before the end of the year.

(4) *New Shola*.—The wood which lies between the lower end of Sim's Park and the upper end of the Wellington Race-course has been handed over by the Forest Department. A three-foot path has been cut through this wood so that persons may now walk through the park from Coonor to Wellington, and I propose next year to convert this path into a carriage road.

(5) *Cattle Trespass*.—This plague is not so great as it is in the corresponding grounds belonging to Government at Ootacamund, nevertheless it will be necessary to erect a substantial fence round that portion of the newly added shola which is bounded by the public road.

III. BARLIYAR.—*Upkeep*.—This has been the same as in past years, and I do not think that any changes are required. The garden continues to have the same bad reputation for unhealthiness, but from inquiries which I have made concerning the inhabitants of the neighbouring village, I cannot help thinking that the unwholesomeness of the place has been exaggerated. The trees and shrubs which have been planted out here thrive wonderfully well; and I consider this garden, for its size, to be the most important one, which the Government possesses on the slopes of the Nilgiri plateau.

IV. KALHATTI.—With the exception of planting out a few thousand seedlings of *Cinchona morada* and *C. verde*, which had been raised by Mr. Jamieson in the Government Gardens, Ootacamund, from seed purchased last year from Messrs. Christie and Co., nothing of importance has been added to these gardens during the past twelve months. The position and climate of Kalhatti resemble so closely those of Sim's Park, Coonoor, that I doubt if it is worth the while of Government to continue its cultivation. I should prefer seeing it abandoned, and a plot of about the same size taken up somewhere in the neighbourhood of Gúdálúr in the Wynaad. Gúdálúr possesses deep rich soil, and has all the characteristics of the Wynaad climate. By establishing a garden here, Government would be able to grow successfully many plants, especially palms, which they cannot grow now in any of their other gardens. The cost of opening out and fencing such a plot of ground ought not to be great, while the annual charge for maintaining the garden would not be much greater than what is at present incurred at Kalhatti. An experimental garden at Gúdálúr would be easily supervised, as it would be within easy reach of the Government plantations at Naduvatam.

HERBARIUM.—Since the time of my first landing in India, I have occupied much of my leisure in the collection and preservation of Indian plants, as without such a collection it is not possible to determine with any degree of accuracy many of the plants which are being constantly sent for identification. The herbarium contains now some four thousand species, the most part of which are correctly named. The specimens having been poisoned to protect them from the attacks of insects, are mounted on paper and enclosed in genus covers, and arranged according to the "Flora of British India" now in the course of publication by Sir J. D. Hooker, Director of the Royal Gardens, Kew. For this large number of species I am to no small extent indebted to the following gentlemen for their liberal assistance:—

(1) *Mr. Hollingsworth, Government Apothecary*, for many rare plants collected about Madras and Ootacamund, as well as for much critical information respecting many of our more doubtful species.

(2) *Mr. Gamble, Conservator of Forests, Northern Circle*, for a very valuable and extensive series of beautifully preserved specimens, being duplicates from his own very rich and magnificent collections.

(3) *Mr. Ferguson of Colombo, Ceylon*, for about 150 specimens of named Ceylon grasses.

(4) *Dr. Trimen, Director of the Royal Gardens, Peradiniya, Ceylon*, for many of the rarer plants of Ceylon, and for much novel and valuable information concerning them.

(5) *Dr. Bidie, Central Museum, Madras*, for duplicate specimens from the herbarium under his control. Also for the loan of the *Wight Herbarium* lately received from Kew. This Herbarium was presented to the Madras Government by Sir J. D. Hooker and contains the greater part of the *Thalamifloræ*, *Gamopetalæ*, as well as many of the *Orchids* of Wight's collections, from the specimens in which nearly all the figures in the "*Icones Plantarum Indice Orientalis*" were drawn. Dr. Wight may be said to have been the first scientific botanist who carefully examined and described the plants of Southern India on any large scale, and I consider it a cause for much congratulation that Madras should have been put in possession of so large a portion of his plants.

(6) *Mr. Wilson, Director of Revenue Settlement and Agriculture*, for specimens of plants of economic interest and information respecting them.

(7) *Mr. Weld, Assistant Collector, South Arcot*, for plants sent from the neighbourhood of Cuddalore.

(8) *Mr. Wedderburn, Head Assistant Collector, Wynaad*, for specimens of plants collected in the neighbourhood of Devála.

(9) *Captain Quentin Agnew*, for about one hundred and thirty excellently chosen and well-preserved specimens of plants from the neighbourhood of Guindy.

(10) *Captain Evans Gordon*, for two packets of plants from Central India.

(11) *Mr. J. Cameron, Lal Bagh, Bangalore*, for about 200 specimens of plants indigenous to the district of Bangalore, or which had been cultivated by him in the Lal Bagh.

The cabinets which had been specially made to contain these collections are at present housed in one of the lodges at the entrance to Government Gardens. The accommodation which this lodge affords is growing insufficient, and next year I shall propose that the old cinchona laboratory, which is now being used temporarily as an office, should be fitted up for their reception.

MUSEUM.—A small collection of woods, fruits, seeds and other vegetable products of botanical or economic interest to those living on the Nilgiri plateau has been brought together. This collection is unarranged for want of space and cases, and is therefore at present of no practical value, but I would venture to suggest the desirability of having this small collection added to, and provision being made eventually for its exhibition to the public. I think that while Madras ought to possess the first museum in the Presidency, inasmuch as it is the most important town, it would not be exorbitant to ask that small museums, containing typical collections of objects of interest in their special neighbourhood, should be established in various centres over the country. If Government should sanction a museum in Ootacamund, I would advise that it should contain such objects only as would be of interest to those living on the Nilgiri plateau and the Wynaad. I would like also to see the museum take in all the chief branches of Natural Science—Botany, Zoology, Geology, Mineralogy and Ethnology. I am sure that such a museum of local products would be of service to those who are engaged in commercial, agricultural or other pursuits in this district, and I do not think that it would cost very much to set one on foot.

LIBRARY.—The botanical books at present in keeping at the gardens are chiefly benefactions from the Forest Department or loans from the library of the central museum in Madras. The very liberal grant which Government made last year for the purchase of botanical works will enable me to add many books which are pressingly needed.

RECEIPTS AND EXPENDITURE.—The following is a summary of moneys granted for the maintenance of the various Government gardens for the year ending 31st March 1884, a detailed account of which will be found in Appendices 5—13:—

	RS.	A.	P.
Ootacamund Government Gardens, budget grant	10,380	0	0
Grant for cooly lines	911	9	2
Supplemental grant	2,400	0	0
Sale of plants, &c.	3,101	14	4
Seed supplied to the Cinchona Department	60	0	0
	16,853	7	6

	RS.	A.	P.
Sim's Park budget grant	1,600	0	0
Grant for fencing	148	12	0
Barliyar	350	0	0
Kalhatti	200	0	0
Stonehouse Park	600	0	0
Upper Norwood	1,000	0	0
Medicinal Gardens	350	0	0
Church Hill Park	100	0	0
	4,348	12	0
Total	21,202	3	6

EXPENDITURE—

	RS.	A.	P.
Ootacamund Government Gardens	16,839	3	0
Sim's Park	1,732	3	5
Barliyár	346	5	8
Kalhatti	193	0	0
Stonehouse Park	591	7	0
Upper Norwood	1,000	4	6
Medicinal Garden	317	1	6
Church Hill Park	72	8	0
Total	20,592	1	1

Short Notices of some of the more interesting Plants which have been grown in the Gardens during the past year.

1. *Liberian Coffee*.—Although this grows vigorously and fruits abundantly wherever it has been cultivated, there is very little demand for it. The outer portion of the pericarp are much less succulent than in *C. Arabica*; and this accident makes it more difficult to pulp.

2. *Ipecacuanha*.—The stock of plants of this species, which at the end of last year consisted of 170 plants, has been increased to 630. All the plants are in a healthy and growing condition, and there will be in the future no difficulty in increasing the number to an indefinite degree. 12 plants well established were sent to Mr. Hadfield, Assistant Conservator of Forests, for cultivation at Nilambúr, 24 plants are also nearly ready to be despatched to each of the following gentlemen, viz., Mr. T. J. Ferguson of Calicut, to Mr. R. Morgan, District Forest officer of the Wynaad and Malabar, and to the Forest Ranger at Pálghat. Detailed directions for their cultivation have been sent with the plants. I have remarked on a former occasion that I do not think the production of *Ipecacuanha* will ever become a part of forestry proper, but I feel sure that in the moister climates of the West Coast and the Wynaad it may be cultivated profitably in gardens.

3. *Cinchona Santa Fé*.—In October last I had one specimen of this species left alive in the Propagating house belonging to the Cinchona Department, but as it was in a very bad condition, I had it removed and placed it under the care of Mr. Jamieson. Since then it has gradually improved and is now in a perfectly healthy state. Mr. Jamieson has already taken from this stock plant no less than thirteen cuttings. Of these, ten are rooted and thriving, and the remaining three, though not yet rooted, are looking quite healthy.

4. *Cinchona Carthagenæ*.—The cultivation of this species has been carried on most successfully. A few of the plants raised during the past year have been distributed to the public for experimentation, while some hundreds have been planted permanently out at Naduvatom, and some score at the Wood estate. The habit of this plant (in its young state at least) is peculiar. The lateral branches exceed considerably in growth the terminal shoot and the tendency of the plant is to become more or less like a ball stuck upon the end of a stick.

5. *Cuprea bark*. (*Remijia Purdieana*).—Out of the packet of seed, which was sent from Kew, about 250 seedlings have been raised. This is much less than was hoped for, as a great deal of the seed appeared to be quite sound. The seed was sown in nearly pure sand and watched carefully every day, and as soon as the radicle pierced the outer covering they were removed to pans containing suitable soils.

6. *Rhus vernicifera* or the *Japan Lacquer plant*.—Upwards of 100 plants have been raised from seed sent from Kew. The plants have not made satisfactory progress as yet. I do not think that the climate of Ootacamund quite suits them, and I intend to remove them at the proper times to Coonoor, Barliyár and Kalhatti.

7. *Rhus succedanea* or the *Japan Wax plant*.—Some fifty plants of this have been raised from seed sent from the Agri-Horticultural Gardens, Madras. All are doing well and have made better growth than has been the case in the last species.

8. *Quilaja saponaria*.—A few only of the seeds of this Rosaceous plant which were sent from Kew have germinated. The plants, however, which have been raised are doing well. The *Quilaja* is a native of Chili. It grows to the height of sixty feet, and its inner bark produces a saponaceous substance. This bark after it has been ground into a powder is used largely by the natives of the country in which it grows as a substitute for soap; and is said to be superior to the ordinary mercantile soap for many purposes in the fuller's trade.

9. *Yucca Gloriosa*.—An experiment made on slices of the stem of this plant showed that it possesses saponaceous properties similar to those of the *Quilaja*. The slices when rubbed between the hands with water gave a copious and pleasant lather of a highly cleansing quality.

10. *Cola nut* (*Cola acuminata*, R. Br).—Four plants of this nut have been raised from seed sent to the gardens by Colonel S. P. Scott. The *Cola* or *Kola-nut* is a native of tropical Western Africa, and is eaten largely by the natives of Guinea. The nut has a bitter taste, and is said to improve the flavor of whatever is partaken of immediately after it. It is reported also that it gives to chronic inebriates a distaste for intoxicants.

11. *Kumerà* (*Convolvulus Chrysorrhizus*, Soland).—This is a native of New Zealand and yields tubers resembling those of the sweet potatoe. The tubers which were received from Kew have made as yet no progress. It is probable that the climate of Ootacamund is too cold to suit the plants, and I shall therefore transfer them to Coonoor and Barliyár.

12. *Arracha* (*Arracacia esculenta*, &c).—This is an umbelliferous plant, which inhabits the more mountainous tracts of the northern parts of South America. It is closely allied to the poisonous hemlock of Europe. The roots are divided into several fleshy lobes, each of which resembles the root of a carrot, and are said to have a flavor between a chestnut and a parsnip. The plants which have been raised of this esculent, are from tubers which were sent from Kew.

13. *Castilleja elastica*.—Thirty-one plants were distributed during the year to Mr. G. Murray of Hosúr in Salem, to Mr. H. P. Hodgson of Kolacambay, Coonoor, and Mr. W. Teare of Naduvatom. The stock in the Propagating house consists at the present time of eighteen healthy plants.

14. *Hevea Brasiliensis*.—Of this I have only one specimen. It is planted out at Barliyár, and during the last year grew eighteen feet.

15. *Manihot Glaziovii*.—This grows freely wherever it has been tried. At Barliyár there are many trees over thirty feet in height with a diameter at one foot above the ground of eighteen inches. The trees fruit abundantly, and produce good seed; but there is no demand for it on the part of the public.

16. *Landolphia florida*.—I am sorry to say that all the Government plants of this rubber-yielding climber are dead, but am glad in being able to report that the species is doing well at Nilambúr, where it is being grown under the auspices of Mr. T. J. Ferguson. A second unnamed species, which was sent from the Agri-Horticultural Gardens, Madras, is doing well.

17. *Carissa Macrophylla*.—This is another climber, which was reported last year might be expected to yield a valuable rubber. Mr. Gamble found it growing wild about Coonoor, and roughly tested its yielding qualities. It does not seem likely to be ever of much commercial importance.

18. *Jalap* (*Exogonium purga*).—29,212 plants were sold last year to the public for the sum of Rs. 492-12-0 and 112 were distributed gratis.

19. *Cacao*.—This thrives well at Barliyar and the seeds germinate freely. There was no demand for plants during the past year.

20. *Mangosteen and Litchi*.—Both of these fruit trees bore heavy crops this year at Barliyar. It is to be regretted that these fruits are not more generally grown in Southern India. They would be a welcome addition to our meagre catalogue and ought to do well in many parts of the Presidency.

21. *Amherstia Nobilis*.—One plant, only six years old, of this magnificent Malacca tree flowered for the first time in Barliyar in March last.

22. *Potatoes*.—Half a ton of seed was imported from England in the early part of the season. A small portion of this stock was distributed, and the remainder planted in the gardens. The resulting crop has been a fair one and free from disease. A considerable quantity of tubers will be available for distribution next year.

23. *Paspalum Conjugatum*.—This is an excellent fodder for horses and cattle generally. In places where it takes kindly to the soil and climate it ousts the native grasses. It loves a wet climate and thrives best between the altitudes of 1,500 feet and 4,000 feet. I hope to be able to distribute seed of this next year from plants grown at Barliyar.

24. *Symphytum Asperinum*.—Abundance of the better varieties of this fodder is to be had in the neighbourhood of Ootacamund, and it is odd that there should be such a widespread prejudice against its use. Grown in deep soil in more humid places, such as the sides of streams, it would produce a crop of most nutritious food for cattle all through the dry season.

25. *Lazosiphon eriocephalus*.—This plant is nearly allied to the species of the same genus, which produces the Nepalese silk paper. It is extremely abundant on the Nilgiri plateau, and might I feel sure be used for the same purpose as its congener.

26. *Kol-naru (Helicteres Isora)*.—The bark of this species yields a fibre of great strength and delicacy. It is used chiefly for making fishing nets by the natives on the West Coast, especially about Mangalore. The plant grows abundantly in the woods on the lower slopes of the Nilgiris and over the whole of the Wynaad.

27. *Cochin-China tuberous-rooted vine*.—Some tubers and a quantity of seed was presented by M. Alb. De Guigne, the French Consul at Madras. From these a large number of plants has been raised, which will be put out for experimentation in all the Government Gardens.

28. *Waras (Flemingia Grahamiana?)*.—This is a strong herbaceous plant, belonging to the natural order Leguminosae. It is extremely abundant on the grassy slopes of the Nilgiris and probably extends equally commonly all over the Wynaad. The leaves and especially the fruits are most frequently densely clothed with bright red glands, which when separated and made into a paste yield a beautiful reddish yellow dye. The following is an account of the way in which "Waras" is grown and manufactured in Arabia by Major Hunter, Resident at Aden. Major Hunter's note is extracted from a paper by Mr. W. T. Thiselton Dyer in the Pharmaceutical Journal of May 31st, 1884:—

Note on "Waras" collected at Harrav in February and March 1884.

"In the neighbourhood of the city "Waras" is not now raised from seed sown artificially, and it is left to nature to propagate the shrub in the surrounding terraced gardens. The plant springs up amongst jawari, coffee, &c., in bushes scattered about at intervals of several yards more or less. When sown as among the Gallas it is planted before the rains in March. If the soil be fairly good a bush bears in about a year. After the berries (pods) have been plucked the shrub is cut down to within six inches of the ground. It springs up again after rain and bears a second time in about six months, and this process is repeated every second year till the tree dies. Rain destroys the berry (pod) for commercial purposes, it is therefore only gathered in the dry season ending about the middle of March. The bush grows to a maximum height of six feet, and it branches close to the ground. The growth is open and the foliage sparse. Each owner has a few acres of land.

"In the middle of February 1884, the following processes were observed:—
"The leaves (? fruiting shoots) of some plants were plucked and allowed to dry in the sun for three or four days [the picking is not done carefully and a considerable quantity of the surrounding twigs, &c., is mixed with the berries (pods)]. The collected moss was placed on a skin heaped up to about six or eight inches high and was tapped gently with a short stick about half an inch thick. After some time the pods were denuded of their outer covering of red powder which fell through the mass on to the skin. The upper portion of the heap was then cleaned away, and the residual reddish green powder was placed in a flat woven grass dish with a sloping rim of about an inch high. The receptacle was agitated gently and occasionally tapped with the fingers, the result being the subsidence of the red powder and the rising to the surface of the chaffy refuse, which latter was carefully worked aside to the edge of the dish, and then removed by hand. This winnowing was continued until little remained but red powder. (No great pains are ever taken to eliminate all foreign matter). A rotl was sold in 1884 for about 13 piasters = 1 rupee 10 annas nearly.

"Waras is sent to Arabia, chiefly to Yemen and Hadhramaut, where it is used as a dye, a cosmetic and a specific against cold. In order to use it a small portion of the powder is placed in one palm and moistened with water, the hands are then rubbed smartly together, producing a lather of a bright gamboge colour which is applied as required."

There are several species of *Flemingia* growing on the Nilgiris and their slopes all of which produce the red glands, the richest of all being probably *F. Vestita* var. *Neilgheriensis*.

From inquiries which I have made, I cannot learn that anything like the preparation of "waras" is manufactured in Southern India, though I am informed by the coolies working on the Government Cinchona estate at Naduvatom that the plant is used in some places in the Wynaad for dyeing clothes.

29. *Bodu (Orobancha Nicotiana)*.—Very rotten specimens of this parasite, which is so destructive to the tobacco crops, was sent me in the spring of last year, when I thought I identified it as *Orobancha (Phelipaea) Indica*. In this I was wrong as the examination of more perfect specimens, which I have since seen, show it to be the *Orobancha Nicotiana*. With respect to eradicating this pest, I could last year only suggest persistent hand-picking before it comes into flower, and I am unable now to add anything more to that suggestion.

(Signed) M. A. LAWSON,
Director.

OOTACAMUND,
15th September 1884.

ENCLOSURES.

METEOROLOGICAL OBSERVATIONS from April 1883 to March 1884 made on the Government Botanical Gardens, Ootacamund.

Months.	Maximum observed during the Month.	RAINFALL.		Days with Rain.	Days without Rain.
		Inches.	Cents.		
April 1883	70.18	4	03	8	22
May	69.15	6	22	14	17
June	68.10	3	12	18	12
July	66.05	8	36	24	7
August	66.21	6	04	22	9
September	70.09	1	86	5	25
October	65.26	10	43	22	9
November	71.01	4	55	13	17
December	70.25	4	09	9	22
January 1884	71.08	1	35	3	28
February	71.26	..	..	..	29
March	75.18	..	..	..	31
Annual mean	69.48	..	..	..	..
Total	..	50	05	138	228

OOTACAMUND,
15th September 1884.

(Signed) M. A. LAWSON,
Director, Govt. Gardens and Parks, &c.

RETURN of Seeds, Plants, &c., distributed from the Government Botanical Gardens, Ootacamund, Barliyar and Kalhatti, during the official year ending 31st March 1884.

Months.	Fruit Trees.	Value.	Timber Trees.	Value.	Ornamental Shrubs and Herbaceous Plants.	Value.
1	2	3	4	5	6	7
April 1883	211	RS. A. P. 31 0 0	60	RS. A. P. 19 8 0	2,033	RS. A. P. 96 4 0
May	..	..	15	4 0 0	133	42 4 0
June	45	16 0 0	92	46 10 0	582	110 12 0
July	4	2 0 0	270	68 8 0	48	42 4 0
August	25	25 0 0	237	62 4 0	1,329	100 6 0
September	..	..	121	41 14 0	188	83 12 0
October	..	..	158	16 0 0	90	52 12 0
November	..	..	23	6 12 0	91	29 0 0
December	6	4 8 0	42	12 0 0	86	15 4 0
January 1884	45	21 12 0	125	37 8 0	180	17 10 0
February	470	70 8 0	..	..	363	30 14 0
March	28	10 0 0	306	33 9 0	25,921	584 14 0
Total ..	834	180 12 0	1,449	348 9 0	31,044	1,206 0 0

Months.	Packets of Vegetable, Flower and other Trees.	Value.	Bouquets and Cut-flowers.	Value.	Sundry Charges.	Total.
	8	9	10	11	12	13
April 1883	204	RS. A. P. 92 2 0	B. C. FRs. 2 1	2 12 0	RS. A. P. 10 14 9	RS. A. P. 252 8 9
May	143	88 1 3	11 7	18 12 0	4 9 3	157 10 6
June	329	126 9 6	3 24	22 12 0	23 13 0	346 8 6
July	228	92 9 6	7 15	23 2 0	35 8 4	263 15 10
August	226	124 4 6	0 4	2 4 0	60 4 6	374 7 0
September	166	37 6 6	2 6	6 14 0	37 0 0	266 14 6
October	273	52 1 0	5 3	12 8 0	89 1 9	222 6 9
November	86	31 8 0	0 1	2 0 0	39 14 0	109 2 0
December	110	38 6 0	2 4	4 0 0	4 4 0	78 6 0
January 1884	88	35 5 0	1 0	2 8 0	63 4 9	177 15 9
February	25	29 10 0	4 4	7 12 0	10 8 0	149 4 0
March	236	91 7 9	1 1	3 8 0	39 4 0	762 10 9
Total ..	2,114	839 7 0	38 70	108 12 0	418 6 4	3,101 14 4

OOTACAMUND,
15th September 1884.

(Signed) M. A. LAWSON,
Director, Govt. Gardens and Parks, &c.

The following is a list of those who have been benefactors to the Gardens during the past year.

Date	From whom.	Particulars.
1st August 1883 ..	Agri-Horticultural Gardens, Madras.	12 packets of Eucalypti seed. 1 packet of Tristania conferta. 1 " of Catalpa Bignonioides.
1st September 1883.	Do. do. ...	32 packets of tree and shrub seeds.
24th " "	Do. do. ...	1 packet of Catalpa speciosa.
8th October " "	Do. do. ...	66 packets of tree and shrub seeds.
24th November " "	Do. do. ...	6 kinds of flowering plants.
24th March 1884 ..	Do. do. ...	1 packet of Juniperus Virginiana.
27th October 1883 ..	Christy and Co., Messrs., London.	12 beans of Maragogipe coffee.
3rd August " "	Director, Government Cinchona Plantations and Parks and Gardens, Ootacamund.	1 packet of Kengia Notiviana.
11th August " "	Do. do. ...	1 " of Convolvulus rufescens.
8th October " "	Do. do. ...	6 plants of Ophiopogon indicum.
22nd November, ..	Do. do. ...	1 packet of Impatiens, new sps.

List of those who have been benefactors to the Gardens during the past year—(Continued).

Date.	From whom.	Particulars.
24th November 1884.	Director, Government Cinchona Plantations and Parks and Gardens, Ootacamund.	1 packet of Smithia dichotoma.
24th " " "	Dawson, Mr. H. R., Madras ...	1 " of Tropæolum speciosum.
28th August " "	Hewston, Dr., Manantoddy ...	5 kinds of flowering plants.
20th November, ..	His Excellency the Governor, Madras.	1 packet of Coprosma Baneriana.
7th January 1884 ...	Do. do. ...	A collection of tree and shrub seeds received from Kew.
13th May 1883 ...	Leishman, Mr. T., Ootacamund...	1 packet of Hop seed.
28th August " "	Oakes and Co., Messrs., Ootacamund.	5 kinds of wheat.
27th October " "	Parsons, Mr. A., Simla ...	A collection of flowering plants, Potentillas, Clematis, &c.
20th June " "	Royal Gardens, Kew ...	1 packet of Rhus vernicifera.
25th July " "	Do. do. ...	30 lb. of carob.
4th August " "	Do. do. ...	6 kinds of tree and shrub seeds.
28th " " "	Do. do. ...	2 " do. do.
11th December, ..	{ Do. do. ... }	2 " do. do.
25th October " "	{ Royal Botanical Gardens, Ceylon. }	1 packet of Washingtonia filifera.
15th November, ..	Roberts, Mr. J. F. ...	1 " of Salvia Columboræ.
		A collection of tree and shrub seeds, 20 kinds.
		A collection of tree and shrub seeds, 68 kinds.
	Kew Nursery, Melbourne, Australia.	1 packet of Australian and New Zealand Fern Spores.
5th February 1884.	Superintendent, Saharunpur Gardens.	A few Australian orchids.
15th March " "	Scott, Col. S. P., Ootacamund ...	A collection of Himalayan and other seeds, 24 kinds.
2nd September 1883.	Underwood, Mr., Manantoddy ...	A few Kolanut tree seeds.
30th November " "	William and Brothers, Messrs. Ceylon.	1 plant of Modecca palmata.
		2 kinds of Cinchona seed.
		1 kind of Croton oil-seed.
		1 " of Oncosperma fasciculata.

The following is a list of those to whom seeds or plants have been distributed during the past year.

Date.	To whom.	Particulars.
1st January 1884 ...	Agri-Horticultural Gardens, Madras.	1 packet of Fuchsia seed.
10th March " "	Brown, Mr. Thos. ...	5 kinds of potato seed.
2nd October 1883 ...	Bidie, Brigade-Surgeon G., for the Calcutta Exhibition.	2 lb. of Taraxacum roots. 4½ lb. of Exogonum tubers. 9 lb. of Digitalis folio.
31st " " "	Caine, Colonel, Ootacamund.	1 lb. of Carob seed. 1 oz. of Tagasata seed. 5 packets of Maize seed.
6th November 1883 ...	Cameron, Mr. J., Bangalore ...	1 lb. of Cypress seed.
2nd July 1883	Dene, Rev. O., Ootacamund.	A collection of flowering plants.
20th February 1884 ...	Director, Government Cinchona Plantations, Ootacamund.	4 lb. of Frenela Rhomboidea seed. ½ lb. of Eucalyptus globulus seed.
25th March 1884 ...	Do. do. ...	8 lb. of Acacia melanoxylon seed.
10th " " "	Director of Agriculture and Commerce, Cawnpore.	1 lb. of Acacia decurrens seed.

List of those to whom seeds or plants have been distributed during the past year—(Continued).

Date.	To whom.	Particulars.
6th March 1884 ...	Fursdon, Mr. C. A. T., Nella-kóta.	6 plants of Rhea.
15th November 1883...	Honorary Secretary, Planters' Association, Yercaud.	100 Jalap tubers. 40 Peppermint plants. 1 lb. of carob seed. 4 oz. of black wattle seed. 1 oz. of Paspalum conjugatum seed.
9th July 1883...	Lone, Mr. A., Vayitri	4 plants of Ipecacuanha. 1 plant of Castilloa.
1st June ,, ...	Morgan, Mr. R., for the Botanical Gardens, Manantoddy.	2 ,, of Mangosteen. 2 ,, of Nutmeg. 6 ,, of Clove. 1 ,, of Cinchona Carthagena.
2nd July ,, ...	Martin, Mr. G. R.	1 packet of white Rhododendron seed. 2 lb. of Sorghum seed, 2 kinds.
7th ,, ,, ...	Manackji Soraliji, Ahmed-nugger.	2 packets of Eucalypti seed, 2 kinds. 1 packet of Michelia Nilagrica. 21 packets of Eucalypti seed.
15th November 1883...	Murray, Mr. G., Hosúr	1 packet of Ceara rubber seed. 12 Jalap tubers.
9th July 1883	Noek, Mr. N., Botanical Gardens, Ceylon.	6 packets of Eucalypti.
19th May ,,	Nagappah and Co., Messrs., Bangalore.	1 plant of Begonia. 2 plants of Fuchsia. 2 plants of Gymnogramma peruviana. A collection of tree, shrub and flowering plants.
8th December 1883	Parsons, Mr. A., Simla	8 kinds of Acacia seed. 3 kinds of Eucalypti seed. 24 plants of Prickly confrey.
15th November ,,	Redley, Mr. M., Lucknow	6 oz. of Reana seed.
2nd July 1883	Superintendent, Suttin's Estate, Kolacambay.	
1st November ,,	Smith, Mr. E. A., Madras	2 oz. of Couch grass seed.
15th May 1883	Trimen, Dr., Ceylon	9 kinds of tree and shrub seeds.
1st November 1883	Do. do.	A collection of tree, shrub, and flowering plants.
15th ,, ,,	Underwood, Mr., Manantoddy.	3 kinds of vegetable seeds.
6th ,, ,,	Wyllie, Mr. S., Wynaad	1 oz. of Brazil cherry seed.
30th ,, ,,	William and Brothers, Messrs., Ceylon.	1 lb. of Acacia Dealbata seed. 2 lb. of Acacia Melanoxylon seed. 2 oz. of Acacia Decurrens seed.
8th February 1884	Do. do.	1 oz. of Eucalyptus globulus seed.

Dr. STATEMENT showing the Receipts and Charges of the Government Botanical Gardens, Ootacamund, for the official year ending 31st March 1884. Cr.

Receipts.	Budget Allotment.	Amount.	Total.	Expenditure.	Amount.	Total.	Unexpended Balance.
To Cash on hand ..	Rs. A. P.	Rs. A. P.	Rs. A. P.	By Cash paid for salary of Curator, office, and fixed cooly establishment ..	Rs. A. P.	Rs. A. P.	Rs. A. P.
" do. being undischursed pay ..	.. ..	3,000 0 0	122 3 1	" Temporary cooly establishment ..	3,766 8 9	5,817 12 6	62 3 6
" Amount realized by sale of plants, &c. ..	.. ..	5,880 0 0	2,185 15 4	" Draining the lower part of the gardens ..	448 0 0	3,766 8 9	
" Cash received from the Collector of Nilgiris on account of salary of Curator, office, and fixed cooly establishment ..	.. ..	500 0 0	5,812 15 1	" Carting soil for filling disused roads and levelling the lawns ..	560 12 0	5,817 12 6	
" Cash received from the Collector of Nilgiris, being amount sanctioned in G.O., No. 874, dated 5th July 1872 ..	.. ..	500 0 0	500 0 0	" Formation of new roads and cutting gravel ..	406 2 0	3,766 8 9	
" Contingencies ..	.. ..	.. ..	.. ..	" Planting grass ..	484 3 0	2,349 14 0	
" Amount sanctioned in G.O., No. 1,000 0 0 ..	.. ..	.. ..	.. ..	" Clearing brushwood and felling Eucalypti on the northern slope of the upper part of gardens ..	59 13 0	699 8 10	
" Amount sanctioned in G.O., No. 302, dated 6th March 1884, for new works ..	.. ..	.. ..	.. ..	" Sundry works ..	699 8 10	699 8 10	
" Add sale of produce credited in ..	.. ..	.. ..	.. ..	" For purchase and freight, &c., of seeds and plants ..	53 2 0	53 2 0	
" treasury ..	.. ..	.. ..	.. ..	" For cost of and writing labels for plants ..	115 2 0	115 2 0	
" Cash received from the Collector of Nilgiris for contingencies and temporary establishment ..	.. ..	.. ..	.. ..	" For purchase of tools ..	59 0 0	59 0 0	
" Amount paid by Accountant-General to Master Attendant for garden contingencies ..	.. ..	.. ..	.. ..	" Do. of water pots ..	82 8 0	82 8 0	
" Amount transferred to the credit of Cinchona department for cost of seeds supplied ..	.. ..	.. ..	.. ..	" Do. of flower pots ..	37 0 0	37 0 0	
" Cash received from the Collector of Nilgiris on account of travelling allowance of the Curator to Sispara and Madras ..	.. ..	.. ..	.. ..	" Do. of service stamps ..	18 0 0	18 0 0	
" Amount paid by the Collector of Nilgiris, being municipal assessment on the buildings of the Government Gardens ..	.. ..	.. ..	.. ..	" Do. of office furniture ..	14 6 0	14 6 0	
" Cash received from the Collector of Nilgiris, being part of Rs. 2,790 sanctioned in G.O., No. 1909, dated 9th May 1883, on account of cooly lines ..	.. ..	.. ..	.. ..	" Do. of iron standards ..	55 0 0	55 0 0	
				" On account of postage on baughies received, &c. ..	3 1 6	3 1 6	
				" Carriage and packing of plants ..	652 8 7	652 8 7	
				" Carpenters' wages for the year ..	390 5 6	390 5 6	
				" Bricklayers' do. ..	142 7 0	142 7 0	
				" Sawyers' do. ..	62 11 7	62 11 7	
				" Blacksmith and stonecutters' wages ..	8 12 0	8 12 0	
				" For printing and binding charges ..	21 8 0	21 8 0	
				" Clothing for the two peons ..	26 0 0	26 0 0	
				" Accountant-General to Master Attendant ..	33 12 11	33 12 11	
				" To Cinchona department for seeds supplied ..	60 0 0	60 0 0	
				" To the Curator, Government Gardens, being his travelling allowance to Sispara and to the Flower show at Madras ..	155 0 0	155 0 0	
				" To the Collector of Nilgiris, being municipal assessment on buildings ..	223 0 0	223 0 0	
				" Sundry charges ..	580 8 8	580 8 8	
				" For the construction of cooly lines ..	911 9 2	911 9 2	
				" Cash credited in treasury ..	2,185 15 4	2,185 15 4	
				" Do. do. on account of stationery and printing ..	2 8 0	2 8 0	
				" Cash on hand ..	142 8 1	142 8 1	
Total ..	17,965 15 4	..	18,670 2 5	Total ..	18,670 2 5	18,670 2 5	62 3 6

OOTACAMUND,
15th September 1884.(Signed) M. A. LAWSON,
Director, Govt. Gardens and Parks, &c.

Dr. STATEMENT showing the Receipts and Charges of Sim's Park at Coonoor for the official year ending 31st March 1884. Cr.

Receipts.	Budget Allotment.	Amount.	Total.	Expenditure.	Amount.	Total.	Unexpended Balance.
	RS. A. P.	RS. A. P.	RS. A. P.		RS. A. P.	RS. A. P.	RS. A. P.
To cash received from the Collector of Nilgiris for contingencies and temporary establishment ..	1,600 0 0	1,583 7 5	1,583 7 5	By cash paid to gardeners and coolies employed during the year ..	1,156 4 5		
„ cash received from the Collector of Nilgiris, being amount sanctioned in G.O., No. 3896, dated 24th September 1883, for the fencing of Sim's Park ..	..	148 12 0	148 12 0	By cash paid for assessment and cooly lines ..	12 0 0		
				By cash paid for water pots ..	12 0 0		
				By cash paid to Messrs. Groves and Co. for fencing ..	148 12 0		
				By cash paid for pillar and step works ..	185 9 0		
				By cash paid to purchase of wood for Arbors, &c. ..	99 11 6		
				By cash paid for purchase of lawnmower ..	72 8 0		
				By cash paid for sundry charges ..	45 6 6		
Total ..	1,600 0 0	..	1,732 3 5	Total ..	..	1,732 3 5	16 8 7

Dr. STATEMENT showing the Receipts and Charges of the Government Botanical Gardens at Barliyar for the official year ending 31st March 1884. Cr.

Receipts.	Budget Allotment.	Amount.	Total.	Expenditure.	Amount.	Total.	Unexpended Balance.
	RS. A. P.	RS. A. P.	RS. A. P.		RS. A. P.	RS. A. P.	RS. A. P.
To amount realized by sale of plants, &c. ..	600 0 0	134 14 0	134 14 0	By cash paid to gardeners and coolies employed during the year ..	322 0 0		
„ cash received from the Collector of Nilgiris for contingencies and temporary establishment ..	350 0 0	346 5 8	346 5 8	By cash paid for weeding ..	14 5 8		
				By cash paid for the repair of gardener's hut ..	10 0 0		
				By cash credited in treasury ..	134 14 0		
Total ..	950 0 0	..	481 3 8	Total ..	..	481 3 8	3 10 4

Dr. STATEMENT showing the Receipts and Charges of the Government Botanical Gardens at Kalhatti for the official year ending 31st March 1884. Cr.

Receipts.	Budget Allotment.	Amount.	Total.	Expenditure.	Amount.	Total.	Unexpended Balance.
	RS.	RS. A. P.	RS. A. P.		RS. A. P.	RS. A. P.	RS.
To amount realized by sale of plants, &c. ..	50	92 4 0	92 4 0	By cash paid to gardeners employed during the year ..	193 0 0	193 0 0	7
„ cash received from the Collector of Nilgiris for gardeners ..	200	193 0 0	193 0 0	By cash credited in treasury ..	92 4 0	92 4 0	
Total ..	250	..	285 4 0	Total ..	..	285 4 0	7

OOTACAMUND,
15th September 1884.

(Signed) M. A. LAWSON,
Director, Govt. Gardens and Parks, &c.

Dr. STATEMENT showing the Receipts and Charges of the Stonehouse Park, Ootacamund, for the official year ending 31st March 1884. Cr.

Receipts.	Budget Allotment.	Amount.	Total.	Expenditure.	Amount.	Total.	Unexpended Balance.
	RS.	RS. A. P.	RS. A. P.		RS. A. P.	RS. A. P.	RS. A. P.
To cash received from the Collector of Nilgiris for temporary establishment ..	600	591 7 0	591 7 0	By cash paid to gardeners and coolies employed during the year ..	591 7 0	591 7 0	8 9 0
Total ..	600	..	591 7 0	Total ..	..	591 7 0	8 9 0

Dr. STATEMENT showing the Receipts and Charges of the Upper Norwood, Ootacamund, for the official year ending 31st March 1884. Cr.

Receipts.	Budget Allotment.	Amount.	Total.	Expenditure.	Amount.	Total.	Unexpended Balance.
	RS.	RS. A. P.	RS. A. P.		RS. A. P.	RS. A. P.	RS. A. P.
To cash received from the Collector of Nilgiris for contingencies and temporary establishment ..	1,000	1,000 4 6	1,000 4 6	By cash paid to gardeners and coolies employed during the year ..	903 0 6		..
				By cash paid for purchase of tools ..	88 4 0		..
				By cash paid for sundry charges ..	9 0 0		..
Total ..	1,000	..	1,000 4 6	Total ..	..	1,000 4 6	..

Dr. STATEMENT showing the Receipts and Charges of the Government Medicinal Gardens, Ootacamund, for the official year ending 31st March 1884. Cr.

Receipts.	Budget Allotment.	Amount.	Total.	Expenditure.	Amount.	Total.	Unexpended Balance.
	RS.	RS. A. P.	RS. A. P.		RS. A. P.	RS. A. P.	RS. A. P.
To amount realized by sale of Jalap tubers, &c. ..	650	688 13 0	688 13 0	By cash paid to gardeners and coolies employed during the year ..	317 1 6	317 1 6	32 14 6
To cash received from the Collector of Nilgiris for temporary establishment ..	350	317 1 6	317 1 6	By cash credited in treasury ..	688 13 0	688 13 0	..
Total ..	1,000	..	1,005 14 6	Total ..	..	1,005 14 6	32 14 6

Dr. STATEMENT showing the Receipts and Charges of St. Stephen's Church, Hill Park, Ootacamund, for the official year ending 31st March 1884. Cr.

Receipts.	Budget Allotment.	Amount.	Total.	Expenditure.	Amount.	Total.	Unexpended Balance.
	RS.	RS. A. P.	RS. A. P.		RS. A. P.	RS. A. P.	RS. A. P.
To cash received from the Collector of Nilgiris for temporary establishment ..	100	72 8 0	72 8 0	By cash paid to gardeners employed during the year ..	72 8 0	72 8 0	27 8 0
Total ..	100	..	72 8 0	Total ..	..	72 8 0	27 8 0

OOTACAMUND,
15th September 1884.

(Signed) M. A. LAWSON,
Director, Govt. Gardens and Parks, &c.

Dr.

FINANCIAL STATEMENT of the Government Botanical Gardens and Parks on the Nilgiris for the official year ending 31st March 1884
as compared with the Budget Estimate and Actuals of the last year.

Cr.

Heads.	RECEIPTS.			Unexpended Balance.	Heads.	EXPENDITURE.			Unexpended Balance.
	Budget Allotment.	Actuals.	Actuals of last year.			Budget Allotment.	Actuals.	Actuals of last year.	
<i>Government Botanical Gardens, Ootacamund.</i>									
To cash on hand on 1st April 1883 ..	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
To cash on hand, being undischarged pay ..	..	117 5 8	268 4 0	..		..	..	..	..
To amount realized by sale of plants, &c. ..	3,000 0 0	2,185 15 4	2,740 13 7	62 3 6		5,880 0 0	5,817 12 6	5,809 7 0	62 3 6
To cash received from the Collector of Nilgiris on account of salary of Curator, office, and fixed cooly establishment ..	5,880 0 0	5,812 15 1	5,809 7 0	..		..	..	..	..
To cash received from the Collector of Nilgiris, being amount sanctioned in G.O., No. 874, dated 5th July 1872 ..	500 0 0	500 0 0	500 0 0	..		..	..	..	..
Temporary establishment ..	..	..	..	..		8,585 15 4	..	..	..
Contingencies ..	..	..	..	..		..	..	..	..
Amount sanctioned in G.O., No. 302, dated 6th March 1884, for new works ..	..	..	..	..		..	..	..	..
Add sale of produce credited in treasury ..	..	..	..	..		..	..	..	..
To amount received from the Collector of Nilgiris for contingencies and temporary establishment, &c. ..	..	8,665 10 10	6,988 3 8	..		..	3,766 8 9	4,567 3 8	..
To amount paid by the Accountant-General to Master Attendant for garden contingencies ..	..	33 12 11	..	..		..	2,349 14 0	..	..
To amount transferred to the credit of the Cinchona department for seeds supplied.	..	60 0 0	..	..		..	699 8 10	874 13 8	..
To amount received from the Collector of Nilgiris for travelling allowance and municipal assessment ..	..	378 0 0	..	..		..	53 2 0	208 0 0	..
To amount received from the Collector of Nilgiris for cooly lines ..	..	911 9 2	..	..		..	2,740 11 9	1,989 0 8	..
Total ..	17,965 15 4	18,670 2 5	16,306 12 3	62 3 6		14,965 15 4	18,670 2 5	16,306 12 3	62 3 6
<i>Barliyār Garden.</i>									
To amount realized by sale of plants, &c. ..	600 0 0	134 14 0	383 10 9	..		350 0 0	322 0 0	312 0 0	3 10 4
To cash received from the Collector of Nilgiris for contingencies and temporary establishment ..	350 0 0	346 5 8	333 6 3	3 10 4		..	24 5 8	21 6 3	..
Total ..	950 0 0	481 3 8	717 1 0	3 10 4		350 0 0	134 14 0	383 10 9	..

Dr.

FINANCIAL STATEMENT of the Government Botanical Gardens and Parks on the Nilgiris for the official year ending 31st March 1884, &c.—
(Continued).

Cr.

Heads.	RECEIPTS.			Unexpended Balance.	Heads.	EXPENDITURE.			Unexpended Balance.
	Budget Allotment.	Actuals.	Actuals of last year.			Budget Allotment.	Actuals.	Actuals of last year.	
<i>Kalhatti Garden.</i>									
To amount realized by sale of plants, &c. ..	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
To cash received from the Collector of Nilgiris for temporary establishment ..	50 0 0	92 4 0	17 14 0	..		200 0 0	193 0 0	186 0 0	7 0 0
Total ..	200 0 0	193 0 0	186 0 0	7 0 0		..	92 4 0	17 14 0	..
<i>Stonehouse, Park.</i>									
To cash received from the Collector of Nilgiris for temporary establishment ..	250 0 0	285 4 0	203 14 0	7 0 0		200 0 0	285 4 0	203 14 0	7 0 0
Total ..	600 0 0	591 7 0	550 15 10	8 9 0		600 0 0	591 7 0	550 15 10	8 9 0
<i>Sim's Park, Coonoor.</i>									
To cash received from the Collector of Nilgiris for contingencies and temporary establishment ..	600 0 0	591 7 0	550 15 10	8 9 0		1,600 0 0	1,156 4 5	1,210 6 7	16 8 7
To cash received from the Collector of Nilgiris, being amount sanctioned in G.O., No. 3896, dated 24th September 1883, for fencing of the Sim's Park ..	..	148 12 0	..	..		..	12 0 0	12 0 0	..
Total ..	1,600 0 0	1,732 3 5	1,471 12 7	16 8 7		1,600 0 0	148 12 0	..	..
<i>Medicinal Gardens, Ootacamund.</i>									
To amount realized by sale of Jalap tubers, &c., to the public ..	650 0 0	688 13 0	296 10 0	..		350 0 0	317 1 6	320 7 9	32 14 6
To cash received from the Collector of Nilgiris for temporary establishment ..	350 0 0	317 1 6	320 7 9	32 14 6		..	688 13 0	296 10 0	..
Total ..	1,000 0 0	1,005 14 6	617 1 9	32 14 6		350 0 0	1,005 14 6	617 1 9	32 14 6
<i>Upper Norwood.</i>									
To cash received from the Collector of Nilgiris for contingencies and temporary establishment ..	1,000 0 0	1,000 4 6	1,179 7 6	..		1,000 0 0	903 0 6	1,139 12 6	..
Total ..	1,000 0 0	1,000 4 6	1,179 7 6	..		..	97 4 0	39 11 0	..
<i>St. Stephen's Church Hill Park.</i>									
To cash received from the Collector of Nilgiris for temporary establishment ..	100 0 0	72 8 0	196 0 0	27 8 0		100 0 0	72 8 0	196 0 0	27 8 0
Total ..	100 0 0	72 8 0	196 0 0	27 8 0		100 0 0	72 8 0	196 0 0	27 8 0

OOTACAMUND,
15th September 1884.

(Signed) M. A. LAWSON,
Director, Govt. Gardens and Parks, &c.

GOVERNMENT OF MADRAS.

REVENUE DEPARTMENT.

READ—the following letter from the Director of Government Cinchona Plantations, Parks and Gardens, Nilgiris, to the Secretary to Government, Revenue Department, dated 15th September 1884, No. 259 :—

I have the honor to forward to you my report on the Government Gardens and Parks, Nilgiris, for the past year.

ORDER—dated 20th October 1884, No. 1155, Revenue.

Miscellaneous.

With the letter read above the Director submits his report for the year 1883-84 on the progress and condition of the Government Botanical Gardens and Parks on the Nilgiris.

2. SEASON.—The total rainfall registered during the year in the gardens at Ootacamund was 50·05 inches, being about 16 inches less than in 1882-83, though still slightly above the yearly average. Owing to the unusually severe frosts in January, many of the more tender plants in the gardens were injured, but the season was not on the whole unfavorable to horticultural operations.

3. BOTANICAL GARDENS, OOTACAMUND.—Many of the alterations and improvements advocated by the Director and approved by Government in reviewing the report for the previous year, were carried out in 1883-84. The swampy portions of the gardens were thoroughly drained, the lawns below the lower terrace levelled and re-grassed, the roads and walks remade, and the greater number of the trees and shrubs identified and labelled. No steps have yet been taken towards the establishment of an experimental kitchen garden or towards extending the scope of the meteorological observations taken daily at the gardens. The former suggestion has been delayed owing to the demand for labor in connection with more pressing improvements, while the latter proposal must await the purchase of the necessary instruments, an item of expenditure not provided for in the budget for the year. Of the special allotment of Rs. 2,790 for new cooly lines, Rs. 911 were expended during the year and the balance re-allotted at its close. Lines for fifteen coolies and their dependents have now been completed, which it is intended shortly to supplement by accommodation for ten more families.

4. The several buildings connected with the gardens underwent the usual repairs, including the lower conservatory, which is stated, however, to be in so bad a condition that it must soon become matter for consideration whether it should not be pulled down and removed to some more suitable part of the grounds. The propagating houses are also stated to be in bad condition and to need considerable alteration. It is observed that an expenditure of Rs. 522 was incurred on them during the first five months of the current year.

5. No information is furnished as to the progress of the catalogue of plants which was stated in the report for the previous year to be in process of compilation.

6. GOVERNMENT HOUSE GARDENS.—Most of the work of reconstruction connected with these gardens has now been completed, and it only remains now to clear away the scrub which still disfigures some portions of the grounds and to plant them with ornamental trees.

7. STONEHOUSE PARK.—Pending the completion of the building and road-making operations in connection with the Government offices, but little can be done for the improvement of this property. Many of the more unsightly trees have, however, been cut down and others planted in their stead. The Director urges the importance of protecting these young plantings from the ravages of stray cattle, but in view of the open nature of the estate, it is not easy to see how this is to be done at a reasonable cost. The exclusion of cattle at night would be a matter of very great difficulty,

while during the day the cheapest and most effectual plan would probably be to employ watchers for the purpose.

8. CHURCH HILL AND CREWE HALL ESTATE.—No special work was carried out during the year in connection with these properties. With regard to the latter, the Director remarks that proposals for its management and ornamentation will be submitted with his budget for 1885-86, but in the budget, which has since been received, no reference is made to the subject.

9. SIM'S PARK, COONOR.—No new work was undertaken during the year. The usual repairs were carried out, and the lawn tennis ground lent to a private committee was re-included in the park, the committee having failed to complete the courts and fence them off as required. Most of the plants were named and are now in process of being labelled.

10. BARLIYAR GARDENS.—The Government note the Director's belief that the unhealthiness of Barliyár has been exaggerated, and gather that he is no longer disposed to recommend the abandonment of the gardens there in favor of a possibly more wholesome locality. There can be no doubt that the climate is admirably adapted to the growth of certain species, and it has yet to be shown that similar results are attainable elsewhere.

11. KALHATTI GARDENS.—In his present report the Director recommends the abandonment of the Kalhatti gardens in favor of a site to be selected in the neighbourhood of Gúdálúr. The reasons urged are that the climate and position of the Kalhatti gardens are so similar to those of Sim's Park, Coonor, as to render the maintenance of the former unnecessary, and that an experimental garden at Gúdálúr, besides having the advantage of a different climate, could be easily supervised from Naduvatam. The suggestion is certainly worthy of consideration, and should the Director on further inquiry and consideration be still disposed to recommend the change, the Government will be prepared to receive favorably his matured proposals. The cost of a suitable plot of ground at Gúdálúr should be ascertained, and proposals should also be submitted for the disposal of the existing gardens at Kalhatti.

12. HERBARIUM, &c.—The Government note with pleasure the very great progress achieved by Mr. Lawson in the formation of a herbarium and the valuable assistance afforded him by various gentlemen, to whom the thanks of Government are due, towards the attainment of so important an object. The suggestion that a district museum of local products should be established in Ootacamund commends itself to Government, and the Director will accordingly be requested to work out the details of the scheme in communication with the Superintendent of the Government Central Museum, Madras, the Conservator of Forests, Northern Circle, and the Collector of the Nilgiris.

13. SPECIAL PRODUCTS.—The cultivation of *Cinchona Carthagensis* was carried on very successfully during the year. Of *Cinchona Santa Fé* but a single specimen remained in the propagating house in October 1883, and this plant, being in bad condition, was removed to the Botanical Gardens, where it has since made a very satisfactory growth and furnished no fewer than thirteen cuttings. About 250 seedlings of *Remijia Purdieana* (Cuprea bark) were raised during the year from seed obtained from Kew.

14. The different rubber plants under cultivation did well, for the most part, during the year, but the specimens of *Landolphia florida* at Barliyár, which were described as small and weak in the previous year, are now reported to have died. There can be little doubt, however, judging by the better results obtained by Mr. Ferguson of Calicut and the Agri-Horticultural Society of Madras, that this species will eventually be established in India. The Collector of Salem will be requested to ascertain and report the present condition of the plants of *Castilleja elastica* stated to have been sent to Hosúr.

15. The Government note the success which has attended the cultivation of *Cacao* at Barliyár. The creation of a demand for this plant, as well as for the mangosteen and litchi, is probably only a question of time, whereas in the case of Liberian coffee there would seem to be practical disadvantages attending its cultivation, which are likely always to outweigh its comparative freedom from leaf-disease.

16. Experiments with potatoes were continued with fair results, and two other descriptions of tuber (*Convolvulus chrysorrhizus* and *Arracacia esculenta*) were introduced. Sufficient time has not yet elapsed to afford the means of judging as regards these latter experiments. Four plants of the Cola nut, which is stated to be eaten largely on the coast of Guinea, and a large number of plants of the Cochin-China tuberous-rooted vine, which is said to yield good wine, were raised from seed during the year. Nothing is stated as regards the growth of the Carob tree at Barliyár and Kalhatti.

17. The Government note the Director's remarks as regards *Paspalum conjugatum* and *Symphytum asperinum*. It is presumed that further experiments are considered unnecessary in connection with the other fodder plants mentioned in previous reports.

18. Some information would have been interesting as regards the experimental cultivation of *Acacia decurrens*, which, it was stated in the previous year's report, was about to be commenced on a comparatively large scale by a gentleman near Coonor.

19. Among other valuable plants introduced in the course of the year were the Japan lacquer plant, the Japan wax plant, and the *Quilaja saponaria* of Chili. An experiment with the *Yucca gloriosa* showed that it possessed saponaceous properties akin to those of the last-mentioned species. At Barliyár the beautiful *Amherstia nobilis* flowered for the first time.

20. The attention of the Director of Agriculture will be drawn to the very interesting note on *Flemingia Grahamiana* contained in paragraph 28 of Mr. Lawson's report, as also to paragraphs 25 and 29, the latter furnishing the true scientific name of the bodu parasite, and the former relating to *Lasiosiphon eriocephalus*, a congener of the *Daphne papyracea* or paper-shrub of the Himalayas, which yields the Nepaul silk paper said to be universally used in Kumaon and elsewhere for genealogical records, deeds, and other documents requiring unusual fineness and durability. As regards the Kol-naru (*Helicteres Isora*) the Government observe that from the experiments made by Messrs. Arbuthnot and Company, it would appear that this fibre is not suitable for weaving purposes.

21. The stock of *Ipecacuanha* plants increased largely during the year, and the Director states that there will be no difficulty in future in increasing indefinitely the number available for distribution. There was also a large increase in the number of jalap plants sold to the general public, showing that the cultivation of this drug is being rapidly taken up by private individuals. No mention is made, however, of *Turaxacum*, medicinal rhubarb, or *Hyoisycamus*.

22. The Government observe that the statements of receipts and charges appended to the report contain a number of unnecessary entries, especially under the head of receipts. There is no need to show as charges in an annual account prepared for submission to Government the sums paid into the treasury at different times, nor as receipts, the sums drawn therefrom for the purpose of meeting sanctioned expenditure. Only genuine cash transactions should appear in the account, the actual receipts from sale of plants, &c., being shown under receipts, and the actual charges incurred in the upkeep and improvement of the gardens under expenditure. The two statements appended to this order illustrate the transactions of the year on this principle, and the forms therein adopted should be followed in future in place of those hitherto in use. Mere book transactions such as that in the accounts submitted relating to a supply of seed from the Cinchona Department should be excluded altogether, and accordingly this item finds no place in the appended statements. It must be understood that expenditure must be strictly confined within the limits of the budget estimate and subsequent supplementary allotments (if any), and that receipts from sale of plants, &c., cannot be drawn against as distinct from the budget and other allotments, but must be paid into the treasury for credit to Government. Seeing that any balance remaining unexpended at the close of the year lapses to Provincial Funds, the entry of "cash in hand" is misleading, and is accordingly omitted in the appended statements.

23. The receipts of the year amounted to Rs. 3,104-6-4 against Rs. 4,300, the budget estimate, and Rs. 3,549-15-4, the actuals of the previous year. The falling off occurs under sale of plants, fruit, seeds, &c., at Ootacamund and Barliyár. The Government would be glad to know whether their suggestion of 1878-79 referred to in the orders reviewing the reports for the last two years has been acted upon up to date.

24. The charges amounted to Rs. 19,531-12-7, exceeding the budget estimate by Rs. 613-0-7 and the actuals for 1882-83 by Rs. 3,024-9-2. The excess over the budget would have been much larger but for a special allotment of Rs. 2,790 for cooly lines, only one-third of which was expended. Under "contingencies" in connection with the Ootacamund Gardens, Rs. 2,525-11-9 were expended against an allotment of only Rs. 1,000. Similar excess expenditure is noticeable under "temporary establishment" (including new works) and "acclimatization of foreign plants."

25. In conclusion, the Government have much pleasure in expressing their satisfaction with the progress achieved during the year; and note especially the Director's acknowledgments of the skill and energy displayed by the Curator, Mr. Jamieson, in carrying out his proposals, and of the hearty assistance rendered him by the rest of his officers.

(True Extract.)

(Signed) H. E. STOKES,
Secretary to Government.

To the Director, Government Cinchona Plantations, Parks and Gardens, Nilgiris.
 „ the Director of Revenue Settlement and Agriculture.
 „ the Board of Revenue.
 „ the Accountant-General.
 „ the Superintendent, Government Central Museum.
 „ the Surgeon-General with the Government of Madras.
 „ the Public Works Department.
 „ the Financial Department.
 „ the Honorary Secretary, Agri-Horticultural Society, Madras.
 „ the Collector of Nilgiris.
 „ the „ of Salem.
 „ the Honorary Secretary, Wynaad Planters' Association.
 „ the „ „ Yercaud „ „
 „ the „ „ Nilgiri „ „
 „ the Editors' Table.

APPENDIX.

Statement showing the Receipts of the Government Botanical Gardens and Parks for the Official Year ending 31st March 1884.

	Actuals, 1882-83.			Budget Estimate, 1883-84.			Actuals, 1883-84.		
	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.
<i>Government Gardens, Ootacamund.</i>									
Sale of plants, seeds, &c. ...	2,740	13	7	3,000	0	0	2,185	15	4
Sale of old box ...	...	...	...	...	...	...	2	8	0
	2,740	13	7	3,000	0	0	2,188	7	4
<i>Government Gardens, Barliyar.</i>									
Sale of plants, fruit, &c. ...	383	10	9	600	0	0	134	14	0
<i>Government Gardens, Kalhatti.</i>									
Sale of plants, &c. ...	17	14	0	50	0	0	92	4	0
<i>Government Medicinal Gardens, Ootacamund.</i>									
Sale of Jalap tubers, &c. ...	407	9	0	650	0	0	688	13	0
Total ...	3,549	15	4	4,300	0	0	3,104	6	4

Statement of Expenditure on the Government Botanical Gardens and Parks for the Official Year ending 31st March 1884.

	Actuals, 1882-83.			Budget Estimate, 1883-84.			Actuals, 1883-84.		
	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.
Pay of Curator ...	3,600	0	0	3,600	0	0	3,600	0	0
1. Travelling Allowance of Curator ...	...	...	...	...	...	...	155	0	0
2. Pay of Curator's office establishment ...	549	4	6	552	0	0	552	0	0
	4,49	4	6	4,152	0	0	4,307	0	0
<i>Government Gardens, Ootacamund.</i>									
1. Overseers and fixed cooly establishment.	1,660	2	6	1,728	0	0	1,665	12	6
2. Temporary establishment ...	4,567	3	8	5,400	0	0*	6,116	6	9
3. Acclimatization of foreign plants (G.O., 5th July 1872, No. 874) ...	874	13	8	500	0	0	699	8	10
4. Labelling of plants ...	2	8	0	...	...	...	53	2	0
5. Construction of cooly lines ...	...	...	...	2,790	0	0†	911	9	2
6. Contingencies ...	1,989	0	8	1,000	0	0	2,525	11	9
	9,299	4	6	11,418	0	0	11,972	3	0
<i>Government Gardens, Barliyar.</i>									
1. Temporary establishment ...	333	6	3	350	0	0	346	5	8
<i>Government Gardens, Kalhatti.</i>									
1. Temporary establishment ...	186	0	0	200	0	0	193	0	0
<i>Government Medicinal Gardens, Ootacamund.</i>									
1. Temporary establishment ...	320	7	9	350	0	0	317	1	6
<i>Sim's Park, Coonoor.</i>									
1. Temporary establishment and contingencies.	1,471	12	7	1,748	12	0‡	1,732	3	5
<i>Stonehouse Park, Ootacamund.</i>									
1. Temporary establishment ...	550	15	10	600	0	0	591	7	0
<i>Church Hill Park.</i>									
1. Temporary establishment ...	196	0	0	100	0	0	72	8	0
Total ...	16,507	3	5	18,918	12	0	19,531	12	7

* Including amount sanctioned in G.O., 6th March 1884, No. 302.

† Sanctioned in G.O., 9th May 1883, No. 1909.

‡ Including amount sanctioned in G.O., 24th September 1883, No. 3596.

Exd. W. J. Lewis.

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Govt. of (1884) Madras.

REVENUE.

B. No. 2816. W. of 10. Nov. 1884.

Commd to the
Supt. Engineer
IV Circle.

By C.B.
D.W.

Issued

Recd.

Encl.

G.O., 20th October 1884, No. 1155.

B. No. 2816. W. of 10. Nov. 1884.

OCTOBER.

Government Botanical Gardens and
Parks, Nilgiris.

Report on — for 1883-84, reviewed.

S.E. IV Circle

W. of 10. Nov. 1884.