No. 2827 dr of 8th Oct/83

By

Communicated to the Supdg Engr. Fourth Circle, Who will instruct the Ex: Engineer Nilgiri Division to draw up without delay, in communication with the Director the Estimates referred to in para 2 of the G.O. in the Rev. Dept

CJ.
4/10

Rev
8/10

S. E. Fourth Circle
E. Fourth Circle

7.10

for 9/10

Rn. No. 4288

Govt. of {1883} Madras.

REVENUE.

20 L.C. with Sn

Issued

Recd. 2/10/83 Encl. 1

G.O., 31st August 1883, No. 1064.

B
No. 2827 dr of 8th Oct/83

AUGUST.

5. L.C

Government Botanical Parks and Gardens,

Nilgiris.—Reviewing the report on the — for 1882-83.

2 Copies sent to Gr G. with order

Guthrie Respt Regts

GOVERNMENT OF MADRAS.

REVENUE DEPARTMENT.

Read—the following letter from M. A. LAWSON, Esq., Director of the Government Parks and Gardens, to the Secretary to Government, Revenue Department, dated Ootacamund, 19th August 1883:—

Mr. Jamieson, the Curator, who has been in charge of the Government Gardens, having reported upon their progress during the past year, I propose confining my remarks to such alterations as I consider desirable should be made in them:—

A.—The Government Gardens—Ootacamund.

1. Many portions of these gardens are very swampy, and it is absolutely necessary that a thorough system of drainage should be undertaken forthwith.
2. The lawns need to be re-levelled; and for their further proper keeping, mowing machines are wanted.
3. The roads and walks are in a bad state of repair; and of both of these there are more than sufficient for the requirements of the gardens. It would be well to do away with such as are not wanted, and to re-make the rest.
4. There are many rare and interesting trees and shrubs, which are not named. The naming of these should be proceeded with at once.
5. It would add largely to the beauty of the gardens, if all that part, which lies between the entrance gates, the old Cinchona laboratory and the lower terrace was to be laid out in a more park-like manner; while retaining the portion immediately above the terrace as an ornamental garden.
6. It would increase the efficiency of the gardens if the terraces, which contain the present nurseries, were enlarged and made serviceable for the purposes of—

   A.—An Herbaceous Botanical Garden.
   B.—An Experimental Kitchen Garden.

7. A more extended series of meteorological observations, than at present made, would be of considerable advantage; in so far as it would enable us to make more accurate comparisons between the climates of this and other localities. The record of such observations might be posted daily on one of the entrance gates, and thus furnish information of an always interesting character to the public. Should this suggestion be adopted, it would be necessary to purchase the following instruments, and to make arrangements for their being properly served and properly maintained.

Instruments.

1. Barometer.
2. Thermometer—
   - *a.* Maximum.
   - *β.* Minimum.
   - *γ.* Solar radiating (black bulb.)
   - *δ.* Wet and dry bulb.
3. A Rain Gauge we possess.

B.—Sim's Park—Coonoor.

1. The gardens here are generally in a better state of repair and more neatly kept than those at Ootacamund; but, as at Ootacamund, the drainage requires looking to; while the roads and walks in many cases need substantial repairs.
2. The plants need naming.
3. Meteorological observations, similar to those, which I have suggested should be taken at Ootacamund, would be of great use.
4. It would add largely to the pleasure and convenience of those residing in Coonoor and Wellington, if the Shola (now a Government Forest Reserve) which lies in the lower part of that ravine in which Sim's Park is situated, and which connects the park with the Wellington Racing flat, was to be taken into the park; and a road made through it, so that persons passing between Coonoor and Wellington might be able to drive direct through the park.

C.—Barliyár.

This garden contains a few rare and very interesting plants; and is admirably situated for experimenting upon tropical species. It is, however, a deadly excavation in a deadly ghât, and it will be for Government to decide whether it shall be retained or if another spot less unhealthy shall be acquired.

N. B.—I have been informed by the Overseer that during the months of February and March last, no less than nine coolies were dismissed on account of their having been attacked by fever. The gardens employ only one laborer at a time.

D.—Kalhatti.

This garden I have not yet visited.

Order—dated 31st August 1883, No. 1064, Revenue.

Miscellaneous.

* Dated 18th July 1883.

The Director submits a brief report on the alterations required in the Nílgiri Botanical Parks and Gardens, a full report * on which for the year 1882-83 had previously been received from the Curator Mr. Jamieson. These documents may conveniently be disposed of at one and the same time in order that the improvements suggested by Mr. Lawson may be set in hand in the current year 1883-84, a supplemental grant of the necessary amount being made for the purpose.

2. To deal first with the Director's letter, the Right Honorable the Governor in Council entirely concurs in thinking that the drainage is susceptible of considerable improvement in parts of the *Ootacamund Gardens*, and that a decrease in the number of roads and an improvement in the upkeep of the lawns is most desirable. On receipt of an indent, the necessary mowing machines and the instruments required for meteorological observations will be procured. Their cost and that of the alterations and improvements proposed in paragraphs 1, 5 and 6 of Mr. Lawson's letter should be included in the Budget Estimate for 1884-85, which will be due on the 1st October next, and the Department of Public Works will be requested to issue orders for the speedy preparation of estimates by the Executive Engineer in concert with the Director. The labelling ordered by G.O., 21st September 1882, No. 3097, should be completed as soon as possible. The Government highly approve the proposed institution of an experimental kitchen garden in which vegetables which hitherto have not been grown on the Nílgiris may be given a fair trial, and they note with regret that Mr. Jamieson's statement (paragraph 19 of report) that little or no improvement in the cultivation of the finer sort of vegetables has taken place, is only too true.

3. The proposed repairs at *Sim's Park* and the cost of the meteorological instruments required there, should also be estimated at an early date for inclusion in the Budget of 1884-85, and the plants should certainly be labelled as those in the Ootacamund Gardens have been. The Conservator of Forests, Northern Circle, and the Collector of Nílgiris will be requested to give their opinion on the proposal made for including the shola, referred to in Mr. Lawson's letter, in the park and for constructing a road through it from Coonoor to Wellington.

4. The Government will await the Director's matured opinion as to the proposed abandonment of the gardens at Barliyár, the climate of which, though unfortunately so inimical to man, has none the less proved favorable to exotics, which have not hitherto succeeded elsewhere. It is observed, moreover, that no death from fever or sickness occurred among the coolies during the year under report.

5. Turning to the *Curator's Report*, the Government observe that the receipts (Rs. 3,439-0-4) which are in excess of those of the last year by Rs. 412-6-0 probably admit of further development, and that their suggestion of 1878-79, referred to in the review of last year's report, has not apparently been acted on up to date. Much has been done during the year under report to enhance the beauty of the *Ootacamund Gardens*, and the turfing over of the gravel road leading from the entrance gate to the Conservatory, which has been taken in hand since Mr. Jamieson wrote his report, will vastly improve their general appearance. The Government, however, see no reason at present to remove the Conservatory. The cooly lines, it is hoped, will be completed long ere the expiry of the current year.

6. The Government learn with great satisfaction that *Cinchona Carthagena* continues to make a very satisfactory growth at Coonoor and Kalhatti and that healthy seedlings have been propagated from the varieties of *Calisaya* (*Morada*, *Verde*, *Zamba morada*) obtained last year from the Secretary of State; and they trust that it may prove, as Mr. Jamieson holds, that the *Castilloa* is successfully established in the Nílgiri District. The Conservator of Forests, Southern Circle, will report at an early date as to its alleged failure at Nilambúr, and the progress of the plants distributed should be carefully watched and noted in next year's report. The Government will also be glad to hear of the result of the experiment being made in Coonoor with *Acacia decurrens*, 10 cwt. of the bark of which is, it is observed, to be forwarded to Cawnpore at the request of the Director of Agriculture and Commerce, North-Western Province and Oudh.

7. The Curator should persevere in experiments with potatoes. Mr. Watson's report on fodder plants should be published in the District Gazette. The Tagasaste, Mr. Jamieson's former praise of which is quoted in the Kew Report for 1881, is, it now appears, inferior to Teosinte and Prickly Comfrey and cattle will not eat it.

8. The results of the Curator's tour (paragraph 20 of report) are satisfactory; but it is observed that no definite information is given as to the progress made with the catalogue of plants, the preparation of which under Mr. Lawson's superintendence was enjoined on Mr. Jamieson by the order on last year's report, and that nothing is said as to the result of the Curator's visit to the Madras Agricultural Exhibition, which is only incidentally alluded to in paragraph 59 of his report.

9. The Committee who undertook to construct the Lawn Tennis ground in *Sim's Park*, Coonoor, will be called on to complete the courts and fence them off from the park, or to relinquish them altogether, as their present unfinished condition is reported to mar the appearance of the park. Attention is directed in this connection to paragraph 13 of G.O., 12th December 1882, No. 1398. The condition of the *Cinchona Ledgeriana* plants raised from Java seed in 1880 is matter for congratulation.

10. Operations at the *Barliyár Garden* evidence no inconsiderable progress, and the Government learn with very great pleasure of an improvement in the health and growth of *Ipecacuanha* which, in the year under report, has *seeded* for the first time. Its propagation at Ootacamund is satisfactory and no possible pains should be spared in securing the successful establishment of this "the most important of

recent introductions to India," experiments with which have recently been ordered * in various localities throughout the Presidency.

* G.O., 18th November 1882, No. 1276.

11. *Castilloa Elastica* made a good growth during the year under report and the further progress of the four plants permanently put out will be watched with interest. *Hevea* also promises well. The weakly *Landolphias* should receive every attention. The threatened exhaustion of the natural sources of supply of Gutta-purcha and India rubber makes the acclimatisation of all plants of the rubber species a matter of great importance.

Kew Report, 1881, pp. 38, 39.

12. If the Director considers it necessary, the Government will be prepared to consider the propriety of sanctioning "a more liberal grant for *Kalhatti Garden*." Mr. Jamieson does not say on what particular head he considers more liberal expenditure called for. *Cinchona Carthagena* and *Ledgeriana* did well here.

13. With reference to paragraph 56 of the Curator's report, it is observed that the prohibition of the extension of the cultivation of *Jalap* was withdrawn by paragraph 17 of the review of his report of last year. If, however, a supply of tubers be maintained for distribution and for the requirements of the Medical Store Department, it will suffice. With reference to paragraph 59, the Surgeon-General will be requested to advise as to the expediency of Mr. Jamieson's prosecuting his experiments with essential oils. Should it be desirable that he should do so, better apparatus will be supplied.

14. The expenditure on the *Upper Norwood* property fell short of the grant (Rs. 1,500) by upwards of Rs. 300. The whole allotment might have been expended with advantage in maintaining the grounds between the garden cottage and Government House in a higher state of efficiency and in removing the wattle which now disfigures this part of the gardens.

15. On the whole the operations of the year are satisfactory and show that the observation of the Agri-Horticultural Committee in their last annual report to the effect that considerable impetus has been given during the year to the demand for, and distribution of, economic plants in consequence of the action of Government, is not without foundation.

(True Extract.)

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

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

Exd. W. H. French.

200 Copies.

B

No. 2827 Revs. 8th Octr/83

Communicated to the S.E. Fourth Circle who will instruct the Asst: Engr: Nilgiri Division to draw up without delay in communication with the Director, the estimates referred to in para 2 of the G.O. in the Rev: Dept

Sd/ C.B.
A.S.

To the Fourth Circle

Govt. of {1883} Madras.

REVENUE.

Issued

Recd. Encl.

G.O., 31st August 1883, No. 1064.

B
No. 2827 Revs. 8th Octr/83.

AUGUST.

Government Botanical Parks and Gardens,

Nilgiris.—Reviewing the report on the — for 1882-83.

Letter order

REPORT

ON

THE PROGRESS AND CONDITION

OF THE

GOVERNMENT BOTANICAL GARDENS AND PARKS ON THE NILGIRIS,

FOR THE YEAR

1882-83.

MADRAS:
PRINTED BY E. KEYS, AT THE GOVERNMENT PRESS.

1883.

REPORT

ON THE

PROGRESS AND CONDITION OF THE GOVERNMENT BOTANICAL GARDENS AND PARKS ON THE NILGIRIS FOR THE YEAR 1882-83.

During the year under report 2,086 fruit trees and economic plants, 7,874 timber trees, 11,908 ornamental trees, shrubs and herbaceous plants, 3,194 packets vegetables and flower seeds, 40 bouquets, and 160 baskets of cut-flowers were sold by the Gardens, which shows a considerable increase on the number distributed during the previous year.

2. *Receipts.*—The actual amount lodged in the Treasury last year from the sale of plants, seeds, &c., from the Ootacamund, Barliyár, Medicinal and Kalhatti Gardens was Rs. 3,439-0-4, which is an increase over the gross receipts of last year of Rs. 412-6-0. The details of receipts and expenditure are given in the statements appended to the report.

3. *Season.*—The total rainfall registered in the Ootacamund Gardens during the past year was 65 inches and 98 cents, being fully 14½ inches more than fell during the previous year, and about 20 inches above the average of the past ten years. The season all through was wet and stormy, and the south-west monsoon much heavier than has been experienced on the Nílgiris for many years. The monsoon may be said to have set in on the 3rd June, from which date high winds and rain almost without intermission prevailed up to the beginning of August when the wind veered round to the north-east and brought several heavy showers from that quarter with occasional glimpses of sunshine. In March last 4 inches and 88 cents were registered in the Gardens. Such a heavy rainfall so early in the year is very unusual. In ordinary seasons the month of March is characterized by dry parching winds from the north-east and a total absence of rain. During the twelve months rain fell on 175 days against 135 in the preceding year. In the Gardens several Eucalyptus trees were blown down, and others had limbs and branches broken; but, considering the unusual severity of the monsoon, the actual damage done in the Gardens was trifling when compared with what many Cinchona and Coffee estates in other parts of the District suffered. Notwithstanding the heavy monsoon, frost was not more severe than in ordinary seasons. The first frost fell on the night of the 3rd December and continued more or less up to the end of February. No plants of any consequence were injured by it.

4. *New Works.*—The principal improvement taken in hand and completed during the year was the clearing and turfing of the slope between Garden Cottage and the Fern House, which has been for many years overgrown with brambles, wattle, &c., and considerably detracted from the beauty of this part of the Garden. The ground was deeply trenched (so as to eradicate every Acacia rootlet), sloped and turfed with Cock's foot grass (*Dactylis glomerata*), and the bank planted with *Michelia Champaca*, *Saurauja*, *Pinus longifolia*, *Cryptomeria*, and other ornamental trees. In the ravine (the soil being favorable to the growth of such plants) specimens of the Nílgiri Tree ferns, *Alsophila latebrosa* and *A. crinita*, and the New Zealand species, *Dicksonia Antarctica*, *Cyathea dealbata* and others, have been planted, and on raised mounds, by the side of the path, a specimen each of *Doryanthus*

excelsa and *Phormium tenax*. A decided improvement has been effected by opening up and planting this portion of the Gardens, and, when the ferns and trees are grown up and established, the improvement will be more apparent. During the heavy rain in July, about 40 feet of the bank below the fountain terrace gave way and carried with it several large *Hydrangeas* and other shrubs. A considerable amount of time and labor was expended in repairing the damage. The slope being very steep, it was found necessary to drive in Eucalyptus posts and interlace them with branches to prevent the soil and turf from again slipping. As the ground is now thoroughly consolidated, and the turf grown together, I do not apprehend its giving way in future. Most of the roads and pathways in the Upper Garden were gravelled and put in thorough order, and the rose hedges, which had become ragged and stunted, were uprooted and replaced by heliotrope. A number of new trees and shrubs were planted in different parts of the grounds, and several minor improvements were carried out.

5. It is proposed to do away with the gravel road extending from the entrance gate to the Conservatory, also the flower-beds on each side of it, and to lay the whole down in grass. By so doing the beauty of the Lower Garden will be much enhanced by giving a greater extent of lawn and affording more space for the planting of specimen Conifers and other trees and shrubs at present unrepresented in this part of the Gardens. The turfing of the road and flower-beds will also effect a saving in labor, the upkeep and preservation of roads, where there is a heavy rainfall, being much more expensive and troublesome than lawns. These alterations will afford a favorable opportunity to remove the old Conservatory, which, besides being an unsightly and dilapidated structure in its present position, destroys the continuity of the lawn and obstructs the view to the Upper Garden. It is at the same time very defective as a plant-house and quite unsuited to the cultivation of specimen plants. The material could, at no great expense, be utilised in building an orchid house in a less conspicuous situation in the Upper Garden; such a house is much needed to accommodate our rapidly-increasing stock of these plants.

6. The two plots of ground in front of the Lodges at the entrance gate will be grassed over and planted with shrubs.

7. At the request of the Collector of the Nílgiris, 93 Cypress and 58 *Pinus longifolia* plants, intermixed with Callitris and hardy shrubs, were, last year, planted in groups along the margin of the Lake from St. Thomas' Church to the bend in the road under Awdry House. The planting and fencing were carried out by the Gardens and paid for by the Municipality. In the same manner, an avenue of *Grevillea robusta* and *Pinus longifolia* was planted along the north side of Church Hill Road.

8. Lawn grass seed was got from England, and operations have been commenced to sow grass and plant hardy shrubs on the vacant ground in front of Crewe Hall, and on each side of the new road.

9. *Buildings*.—In G.O., Financial Department, dated 14th February 1883, No. 359, a sum of Rs. 2,790 was sanctioned for new cooly lines in the Government Botanical Gardens; but owing to press of other work the erection of buildings could not be undertaken by the Public Works Department, and I was requested to execute the work. On receipt of the orders of Government I invited contracts for the work, but in consequence of heavy rain in March, and the nature of the material (wattle and daub), it was impossible to put it in hand or utilise the grant before the end of the official year, on which date the grant lapsed. I therefore immediately applied for reallotment of the grant, which has been sanctioned—*vide* G.O., No. 1061, dated 19th April last. The buildings will be put in hand as soon as the rains are over, and completed before the end of the current year.

10. The old Conservatory was partly reglazed, and the broken glass in the green house and propagating house repaired. The buildings were whitewashed and otherwise put in order. The propagating house handed over to the Gardens by the Cinchona Department has been very useful in the rearing of the *Cinchona calisaya* and other tender plants.

11. *Potatoes*.—In consequence of high winds and a heavy rainfall, last year's crop of potatoes was very small and of bad quality. The hulm was blown away by the wind when it had nearly attained full growth, and the tubers rotted in the ground from continuous wet before they reached maturity. From the same causes the potatoe crop in and around Ootacamund was almost a total failure. In fact in many places the crop was so poor that native cultivators allowed what crop there was to rot in the ground, as they did not consider the yield would pay the cost of lifting. The only localities where there was anything of a crop was in sheltered parts of the Kaity valley and at Kalhatti. The result was that for several months in the year Ootacamund was dependent on Bangalore and Poona for its supply of potatoes. This season I have a small but healthy crop of kidneys coming on. The new varieties mentioned in last year's report were preserved and have been again planted. I intend this year to introduce some healthy seed from England and Malta. Bangalore seed, although healthy and sound, does not succeed well in the Nílgiri soil.

12. *Fodders*.—A good stock of Prickly Comfrey and Brome Grass has been maintained in the Garden nurseries for distribution among planters and others to whom a heavy cropping and nutritious fodder is a desideratum. A new fodder plant was introduced last year, viz., the Salt Bush of New South Wales (*Rhagodia Billardieri*) which is said to withstand long periods of drought. It is worthy of a trial, and if found to thrive in the climate and soil of the Nílgiris, may afford food for sheep and cattle when there is nothing else to be had.

13. *Tagasaste*.—The following persons received a supply of Tagasaste seed from the Gardens last year:—

C. W. Watson, Esq., Kartary.
Mr. Richter, Ootacamund.
Lady Souter, do.
Mr. Kemp, do.
H. W. Baker, Esq., Periyakulam, Travancore.
Alex. Allan, Esq., Coonoor.
A. S. Cowdell, Esq., Ootacamund.
General Thatcher, Kartary.
Mr. Barnard, Ootacamund.

The parent plants continue to make a healthy growth in the Ootacamund Garden and are again in flower, so that a further supply of seed will be available for distribution in October next.

Mr. Watson has kindly favored me with the following interesting report on the fodder plants supplied to him:—

(*a*.) "*Tagasaste*.—Seed kept in water at a temperature of 92°—98° Fahr. for twenty-four hours, then sown (21st August 1882) 3 inches apart in prepared beds, germinated in eight days, growth very slow, now (2nd June 1883) about six feet high. Cattle will not eat it. Elevation too low for rapid growth."

(*b*.) "*Teosinte*.—Seed soaked as above, some sown in sholah soil, some in swamp and some in nursery and afterwards transplanted. That sown in sholah soil has grown well and yielded three crops. The seed was sown four feet apart, and nearly all germinated. That sown in swamp came up though no care was taken of it. Transplanting from beds should be done as soon as the sprout shows above ground. Cattle and horses eat this fodder greedily green or dried. Deer are also fond of it, so a fence is necessary. Each plant will yield about 10 lb. of green fodder at a cutting. Teosinte should prove a valuable fodder at this elevation. It seeds freely. I have a quantity of self-sown seed now sprouting."

(*c*.) "*Sorghums*—(Kaffrarium and Saccharatum).—Sown broadcast in sholah soil, yielded one good crop in two months then died back, requires irrigation."

(*d*.) "*Brome Grass*.—Grows well, but was entirely destroyed by hares who prefer it to anything else; would make a capital hay for the hot season."

(*e*.) "*Symphytum Asperrimum*.—Grows luxuriantly, and once firmly established may be cut every three weeks; grows everywhere, prefers steep side of drains, roads &c.; cattle will only eat it when mixed with other fodders. Buffaloes and pigs thrive on it."

(*f*.) *Remarks*.—Teosinte and Prickly Comfrey are the only two fodders I would recommend for this District on account of their rapid growth and yield. They are both inferior to Guinea Grass. Prickly Comfrey, however, does not require irrigation and with care cattle may be induced to eat it. When pigs are kept, it is invaluable."

14. *Cinchona Carthagena*.—The *C. Carthagena* plants at Coonoor and Kalhatti continue to make a very satisfactory growth, especially the plant in Sim's Park which has now attained a height of 48 inches, having made a growth of 23 inches during the twelve months. This plant has remarkably handsome foliage, and is altogether very healthy and vigorous. I have not received reports from all the parties to whom plants were supplied, but, where they have been planted in suitable localities, I have been told they are doing well. The plants sent to Naduvatam and Pykara last year are now quite established. Propagation from the small stock (two plants) was carried on successfully. Twenty-six plants were distributed during the year, and the stock at present consists of fifty-six plants.

The following persons were recipients of plants :—

Edward Hamlin, Esq., Wynaad.
J. Ferguson, Esq., Messrs. Hinde and Co., Calicut.
W. Lee Kirby, Esq., Coonoor.
C. Sheldrick, Esq., Nellakóta.
C. M. Grant, Esq., Ouchterlony Valley.
S. Millan, Esq., Terrioot.
E. McMaster, Esq., Tattapollium.
G. F. Bell, Esq., Ceylon.
James Keary, Esq., Manantoddy.
W. Griffith, Esq., Kótagiri.
E. Harding, Esq., Ceylon.
C. Grey, Esq., Coonoor.
Rhodes Morgan, Esq., Wynaad.

As the stock of plants increases the distribution of the plants will be proportionately greater during the current year.

15. *Cinchona calisaya*.—In March last a packet of seed of each of the following four valuable Cinchonas was received from the Secretary to Government, Revenue Department, viz., *Cinchona calisaya morada*, *C. calisaya verde*, *C. calisaya Zamba morada* and *Cinchona calisaya verde* and *morada*. Immediately on receipt, I had about two-thirds of the seed carefully sown reserving the remainder in case of accident. From the time of sowing up till they began to germinate the seed was looked after by myself. The number of seedlings pricked off to date is roughly estimated at 43,750, which may be considered a very satisfactory result from seed imported from South America. All the seed received equal attention and the same treatment, but the percentage of Morada seed which germinated was much less than of the other varieties. The seedlings are very healthy, and as soon as they are strong enough to be moved into a cooler house the remainder of the seed will be sown.

16. *Castilloa elastica*.—About this time last year our stock of Castilloa consisted of 14 small plants including the two in the Barliyár Garden. Since then 16 plants have been distributed and there are now in the propagating house 18 healthy plants and cuttings. It may now be accepted that the Castilloa is successfully established in the Nílgiri District. Time and capital are all that is now required to develop the cultivation of this valuable species. Considering the facilities at my command for the propagation of tropical plants in Ootacamund, the rapid increase in these plants is very satisfactory. I believe at Nilambúr, all the cuttings and layers put down have failed. In Ceylon and even at Kew they have experienced some difficulty in propagating the Castilloa from cuttings. The 16 plants were distributed as follows :—

J. Thomson, Esq., Nellakóta	...	1 plant.
Geo. Oakes, Esq., Sígúr	...	1 ,,

James Keary, Esq., Manantoddy.	...	2 plants.
E. Harding, Esq., Ceylon	...	2 ,,
S. Muller, Esq., Terrioot	...	1 plant.
C. Sheldrick, Esq., Wynaad	...	1 ,,
J. Ferguson, Esq., Calicut	...	1 ,,
E. McMaster, Esq., Tattapolliam.	...	1 ,,
Rhodes Morgan, Esq., for Botanical Garden, Wynaad	...	1 ,,
Colonel Scott, Nelliampathis	...	1 ,,
Major Johnston, Chelmsford Estate, Kullar	...	2 plants.
Barliyár Garden recently planted	...	2 ,,
Total	...	16 plants.

Mr. Thomson's plant has, I believe, died, but all the others, I hear, are doing well. Mr. Oakes sends me the following note on his plant :—

"The plant of *Castilloa elastica* you were good enough to give me on the 12th of July 1882 was then about 5 inches high. It was planted among the Coffee in black loamy soil. On the 22nd June last, it measured 4⅛ feet in height and was in beautiful foliage, some of the leaves being 10 inches long by 4 broad. It has not yet made any branches."

17. *Acacia decurrens*.—Extracts from my last report on the Black Wattle having been published in the local and other newspapers, I have received applications for seed and several letters asking for information regarding the manner and probable cost of cultivating the Wattle, all of which were replied to. Five pounds of seed were imported from Australia, half of which has been distributed. On my recommendation a gentleman in Coonoor is opening up ten acres of land which he intends planting entirely with *Acacia decurrens*.

18. *Labels*.—The labelling of trees and shrubs was continued during the year until nearly all identified species have been labelled. The collection of Nílgiri and exotic Ferns so far as they have been identified have been provided with strong dealwood tallies. Many are the forms and substances employed in making labels for plants. The lettering on the majority of the teakwood labels put out last year has resisted the action of the atmosphere very well. In a few cases only has the painted surface peeled off. As an experiment I am having a few zinc labels painted and put out, and am disposed to think that they will hold the inscription better, will be cheaper, and more durable than teakwood labels.

19. An Agri-Horticultural Exhibition was held in the Government Gardens on the 6th of October last. The exhibition, as a whole, may be considered to have been a success; had it been known earlier throughout the District that an exhibition was to be held in October, the number of exhibitors would have been larger. Many persons would, no doubt, have grown vegetables and flowers specially for it. The show of grains, fruit, plants in pots and cut-flowers was very good, but that of vegetables comparatively poor both in quality and quantity, and not what one would expect in Ootacamund, and not near so fine as I have seen at former exhibitions. This result was no doubt mainly due to the unusually heavy and prolonged monsoon. The constant sunless weather materially affected the growth of vegetables and caused successive sowings of marrow, fat peas, salads, French beans and even cauliflower to damp off before they were half grown. Many of the vegetables exhibited were large and coarse, the consequence of being too old.

I consider that little or no visible improvement has taken place in the cultivation of the finer sorts of vegetables since the Agri-Horticultural Society first held an exhibition. With a view to encourage native gardeners to cultivate the most improved varieties of such vegetables as cauliflower, cabbage, beet, &c., the Committee provided Rs. 50 worth of imported seeds of these vegetables. A packet of each was given to the successful competitors.

20. *Tour of the Superintendent*.—In the latter part of December and beginning of January last, I availed myself of the permission granted me (*vide* paragraph 9

of G.O., No. 1398, dated 12th December 1882) to visit the Carcoor and Sispara Ghâts with the result of obtaining many valuable additions to the Garden collection of plants and seeds. Among the plants collected the following were previously represented in the Garden collection by single specimens only and, in some cases, not at all :—

Flowering Plants.

Torena Asiatica (Sispara).
Strobilanthes gossypinus (do.)
Impatiens Jerdoniæ (do.)
Do. Denisonii (do.)
Exacum bicolor (Ouchterlony Valley).
Sonerila elegans (Sispara.)
Hoya pauciflora (do.)
Ceropegia elegans (do.)
Begonia dipetala (Aratapara Valley).
Do. subpeltata (do.)
Æschynanthus. Sps. (Sispara).
Didymocarpus tomentosa (Sispara).
Thunbergia mysorensis (Ouchterlony Valley).
Asystasia, species (do.)
Cycas circinalis (Aratapara Valley).

Orchids.

Dendrobium aureum (Wálaghât).
Do. aqueum (do.)
Do. Jerdonianum (do.)
Liparis biloba (Naduvatam).
Oberonia Arnottiana (do.)
Bulbophyllum Nílagiriense (Naduvatam).
Eria polystachya (do.)
Do. pubescens (do.)
Cœlogyne corrugata (Sispara).
Do. nervosa (do.)
Pholidota imbricata (Aratapara Valley).
Vanda Roxburghii (do.)
Saccolabium paniculatum (do.)
Cymbidium aloefolium (do.)
Saccolabium rubrum (Avalanche).
Calanthe Perottetii (do.)
Ærides Lindleyanum (Naduvatam).
Do. speciosum (Ouchterlony Valley).
Do. cylindricum (do.)

Ferns.

*Anemia Wightiana (Sispara).
*Lastræa ferruginea (do.)
Cheilanthes tenuifolia (Sígúr).
Pteris patens (Carcoor).
Asplenium Zenkerianum (Avalanche).
Do. contiguum (do.)
Do. planicaule (do.)
Do. heterocarpum (do.)
Do. nidus (Carcoor).
Tæniopsis lineata (Sispara).
Alsophila crinita—Tree fern (Sispara).
Asplenium varians (Sígúr).
Diplazium Sylvaticum (Carcoor).
Do. Australe (Avalanche).

* Both these ferns are very rare and now almost extinct on the Nílgiris.

Lomaria elongata (Carcoor).
Pleopeltis oxyloba (Avalanche).
Cyrtomium caryotideum, and several others.

21. *Catalogue.*—The price list of plants and seeds for sale at the Gardens has been revised and corrected and will shortly be sent to the Press. As time permits material for the compilation of a complete catalogue of all the plants in the Government Gardens is being collected and arranged.

22. *Library.*—In G.O., No. 3477, dated 23rd October 1882, a sum of Rs. 330 was sanctioned for the purchase of books and periodicals for the Garden Library.

With the above sum the following books have been purchased :—
Beddome's Ferns of Southern India.
Do. Flora Sylvatica.
Bentham's Flora Australiensis.
Bentham and Hooker's Genera Plantarum.
Gordon's, the Pinetum and Supplement.
The Treasury of Botany.
The Tropical Agriculturist;
and the following periodicals and reports were received from Government :—
The Indian Agriculturist.
Flora of British India.
Gardener's Chronicle.
Indian Forester.
Report on Saidápet Farm for 1880-81.
Annual Report of the Madras Agricultural Department for 1880-81.
Mr. Benson's Report on Agricultural Implements suitable for introduction into India.
General Report on Saidápet Farm for 1881-82.
Report on the exhibition of Silk cocoons held at Mudiapur and Punjab.
Extract from the Annual Report on Royal Botanical Gardens, Calcutta, for 1881-82.

23. *Assistants.*—The Garden Overseer (C. McDonald), Writer (A. N. Vencataramanier) and Propagator (T. Burrows) have each given me satisfaction in the discharge of their respective duties during the year.

24. *Donations and interchange of living plants.*—During the past year considerable additions were made to the Garden collection both by purchase and exchange. The principal purchases were from L. Paillet, Paris, viz., a collection of finer kinds of Apples, Pears, Plums, Apricots, Cherries, Peaches, Nectrines, Raspberries, &c. The young trees arrived in excellent condition, and will shortly be planted at Kalhatti. From Messrs. Cannell and Sons, Swanley, Kent, a collection of Abutilons, Single Dhalias, Chrysanthemums, Sempervivums, Geraniums, Begonias, &c.; from W. Griffith, Esq., bulbs of Gladioli, Narcissus, Hyacinths, Amaryllis, Spiraxis, Scillas and other bulbous plants. The following contributions are specially worthy of notice. From Kew. through His Excellency the Governor, seeds of nine varieties of Perennial Lathyrus, four of Bomarea (all the former and three of the latter have germinated and are growing freely), a packet each of Protea cyanoides, Sabal mauritiana and Rhus vernicifera. From J. Ferguson, Esq., Calicut, six Calabar beans (Physos-tigma venenosum), six plants Landolphia florida and two plants each of the Soudan and Currant vines. The Soudan vines were in a weak state when received, and soon died. The Currant vines are doing well and have been propagated. From E. Greenslade, Esq., Pykara, a large and valuable collection comprising 135 species of Australian tree and shrub seeds. The other receipts and distributions are detailed below.

25. *Receipts.*—From the Superintendent, Lal Bagh, Bangalore, Tacsonia ignea, Schinus molle, Coprosma lucida; from Mrs. Grant Duff, 2 packets of Pansies and one packet each of Auricula and Penstemon seeds; from W. Lee Kirby, Esq., 40 Pinus

martima and two Lilac plants; from Thomas Laing, Esq., a packet of Salt Bush seed; from General Morgan, smooth Cayanne pine; from Messrs. Nagappa and Co., Bangalore, 13 kinds of Roses; from Colonel Scott, Coimbatore, a packet each of Ceara rubber, Acacia and Boronia seeds; from H. Sheldrick, Esq., Wynaad, one plant of Landolphia; from J. Stephenson, Esq., Agri-Horticultural Gardens, Madras, Clematis, Eucalyptus and Eugenía seeds; and from Dr. Trimen, Ceylon, Stillingia sebifera seed.

26. The following plants and seeds were distributed :—To the Superintendent, Lal Bagh Garden, Bangalore, Ipecacuanha, new Geraniums, new Chrysanthemums, Phormium tenax, Tritoma, Acacia decurrens and Neapolitan violet plants; to W. Logan, Esq., Collector of Malabar, two plants Coca (Erythroxylon coca); to W. E. White, Esq., Thoppa Taluk, Jalap tubers, Chinchona, Lavender and Dandelion seeds; to C. W. Watson, Esq., Kartary, Teosinte and Sorghum seeds; to the Rev. Dene, Lawrence Asylum, Ootacamund, one collection of Ornamental Tree plants; to Lady Souter, Ootacamund, Reana seed; to J. H. Thomson, Esq., Nellakóta, Castilloa elastica; to Dr. Bidie, Madras, Violets, Nílgiri ferns, Bulbous plants, Aloes and other succulent plants; to Colonel Lee Strange, Secunderabad, Coca plants; to J. G. Apkar, Calcutta, Nílgiri ferns, Nílgiri orchids and a collection of flower, &c., plants; to Messrs. Nagappa and Co., Bangalore, white and large flowering Fuchsias, Camelias and Coronation plants; to J. Stephenson, Esq., Madras, Cinchona seed; to T. H. Story, Esq., Madras, collection of Flower plants and 300 Clove seeds; to J. Keary, Esq., Manantoddy, Castilloa elastica; to the Honorary Secretary, Shevaroy Planters' Association, Jalap tubers and Peppermint roots; to J. F. Ferguson, Esq., Calicut, Castilloa elastica and Nílgiri nettle fibre; to H. B. Barclay, Nílgiris, Sorghum seeds; to Mr. Pink, Brisbane Gardens, Nílgiri orchids; to J. Roberts, Esq., Melbourne, Nílgiri orchids and bulbs; to His Excellency the Governor Nílgiri orchids and Lily bulbs; to the Deputy Conservator of Forests, Nílgiris, Callitris rhomboidea and Albizzia lophantha seeds; to Colonel Scott for Director, Brisbane Gardens, Nílgiri orchids, Jalap tubers and Peppermint roots; to G. F. Bell, Esq., Colombo, Castilloa, Mangosteen, Erythroxylon coca, Myristica moschata, Caryophyllus aromaticus, Ipecacuanha and Begonias; and to Rhodes Morgan, Esq., Cuzco maize, Nutmeg, Acacia dealbata, and Melanoxylon seeds and Castilloa elastica, Mangosteen, Nutmeg and Clove plants.

27. Sim's Park.—The Budget allotment for the year was Rs. 1,600, of which Rs. 1,471-12-7 was expended on wages of gardeners, repairs to seats and buildings, leaving an unexpended balance of Rs. 128-3-5.

28. *Season.*—I have no means of registering the rainfall in Sim's Park, but last year it must have been above the average, having received a fair share of the heavy south-west monsoon rains in June and July. These months, as a rule, are very dry in Coonoor. Frost was very severe for several nights towards the end of December and beginning of January. In the bottom of the valley a number of Chinchona plants four and five feet in height and some shrubs, which had withstood the frosts of previous years, were killed to the ground. With this exception the season was a favorable one.

29. *New Works.*—A decided improvement has been effected by opening out and altering the piece of ground near the main entrance to the Park known as "Hannington's Tope." At the request of the Collector all the Acacia trees that were either dead or dying from the effects of parasites, were uprooted and some of them replaced by young plants of *Pinus longifolia*. The Coonoor water-supply channel was diverted several yards to admit of the public road being widened and the sharp corners reduced. The mound forming a triangle in the centre of the Bleakhouse and Wellington roads, and the banks protecting the water channel have been turfed. All that remains to be done to complete the work is the planting of a few trees and ornamental shrubs, which will be done as soon as the weather is favorable. Part of the cost of the work was met from the sale of the trees cut down, the remainder was paid by the Municipality. In the Park another three acres of land was cleared of scrub, trenched and planted with a strong-growing variety of Hurriah Grass. A small tank was made near the nurseries to facilitate the watering

of young plants and flower borders during dry weather. Several species of trees, shrubs and herbaceous plants not previously represented in the Park were planted out.

30. The Lawn Tennis grounds commenced last year (*vide* paragraph 29 of the Report for 1881-82) are still unfinished. Nothing in the way of completing the grounds has been done since December last, and what was formerly a pretty piece of lawn is now an unsightly excavation, destroying the beauty of what once was the most picturesque portion of the Park. I would suggest that the Committee, who undertook to carry out the work, be asked either to complete the grounds, or relinquish their claim to it so that it may be planted up and its present unsightliness removed.

31. *Fences.*—The galvanized iron-wire fencing with gates on the south-east boundary of the Park has been completed by Messrs. Groves and Company according to estimate. The erection of this fence, besides opening up and improving the general appearance of the property as seen from the public road, forms an effective and long-needed barrier against cattle.

32. *Arbours.*—The arbour on the upper terrace which was for a long time in a ruinous and very unsafe condition has been rebuilt in a substantial and permanent manner. The Acacia posts have been replaced by brick and chunam pillars, and the bamboo mat roof by corrugated iron and tiles. The other arbours will be replaced and strengthened as funds are available.

33. *Cinchona Ledgeriana.*—The *Cinchona Calisaya Ledgeriana* plants raised from Java seed in 1880, and planted in a plot of ground near the Park cooly lines, continue to make a most satisfactory and healthy growth, some of them having attained a height of nearly five feet. A good percentage of the plants are undoubtedly pure Ledgeriana, having all the characteristics in foliage and habit of growth of that valuable species.

34. The Superintendent visited the Park on thirty-eight days during the year.

35. Barliyar Garden.—The allotment for the upkeep of the Garden for the year was Rs. 312, and the expenditure Rs. 333-6-3. The gross receipts from sale of plants and fruit during the same period was Rs. 383-10-9, which is Rs. 50-4-6 in excess of the expenditure and Rs. 199-2-5 more than was realised last year. This result is mainly due to an increase in the sale of plants, the demand for which we have not hitherto been able to meet. Owing to the fruit being leased out, none was available for the purpose of propagation. The distribution of young plants will, I feel sure, increase as it becomes known that young plants of all the spice and fruit trees under cultivation in the Garden can be had on application.

36. *Season.*—The season was drier than usual. The fruit crop in consequence was under the average of former years.

37. *New Works.*—The area of the lower garden was somewhat extended by cutting down and clearing away a strip of scrub jungle. The Upper Garden was thoroughly cleaned, water channels repaired and put in good order. The nurseries are well stocked with Cocoa, Nutmeg, Clove, Cinnamon and other plants in excellent condition for planting out this season. Up till last year the number of young Mangosteen plants raised in one season never exceeded a couple of dozen. During the past twelve months several were sent out, and I have now 150 healthy young plants which were raised and are now in the propagating house in the Ootacamund Gardens.

38. *Liberian Coffee.*—The old plants are very healthy and continue to produce regular crops. There will be a good quantity of seed and plants available during the current year. The seed I propose to give away gratis to any one willing to give it a trial in districts where the *Coffee Arabica* has failed.

39. *Ipecacuanha.*—The plants left in the Barliyár nurseries were transplanted into beds specially prepared for them and have since then somewhat improved in health and growth. During the year one plant bore perfect seed from which a few plants were raised. This is the first instance of Ipecacuanha seeding at Barliyár. In the early part of last year a few dozen plants were brought from Barliyár and placed

in the propagating house in the Ootacamund Gardens. Since then propagation has been carried on by root, stem and leaf cuttings. Sixty plants were sent out and the stock now consits of 170 plants. The Collector of Malabar received twelve of the strongest plants carefully packed in a Wardian case for transmission to the Laccadives. The recipients of plants were—

	Plants.
Geo. Romilly, Esq., Wynaad	6
Colonel Scott, Nellramphasis	3
The Collector of Malabar	12
The Deputy Conservator of Forests, Nilambúr	10
The Dewan of Travancore	25
A. Lone, Esq., Wynaad	4
Total ...	60

40. The following note on the planting and propagation of Ipecacuanha was sent with the case of plants forwarded to the Laccadives :—

(*a.*) *Plant Cuttings.*—These when taken from the tops of the plant while in vigorous growth and inserted in well-drained pots filled with finely-sifted sand and kept moist, should produce roots in from five to six weeks with or without artificial heat. After the cuttings are sufficiently strong, they should be potted in a mixture of fine loam and sand.

(*b.*) Ipecacuanha may also be propagated by leaf cuttings by simply inserting the leaves up to the middle of the mid-rib in pots filled with sand. This system, when successful, produces very strong plants; but great care and attention is necessary, otherwise losses will be heavy from damp, &c.

(*c.*) As a means of increasing the Ipecacuanha plant, root cutting is at once the safest and quickest mode of propagation. To ensure success these must be strong and vigorous. In propagating by root cuttings it is not necessary to work with large pieces. If a root be cut into very small portions and the pieces be planted with the precaution of always keeping the top of the pieces upwards and quite uncovered by the sand, the lower extremities alone being in contact therewith, they will, in a month or six weeks, throw out young shoots and form fresh fibrous roots. When sufficiently rooted, they should be potted into a mixture of loam and sand. The formation of roots does not always take place with the appearance of the shoots. In moist climates Ipecacuanha cuttings are liable to be attacked by a minute thread-like fungus which should be destroyed in the earlier stages of its growth by dusting the cuttings and surface of the pot with flowers of sulphur.

(*d.*) Before planting out Ipecacuanha a shady and moist (but not wet) situation should be chosen where the drainage is good, and stagnant water not likely to accumulate about the roots which are thick and fleshy and easily damp off and rot.

(*e.*) Pits should now be dug six feet square and two feet deep and the bottom filled to a depth of six inches with pounded (coarsely) bricks or tiles, or if these cannot be obtained, with gravel.

(*f.*) A layer of well-cleaned cocoanut nar should be spread to a depth of half an inch over the gravel or brick rubble and the pit then filled in with well-rotted leaf mould and coarse sand in the proportion of $\frac{1}{4}$ of sand and $\frac{3}{4}$ of leaf mould.

(*g.*) If obtainable a little old cattle manure can be added to this compost, say $\frac{1}{4}$ of cattle manure and $\frac{1}{2}$ of leaf mould.

(*h.*) The plants in the pots should be very slightly sprinkled with water for a few days before planting out. The planting out should be done only in the afternoon.

(*i.*) The pot having been inverted and the stem of the plant seized at the base between the index and the next finger, the rim of the pot with the plant head downwards should be gently tapped against a block of wood of sufficient height.

(*j.*) The ball of earth will now leave the pot entirely, the rootlets being enclosed in the earth uninjured.

(*k.*) A hole of the size of the ball of earth that has come out of the pot having been scooped in the prepared soil, the plant should be turned up the proper way and the ball of earth holding its roots gently placed in the hole.

(*l.*) The surrounding soil should be then raked forwards to fill in any opening that may be left round the ball of earth, and gently but firmly pressed down with the hands.

(*m.*) The plant should now be watered as well as the soil for a radius of three feet from the base of the stem of each plant.

(*n.*) And a pandal six feet high erected over the plants and covered with cadjan.

(*o.*) The plants should after this be watered every evening.

(*p.*) But at no time should the watering be so copious as to saturate the soil which must only be kept damp and no more. Any excess of water will rot the roots.

(*q.*) The pandal can be removed when the plants commence to grow. The natural shade will then be sufficient.

41. *Erythroxylon Coca.*—The original plant has made a vigorous growth, has borne perfect seed and in appearance much resembles a healthy Tea bush. In a letter received from W. Logan, Esq., Collector of Malabar, in February last, he says :

"The two plants you kindly gave me have flourished well down here on the sea coast, elevation about fifty feet above sea level, soil laterite red earth with much gravel, pits dug about two feet square, manure, a barrowful of rotted stable manure and refuse. One plant is now over three feet high, standing well out in the open, in form a struggling bush ; it put out flowers almost as soon as it was planted out and it continues to flower even now. The gardeners commenced watering it while I was away and I shall continue it now, but it looked so robust when I left here in November, that I think it might have done without water. The growth has never had a check."

"I gave the other plant after it had been well established to Ferguson of Hinde and Company. It too is doing well. F. says the flowers should be rubbed off, and it will then throw out suckers. Is this so."

Mr. Oakes, Sígúr, sends me the following remarks on the plant he received in July last :—

"A small plant of this shrub was received with the rubbers and has taken kindly to the soil. It is now a nice little shrub of about two feet high and two feet across. It has blossomed profusely several times, but I have not succeeded in saving any seed.

42. *Castilloa elastica.*—The plants put out last year have made a good growth and have apparently become quite established. Other two plants were put out recently, so there are now four plants permanently planted out at Barliyár.

43. *Heonvea Braziliensis.*—The solitary Heonvea plant made no growth for some months after it was planted out. It has, however, lately made a start and is now very healthy and promising.

44. *Landolphia Florida.*—Four of the six Landolphias kindly presented to the Gardens by F. J. Ferguson, Esq., Calicut, have lately been planted at Barliyár. The plants are rather small and weak, but I trust with care and attention to establish them.

45. *Ceara Rubber* (Manihot Glaziovii).—The oldest plants continue to thrive and are now beginning to assume the character of trees and have grown proportionately more in girth than height during the past twelve months. Three of them yielded seed, some of which was sown and the remainder distributed. As an instance of the rapidity with which this tree grows in favorable localities, I quote the following from letters received from the Collector of Malabar and Mr. Oakes, Sígúr :—

"Cearas grow here astonishingly. Six plants put out in the beginning of July 1882 are now (2nd February 1883) respectively 11′-4″, 11′-4″, 10′-11″, 11′-9″, 10′-7″, and 10′-7″. They made, all but the last, few inches of this growth between beginning July and beginning October. They are now wintering."

Mr. Oakes says :

"Two plants were received, one being planted in a light black loam, the other in rather a stiff red soil. The plant seems to prefer the former. They were both planted on the same day (12th July 1882), and on the 22nd June, the one in black soil measured 13½ feet in height with a clean straight stem which at one foot from the ground is 6 inches in circumference. It blossomed and set a few seeds when ten months old. The plant put out in red soil measures 10 ½ feet, but the circumference of the stem is almost equal to the larger tree. I think our elevation is very suitable for Ceara Rubber, and with moderate care for the Castilloa. Of the former variety I have now some hundreds of young plants put out between every two rows of Coffee bushes and am under the impression the Coffee will benefit by the shade which the Rubber will, after a year or two, afford. Our annual rainfall is very small, averaging 25 to 30 inches ; but all the Coffee is under irrigation when necessary."

46. *Carob Tree* (Ceratonia siliqua).—One young tree flowered last year, but did not set fruit.

The fruit trees received from the Straits three years ago and from Ceylon last year are all doing well. Two of the Mahogany trees alongside of the public road made an exceptionally rapid growth and are now several feet in advance of the others that were planted at the same time.

47. I am pleased to report that no death from fever or sickness occurred among the coolies employed in the Gardens during the year.

48. The Superintendent visited the Garden on nine days during the twelve months.

49. KALHATTI GARDEN.—The Budget grant for the Kalhatti Garden was Rs. 180, receipts from sale of plants Rs. 17-14-0, and the expenditure during the year on account of labor, &c., Rs. 186.

50. *New Works.*—No new work or extension was undertaken during the year. Ground is being cleared and prepared for the fruit trees imported from France. They will be kept here, as stock plants for grafting and propagation. The Kalhatti nursery is useful in many respects, especially for raising young fruit trees; but if it is to be maintained in anything like order, a more liberal grant is required for its upkeep. The nursery at present contains a fair stock of Orange and other fruit trees. Among the plants noticed in former reports the following continue to make satisfactory progress.

51. *Ceara Rubber.*—The largest plant has attained a height of 15 feet with a girth of 14 inches.

52. *Cinchona Ledgeriana.*—The largest plant is now 14½ feet high which gives a growth of six feet during the year and has a girth of 13 inches. The plants are vigorous and healthy, are covered with flowers, and if weather continue favorable will yield a good crop of seed this season. The two *C. Carthagena* plants are very healthy and promise to do well at Kalhatti.

53. *Carob Tree.*—The young plant of this tree put down three years ago has now attained the dimension of a fair-sized tree, having made an upward growth of about five feet last year and is proportionately branched. It flowered recently and I think will set fruit.

54. *Peppermint.*—Did not make the growth last year that I expected. The yield of herb was in consequence very small. This result was entirely due to the land having become exhausted for want of manure which is difficult to be had and expensive at Kalhatti. The ground is now being trenched over, manured, and the roots replanted, which I hope will cause a more satisfactory growth during the present year.

55. *Medicinal Garden.*—The Budget allotment was Rs. 400, of which Rs. 320-7-9 was expended on labor, cultivation, &c. The receipts were from sale of Jalap tubers, Taraxacum, &c., to the public, Rs. 296-10-0. Sale of Jalap tubers to the Medical Department credited by book transfer, Rs. 110-15-0. Total receipts, Rs. 407-9-0, or Rs. 87-2-3 over the expenditure.

56. *Jalap.*—The total number of tubers sold and distributed gratis during the year was 9,051, which is 3,741 more than was sent out in 1881-82. From the above figures it will be apparent that the cultivation of this drug is being taken up by private individuals. To those who purchased a large number of tubers a considerable reduction in the price (Rs. 5 per 100) was made. This plan I consider preferable to supplying tubers gratis to any and every applicant. As directed by G.O., No. 1637, dated 6th December 1880, the area under this crop has not been extended, the present stock being sufficient to meet a considerable increase on last year's demand for tubers, and leave a quantity available for the Medical Stores. The cultivation of Jalap was commenced towards the end of 1877. Our stock then consisted of 100 tubers. Since then 536 lb. of dry tubers have been supplied to the Medical Stores, and upwards of 18,000 tubers distributed. The following table gives the distribution of tubers for last year:—

Statement showing the Names of Applicants, Number of Jalap Tubers applied for and supplied to each during the Official Year ending 31st March 1883.

Names of Applicants.	Number of Tubers applied for.	Number supplied.
J. F. Ferguson, Esq.	1,000	1,000
C. McMaster, Esq.	6,700	6,700
A. W. Turner, Esq.	100	100
Mrs. Nanney	2	2
Mr. Goodrich	25	25
George S. Nash, Esq., ...	100	100
W. E. White, Esq.	12	12
North Davidson, Esq.	As much as can be spared ...	1,000
Honorary Secretary, Shevaroy Planters' Association ...	12	12
G. F. Bell, Esq.	100	100
	Total distributed ...	9,051

57. *Medicinal Rhubarb.*—The plants continue to grow very slowly. Two plants were given to a gentleman in Coonoor for trial, leaving a stock of twenty plants in the Ootacamund Gardens.

58. *Taraxacum.*—A quantity of Taraxacum root was supplied to applicants during the year at one anna per lb. of green root.

59. *Essential Oils.*—I distilled some very fine samples of Pepperment, Eucalyptus, Rosemary, Lavender and other essential oils which were awarded a prize at the Agricultural Exhibition held in Madras in February last, and were afterwards handed over to Dr. Bidie for the Museum. In September last I supplied a quart bottle of Blue-gum oil to the Medical Stores, but have not yet heard whether it is as good as the English article, the present price of which is, I believe, 5*s.* per lb. If the distillation of this oil was conducted on a large scale, I have no doubt it could be produced at half that price; but with the imperfect appliances at my command, it is doubtful whether it would pay to undertake the distillation of other essential oils for the Medical Stores.

60. CHURCH HILL PARK.—The grant for the year was Rs. 200 and the expenditure Rs. 196.

61. The young trees and shrubs made an excellent growth during the past year and will soon give a decided and pleasing effect to the face of the hill. Arrangements will be made to have the planted portion fenced in this year.

62. STONEHOUSE PARK.—The allotment for this property was Rs. 600, of which Rs. 550-15-10 was expended.

63. At the request of the Acting Collector of the Nílgiris a number of Acacia trees in the vicinity of the offices were cut down. The removal of the trees has considerably opened up and improved the general appearance of the property. The entire hill was twice weeded and cleared of undergrowth, but I regret to add that some of what would soon have been handsome specimen trees were much injured by stray bullocks. I have found it almost impossible to keep the grounds in anything like order owing to a large amount of carting, brick-making, and other traffic in connection with the new buildings.

64. UPPER NORWOOD.—The Budget grant for Government-house grounds was Rs. 1,500, and the expenditure Rs. 1,179-7-6.

65. The principal work carried out during the year in addition to the general upkeep and improvement of the property was the making of a small kitchen garden and the planting of half an acre of land with Lucerne, Brome Grass, Carrots and

other fodder plants. A number of young Cupressus, Pinus, Araucaria, and other ornamental trees were planted in different parts of the grounds.

66. Plants in pots, cut-flowers, &c., were as hitherto supplied when required.

18th July 1883.

(Signed) A. JAMIESON,
Supt., Govt. Botanical Gardens.

ENCLOSURES.

METEOROLOGICAL OBSERVATIONS from April 1882 to March 1883 made on the Government Botanical Gardens, Ootacamund.

Months.	Monthly mean of Minimum Thermometer.				Maximum observed during the Month.	Rainfall.		Days with Rain.	Days without Rain.
	7 A. M.	2 P. M.	5 P. M.	Daily.		Inches.	Cents.		
April 1882 ..	..	16·05	15·08	14·18	70·20	5	47	7	23
May ,, ..	..	15·26	15·12	15·02	70·09	8	45	18	13
June ,, ..	..	18·26	18·00	18·07	66·19	7	38	20	10
July ,, ..	..	19·24	20 03	20·02	67·28	12	06	31	..
August ,, ..	..	22·00	21·07	21 25	63·17	4	88	25	6
September ,, ..	..	20·05	20·29	20·09	68·14	3	15	20	10
October ,, ..	..	25·28	25·24	26·01	68·19	10	06	18	13
November ,, ..	..	24·18	24·16	24·13	69·17	9	14	19	11
December ,, ..	..	19·12	18·00	18·03	70·23	..	43	5	26
January 1883 ..	..	17·16	16·13	17·03	72·10	..	4	1	30
February ,, ..	..	15·15	15·17	15·11	72·03	..	4	1	27
March ,, ..	..	..	..	..	70·18	4	88	10	21
Annual Mean ..	..	19·37	18·93	18·99	68·91	..	..	..	..
Total ..	..	19·25	..	..	..	65	98	175	190

OOTACAMUND,
10th May 1883.

(Signed) A. JAMIESON,
Supt., Govt. Botanical Gardens.

DR. STATEMENT of Receipts and Charges of the Government Botanical Gardens, Ootacamund, for the Official Year ending 31st March 1883. 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 on hand on 1st April 1882	..	268 4 0	268 4 0	By Cash paid for salary of Superintendent and Fixed Establishment including Peons ..	4,859 4 6		
,, Amount realised by sale of plants, seeds, &c.	3,000 0 0	2,740 13 7	2,740 13 7	,, Permanent Cooly Establishment ..	950 2 6	5,809 7 0	70 9 0
,, Cash received from the Collector of Nilgiris for salary of Superintendent, Fixed Office and Cooly Establishment	5,880 0 0	5,809 7 0	5,809 7 0	,, Temporary Coolies for their wages ..	4,567 3 8		
,, Cash from the Collector of Nilgiris being the amount sanctioned in G.O., No. 874, of 5th July 1872	500 0 0	500 0 0	500 0 0	,, For purchase and freight of seeds and plants	874 13 8		
Temporary Establishment .. 3,000 0 0				,, Do. tools	93 9 0		
Contingencies 1,000 0 0				,, Do. water-pots	31 8 0		
Grant for labelling plants .. 600 0 0				,, Do. flower-pots	56 8 0		
Add sale of produce credited in Treasury 2,740 13 7				,, Do. Service Stamps	18 0 0		
	7,340 13 7			,, On account of postage on Banghies received and despatched	31 3 6		
,, Cash received from the Collector of Nilgiris for Contingencies, Temporary Establishment and for labelling plants, &c. ..	..	6,796 3 0		,, Carriage and packing of plants	495 14 6		
,, Amount paid by Accountant-General to Master Attendant for Garden Contingencies.	..	42 8 8		,, Carpenters' wages for the year	358 13 1		
,, Amount transferred to the credit of Cinchona Department for cost of a Still purchased	..	100 0 0		,, Bricklayers' wages	172 4 0		
,, Amount transferred to the Forest Department for a teak log	..	49 8 0		,, Sawyers' wages	93 14 3		
			6,988 3 8	,, Blacksmiths' wages	16 4 0		
				,, Accountant-General to Master Attendant..	42 8 8		
				,, To Cinchona Department for Still purchased	100 0 0		
				,, Forest Department for teak log	49 8 0		
				,, Clothing for the two Garden Peons ..	28 0 0		
				,, For printing two Memorandum Books ..	7 0 0		
				,, Sundry charges	394 1 8		
				,, For cost of, and writing labels for, plants.	208 0 0	7,639 2 0	352 9 11
				,, Cash credited in Treasury	2,740 13 7		
						2,740 13 7	
				,, Cash on hand	117 5 8		
						117 5 8	
Total ..	16,720 13 7	..	16,306 12 3	Total ..	..	16,306 12 3	423 2 11

OOTACAMUND,
10th May 1883.

(Signed) A. JAMIESON,
Supt., Govt. Botanical Gardens.

DR. STATEMENT showing the Receipts and Charges of the Government Botanical Gardens CR.
at Barliyár for the Official Year ending 31st March 1883.

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 ..	312	333 6 3		By cash paid Gardeners and Coolies employed during the year	312 0 0	312 0 0	
To amount realised by sale of plants, fruits, &c. ..	650	383 10 9	333 6 3	By cash paid Coolies for taking plants from Ooty.. ..	2 8 0		
			383 10 9	Do. for weeding.	7 0 0		
				Do. for sundry expenses	11 14 3		
				By cash credited in Treasury	383 10 9	21 6 3 383 10 9	
Total ..	962	..	717 1 0	Total ..	..	717 1 0	..

OOTACAMUND,
10th May 1883.

(Signed) A. JAMIESON,
Supt., Govt. Botanical Gardens.

DR. STATEMENT showing the Receipts and Charges of the Government Botanical Garden CR.
at Kalhatti for the Official Year ending 31st March 1883.

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 ..	180	186 0 0		By cash paid to two Gardeners employed during the year	186 0 0	186 0 0	
To amount realised by sale of plants, fruits, &c. ..	50	17 14 0	186 0 0	By cash credited in Treasury	17 14 0	17 14 0	
			17 14 0				
Total ..	230	..	203 14 0	Total ..	..	203 14 0	..

OOTACAMUND,
10th May 1883.

(Signed) A. JAMIESON,
Supt., Govt. Botanical Gardens.

DR. STATEMENT showing the Receipts and Charges of Stonehouse Park, Ootacamund, CR.
for the Official Year ending 31st March 1883.

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 ..	600	550 15 10		By cash paid Gardeners and Coolies employed during the year.. ..	536 15 10	536 15 10	49 0 2
			550 15 10	By cash paid for sundry charges..	14 0 0	14 0 0	
Total ..	600	..	550 15 10	Total ..	..	550 15 10	49 0 2

OOTACAMUND,
10th May 1883.

(Signed) A. JAMIESON,
Supt., Govt. Botanical Gardens.

DR. STATEMENT of Receipts and Charges of Sim's Park, Coonoor, for the Official Year ending 31st March 1883. 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 ..	1,600	1,471 12 7	1,471 12 7	By cash paid Gardeners and Coolies employed during the year ..	1,210 6 7	1,210 6 7	
				By cash paid for corrugated iron sheets ..	200 0 0		
				By cash paid for water-cans ..	12 0 0		
				By cash paid for scissors ..	2 0 0		
				By cash paid for assessment on Cooly lines ..	12 0 0		128 3 5
				By cash paid for Peons' clothing .	14 0 0		
				By cash paid for baskets ..	5 0 0		
				By cash paid for 2,000 Gum-plants.	11 0 0		
				By cash paid for sundry charges .	5 6 0	261 6 0	
Total ..	1,600	..	1,471 12 7	Total ..	..	1,471 12 7	128 3 5

OOTACAMUND,
10th May 1883.

(Signed) A. JAMIESON,
Supt., Govt. Botanical Gardens.

DR. STATEMENT of Receipts and Charges of the Government Medicinal Gardens, CR.
Ootacamund, for the Official Year ending 31st March 1883.

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 ..	400	320 7 9	320 7 9	By cash paid to Gardeners and Coolies employed during the year .	320 7 9	320 7 9	79 8 3
To amount realised by sale of Jalap tubers and Taraxicum root to the Public ..	600	296 10 0	296 10 0	By cash credited in Treasury ..	296 10 0	296 10 0	
Total ..	1,000	..	617 1 9	Total ..	..	617 1 9	79 8 3

OOTACAMUND,
10th May 1883.

(Signed) A. JAMIESON,
Supt., Govt. Botanical Gardens.

Dr. STATEMENT of Receipts and Charges of the Upper Norwood, Ootacamund, for the Official Year ending 31st March 1883. 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 ..	1,500	1,179 7 6	1,179 7 6	By cash paid Temporary Coolies employed during the year ..	1,139 12 6	1,139 12 6	320 8 6
				By cash paid for plants and seeds purchased ..	33 11 0		
				By cash paid for water-cans ..	6 0 0	39 11 0	
Total ..	1,500	..	1,179 7 6	Total ..	..	1,179 7 6	320 8 6

OOTACAMUND,
10th May 1883.

(Signed) A. JAMIESON,
Supt., Govt. Botanical Gardens.

Dr. STATEMENT of Receipts and Charges of St. Stephen's Church Hill Park, Ootacamund, for the Official Year ending 31st March 1883. 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 ..	200	196 0 0	196 0 0	By cash paid to Gardeners and Coolies employed during the year.	96 0 0	96 0 0	4 0 0
				By cash paid for Blue-gum posts for fencing ..	100 0 0	100 0 0	
Total ..	200	..	196 0 0	Total ..	..	196 0 0	4 0 0

OOTACAMUND,
10th May 1883.

(Signed) A. JAMIESON,
Supt., Govt. Botanical Gardens.

Dr. FINANCIAL STATEMENT of the Government Botanical Gardens and Parks on the Nilgiris for the Official Year ending 31st March 1883, as compared with the Budget Estimate and Actuals of the last year. Cr.

Heads.	Receipts. Budget Allotment.	Receipts. Actuals.	Receipts. Actuals of last Year.	Unexpended Balance.	Heads.	Expenditure. Budget Allotment.	Expenditure. Actuals.	Expenditure. Actuals of last Year.	Unexpended Balance.
Government Botanical Gardens, Ootacamund.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	*Government Botanical Gardens, Ootacamund.*	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
To cash on hand on 1st April 1882 ..	..	268 4 0	8 6 0	..	By cash paid to Superintendent and Fixed Establishment for their pay	4,872 0 0	4,859 4 6	4,742 13 1	12 11 6
To amount realised by sale of plants, seeds, &c.	3,000 0 0	2,740 13 7	2,522 13 0	..	By cash paid to Permanent Cooly Establishment for their pay	1,008 0 0	950 2 6	955 4 3	57 13 6
To salary of Superintendent and Fixed Establishment including Peons	4,872 0 0	4,859 4 6	4,742 13 1	12 11 6		Rs. A. P.			
To wages of Fixed Cooly Establishment ..	1,008 0 0	950 2 6	955 4 3	57 13 6	Temporary Establishment ..	3,000 0 0	..	..	..
To grant for developing vegetable products of other Countries	500 0 0	500 0 0	500 0 0	..	Contingencies	1,000 0 0	..	..	..
	Rs. A. P.				Grant for labelling	600 0 0	..	..	..
Temporary Establishment ..	3,000 0 0	..	..	..	Add sale of produce credited in Treasury	2,740 13 7			
Contingencies	1,000 0 0	..	..	..		7,340 13 7	..	..	..
Grant for labelling	600 0 0	..	..	..	By cash paid to Temporary Coolies employed during the year	..	4,567 3 8	4,351 6 11	
Add sale of produce credited in Treasury	2,740 13 7				By cash paid for cost of and writing labels for plants	..	208 0 0	..	352 9 11
	7,340 13 7	..	..	..	By cash paid for contingencies and other charges	..	1,989 0 8	1,900 1 11	
To amount received from the Collector of Nilgiris for Temporary Establishment, labelling plants and contingencies, including all book transfers	..	6,988 3 8	6,898 3 9	352 9 11	By cash paid for cost and freight of seeds and plants purchased	500 0 0	874 13 8	886 12 11	
					By cash credited in Treasury	..	2,740 13 7	2,522 13 0	..
					Do. on hand on 31st March 1883 ..	..	117 5 8	268 4 0	..
Total ..	16,720 13 7	16,306 12 3	15,627 8 1	423 2 11	Total ..	13,720 13 7	16,306 12 3	15,627 8 1	423 2 11
Barliyár Garden.					*Barliyár Garden.*				
To cash received from the Collector of Nilgiris for Contingencies and Temporary Establishment	312 0 0	333 6 3	327 12 0	..	By cash paid to one Gardener and a Cooly employed during the year	312 0 0	312 0 0	312 0 0	..
To amount realised by sale of plants, fruits, &c.	650 0 0	383 10 9	184 8 4	..	By cash paid for sundry expenses, &c. ..	..	21 6 3	15 12 0	..
					By cash credited in Treasury	..	383 10 9	184 8 4	..
Total ..	962 0 0	717 1 0	512 4 4	..	Total ..	312 0 0	717 1 0	512 4 4	..
Kalhatti Garden.					*Kalhatti Garden.*				
To cash received from the Collector of Nilgiris for Contingencies and Temporary Establishment	180 0 0	186 0 0	181 0 0	..	By cash paid to two Gardeners employed during the year	180 0 0	186 0 0	180 0 0	..
To amount realised by sale of plants, &c. ..	50 0 0	17 14 0	15 14 0	..	By cash paid on account of sundry expenditure	..	..	1 0 0	..
					By cash credited in Treasury	..	17 14 0	15 14 0	..
Total ..	230 0 0	203 14 0	196 14 0	..	Total ..	180 0 0	203 14 0	196 14 0	..

Dr. Financial Statement of the Government Botanical Gardens and Parks on the Nílgiris for the Official Year ending 31st March 1883, &c.— (*Continued*). Cr.

Heads.	Receipts. Budget Allotment.	Actuals.	Actuals of last Year.	Unexpended Balance.	Heads.	Expenditure. Budget Allotment.	Actuals.	Actuals of last Year.	Unexpended Balance.
Stonehouse Park.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	*Stonehouse Park.*	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
To cash received from the Collector of Nílgiris for Contingencies and Temporary Establishment	600 0 0	550 15 10	562 1 3	49 0 2	By cash paid Gardeners and Coolies employed during the year	600 0 0	536 15 10	514 13 3	49 0 2
					By cash paid for sundry expenses	..	14 0 0	47 4 0	
Total ..	600 0 0	550 15 10	562 1 3	49 0 2	Total ..	600 0 0	550 15 10	562 1 3	49 0 2
Sim's Park, Coonoor.					*Sim's Park.*				
To cash received from the Collector of Nílgiris for Contingencies and Temporary Establishment	1,600 0 0	1,471 12 7	1,537 12 1	128 3 5	By cash paid to Gardeners and Coolies employed during the year	1,600 0 0	1,210 6 7	1,202 2 1	128 3 5
					Do. for corrugated iron sheets ..	..	200 0 0	..	
					Do. water-cans	..	12 0 0	12 0 0	
					Do. manure	..	..	34 8 0	
					Do. a pair of scissors	..	2 0 0	..	
					By cash paid on account of assessment on Cooly lines	..	12 0 0	12 0 0	
					Do. hire of 11 carts with plants to Coonoor	..	..	38 8 0	
					By cash paid to baskets purchased	..	5 0 0	29 14 0	
					Do. for sundry charges	..	19 6 0	14 0 0	
					By cash paid for 2000 Blue-gum plants ..	..	11 0 0	..	
					Do. for tools	..	..	138 8 0	
					Do. for lawn mowers and syringes .	..	..	56 4 0	
Total ..	1,600 0 0	1,471 12 7	1,537 12 1	128 3 5	Total ..	1,600 0 0	1,471 12 7	1,537 12 1	128 3 5
Medicinal Gardens, Ooty.					*Medicinal Gardens, Ootacamund.*				
To cash received from the Collector of Nílgiris	400 0 0	320 7 9	320 6 9	79 8 3	By cash paid to Gardeners and Coolies employed during year	400 0 0	320 7 9	320 6 9	79 8 3
To amount realised by sale of Jalap tubers, &c., to the public	600 0 0	296 10 0	192 8 0	..	By cash credited in Treasury	..	296 10 0	192 8 0	..
Total ..	1,000 0 0	617 1 9	512 14 9	79 8 3	Total ..	400 0 0	617 1 9	512 14 9	79 8 3
Upper Norwood.					*Upper Norwood.*				
To cash received from the Collector of Nílgiris for Contingencies and Temporary Establishment	1,500 0 0	1,179 7 6	1,110 1 5	320 8 6	By cash paid Temporary Coolies employed during year	1,500 0 0	1,139 12 6	1,064 13 5	320 8 6
					By cash paid for seeds, &c., purchased ..	..	33 11 0	..	
					Do. for water-cans	..	6 0 0	..	
					Do. for baskets	..	..	1 0 0	
					Do. for tools	..	..	44 4 0	
Total ..	1,500 0 0	1,179 7 6	1,110 1 5	320 8 6	Total ..	1,500 0 0	1,179 7 6	1,110 1 5	320 8 6

Dr. Financial Statement of the Government Botanical Gardens and Parks on the Nílgiris for the Official Year ending 31st March 1883, &c.— (*Continued*). Cr.

Heads.	Receipts. Budget Allotment.	Actuals.	Actuals of last Year.	Unexpended Balance.	Heads.	Expenditure. Budget Allotment.	Actuals.	Actuals of last Year.	Unexpended Balance.
St. Stephen's Church Hill Park.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	*St. Stephen's Church Hill Park.*	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
To cash received from the Collector of Nilgiris for Blue-gum posts and pay of a Cooly employed during the year ..	200 0 0	196 0 0	660 10 7	4 0 0	By cash paid on account of a Cooly employed during the year	200 0 0	96 0 0	639 10 7	4 0 0
					By cash paid on account of Blue-gum posts for fencing	..	100 0 0	..	
					By cash paid on account of tools, &c. ..	..	..	21 0 0	
Total ..	200 0 0	196 0 0	660 10 7	4 0 0	Total ..	200 0 0	196 0 0	660 10 7	4 0 0

Ootacamund,
10th May 1883.

(Signed) A. JAMIESON,
Supt., Govt. Botanical Gardens.

RETURN of Seeds, Plants, &c., distributed from the Government Botanical Gardens, Ootacamund, Barliyár and Kalhatti during the Official Year ending 31st March 1883.

Names of Month.	Fruit Trees and Economic Plants.	Value.	Timber Trees.	Value.	Bouquets and Cut-flowers.	Value.	Packets of Vegetable, Flower and other Seeds.	Value.	Ornamental Trees, Shrubs and Medicinal Plants.	Value.	Sundry Receipts.	Total.
		Rs. A. P.		Rs. A. P.	B. C.F.	Rs. A. P.		Rs. A. P.		Rs. A. P.	Rs. A. P.	Rs. A. P.
April 1882 ..	...	...	..	...	... ...	...	113	64 15 0	72	64 12 0	5 3 0	134 14 0
May ,, ...	...	...	...	...	7 14	19 4 0	276	60 11 7	1,073	74 8 0	6 14 6	161 6 1
June ,, ...	2	0 8 0	626	49 10 0	5 15	13 2 0	432	134 6 6	1,095	133 3 0	64 6 0	395 3 6
July ,, ...	36	9 0 0	195	50 2 0	9 13	23 8 0	323	107 13 6	917	155 9 0	47 8 0	393 8 6
August ,, ...	10	3 14 0	100	25 0 0	1 12	8 9 0	274	77 11 3	152	30 13 0	12 6 0	158 5 3
September ,, ..	42	10 8 0	888	181 6 0	2 11	8 14 0	380	110 9 9	1,373	174 5 0	46 8 6	532 3 3
October ,, ...	18	6 4 0	5,247	131 6 0	10 24	14 2 0	146	62 13 9	324	60 10 0	11 8 0	286 11 9
November ,, ...	...	...	762	73 8 0	3 60	26 0 0	181	76 8 3	343	97 1 0	14 2 0	287 3 3
December ,, ...	...	...	...	...	... ...	...	80	22 14 6	83	19 8 0	2 6 0	44 12 6
January 1883 ...	23	5 10 0	...	...	3 1	6 0 0	28	24 0 0	32	11 7 0	1 6 0	48 7 0
February ,, ...	...	...	1	0 8 0	... ...	...	37	16 14 6	194	64 12 0	3 1 9	85 4 3
March ,, ...	2,675	262 12 0	55	110 4 0	0 10	5 4 0	924	97 9 0	6,250	278 8 0	156 12 0	911 1 0
Total ...	2,806	298 8 0	7,874	621 12 0	40 160	124 11 0	3,194	856 15 7	11,908	1,165 0 0	372 1 9	3,439 0 4

(Signed) A. JAMIESON,
Supt., Govt. Botanical Gardens.

OOTACAMUND,
10th May 1883.

31ST AUGUST 1883, No. 1064, REVENUE.

GOVERNMENT OF MADRAS.

REVENUE DEPARTMENT.

READ—the following letter from M. A. LAWSON, Esq., Director of the Government Parks and Gardens, to the Secretary to Government, Revenue Department, dated Ootacamund, 19th August 1883:—

Mr. Jamieson, the Curator, who has been in charge of the Government Gardens, having reported upon their progress during the past year, I propose confining my remarks to such alterations as I consider desirable should be made in them:—

A.—The Government Gardens—Ootacamund.

1. Many portions of these gardens are very swampy, and it is absolutely necessary that a thorough system of drainage should be undertaken forthwith.
2. The lawns need to be re-levelled; and for their further proper keeping, mowing machines are wanted.
3. The roads and walks are in a bad state of repair; and of both of these there are more than sufficient for the requirements of the gardens. It would be well to do away with such as are not wanted, and to re-make the rest.
4. There are many rare and interesting trees and shrubs, which are not named. The naming of these should be proceeded with at once.
5. It would add largely to the beauty of the gardens, if all that part, which lies between the entrance gates, the old Cinchona laboratory and the lower terrace was to be laid out in a more park-like manner; while retaining the portion immediately above the terrace as an ornamental garden.
6. It would increase the efficiency of the gardens if the terraces, which contain the present nurseries, were enlarged and made serviceable for the purposes of—

   A.—An Herbaceous Botanical Garden.
   B.—An Experimental Kitchen Garden.

7. A more extended series of meteorological observations, than at present made, would be of considerable advantage; in so far as it would enable us to make more accurate comparisons between the climates of this and other localities. The record of such observations might be posted daily on one of the entrance gates, and thus furnish information of an always interesting character to the public. Should this suggestion be adopted, it would be necessary to purchase the following instruments, and to make arrangements for their being properly served and properly maintained.

Instruments.

1. Barometer.
2. Thermometer—
   - *a.* Maximum.
   - *β.* Minimum.
   - *γ.* Solar radiating (black bulb.)
   - *δ.* Wet and dry bulb.
3. A Rain Gauge we possess.

B.—Sim's Park—Coonoor.

1. The gardens here are generally in a better state of repair and more neatly kept than those at Ootacamund; but, as at Ootacamund, the drainage requires looking to; while the roads and walks in many cases need substantial repairs.
2. The plants need naming.
3. Meteorological observations, similar to those, which I have suggested should be taken at Ootacamund, would be of great use.
4. It would add largely to the pleasure and convenience of those residing in Coonoor and Wellington, if the Shola (now a Government Forest Reserve) which lies in the lower part of that ravine in which Sim's Park is situated, and which connects the park with the Wellington Racing flat, was to be taken into the park; and a road made through it, so that persons passing between Coonoor and Wellington might be able to drive direct through the park.

C.—Barliyár.

This garden contains a few rare and very interesting plants; and is admirably situated for experimenting upon tropical species. It is, however, a deadly excavation in a deadly ghât, and it will be for Government to decide whether it shall be retained or if another spot less unhealthy shall be acquired.

N. B.—I have been informed by the Overseer that during the months of February and March last, no less than nine coolies were dismissed on account of their having been attacked by fever. The gardens employ only one laborer at a time.

D.—Kalhatti.

This garden I have not yet visited.

Order—dated 31st August 1883, No. 1064, Revenue.

Miscellaneous.

The Director submits a brief report on the alterations required in the Nílgiri Botanical Parks and Gardens, a full report * on which for the year 1882-83 had previously been received from the Curator Mr. Jamieson. These documents may conveniently be disposed of at one and the same time in order that the improvements suggested by Mr. Lawson may be set in hand in the current year 1883-84, a supplemental grant of the necessary amount being made for the purpose.

* Dated 18th July 1883.

2. To deal first with the Director's letter, the Right Honorable the Governor in Council entirely concurs in thinking that the drainage is susceptible of considerable improvement in parts of the *Ootacamund Gardens*, and that a decrease in the number of roads and an improvement in the upkeep of the lawns is most desirable. On receipt of an indent, the necessary mowing machines and the instruments required for meteorological observations will be procured. Their cost and that of the alterations and improvements proposed in paragraphs 1, 5 and 6 of Mr. Lawson's letter should be included in the Budget Estimate for 1884-85, which will be due on the 1st October next, and the Department of Public Works will be requested to issue orders for the speedy preparation of estimates by the Executive Engineer in concert with the Director. The labelling ordered by G.O., 21st September 1882, No. 3097, should be completed as soon as possible. The Government highly approve the proposed institution of an experimental kitchen garden in which vegetables which hitherto have not been grown on the Nílgiris may be given a fair trial, and they note with regret that Mr. Jamieson's statement (paragraph 19 of report) that little or no improvement in the cultivation of the finer sort of vegetables has taken place, is only too true.

3. The proposed repairs at *Sim's Park* and the cost of the meteorological instruments required there, should also be estimated at an early date for inclusion in the Budget of 1884-85, and the plants should certainly be labelled as those in the Ootacamund Gardens have been. The Conservator of Forests, Northern Circle, and the Collector of Nílgiris will be requested to give their opinion on the proposal made for including the shola, referred to in Mr. Lawson's letter, in the park and for constructing a road through it from Coonoor to Wellington.

4. The Government will await the Director's matured opinion as to the proposed abandonment of the gardens at Barliyár, the climate of which, though unfortunately so inimical to man, has none the less proved favorable to exotics, which have not hitherto succeeded elsewhere. It is observed, moreover, that no death from fever or sickness occurred among the coolies during the year under report.

5. Turning to the *Curator's Report*, the Government observe that the receipts (Rs. 3,439-0-4) which are in excess of those of the last year by Rs. 412-6-0 probably admit of further development, and that their suggestion of 1878-79, referred to in the review of last year's report, has not apparently been acted on up to date. Much has been done during the year under report to enhance the beauty of the *Ootacamund Gardens*, and the turfing over of the gravel road leading from the entrance gate to the Conservatory, which has been taken in hand since Mr. Jamieson wrote his report, will vastly improve their general appearance. The Government, however, see no reason at present to remove the Conservatory. The cooly lines, it is hoped, will be completed long ere the expiry of the current year.

6. The Government learn with great satisfaction that *Cinchona Carthagena* continues to make a very satisfactory growth at Coonoor and Kalhatti and that healthy seedlings have been propagated from the varieties of *Calisaya* (*Morada*, *Verde*, *Zamba morada*) obtained last year from the Secretary of State; and they trust that it may prove, as Mr. Jamieson holds, that the *Castilloa* is successfully established in the Nílgiri District. The Conservator of Forests, Southern Circle, will report at an early date as to its alleged failure at Nilambúr, and the progress of the plants distributed should be carefully watched and noted in next year's report. The Government will also be glad to hear of the result of the experiment being made in Coonoor with *Acacia decurrens*, 10 cwt. of the bark of which is, it is observed, to be forwarded to Cawnpore at the request of the Director of Agriculture and Commerce, North-Western Province and Oudh.

7. The Curator should persevere in experiments with potatoes. Mr. Watson's report on fodder plants should be published in the District Gazette. The Tagasaste, Mr. Jamieson's former praise of which is quoted in the Kew Report for 1881, is, it now appears, inferior to Teosinte and Prickly Comfrey and cattle will not eat it.

8. The results of the Curator's tour (paragraph 20 of report) are satisfactory; but it is observed that no definite information is given as to the progress made with the catalogue of plants, the preparation of which under Mr. Lawson's superintendence was enjoined on Mr. Jamieson by the order on last year's report, and that nothing is said as to the result of the Curator's visit to the Madras Agricultural Exhibition, which is only incidentally alluded to in paragraph 59 of his report.

9. The Committee who undertook to construct the Lawn Tennis ground in *Sim's Park*, Coonoor, will be called on to complete the courts and fence them off from the park, or to relinquish them altogether, as their present unfinished condition is reported to mar the appearance of the park. Attention is directed in this connection to paragraph 13 of G.O., 12th December 1882, No. 1398. The condition of the *Cinchona Ledgeriana* plants raised from Java seed in 1880 is matter for congratulation.

10. Operations at the *Barliyár Garden* evidence no inconsiderable progress, and the Government learn with very great pleasure of an improvement in the health and growth of *Ipecacuanha* which, in the year under report, has *seeded* for the first time. Its propagation at Ootacamund is satisfactory and no possible pains should be spared in securing the successful establishment of this "the most important of

recent introductions to India," experiments with which have recently been ordered * in various localities throughout the Presidency.

* G.O., 18th November 1882, No. 1276.

11. *Castilloa Elastica* made a good growth during the year under report and the further progress of the four plants permanently put out will be watched with interest. *Hevea* also promises well. The weakly *Landolphias* should receive every attention. The threatened exhaustion of the natural sources of supply of Gutta-purcha and India rubber makes the acclimatisation of all plants of the rubber species a matter of great importance.

Kew Report, 1881, pp. 38, 39.

12. If the Director considers it necessary, the Government will be prepared to consider the propriety of sanctioning "a more liberal grant for *Kalhatti Garden*." Mr. Jamieson does not say on what particular head he considers more liberal expenditure called for. *Cinchona Carthagena* and *Ledgeriana* did well here.

13. With reference to paragraph 56 of the Curator's report, it is observed that the prohibition of the extension of the cultivation of *Jalap* was withdrawn by paragraph 17 of the review of his report of last year. If, however, a supply of tubers be maintained for distribution and for the requirements of the Medical Store Department, it will suffice. With reference to paragraph 59, the Surgeon-General will be requested to advise as to the expediency of Mr. Jamieson's prosecuting his experiments with essential oils. Should it be desirable that he should do so, better apparatus will be supplied.

14. The expenditure on the *Upper Norwood* property fell short of the grant (Rs. 1,500) by upwards of Rs. 300. The whole allotment might have been expended with advantage in maintaining the grounds between the garden cottage and Government House in a higher state of efficiency and in removing the wattle which now disfigures this part of the gardens.

15. On the whole the operations of the year are satisfactory and show that the observation of the Agri-Horticultural Committee in their last annual report to the effect that considerable impetus has been given during the year to the demand for, and distribution of, economic plants in consequence of the action of Government, is not without foundation.

(True Extract.)

for Ag. Secretary to Government.

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

Exd. W. H. French.

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87 [illegible]

No. 2827 dy 8th Oct/83

B/

Communicated to the Supdg Engr. Fourth Circle, Who will instruct the Ex: Engineer Nilgiri Division to draw up without delay, in communication with the Director the Estimates referred to in para 2 of the G.O. in the Rev. Dept

CJ.
4/10

Rev
8/10
√

S.E. Fourth Circle
S. Fourth Circle

4.10

Govt. of {1883} Madras.

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G.O., 31st August 1883, No. 1064.

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No. 2827 dy 8th Oct/83

AUGUST.

5. L.C

Government Botanical Parks and Gardens,

Nilgiris.—Reviewing the report on the — for 1882-83.

2 Copies sent to Gov. with order

Entd in Recpt Regr