

(1) Number of pages 38.
(2) Date of repair 25-8-38.
(3) Initials of the Referencer 1

MADRAS RECORD OFFICE.

Government of Madras.

Revenue DEPARTMENT.

G.O. No.	985	Press Mis.
Dated	31-8-	18 85.

Not to be folded or roughly handled

31st AUGUST 1885, No. 985, REVENUE.

GOVERNMENT OF MADRAS.

REVENUE DEPARTMENT.

READ—again the following letter from W. WILSON, Esq., Acting Secretary to Government, Revenue Department, to the Honorable the Colonial Secretary, Colombo, dated 22nd July 1885, Mis. No. 3743 :—

With reference to the paragraphs in the report on the Royal Botanical Gardens, Peradeniya, for 1884 on the subject of *Erythroxylon coca*, I am directed to request that, with the permission of His Excellency the Governor, Dr. Trimen may be asked to furnish this Government with detailed information regarding his method of drying and preparing the leaves.

READ—also the following letter from the Honorable the Colonial Secretary, Colombo, to the Acting Secretary to Government, Revenue Department, dated Colombo, 12th August 1885, No. 67 :—

With reference to your letter No. 3743, of the 22nd ultimo, I am directed to transmit to you the annexed copy of a letter from the Director of the Royal Botanic Gardens, Peradeniya, and I am to request you to be good enough, with the permission of the Right Honorable the Governor of Madras in Council, to furnish me with the information asked for in the concluding paragraph of Dr. Trimen's letter.

ENCLOSURE.

Letter from Dr. H. TRIMEN, Director of the Royal Botanic Gardens, Peradeniya, to the Honorable the Colonial Secretary, Colombo, dated Peradeniya, 7th August 1885, No. 23.

I have the honor to acknowledge the receipt of your letter, No. 32, of 4th August; the accompanying letter from the Government of Fort St. George is herewith returned.

In reply, I have to state that I have prepared a single small sample only of coca leaves from trees in this garden. This was in February last during the hot dry weather. No special precautions were taken. Fully grown leaves were carefully picked and at once dried gradually in the air under the shade of a verandah, the process being finished off in the sun. The complete drying took ten or eleven days, and the leaves lost half their weight in the process. When finished the leaves were flat, greyish-green and mostly unbroken, forming a good-looking sample. I am not aware whether the plan followed is the best that might be employed; possibly more rapid drying would be found preferable. A sample packed in a tin-box was sent home, and on analysis by Mr. D. Howard was found to contain 0.22 per cent. of pure cocaine, a fair but not large proportion. I published this result in the Ceylon newspapers on 10th April last.

2. I understand that some analyses of the *young* leaves have been recently made by Mr. Hooper, the Government Chemist at Ootacamund, and I should feel obliged if you would request the Madras Government to furnish you with the result of these assays for our information here.

ORDER—dated 31st August 1885, No. 985, Revenue.

Miscellaneous.

Communicated to the Board of Revenue, the Director of Revenue Settlement and Agriculture, and the Director of Government Cinchona Plantations, Botanical Gardens and Parks.

2. An extract from Mr. Hooper's report for the last year in which the results of his experiments with *Coca erythrozydon* leaves are given will be forwarded to the Government of Ceylon with the following letter:—

(Here enter No. *4617* Mis., dated 31st August 1885.)

(True Extract.)

(Signed) W. WILSON,
Ag. Secretary to Government.

To the Board of Revenue.
„ the Director of Revenue Settlement and Agriculture.
„ the Director, Government Cinchona Plantations, Parks and Gardens, Nilgiris.

Exd. W. J. Lewis.

100 Copies.

Govt. of {1885} Madras.

REVENUE.

Issued

Recd.

Encl.

G.O., 31st August 1885, No. 985.

AUGUST.

Coca Leaves.

Information regarding Dr. Trinen's method of drying and preparing —, communicated to certain authorities; and an extract from the report on the experiments made by the Government Quinologist, forwarded to the Ceylon Government.

NOTE FOR THE SECRETARY.

ilding to be cement floor was laid down, and a low enclosing wall built. pletely renovated, glass-lights let into the roof, a cement floor central pillars and extensive brick staging. This is for the tion of ferns in pots, for which it is well suited ; a consider- urther of both native and foreign species." n erected behind the store, and a road to it made. It accom- have hitherto had no shelter, and also the meadow-mower and en built at the cooly lines. It will, I think, be necessary to emelves this next year ; they are now very old and incom- rd to the high road. better house accommodation to the Head Gardener. The was originally a store for housing Public Works tools, &c., ling. When the appointment of an English Gardener was got ready at a slight cost provided out of a small vote for and since that time nothing further has been expended on it. siderable attention. I do not, however, think that this build- nto a convenient or suitable dwelling for a European. It which about one-third has been partitioned off at one end, and lows let in along the end wall. The remainder is dark and e required, be turned into further living rooms. As the Iso is very bad,—abutting on the entrance to the Director's ould suggest that it be taken down, and a smaller but more

commodious house be built for Mr. Clark a little distance away and further from the high road. As the existing house is well and solidly constructed, I believe the heavy material would be amply sufficient for the requirements of the new building, but of course this is a matter of which the Public Works Officer will be the judge, and I hope he may be instructed to report on it.

Memorial to the late Dr. Thwaites.—Soon after the death of the late Director, a desire was expressed among his numerous friends that some memorial of him should be placed in the Gardens where he so long presided. This received especially hearty support from Sir W. Gregory, and upon. A sufficient sum of money having been subscribed for a modest building, I purpose to erect a small summer-house, kiosk or shelter for visitors in the Kandyan style of architecture on the site selected, as soon as the plans are completed.

Iron Roller.—The large cylinder presented by Mr. F. D. Mitchell has been fitted up as a roller, and is found of great use in road-making and in keeping the lawns in good order. A fine pair of Coast bulls was purchased during the year; these work this heavy roller, and also the meadow-mower, with ease and celerity.

Labels.—Some larger labels are now being used for fixing into the ground at the foot of trees, palms, &c., consisting of solid single blocks of teak, palm or wā wood about two feet long with a large sloping surface at the top, and tapering gradually to a point at the bottom; they have two coats of black paint, and the lower portion is also tarred. Some of these put out in the early part of June are standing very well, and I am now preparing a large number.

Improvements near the Store.—The neighbourhood of the Store, Offices, and Plant-houses has been taken in hand and greatly improved. A waste piece of ground, formerly used as a receptacle for useless articles and rubbish, has been dug up and laid out in flower beds, in which have been planted specimens of various roses and flowering plants of small size. New wells for watering and for washing pots, &c., have been constructed along the water-course here; new rockeries made and stocked with ferns and foliage-plants, dwarf hedges planted, a new set of brick steps made, and the path from them to the entrance gate entirely re-made.

Rainfall.—The early part of the year was very dry, and the ordinary south-west monsoon rains of May to July to a great extent failed; but the latter portion of the year received above the average rainfall, that of October being very large. The following is Mr. Clark's record for the year:—

1884.	Rainfall.	Rainy Days.
January	0.40	2
February	1.17	2
March	1.87	7
April	3.91	7
May	10.37	10
June	4.71	10
July	4.07	14
August	6.83	15
September	4.01	11
October	18.47	17
November	11.78	13
December	7.40	8
Total	74.99	115

The heaviest fall in any 24 hours was 3.47 inches, which fell on October 14th—15th. The Gardens suffered somewhat from the heavy winds at the monsoon changes. In May and June, several fine trees were blown down, or had large branches torn away, and in October, one of the "ruins" (tall old tanks completely covered up with *Thunbergia*) fell down, and one of the handsome original Saman trees, planted in 1853, was blown over. On September 17th, a more serious mishap followed the fall of a large *Derris robusta*, one branch of which struck the orchid house, breaking three of the main rafters and 34 panes of glass; several valuable plants were severely cut by the falling glass. The damage is in course of repair.

2. — Hukgala Garden.

Considerable progress has been made in the improvements at this Garden during the year; and though the remarkably prolonged drought and failure of water-supply was a great misfortune at the time, it has proved an indirect benefit. Sanction was given to the construction of a reservoir, and a vote for the work granted in September, and Mr. Nock has now finished off this valuable addition to the Garden. I trust we are now free from any further serious effects from prolonged dry weather.

The construction of the extension of the Carriage Drive has been continued to the extent which the labour supply (lent from Pèrādēniya) will allow; but it is a heavy work for our means. I shall continue to spare labour for this from the larger Garden during 1885. Additional work will be caused by the results of a sudden and very heavy rain-storm in October. The mass of water carried away a portion of the embankment below the new pond on which the drive runs, and this will have to be re-made, and provision afforded for such unexpected floods by a large culvert in the embankment.

The coolie lines are in a very bad state, and I intend to re-build them in the coming year. The Superintendent also desires to construct, on the public high road below the Garden, a good cattle-shed in the place of one blown down last year. He believes that if such a shed existed, most cartmen would put up there before commencing the rest of the long ascent to

Nuwara Eliya, and that we should thus acquire for the Garden a valuable supply of manure. As the want of manure is much felt at Hukgala, I have approved of Mr. Nock's suggestion.

The following extracts are from a full report by Mr. Nock of the Garden under his charge for the year 1884:—

Buildings.—The walls of the Superintendent's bungalow have been repaired and whitewashed inside and out, and the doors and windows repaired and re-painted. Two windows have been inserted in the front sitting-room on the side facing the flower garden.

Propagating House.—The inside fittings were completed at the beginning of the year, the floors and edgings laid, and the pillars and walls whitewashed. The chimney was built up to the proper level. The furnace in the stoke hole was fitted up, and the stoke hole roof shingled. The glazing of the roof was completed, and the painting of the doors, &c., finished off.

I am glad to be able to report that the arrangements for giving air and the flue for bottom heat have worked in the most satisfactory manner, and altogether the house is a great success.

New Carriage Shed.—A large carriage shed, 36 feet long, 16 feet wide, and 9 feet high from the floor to the wall plates, has been erected for the use of visitors. It is placed in a convenient and sheltered spot a little more than half-way round the garden, and about two minutes' walk from the point which commands the magnificent view over the Uva District.

Three new span-roofed plant-sheds have been erected during the year. Each shed is 43 feet long and 9½ feet wide, the height from floor to ridge being 8 feet. The sides are left open 3 feet from the ground, and the roof is thatched with mana grass to within 2 feet of the top. A path, 2 feet 3 inches wide, runs down the centre of each shed.

Roads and Paths.—With the aid of the labour from Pèrādēniya, we were able to proceed at the beginning of the year with the extension of the carriage drive. The levels were taken and the curves marked out for the whole of the remaining distance (275 yards), to the point where it will again enter the old drive. The proper level was excavated 15 feet wide all through. To effect this we had to make three cuttings, the first being 66 feet long with an average depth of 3 feet, the deepest part being 6 feet. The second was 100 feet long, average depth 4 feet, and the deepest part 6 feet 6 inches, and the third was 100 feet long with an average depth of 9 feet, the deepest part being 12 feet 6 inches. Altogether about 900 cubic yards were excavated and carted, and carried away to fill up the hollows. A culvert, 18 feet long, 3 feet 6 inches deep, and 22 inches wide, was formed in a gully the road had to cross, and retaining walls on each side, 32 feet long with an average depth of 4 feet, built. 150 feet from this place, after going through the third cutting, we came to another gully, and it was thought advisable here to build a strong retaining wall on the upper side only, there being plenty of soil from the cuttings to fill up the gully sufficiently to allow carriages, &c., to pass safely over, and to have a long sloping turf bank on the lower side. On the upper side the water confined in the gully formed an ornamental sheet of water, 160 feet long and 56 feet wide at the widest part, and varying in depth from 2 feet to 8½ feet. All went on well, till on 12th September a very heavy shower (2.98 inches in 2 hours) fell, and the outlet for the overflow-water being insufficient to carry it away quickly, it flooded over the road and carried away a large portion of the unfinished bank below, thus closing the road again.

Of new paths, 295 yards have been made during the year, of 4 feet width; and 578 yards of turfing (1 foot wide) have been laid down as verges at sides of paths; and 145 square yards of turf have also been laid down in the flower garden and by the new rose garden.

Fernery.—A good deal of work has been done in the fernery during the year in renewing the beds with surface soil from the jungle, in replanting, and in the general cleaning up. I regret to say that a considerable quantity of the smaller plants were lost during the drought; but all the beds have, since the rains commenced, been planted up, and everything is now in good order. Over 7,000 plants of native ferns were collected from the surrounding jungles, and used in the planting up of the beds. Another portion of the rock-bank, 40 feet long and 10 feet wide, has been formed, and planted up with foreign species of ferns and begonias.

A great addition to the fernery during the year were three fine specimens of Australian tree ferns, which the Director obtained through the kindness of the Australian Commissioners of the Calcutta Exhibition. They were received here in April, and are now well established. The trunk of the largest is 5 feet 6 inches high, with a circumference of 2 feet 8 inches, and it carries a head of 19 fronds.

Nurseries.—A large stock of garden plants has been steadily kept up, but I regret to say that there has been but little demand for them, and much labour is lost in their constant renewal.

Borders and Shrubberies.—Nearly all the plants have been manured, and 14,780 additional trees, shrubs, and smaller plants planted out during the year. The bare space opposite the bungalow formerly used as a carriage stand by visitors has been formed into flower-borders.

A line of strong Juniper plants, 12 feet apart, has been planted on the edge of the patana along the public road and garden drive. It is proposed to plant several more rows of other trees at the back of these, so as to form in time an ornamental shelter-belt, when the unsightly trees now occupying the space can be removed.

Flower Garden.—The surroundings of the new propagating house have been much altered and improved. The dilapidated cart shed has been removed, and all the old jungle trees between it and the house grubbed up, and the hollow filled in level with the garden. A path has been made across this up to the house with two flights of steps in its course. Behind the house the jungle has been felled, the bank sloped, and a good path made leading up to the potting shed.

New Rose Garden.—The site for the new rose garden, which is in a sheltered situation opposite the new carriage shed, was taken in hand in August, and completed ready for planting in December. This site was originally a deep ugly gully, but was partly filled up with the soil from the large cutting in the carriage drive made last year. After the jungle trees had been cut down and the roots grubbed up, 110 cubic yards of soil were laid over it, and the whole piece made of the same slope as the carriage drive which runs close along one side of it. The design is very simple and so arranged that it can be extended at any time without interfering with the beds already made. The circle in which it is made is 64 feet in diameter, and the line which forms the circle is made of strong plants of privet. Inside this nine beds are formed with paths 4 feet wide running round them and bordered with turf 12 inches wide. The centre bed is a round one, 15 feet in diameter. The whole is planned to contain 171 plants. These now consist of about 80 different kinds; the rest are duplicates, which I shall be very glad indeed to exchange with any person who

has named sorts which are additional to those we have. A list of our duplicates can be supplied to any one wishing to exchange.

New Reservoir.—During the greater part of the long drought no water came to the garden by the old channel, and for three months all clean water had to be carried for about three quarters of a mile. As soon as the expenditure was sanctioned for the formation of a reservoir, work was commenced early in September on a site already selected for the purpose, and was concluded in December. This reservoir is square in plan, 49 feet in the sides at the top, sloping to 29 feet in the sides at the bottom, and is 10 feet deep. It is calculated to hold about 100,000 gallons.

It was intended to have covered the sides and bottom with a layer of clay, 18 inches thick, but the bed of clay near the garden gave out, and we were only able to put a layer 6 inches thick on the sides. As the excavation was made in mostly solid ground it was thought it would hold water, but I regret to state, there is a little leakage. However, I hope to be able to stop this. The reservoir is fed by two small streams, across which strong retaining walls have been built, and 3-inch iron pipes have been fixed. In the centre of each wall and carried across the gullies. When more water comes down than the 3-inch pipe will take, it rises and flows over the wall and follows its old natural course; thus there will be no fear of the sides of the reservoir being washed away. The outlet pipe is 2 inches in diameter, and is carried through a bank over 100 feet thick.

Visitors.—The number of visitors during the year was 539, being an increase of 79 over that of last year, and 169 over that of 1882.

Weather.—The weather up to the 26th of August was very dry, only 24.47 inches of rain being registered to that date. The number of days on which rain fell during 1884 was 30 short of the number of 1883. No water came down the old water channel on account of all the little rivulets being dried up, and the water from the stream at the head being so little that it all filtered away long before reaching the gardens. It became a question at last which plants should have the little water remaining in the old pond in the garden.

Throughout the garden the plants suffered very much. A very considerable number of the smaller ones were killed outright, and it was much feared that many of the large ones, especially the tree-ferns, which lost all their fronds, would share the same fate, but only one of them, I am glad to be able to report, actually died. The effect of the first good soaking with rain was really wonderful: plants apparently all but dead began to revive at once; the tree ferns, which in the middle of August looked nothing more than dry stumps, are now crowded with fine heads of large fertile fronds.

The total rainfall for the year was 75.24 inches, as follows:—

	Rainfall.	Rainy Days.		Rainfall.	Rainy Days.
January	4.67	17	July	3.09	17
February	1.85	7	August	4.33	22
March	3.90	9	September	8.32	20
April	3.02	12	October	14.07	25
May	4.45	12	November	9.51	19
June	2.23	11	December	15.47	25
Total—75.24			196		

The greatest fall in any 24 hours was 3.62 inches on 12th—13th December.

The wind during the year was generally much lighter than last, although it blew with great force at times. It was light or moderate until the 13th May, when it was strong for a few days, being very strong on the 14th May, equal to 20-40 miles an hour. It was moderate again from the 19th May to 10th June, when it blew very strong and steady from the W.N.W. for the most part of that and the next month; the greatest pressure per square foot during that time being 6.055 lbs. on 9th July, equal to 34.50 miles an hour. From then to the end of September it was strong or moderate, and from September to the close of the year it was chiefly light or moderate, with the exception of from the 11th to the 15th December when it was very strong, the pressure on the 12th being 3.976 lbs., or equal to 24.20 miles an hour.

The barometric pressure and the temperature of the air was as follows:—

BAROMETRIC PRESSURE. (*5,581 ft.)			TEMPERATURE OF THE AIR.		
1884.	Mean.	Range.	1884.	Mean.	Range.
January	24.575	138	January	59.1	22.5
February	24.574	192	February	60.6	27.5
March	24.544	195	March	63.6	27.5
April	24.547	196	April	66.2	25.6
May	24.508	148	May	66.8	22.4
June	24.506	186	June	65.8	25.0
July	24.480	191	July	64.1	21.0
August	24.490	208	August	63.6	22.0
September	24.525	176	September	63.2	20.5
October	24.533	227	October	62.9	20.5
November	24.502	176	November	61.8	21.0
December	24.548	189	December	59.4	21.5
The 12 months	24.528	228	The 12 months	64.0	35.0
Highest reading, 18th to 19th February, 24.670			Maximum temperature, 8th June, 78.6		
Lowest " 10th and 12th July, 24.372			Minimum " 12th Feb., 43.5		

The highest temperature registered in the sun's rays was 147° on 4th and 30th October; the lowest on grass 34° on 19th February.

The mean amount of cloud for the year was 7.06, and that of ozone 3.89. The cloudiest month was December.

The mean daily horizontal movement of the air was 204.59 miles. July was the windiest month, with a mean daily horizontal movement of 391.22 miles, and January the calmest, with a movement of 93.87 miles.

* Corrected height obtained approximately from readings of barometer.

3.—Heneratgoda Garden.

The general state of this Branch continues satisfactory, but the natural poverty of the soil is becoming very evident from the condition of some of the older plants, and I intend to expend some money on a thorough application of manure during the coming year.

A few acres of untouched jungle still remain within the Garden bounds, and a path has been cut through this, forming a pleasant and shady walk, and showing well many native trees and climbers in their natural condition. At the entrance to the Garden itself, considerable improvements are being made by clearing away the jungle, widening the road, thinning out bad trees, and planting new ones.

A new clearing of about half an acre for cardamoms has been formed in place of the old one.

The work of distribution of cacao pods and seedlings to the Government Agents, &c., for native cultivators was continued, and is referred to elsewhere. A large distribution of seeds of Ceara and Para rubbers was also made.

The trees of the pale-fruited cacao had become so crowded that some have had to be cut out.

This garden suffered but little from the drought. A few clove and cacao trees died, and many pods of the latter shrivelled and dropped before ripening. Vanilla also cropped badly.

The Muhaffiram in charge continues to do his work with intelligence and zeal. I again call attention to his little house, which requires tiling, &c.

4.—Anuradhapura Garden.

This new garden is getting on well, and is already looking neat and orderly, and an ornament to the place. Satinwood gates have been put up at the entrance, and a hedge of *Furcraea* on either side as a protection against cattle. An avenue of palmyrah palms is intended to lead to the gate from the public road, and the seeds have been planted in position.

The work of the year has been clearing the ground, levelling, and digging out stumps. The carriage road has been repaired and gravelled, and several new paths made. The small pond has also been deepened; it had been intended to fill it to a higher level by a channel or piping from the permanent water-course from the Tissa tank, but this was found to be impossible.

Three more cartloads of plants have been sent from Pêrâdeniya, besides seeds and cuttings by post, and the garden is being stocked with a large number of useful and ornamental plants not previously seen in the northern parts of Ceylon.

It is satisfactory to find that the soil is good, and, the water-supply being constant, that a large number of these plants succeed when properly looked after. The season has been a very dry one, and the watering is of course continuous labour, but it is evident that, with the exception of those which require a moist atmosphere throughout the year, the majority of tropical species can be cultivated with success.

The conduct of the native superintendent is such as to merit my continued approval. He works steadily, but, like most Singhalese who move to this place from other districts, suffers frequently from fever.

II.—INTERCHANGE OF PLANTS AND SEEDS.

The exchanges with other Gardens and Botanical Establishments have been continued as usual. We have received Warian cases of plants during the year from the Royal Botanic Gardens of Kew (2) and Calcutta (5), from those of Poona, Hongkong, and Buitenzorg (Java), also from the Forest Department, British Burmah, Mr. Jager of Hawaii, and from Messrs. Linden of Ghent, and Mr. Chatterjee of Calcutta.

Wardian cases have been sent out to the Gardens at Kew (4), Calcutta (5), Hongkong, and Buitenzorg, to the Agri-Horticultural Society of Madras, to Messrs. Hinds & Co., Calcut, for Madras Government (3), and to the Hon. the Colonial Secretary, Fiji.

Packages of seeds, &c. (large and small) have been received from the Government Establishments of Kew, Dublin, Calcutta, Saharunpore, Darjiling, Madras, Poona, Singapore, Hongkong, Natal, Melbourne, Jamaica and British Guiana; also from the Jardin des Plantes, Paris, and the Botanic Gardens at Buitenzorg, the Forest Department, British Burmah, the Agricultural Department, Madras, the Colonial Secretary, Fiji, and the Acclimatisation Society of Brisbane. Seeds, &c., have also been received from Col. Beldorne, Baron von Mueller of Melbourne, Messrs. T. Christy (London), J. Francis (Jamaica), and M. H. Stirling (Bombay), and from Messrs. Haage and Schmidt (Erfurt), and Messrs. Linden (Ghent).

My acknowledgments are also due to the following Ceylon residents for various plants and seeds by gift or exchange:—Mrs. Baker, Mrs. Lane, Mrs. Tranchell, Mrs. Wheeler, and Messrs. F. Bayley, T. N. Christie, J. Alexander, J. A. Campbell, W. J. Cotton, J. G. Crow, J. H. De Saram, J. E. A. Dick-Lander, Hon. J. F. Dickson, C.M.G., J. Farr, J. Ferguson, W. Ferguson, F.L.S., G. G. Green, O. P. Hayes, A. Heelis, Dr. Hutchings, T. C. Huxley, A. J. Kellow, Hon. F. M. Mackwood, Rev. G. W. R. Mackenzie, J. Munton, A. R. Lewis, H. Nevill, C.C.S., G. Ross, H. S. Saunders, A. Taber, E. T. Thwaites, J. Tilly, J. F. Waring, A. Whyte, and Messrs. William Bros.

Seeds have been sent to the Botanic Gardens of Kew, Dublin, Calcutta, Saharunpore, Singapore, Hongkong, Natal, Melbourne, Jamaica, Trinidad and British Guiana; to the Agri-Horticultural Society, Madras, to H. M. Resident, Perak, the Colonial Secretary, Fiji, the Government of Bombay, to the Royal Botanic Society of London, Capt. Foot, late H.B.M. Consul, Nyassa, Central Africa, Mr. Swettenham, C.C.S., Cyprus, Dr. Bidie, C.I.E., Madras, Col. Beddome, and to Messrs. Ball, Linden, and Haage & Schmidt.

Supplies of ornamental and useful trees and shrubs, and seeds have been given, on application, to the Government Agents or their Assistants at Colombo, Kandy, Jaffna, Matalé, Kurunegala, Badulla, Trincomalee, and Mullaitivu, to the Municipality of Colombo, to the Model Farm,

Kalutara, and to the Managing Committee of the Colombo Museum (in continuation of those sent last year).

III.—PRINCIPAL ADDITIONS TO THE COLLECTIONS.

The following lists continue those of the last four years, and include the more interesting species safely established during 1884.

A short visit to the Botanic Gardens at Calcutta gave me the opportunity of selecting with Dr. King from the extensive collections there brought together a number of *desiderata* for Peradeniya, and of these the greater part have since been received. In return, Dr. King paid a brief visit here, and I have since had the pleasure of supplying him with a large number of additions to the Calcutta Gardens. This exchange has thus been mutually very beneficial.

I.—PERADENIYA, HENERATGODA, AND ANURADHAPURA GARDENS.

DICOTYLEDONS.

- Unona discolor*, Vahl, var. *bracteata*, Bl. Java. (Buitenzorg.)
Cocculus ovalifolius, DC. Java. (Buitenzorg.)
Aberia ceylanica, Hk. f. & Harv. Kel apple. Natal. (Acclim. Soc. Brisbane.)
Pittosporum timorense, Bl. Timor. (Buitenzorg.)
Garcinia indica, Choisy. Brindall. Affords "Kokum Butter." Western India. (Poona.)
Calophyllum polyanthum, Wall. Khasya. (Calcutta.)
Dryobalanops Camphora, Colebr. Borneo Camphor. (See Report for 1882, p. 14.) Sumatra.
Boroeo (Buitenzorg.)
Dipterocarpus alatus, Roxb. E. Bengal, Malay Peninsula. (Calcutta.)
Pachira aquatica, Aubl. ? Trop. America. (Calcutta.)
Ochroma Lagopus, Sw. W. Indies. Seeds covered with cotton. (Jamaica.)
Sterculia coccinea, Roxb. Silhet, Malay Peninsula. (Calcutta.)
S. lurida, F. M. N. S. Wales. (Acclim. Soc. Brisbane.)
Bombaya Mastersii, Hk. Trop. Africa. Figured in Bot. Mag., t. 5639. (Calcutta.)
Pterospermum semisagittatum, Ham. Assam. (Calcutta.)
Heritiera Fomes, Buch. Bengal, Malaya. (Calcutta.)
Galphimia nitida, (Madras.)
Amora aphanamictis, T. & B. Java. (Buitenzorg.)
Cedrela odorata, L. "Sweet Cedar." W. Indies & Mexico. The wood valuable, used especially for cigar boxes. (Jamaica.)
C. serrulata, Miq. Sumatra. (Buitenzorg.)
Gouania domingensis, L. "Chew-stick" of Jamaica. W. Indies and Trop. America. (Kew & Jamaica.)
Leuca sanguinea, Wall. Burmah. (Calcutta.)
Cissus, sp. Sikkim. (Calcutta.)
Esculus pandurana, Wall. Assam, Burmah. (Calcutta.)
Schinus terebinthifolius, Raddi. "Mastic" of W. Indies. Brazil. (Jamaica.)
Hyperphyllum ruffum, Bernh. Kaffe Plum, "Eichenhout." Cape of Good Hope. (Kew.)
Cordia monadelphus, Roxb. Chittagong. (Calcutta.)
Milletia atropurpurea, Benth. Malay Pen., Sumatra. (Buitenzorg.)
Prya Ebenus, DC. Jamaica Ebony. W. Indies. (Jamaica.)
Pterocarpus acutifolius, Hassk. Amboyna. (Buitenzorg.)
Pisidia erythrina, L. "Dogwood." W. Indies, Cent. America. (Jamaica.)
Peltophorum dasycarpus, Kurz. Sumatra. (Buitenzorg.)
Cesalpinia Bonducella, (L.) Tropics generally. (Jamaica.)
C. arborea, Zoll. Java. (Buitenzorg.)
W. j. et al. sinensis, Dulz. Cane. A beautiful thorny creeper; pods contain tannin. (Poona.)
Brownia Ariz, Benth. Trop. America. And hybrids of this with *B. grandiceps* & *B. coccinea*. (Calcutta.)
Bauhinia acuminata, L., var. *sumatrana*. (Buitenzorg.)
Adenanthura microsperma, T. & B. Java. (Buitenzorg.)
Acaula torulosa, Benth. Trop. Australia. (Saharunpore.)
Euterobium cyclocarpum, Griseb. Jamaica, Venezuela. (Jamaica.)
Terminalia laurifolia, T. & B. Java. (Buitenzorg.)
Eucalyptus alba, Reinw. Timor, N. Australia? Probably the only species of *Eucalyptus* native out of Australia. (Buitenzorg.)
Eugenia, sp. Sikkim. (Calcutta.)
Gustavia augusta, L. Trop. America. (Calcutta.)
Pteroma semidecandrum, Triana. (*Lasiandra macrantha*, Seem.) Brazil. Fig. in B. Mag., t. 5721. (Linden.)
Sonneria margaritacea, Lindl. Java? Fig. in B. Mag., t. 5104. (Linden.)
S. argentea, (Linden.)
Bertholonia marmarata, Naud., var. *superba*. Brazil. (Calcutta.)
B. vittata, (Calcutta.)
Begonia umbellata, (Linden.)
B. barbata, Wall. Burmah. (Calcutta.)
B. Meyselliana, (Linden.)
B. tomentosa, Schott. Benzil. (Calcutta.)
B. sp. ("Apena.") (Calcutta.)
Tapidanthus calyptrotus, Hk. f. & Th. E. Bengal. (Calcutta.)
Hymenodictyon thyrsiflorum, Wall. Bengal. (Calcutta.)
Mussaenda latera, D. d. Trop. Africa. (Calcutta.)
Hoffmannia Gheisbeckii, Hk. f. New Granada. Figured in B. Mag., t. 5393. (Calcutta.)
Psychotria expansa, Bl. Java. (Buitenzorg.)

- Mikania Guano*, Benth. Trop. America. The true "guano," a famous remedy for snake bites (Kew & Jamaica.)
Gynura aurantiaca, DC. Malay Archipelago. (Linden, Buitenzorg, and Calcutta.)
Lucuma mammosa, Gaertn. f. "Mammee Sapota." Montserrat. (Kew.)
Mimosa globosa, Gaertn. f. (Includes *M. Balata*, Gaertn. f. ?) W. Indies and Trop. America. The Bully tree; affords "Gum Balata," a peculiar variety of Gutta Percha. (Kew.)
Bassia butyracea, Roxb. Butter Tree. Trop. Himalaya. (Calcutta.)
Diospyros heterophylla, Wall. Java.
Parameria glandulifera, Benth. "Talking Milk Creeper." Malaya, Philippines, Cochin China. (Calcutta; Forest Dep. B. Burmah.)
Echites picta, Hort. Cal. (Calcutta.)
Sirophanthus, sp. Billiton. (Buitenzorg.)
Cordia buntamensis, Bl. Java. (Buitenzorg.)
Lindenbergia, sp. (Calcutta.)
Episcia (Cyrtodora) metallica, Trop. America. (Calcutta.)
Strobilanthes (Goldfussia) isophylla, T. And. Assam. (Calcutta.)
Duranta Ellisii, Jacq. (*Ellisia*, L.) W. Indies & Trop. America. (Saharunpore.)
Tectona Hamiltoniana, Wall. Burmah, Philippines (Calcutta.)
Gmelina Hystrix, (Schultes.) Siam, Burmah (Mr. H. Starling, Bombay.)
Piper metallicum, (Linden.)
Peperomia magnifica, (Calcutta.)
Persea Nana, Oliver. Yunnan, China. Timber greatly prized in China. See Kew Report for 1879, p. 37. (Hongkong and Calcutta.)
Hernandia bivalvis, Benth. Queensland. (Brisbane.)
Aquilaria Agallocha, Roxb. The "Akyaw," Eagle wood, or Aloes wood of Martaban and Mergui. See Kew Report for 1878, p. 36. (Forest Dep. Brit. Burmah.)
Excaecaria bicolor, Zoll. Java. (Calcutta.)
Chlorophora tinctoria, Gaud. (*Maclura chlorocarpa*, Liebm.) Fustic. Central America. Sent from Colombia under the name of "Dinde." (Kew.)
Ficus cuneata, (Miq) Java. (Buitenzorg.)
Pellionia Daveanana, pulchra & argentea (Linden.)
Salix babylonica, L. Weeping Willow. Persia, &c. (Kew.)
Pinus Massoniana, Lamb. (*P. sinensis*, Lamb.) China. (Hongkong.)
Agathis (Dammara), sp. Penang. (Calcutta.)

MONOCOTYLEDONS.

- Ravenala (Urania) guianensis* (Rich.) Trop. America. (Kew.)
Billbergia Euphemie, E. Morr.
B. Libanina, De Jonghe.
B. longifolia, K. Koch.
B. viridiflora, Lindl.
B. melanacantha, & other species.
Echmea calyculata, Baker.
E. fasciata, Baker.
E. Wielbachii.
Pitcairnia rubiginosa.
Karatas spectabile.
K. triste.
Tillandria xiphostachys, Hook. Columbia. (Kew.)
Dendrobium cretaceum, Lindl. Khasya. (Chatterjee.)
D. Parishii, Rehb. f. Burmah. (Chatterjee.)
D. Wardianum, Assam. (Linden.)
Eria stellata, Lindl. Java. (Calcutta.)
Cattleya Harrisoniana, Batem. Brazil. Fig. in Bot. Reg., t. 1919. (Linden.)
C. Eldorado, Lindl. Brazil. (Linden.)
Phajus Wallichii, Lindl. Bombay. (Chatterjee.)
Renanthera coccinea, Lour. Cochin China. (Chatterjee.)
Saccolabium giganteum, Lindl. Burmah. (Chatterjee.)
Oncidium carthaginense, Sw. W. Indies. (Linden.)
Stanhopea tigrina, Batem. Mexico. (Linden.)
Cataceta Trulla, Lindl. Trop. America. Fig. in Bot. Reg., v. 27, t. 34. (Linden.)
Peristeria elata, Hk. "El Spirito Santo," or Dove Orchid. Panama. Bot. Mag., t. 3116. (Linden.)
Arides rubrum, (Chatterjee.)
Cypripedium insigne, Wall. Khasya. (Chatterjee.)
Laelia furfuracea, Lindl. Mexico. (Linden.)
Sprekelia formosissima, Heist. Mexico. (Green.)
Areca madagascariensis, Mart. Madagascar. (Calcutta.)
Dryophloeus Rumphii, Bl. Moluccas. (Calcutta.)
Cyphosperma Vieillardii, Wendl. (*Kentia robusta*, Hort. Lindl.) New Caledonia. (Linden.)
Euterpe, sp. Jamaica. (Kew.)
Geonoma gracilis, Wendl. Costa Rica. (Linden.)
G. Seemanni, Wendl. Nicaragua. (Kew.)
Chamaedorea Arenbergiana, Wendl. (Calcutta.)
C. sp. (Kew.)
Caryota Rumphiana, Mart. Borneo & Moluccas. (Kew.)
Phoenix, sp. Hongkong. (Kew.)
Sabal Sanfordii, Hort. Lindl. (Linden.)
Acanthorkiza aculeata, Wendl. Cent. America. (Kew.)
Brahea dulcis, Mart. Mexico. (Linden.)
Pritchardia Martii, Wendl. Sandwich Is. (Linden.)

- P. pacifica*, Seem & Wendl. Fiji Is. (Hon. J. B. Thurston.)
P. sp. Sandwich Is. (Jaeger.)
Livistona Hoogendorffii, T. & B. (Linden.)
Baobab, sp. (Trinidad.)
Astrocaryum gynaecanthum, Mart. (Brit. Guiana.)
Martinezia erosa, Hort. Lind. W. Indies. (Linden.)
Coccoloba Blumeni, Hort. Lind. Brazil. (Linden.)
C. flexuosa, Mart. Brazil. (Mauritius.)
Pandanus humilis, Kurz. (*P. Kurzianus*, Solms.) Java, &c.
P. Lais, Kurz. Malay Archipelago.
P. moschatus, Miq. (*P. laevis*, Hassk.) Amboyna.
P. Samak, Hassk. Malay Archipelago.
P. scandens. (All from Buitenzorg.)
Alocasia cuprea, O. Koch. (*A. metallica*, Hk. f.) Borneo. Fig. in Bot. Mv., t. 5190. (Hon. J. F. Dickson.)
Colocasia neogranatensis. (Linden.)
Caladium pictum, DC. (Kew.)
Anthurium Rothschildianum. (Linden.)
Aglaonema pictum, Kunth. Malaya. (Linden.)
Dracontium, sp. (Kew.)
Philodendron asperatum, C. Koch. Brazil. (Kew.)
P. melanocephalum. (Kew.)
Sansevieria cylindrica, Boj. W. Trop. Africa. (Calcutta.)
S. guineensis, Willd. (*trifasciata*, Hort.) Bowstring Hemp. Trop. Africa. (Calcutta.)
Dracaena Cinnabari, Balf. f. Socotra. Yields the "Dragon's Blood" of Zanzibar. (Kew.)
Dichorisandra, sp. (Calcutta.)
Mapania, sp. Penang. (Calcutta; sent as a "*Pandanus*.")

FERNS, &c.

- Adiantum peruvianum*, Klotzsch. Peru. (Calcutta.)
A. Fergusoni, Moore. Cult. in Ceylon. (W. Ferguson.)

2.—HAKGALA GARDEN.

DICOTYLEDONS.

- Liriodendron tulipifera*, L. Tulip Tree. N. America. (Dublin.)
Magnolia macrophylla, Mich. N. America. (Dublin.)
Papaver alpinum, L. Europe. (Dublin.)
Eschscholtzia californica, Cham., several varieties. (Haage & Schmidt.)
Matthiola bicornis, DC. Greece. (Haage & Schmidt.)
M. tricuspidata, Br. Mediterranean. (H. & S.)
Iberis Lagascani, DC. Spain. (Dublin.)
I. sempervirens, L. Greece. (H. & S.)
Viola lutea, Huds. Europe. (Dublin.)
Lychnis chalcidonica, L. Asia Minor. (Dublin.)
Dombeya Dregerana, Sond. Cape.
Tropaeolum nudum, Sm. "Canary Creeper." Peru, Mexico. (Mrs. Baker.)
Cedrela odorata, L. "Cedar" of W. Indies.
Ampelopsis hederacea, DC. "Virginian Creeper." N. America. (Dublin.)
Esculus Hippocastanum, L. Horse Chestnut. Asia Minor. (Kew.)
E. rubicunda, Herb. N. America. (Kew.)
Melanthus major, L. Honey Tree. Cape. (H. S. Saunders.)
Schinus terebinthifolius, Rad. li. Brazil.
Lupinus polyphyllus, Dougl. N. America. (H. & S.)
Lathyrus Drummondii, Hort. (Dublin.)
Cuscuta viminalis, L. W. Indies. (Jamaica.)
Acacia pyramidalis, Benth. "Golden Wattle." The best of the bark with. (A. Cunningham.)
Prunus Lauro-cerasus, L. Cherry-Lanrel. Asia Minor. (H. S. Saunders.)
Sedum caruleum, Valh. Mediterranean. (H. & S.)
Echeveria secunda, Lindl., var. *glauca*. Mexico. (J. Tilly.)
Psidium montanum, Sw. Mountain Guava. W. Indies. (Jamaica.)
Passiflora incarnata, L. W. Indies. (Jamaica.)
Sicana odorifera, Naud. Trop. America. (Jamaica.)
Begonia argyrostigma, Fisch. Brazil. (T. C. Huxley.)
Arracacha esculenta, DC. Peru, Trinidad. A culinary vegetable. (Jamaica.)
Cephalanthus occidentalis, L. N. America. (Dublin.)
Scabiosa amara, Jacq. Russia. (Dublin.)
Mikania Guaco, Bonpl. Trop. America.
Acroclinium roseum, Hk. W. Australia. (Mrs. Wheeler.)
Calliopsis cardaminifolia, DC. Mexico. (H. & S.)
Chrysanthemum coronarium, L. S. Europe.
Hieracium maculatum, Sw. Europe. (Col. Beadome.)
Campanula Vidalii, Hk. Azores. (Col. Beadome.)
C. macrantha, Fisch. Europe. (Dublin.)
C. ezimia, Wendl. Europe. (Dublin.)
C. persicifolia, L. Europe, &c. (Dublin.)
Arbutus Unedo, L. Strawberry Tree. W. Europe. (H. S. Saunders.)
Erica arborea, L. S.W. Europe. (Haage & Schmidt.)
Calluna vulgaris, L. Ling. Europe. (H. & S.)

MISCELLANEOUS.]

ROYAL BOTANIC GARDENS.

- Primula veris*, var. *elatior*. Oxlip. Britain. (H. & S.)
Cyclamen latifolium, Sibth. (*persicum*, Mill.) Greek Islands. (J. Gray.)
C. europaeum, L. S. Europe. (H. & S.)
Forsythia viridissima, Lindl. China. (Kew.)
Frazinus americana, L. N. America. (Dublin.)
Dipladenia Brearleyana. (J. A. Campbell.)
Cobaea scandens, Cav., var. *alba*. (Darjiling.)
Myosotis azorica, Wats. Azores. (H. & S.)
Cyphomandra betacea, Sendtn. Tree Tomato. Peru. (Jamaica.)
Verbascum densiflorum, Bert. S. Europe. (Dublin.)
Pentstemon campanulatus, Willd. Mexico. (Dublin.)
P. Richardsonianum, Dougl. Colombia. (Dublin.)
P. roseum, G. Don. Mexico. (Dublin.)
P. Hartwegii, Benth. Mexico. (H. & S.)
Digitalis ferruginea, L. Europe. (Dublin.)
Catalpa speciosa. (Dublin.)
Salvia Horminum, L. Europe. (Col. Beadome.)
Betula lenta, L. N. America. (Dublin.)
Populus nigra, var. *fastigiata*, L. Lombardy Poplar. (Kew.)
Salix alba, L. Common Willow. Europe. (Kew.)
S. Russelliana, Sw. Europe. (Kew.)
S. viminalis, L. Osier. Europe. (Kew.)
Quercus salicina, Bl. Japan. (Kew.)
Q. ferruginea, Mich. N. America. (Kew.)
Q. australis, Link. Portugal, Asia Minor. (Kew.)
Q. Fontanesii, Guss. Mediterranean. (Kew.)
Q. Cerris, L. Turkey Oak. S. Europe, Asia Minor. (Kew.)
Q. sessiliflora, Sal. Europe. do.
Pinus Jeffreyi, Balf. California. (Dublin.)
P. Massoniana, Lamb. (*P. siemensii*, Lamb.) China.
Thuja gigantea, Nutt. N.W. America. (Dublin.)
Abies Mertensiana, Bory. Brit. Columbia, &c. (Dublin.)

MONOCOTYLEDONS.

- Epidendrum fragrans*, Sw. Jamaica.
Sparaxis tricolor, Ker. Cape. (Haage & Schmidt.)
Orthrosanthus multiflorus, Sw. W. Australia. (Darjiling.)
Leucorum aestivum, L. Europe. (J. Tilly.)
Sprekelia formosissima, Herb. S. America.
Agave Keratto, Mill. "Karatto." W. Indies. (Jamaica.)
Sagittaria sagittifolia, L. Arrow Head. Europe. (W. Ferguson.)
Agapanthus umbellatus, L'Herit. Cape. (J. Tilly.)
Ruscus aculeatus, L. Butcher's Broom. S. & W. Europe. (Kew.)
Bambusa Fortunei, Van Houtte. Japan. (Darjiling.)

FERNS, &c.

- Hemitelia speciosa*, Hk. ? New Grenada. (Kew.)
Dicksonia cicutaria, Sw. W. Indies & Trop. Am. (Kew.)
D., sp. Australia. (Australian Commission, Calcutta Exhibition.)
Aspidium falcatum, Sw. Asia, S. Africa, &c. (St. Petersburg.)
Nephrodium ciliatum, Presl. S. America, W. Indies. (St. Petersburg.)
Gymnogramma L'Hermieri, Bory. W. Indies. (Kew.)
 And, in addition, numerous garden varieties from various sources, of species of *Aquilegia*, *Delphinium*, *Aubretia*, *Dianthus*, *Althaea*, *Pelargonium*, *Impatiens* (Balsam), *Rosa* (Rose), *Begonia*, *Aster*, *Calliopsis*, *Chrysanthemum*, *Centaurea*, *Mimulus*, *Gloxinia*, *Primula Auricula*, *Gladiolus*, &c., and several Ferns.

IV.—NOTES ON ECONOMIC PLANTS.

Coffee.—There is nothing specially to be said of this cultivation in Ceylon, but to remark on the steadily decreasing area devoted to it; in several districts it bids fair to be wholly superseded by tea before long. In addition to leaf disease, coffee has had to bear in many parts a severe attack of what is known as "bug"—a *Coccus* or scale-insect, *Lecanium Coffee*, always accompanied by a black external fungus, *Triposporium Gardneri*. This pest, always present in small quantity, has not been so prevalent for many years as during the past season.

The report by Mr. MacLachlan, alluded to in former reports, on yet another coffee-pest, namely, "grub," was not received till July. It is printed in the *Government Gazette* of 22nd August. Mr. MacLachlan has determined all, or nearly all, the beetles concerned to be close allies of the notorious *Melolontha vulgaris*, the common European cockchafer; and in answer to specific inquiry, states decidedly that the larvæ, which feed on the roots, according to all previous evidences prefer such as "are succulent and in a presumably generally healthy condition." With regard to their longevity, he thinks it probable that a chafer may exist as a free-flying perfect insect for weeks, but as to the more important point of the duration of the larval or "grub" stage, that must be decided by observation in Ceylon. Mr. MacLachlan recommends keeping estates perfectly free from grass and herbaceous plants, upon the roots of which by preference the larvæ feed, and suggests a trial of saturating the soil with dilute kerosene oil. But, above all things, he would "encourage insectivorous birds to the fullest possible extent." Sir W. Gregory, in a letter appended to the report, attributes the recent great increase in the number of

cockchafers to the abandonment of the practice of burning off the patanas in the dry season, which must have been the destruction of large quantities of larvae.

Under a combination of adverse influences, added to the still decreasing value of coffee as a market commodity, it is not surprising that planters in most districts are more and more abandoning its production, and turning to cultures which better reward their exertions.

Tea.—The export of tea during the commercial year, 1883-84, rose to over 2 millions (2,262,539) lbs., valued at over 1½ million rupees. The great bulk of this is grown on old coffee land, and how rapidly the transformation is going on may be judged of from what is stated of one district, where, out of a total of 16,000 acres formerly under coffee, no less than 10,000 are already planted up with tea. The present area in the whole Colony under the latter is certainly not over-estimated at 65,000 acres. Prices continue remunerative, but planters must be prepared for a considerable fall as our export increases. The area climatically suitable for tea is evidently larger than that for coffee estates, but most of the land at the lower elevations has been terribly exhausted by centuries of the thriftless system of native cultivation (chena), and there is little virgin forest land remaining for disposal.

The tea plant in Ceylon shows itself as yet very free from enemies. The "bug" of Assam, *Helopeltis*, though present in several parts of the Island, has scarcely been detected injuring tea. A few Lepidopterous larvae are reported as troublesome, especially one of the house-bearing *Psychida*, *Manatha albipes*, Moore, which occurs sometimes in great abundance. This little caterpillar carries about a conical white case, the head and thorax only protruding.

A request which I made to Kew for information as to the woods of which tea boxes are made in China, has led to an extensive inquiry on the subject. From the replies to the questions addressed to our Consuls in China, which have been published, it appears that several different woods are employed in different parts of that great empire, but the favourites are evidently species of *Liquidambar*. These are small maple-like trees, little known botanically, and not extending into tropical regions. It also seems that one or two species of *Conifera* are also employed, though it is generally thought that resinous woods should be avoided. One of these is *Pinus sinensis* (*P. Massoniana*), which is the commonest pine in China and has also been largely planted elsewhere. Of this, it happens, I received a stock of seed last February from Hongkong, where it is one of the principal trees used in the re-forestation of the island. The young plants from this seed are growing vigorously, and this hardy species seems likely to do well both at Peradeniya and Hakgala. As we have no native conifers, and very few pines to our plantations; but for tea boxes it would, I think, have to be used with caution. The tallest specimen at Hakgala is already 5½ feet.

A consignment of "hybrid" tea seed from the Gardens was forwarded to the Lake District of Central Africa for trial there, at the request of H. B. M.'s Consul at Nyassa. Capt. Foot's lamented death must however have occurred before the seed could have reached him.

Cinchona.—The year has been characterized especially by an immense export of bark—more than ten million (10,139,953) lbs. This, which is considerably more than three millions over that of the previous year, is in excess of all anticipations. As a result, the price of Quinine has continuously fallen to its present price of 4s. to 4s. 6d. per oz., and of bark to 5½d. or 6d. per 4½ million rupees—more than three times that of the tea exported in the same period, and the cultivation in Ceylon is still very remunerative to the growers of good barks. The fall in value has, on the other hand, been disastrous to the South American bark trade, and the export from that part of the world has been greatly reduced. The lowering of the price of Quinine must be regarded as a great benefit to humanity, and is indeed the very object which the originators of cinchona cultivation in the East set before themselves.

A little more seed of "Cuprea Bark" (*Remijia*, sp.) was received from Kew in July. Mr. Nock reports that all failed to germinate, except about 200, which were sown in a pan placed in rather strong bottom heat. Of these, unfortunately nearly all were eaten off in one night, and at the close of the year only two or three tiny unhealthy plants remained.

A good series of cinchona barks was exhibited by the Planters' Association at the Calcutta Exhibition. At the request of Mr. Cypper, the Commissioner, I drew up for his "Handbook to the Ceylon Court" a succinct account of the history and position of cinchona cultivation in Ceylon.

By the courtesy of Mr. J. V. H. Owen, I have had the opportunity of examining his plantation of "Verde" and "Morada" cinchonas in New Maturata. The oldest of these trees are now 2½ years, and commencing to flower. They present a considerable range of variety, though less than when seedlings, and generally maintain their robust character. The large proportion belong to a type which is distinct from any I have seen here hitherto. It is, however, I consider, a variety of *C. Calisaya*,† and not of *C. Lehyerian*, and is best characterized by the foliage. The remarkably intense coppery or vinous colouring of the under-surface of the leaves, so striking in the young plants, usually disappears gradually in the older ones, but is as conspicuous as ever in young shoots sent up from their base. The leaves of the flowering trees are remarkably broad for *Calisaya*, rather obtusely pointed, quite smooth, firm, and with very large serratures. The flowers vary greatly in size and colour as in other *Calisaya*-forms. No

* From an interesting calculation made in the *Ceylon Observer* newspaper, it appears that since the year 1878-9, the increase in value of our exports other than coffee is no less than Rs. 11,041,917, thus going some way towards meeting the immense falling off of Rs. 30,732,661 in the value of the export of coffee in the same period.

† But it will not agree with the var. *oblongifolia* of Weddell, to which it has been referred, nor with any other of his described *Calisaya* varieties.

analysis of the bark has as yet been made; the varieties of *C. Calisaya* hitherto grown in Southern India and Ceylon have not proved satisfactory as Quinine bearers, it remains to be seen if this will be an exception.—[Note added, March, 1885.]

Cacao.—The growing importance of this cultivation to the Colony is seen by the large increase in its export, 9,863 cwt. in 1883-4 against 3,585 cwt. the year before. The position is very encouraging on the whole.

The varieties received in 1881 from Trinidad having now for the most part fruited, I have been able to look into the characters and differences they present. The whole of them produce seeds which are more or less dark violet-coloured on section when fully ripe, and thus differ completely from the variety in general cultivation here, which has the seeds pale yellow within. As regards the names under which they were received, and which have been very carefully kept attached to the plants from the beginning, they do not appear to connote any very constant or distinct characteristics or differences, so far as these examples allow me to judge.

The names of the strains, as sent by Mr. Prestoe with the plants, were as follows:—

Forastero (numbered 9 & 13)
Cundamar (numbered 10, 14, 16)
Cayenne (numbered 15 & 18)

Verdico (numbered 12)
Sangre Toro (numbered 5)
Criollo or *Ochro* (numbered 9 & 17)

and, in addition, a number labelled "Forastero, several best selected varieties mixed." Most of these might apparently come under some of the other names, and indicate that the name "Forastero" is used also in an extended sense to include them.

The variety in shape, size, and colour of pod; and number, weight, and form of seed is remarkable; and as I have had careful coloured drawings made of each sort as they ripened, they can be readily compared with one another and with descriptions. Among them are some undoubtedly very fine sorts; and some others as characteristically bad, with small round pods with very thick walls and few seeds. The worst I shall destroy, lest they should injuriously affect the others by cross-fertilization.

Forastero (No. 8), *Sangre Toro* (No. 5), and *Criollo* (No. 9), have not yet produced ripe pods, but of the remainder the most desirable sort as judged of by number, weight, and character of seeds appears to be the *Cundamar* (No. 10). The pods of this variety, of which we have 6 trees, have all been deep-red, usually somewhat pointed, with the 10 grooves rather deeply marked, and, as the name indicates, the rind somewhat nodular or worted; the seeds are long and almond-shaped, and show on section a broad-oval, that is, they are but slightly compressed. Among the other *Cundamars* (Nos. 14 and 16), is a considerable range of variety, some are yellow-podded, and of these one tree of No. 16 appears to be a specially fine sort.

I had looked forward to the fruiting of the *Criollo* variety, expecting it to exhibit characteristic differences from all the other kinds. The two trees of No. 17 have, however, produced pods and seed which it would not be possible to distinguish from some of the *Cundamar*. The Cacao properly called *Criollo* (or *Creole*) is said to be distinguishable by its smaller pods (which are red), and especially by its almost globular seeds, the interior of which is a "pale crimson," and which have a particularly fine flavour. The plants sent here under the name do not exhibit these peculiarities. This was formerly the only kind grown in Trinidad (hence "Criollo" = native), but was destroyed there, and is now principally cultivated in Venezuela, where it affords the well-known Caracas Cacao of commerce. In Trinidad its place has been taken by the *Forastero* (= foreign) varieties. As to which of these two classes the old "Ceylon" Cacao is to be referred, if to either of them, I am unable to say. It is believed to have been received about 50 years ago from Trinidad,* and may have become somewhat modified since its introduction.

I have made a small distribution of the pods and young plants of the better varieties of these Trinidad Cacaos to such planters as were desirous of trying them, about 30 in number. The small number of the trees of course rendered anything more extensive impossible at present.

The endeavour to spread Cacao cultivation among the villagers in suitable districts has been carried on, and during the year, 3,500 pods (about 10,500 seeds) and 1,100 young plants have been sent out from Heneratgoda for distribution by the Government Agents through the Headmen.

As well as in English, and given out with the plants and seeds.

In my last Report, I called attention to the damage done on a few estates to the young shoots of Cacao by the punctures of a sucking bug, *Helopeltis Antonii*, and expressed the hope that it would not spread widely. At the time I was not aware that this insect was a native of the island as seems to be the case,† but I am glad to be able to report that it does not appear to be generally distributed here, and shows a tendency to restrict itself to particular localities. In a few neighbouring places towards the end of June, (after a long drought) the condition of the Cacao was so serious that I was requested to visit and report officially on the cause. This I did and satisfied myself that as had been suspected by me, this insect was the principal source of the injury. In a Report submitted in September,‡ I was able to some extent to trace out the life-history of *Helopeltis*, and the nature of the damage done both to the shoots and the young pods. The eggs are, without doubt, laid in the young succulent shoots; whether also in the young pods is not certainly determined; in all stages the insect is active and lives by sucking the tender young tissues of the plant. I recommended systematic catching and destruction of the larval

* Cacao was grown in the Botanic Garden (then at Kalutara) in 1819, and may have been introduced by Moon, the Superintendent. But the origin of most of the present cultivated cacao seems to have been a consignment from Trinidad obtained by Sir R. Horton in 1834.—5.

† In the original description of the insect by Dr. Signoret, published at the end of 1858, the locality given is simply "Ceylon." The author received the specimens from Dr. Anton Dohrn to whom he dedicated the species.

‡ Printed in the *Tropical Agriculturist* for October, 1884, Vol. IV, pp. 327-329.

and perfect insects as the best method of dealing with the pest, and where this was thoroughly carried out, the good effects were quite evident. The insect is not, as compared with some pests, very abundant, but over 2,000 a day were being caught on one estate during the wet weather of October, when the Cacao was shooting up vigorously, and a single bug commits much damage. The effects of the drain on the fluids of the trees are much more serious where Cacao is also exposed to the drying effects of sun and wind.

India-rubber. Ceara.—I have nothing further of a practical nature to report as to any method of collecting the Ceara-rubber at a cost sufficiently low to make it profitable to the European planter. It is, however, clear, that as the trees attain a larger size and greater age, there is a more copious flow of milk, and the tears of rubber obtained by leaving it to dry on the trees are larger and more solid. One of the original trees in Pêradeniya, nearly 8 years old, and about 14 inches in diameter, has lately been cut down in making a new path; this tree had been thoroughly drained of milk in 1882, but on now repeating the operation, nearly 1½ lb. of dry rubber was obtained.

A considerable distribution of seed (10,300) has been made to the Government Agents for experimental native cultivation. The tree will bear a dry climate, and does well at Anurâdhapura.

Castilloa Rubber.—On application from the Superintendent of the Model Farm at Kalutara, I supplied 300 large seedling plants to that institution, and I am glad to learn that they are growing well and have proved vigorous young plants.

The Government of Madras being desirous of continuing the experimental culture of this at Nilambur, a further consignment of 3 Ward cases, containing 100 young plants, was sent to Messrs. Hinde & Co., in March and July.

The measurement of the largest tree, 43 feet high, of the species at Heneratgoda is 32½ inches in circumference at a yard from the ground.

Para Rubber.—A good crop of seeds was produced at Heneratgoda, and over 1,000 seedlings were raised; most of these were distributed to officials in suitable parts of the Colony. A few seeds were also produced for the first time at Pêradeniya in August.

In March, a case of 26 plants was sent to Calicut for the Madras Government. A box of seeds sent in July appears to have not reached its destination.

Our largest tree of *Hevea brasiliensis* is now 63 feet high and 36 inches in circumference at a yard from the ground.

Hevea Spruceana, has not succeeded so well as its more important congener. The only two plants remaining at Heneratgoda are not in good health.

Other Rubber-yielding Species.—*Tabernaemontana crassa* has grown up to 8½ feet high with very handsome leaves 15 by 9½ inches, a striking plant. The oldest plant of *Landolphia Kirkii* is in flower all through the year, but has produced no fruit; its main stem is nearly 6 inches in circumference. *Urceola esculenta* from Burmah (see Report for 1882, p. 13) has become an unmanageable climber of large size growing rapidly and spreading widely. The leaves on the older branches are now quite smooth; it flowers very freely, and has formed abundance of ripe fruit. It is difficult to understand how these can be edible as is said to be the case.

Nine plants of the "Talaing Milk Creeper" of Burmah, have been received from Col. Seaton of the Indian Forest Department, and a few more from the Calcutta Botanic Gardens. This is *Parameria glandulifera*, another Apocynaceous rubber-yielding vine. Attention was first called to it by Dr. Pierre, late Director of the Saigon Botanic Garden. He introduced it from the forest into that garden in 1874, but it grows throughout the Malay Peninsula.* The rubber which is said to be of very superior quality is prepared by heating with water. The plant is found from sea-level up to 3,000 feet; like other rubber-yielding climbers of this family, large forest trees are necessary to afford it a proper opportunity for growth, and thus they are all unsuitable for ordinary estate cultivation, but would be valuable as forest products.

Gutta Percha.—The young trees of Gutta Taban Putih continue their natural slow growth, the largest (at Pêradeniya) is now 2 feet 10 inches high. From the dried specimens sent by Mr. Wray from Perak, I was not able to determine this species of *Dichopsis*; but Mr. Thibault Dyer now informs me that it is, he believes, identical with *Paluquium* (= *Dichopsis*) *pustulatum*, Pierre. The determinations of the other Perak species of "Gutta" given in my Report for last year (p. 14) are further corroborated by Mr. Dyer, who has been carefully examining the series of Mr. Wray's plants sent to Kew.

Gutta Sundek (*Payena Lœvii*) has made good growth this year, some of the young trees being now 12 feet high.

I am indebted to Kew for plants of the tree affording the peculiar variety of Gutta Percha known as Gum Balata. This is *Mimusops globosa*, and a native of Guiana, Trinidad, and some of the West Indian islands. It is a large tree occurring under two forms (? species), and its product appears likely to become of increasing use in various ways.

Erythroxylon Coca.—At the close of the year, a renewal of interest in "Coca," the well-known masticatory of Peru and Bolivia, has been caused by the discovery of a valuable property in the alkaloid contained in the leaves. Cocaine is now found to be a very effective and manageable local anæsthetic, and thus of great use in operations on the eye, throat, &c. Hence has sprung up a considerable demand for it in Europe, and enquiries as to the plant and its suitability for culture in Ceylon. *E. Coca* has been grown in the Gardens for several years, having been introduced through Kew in 1870. Growing as it does here in a hot climate and mostly in shade, it forms straggling bushes reaching 12 feet or more in height with long weak branches. Cultivated

* It has not been found in the Indian Peninsula or in Ceylon.

in the open and subjected to periodical plucking of its leaves, it would doubtless soon put on a much more compact habit. It blossoms profusely several times a year, the multitudes of small yellow faintly scented flowers completely covering the long branches; but not much seed is produced, most of the flowers failing to set. The fruit is scarlet, small, and one-seeded; the plant can be also readily grown from cuttings. The Coca grows well at Heneratgoda, but at Hakgala an attempt made two years ago did not prove successful; a new trial is being made there: as the plant is in South America cultivated up to 5,000 feet or higher, it may be expected to grow well in our hill districts up to at least that elevation.

In the preparation of the leaf all that is needed is gradual but thorough drying, and the careful avoidance of any dampness or incipient fermentation. When finished, the leaves should be flat, thin, and brittle, and of an uniform pale yellowish-green.

I may add that we have in Ceylon a closely allied species, *E. monogynum*, which is common in the hot dry districts, and called in Tamil "Tevadaram." The wood is slightly fragrant, and Dr. Ondaatjie has recorded the preparation from it at Puttalam of a creasotic oil. The leaves are strikingly like those of *E. Coca*, and it is interesting to note that in South India, they were largely used as food by the poor during one of the late famines, as recorded by Dr. Bidie. They may possibly contain Cocaine.

Nux-vomica.—The export of these seeds from Indian ports, especially from Madras, has long been an important one, but I am not aware that any are sent from Ceylon. Yet *Strychnos Nux-vomica*, the "Goda-kaduru" of the Sinhalese, is a common enough little tree in the drier parts of the Island. The seeds are the principal source of the very poisonous but valuable tonic alkaloids Strychnine and Brucine. The publication of an interesting paper by Messrs. Dunstan and Short in the Pharmaceutical Journal (reprinted in Tropical Agriculturist, November, 1884,) calls attention to this as a Ceylon product, being based on a series of specimens sent from Hambantota by Dr. Ondaatjie, District Medical Officer of Galle. The researches of these chemists show that the Ceylon seeds are remarkable for their very high percentage of alkaloids, every specimen examined containing a much greater proportion than the richest known Indian examples. The bright orange fruit contains usually from two to four seeds, (but may have as many as nine), which are of different sizes in the same fruit; these investigations show that the larger the seeds, the greater the percentage of total alkaloids.*

Vegetables from Jamaica.—*Arracacha.*—This umbelliferous plant, *Arracacia esculenta*, a native probably of the Andes of South America, where it is cultivated up to 6,000 feet, was introduced into Jamaica in 1822, and produces large edible starchy roots with the flavour somewhat of parsnip. Two or three attempts to import the roots in a living state have proved completely unsuccessful, but Mr. Nock has now succeeded in raising some young plants from seeds sent from Jamaica, which it is hoped will in time develop the edible portion.

Cho-cho. (*Sechium edule*).—This is an excellent vegetable much in favour in Tropical America and the West Indies, and also grown in the Mediterranean region under the name of Cayote or Chayote. The firm fleshy irregular fruit contains only a single large seed, and is thus very unlike other gourds. A case of plants of this received from Kew in October, were all dead on arrival, but I have applied to Jamaica direct for seed.†

Tree Tomato. (*Cyphomandra betacea*).—This is a close ally of the ordinary tomato, and a native of Peru and neighbouring countries, but cultivated in the hills in many parts of South America and the West Indies. Its fruit which is red and the size of a pigeon's egg may be employed in all ways like the tomato, and resembles it in flavour. Seeds have been received from Jamaica, and there are now many young plants at Hakgala.

Socotra Dragon's-blood.—The source of this ancient drug and pigment was not known with certainty until Dr. Bayley Balfour's exploration of the Island of Socotra in 1880. He named the species of *Dracæna* which yields it, *D. Cinnabari*, Balf.f. A box of young plants of this interesting plant was sent to me from Kew in June. As the wet climate of this part of Ceylon would quickly prove fatal to them, they were sent to Anurâdhapura where they will stand a better chance. But little of this ancient Cinnabar or Dragon's-blood at present comes into trade (through Bombay), most of the substance now so called being the produce of a rattan of the Malay region (*Calamus Draco*), and shipped from Singapore.

Tropical Fruit-trees.—It is worth mention, as a somewhat unusual event, that one of the Durian trees at Pêradeniya gave a heavy crop of fruit last August. The tree is a young one, about 18 years old, and had not flowered before. The very large old tree which flowers so profusely every year also produced a few ripe fruit this year. Several other Malayan fruit trees also bore well, as the Mangosteen, Santol, &c. The "Chinese Quince," *Diospyros Ebenaster* of the Philippines, also produced abundance of its handsome and sweet-scented golden fruit which are however very poor in flavour.

Fifteen grafted mangos of approved varieties were received from the Poona Botanical Gardens and planted at Pêradeniya.

There is a good supply of seedling Cherimoyer trees available at Hakgala. The fruit of this tree (*Annona Cherimolia*), is considered to be far superior to the other species of the genus *Annona*, (the custard apple, sweet sop, &c.) but the tree is adapted only to the hill climate of Ceylon.

* The pulp in which the seeds are immersed contains a small proportion of Strychnine, so small that it is said that this pulp is eaten by birds. Dr. Ondaatjie has, however, settled by experiments on dogs, cats, and pigeons that it is fatally poisonous in sufficient quantity.

† A box of germinating seeds arrived in January, 1885, and one of them has survived. From this there are now three rooted cuttings at Hakgala. (Note added.)

Eucalyptus Plantation.—The trees are now nearly 2½ years old and grow well and rapidly. Of the 15 kinds selected for measurement last year, *E. Gunnii* is now the highest, 26 feet with a girth of 10 inches; *E. robusta* is 24 feet and 15 inches in girth, *E. marginata* 25 feet and 13 inches in girth, and *E. longifolia* 24 feet and 14 inches in girth; these are the quickest in growth, at their present early stage, of the species we have.

Coco de-mer.—In response to an application made in 1882, I have received from the Chief Civil Commissioner of the Seychelles, through His Excellency the Governor of Mauritius, 10 seeds of this rare and magnificent palm. They arrived in April and were at once planted 7 at Henaratgoda and 3 at Péradeniya. As yet there are no signs of germination, but the usual period occupied in this process is from 18 to 30 months, so that this is not to be expected. Péradeniya already possesses two beautiful specimens of this unique Palm, about 30 years old, but in the case of so extremely local a plant as this and one of such peculiar interest to naturalists, it is much to be desired that a larger stock should be in existence, so that in time it may be possible to propagate by seed from another centre. This palm, being, like the Palmyra, dioecious, it is necessary to have sufficient plants to make it probable that both sexes will be represented among them.

V.—HERBARIUM AND LIBRARY.

Herbarium.—A canvas ceiling has been put up in the Herbarium building in such a way as to intercept the fine rain and dust, &c., which in windy and rainy weather blows in, without interference with the ventilation.

The cabinets have been increased by four during the year. It is expected that the whole of the remainder will be put up soon, so as to complete the plan of arrangement and afford proper accommodation for the large number of specimens at present merely tied into bundles.

A great many additional specimens of Ceylon plants have been mounted and incorporated with the Herbarium, including a fair proportion of novelties. The principal contributors to the native collections have been from Messrs. G. Wall, F.L.S.,—rare or critical Ceylon Ferns, W. Ferguson, F.L.S. and H. Nevill, C.C.S., but specimens from many other contributors have been received. I regret that my other work has not permitted any distant excursions for collecting during this year; but the native collectors have been successfully employed.

Much of my time has been occupied in the preparation of a new and revised Catalogue of the Ceylon Flora, brought fully up to the present date. The want of a handy list for reference has been often complained of, and will be thus supplied, but it does not of course take the place of a descriptive work, the preparation of which will be a more laborious undertaking. The publication of the Catalogue has been undertaken by the Royal Asiatic Society, (Ceylon Branch) as a supplement to a volume of its "Proceedings," and the printing has already commenced.

To the general Herbarium of foreign plants, some valuable additions have been made chiefly of Indian plants.

From the Kew Herbarium have been received the following:—

- (1.) The first instalment of duplicates of Dr. Wight's Herbarium (1,020 species), principally South Indian. Amongst these are also a number of specimens of Ceylon plants collected by Col. Walker and by Gardner, which have been laid into the local Herbarium. All mounted and for the most part named.
- (2.) A small collection from Canara, collected by Talbot.
- (3.) Plants from Singapore collected by Cantley.
- (4.) Plants from Cochin China collected by Pierre.

From the Calcutta Herbarium:—

- (1.) A miscellaneous collection of mounted and named duplicates.
- (2.) A set of *Cyperaceæ* critically named by Mr. C. B. Clarke.

From Mr. A. F. Duthie, F.L.S., Superintendent, Botanic Garden, Saharanpore; a fine series of plants collected by himself in the North-West Himalaya.

From Mr. C. B. Clarke, F.R.S., Calcutta; named duplicates from his Indian collections.

Library.—The request made in my last Report for glass-fronted book-cases having been granted, I have had some of the most dilapidated volumes rebound, and have put in hand the construction of the cases.

The following additions have been made to the Library during the year:—

- Linnaeus, *Genera Plantarum*. Ed. 6. 1764.
 Howard, *Illustrations of the Nueva Quimologia*, 1862. (Presented.)
 Voight, *Hortus suburbanus Calcuttensis* 1845.
 Gardner, on *Christisonia*, 1846.
 Kurz, *Descriptions of Indian plants*, 1874. (Presented.)
 Id., *New Burmese plants*, Pts. 2 & 3, 1873. (Presented.)
 Id., *Contributions to the Burmese Flora* Pts. 1-4, 1874-7. (Presented.)
 Hooker, J. D., *Flora of British India*, Pt. 11, 1883. (Presented.)
 Treub, *Ann. du Jardin Bot. de Buitenzorg*, Vol. III., Pt. 2, 1884. (Presented.)
 Baccari, *Malesia*, Pt. 4, 1884. (Presented.)
 Vidal, *Flora Forestal de Filipinas*, Vols. 2, 1883. (Presented.)
 Pierre, *Flora Forestière de la Cochin-Chine*, Fasc. 1 to 6. (Presented.)
 Wendland & Drude, *Palma Australasica*, 1871.
 Bailey, *Hawaiian Ferns*, 1883. (Presented.)
 Leudiger-Fortmorel, *Cat. d. Diatomées de l'île Ceylan*, 1879.
 Icones Plantarum, ser. 3, Vol. V, Pts. 1 & 2.
 Hooker's *London Journal of Botany*, Vols. I. to III., 1842-44.
 Proceedings of the Agri-Horticultural Society of Madras, viz.:—Synopsis 1835-70. Index 1871-74; New Series, Vol. I., 1875-78; Vol. II., 1879-81. (Presented.)
 Hutchins, Report on measurement of *Casuarina* at Nellore, 1884. (Presented.)
 Moore, *Lepidoptera of Ceylon*, Pts. 8 & 9. (Presented.)

And, in continuation, the following Periodical Publications for 1884:—

Botanical Magazine, Gardeners' Chronicle, Indian Forester, Journal of Botany (presented),
 Pharmaceutical Journal (presented), Planters' Gazette, (presented), Tropical Agriculturist.

The various annual and other reports and publications of Indian and Colonial Botanic Gardens, Forest Departments, &c., have been received as usual, and my thanks are due to the various Governments and individuals for their presentation.

Museum.—Nothing has as yet been done towards any exhibition of specimens, but some contributions of importance have been made during the year towards the formation of a Museum of Economic Botany.

The Committee of the Planters' Association, through their Commissioner, Mr. Capper, have presented the greater part of the articles sent to the Calcutta Exhibition of 1883-4, consisting of samples of tea, coffee, cacao, cinchona, cardamoms, cinnamon, citronella oil, coir-matting, &c.

The Government Agent, Western Province, has presented the collection of 200 specimens of timber from the Pasdun Koralé, which obtained a prize medal at the Colombo Agri-Horticultural show in 1883.

Mr. G. A. Dick of Uda Fusselawa has sent samples of South American barks (Calisaya, Carthagena, Columbia) from the Milan Quinine Factory; and there have been many small contributions from various sources.

I am very desirous to install a Museum as a new branch of the Department, and feel sure it would be instructive and useful. I have already suggested to Government that if this Colony take a part in the London Colonial Exhibition of 1886, the opportunity of the collection of vegetable products throughout the country might be availed of, and two or three duplicate sets be formed, of which one should be retained for the Péradeniya Museum, as a type and reference series. Should this idea be approved of, it will be necessary that a small expenditure on the necessary cabinets and cases, bottles, glass, and preservatives be incurred.

The building—the "Director's bungalow"—requires no alteration, being in all respects well adapted for such a Museum.

VI.—RECEIPTS FROM SALES.

The sale of plants and seeds has not been large during 1884. There is little demand for any new agricultural plants, and as regards ornamental ones, the general want of ready money in the community at large tells especially here.

The principal sale is of Vardian cases and boxes of orchids, &c., the demand for which still keeps up, but these are for the most part purchased by passing travellers.

Thirty-four such cases and boxes were supplied to purchasers during the year. This sort of business, which I do not think it is to the interest of the Gardens to in any way encourage, is only carried on at Péradeniya, and would be better in the hands of a private nurseryman.

The following receipts have been duly paid into revenue during the year:—

	Rs.	cts.
From Péradeniya	2,017	14
Hakgala	362	61
Henaratgoda	347	91
Anuradhapura	38	77
Total—Rs.	2,766	49

This sum is distributed over the following number of purchasers:—

	Rs.	cts.
At Péradeniya	515	
Hakgala	68	
Henaratgoda	108	
Anuradhapura	42	
Total—	733	

VII.—EXPENDITURE.

The total cost of the Department for the year is shown in the following:—

	Rs.	cts.	Rs.	cts.
Salaries	—	—	17,995	35
Gardeners' and Labourers' wages:—				
Péradeniya	8,188	5		
Hakgala	2,999	97		
Henaratgoda	1,995	0		
Anuradhapura	1,000	0		
			14,183	2
Office contingencies	—	—	2,596	62
Stationery	—	—	78	34
Travelling and collecting	—	—	1,578	58
Special vote (for bullocks)	—	—	70	0
Pavilion, Kandy	—	—	2,204	2
Total—Rs.			38,705	93

Péradeniya,
 1st January, 1885.

HENRY TRIMEN, M.B.,
 Director.

G.O. No. 985

Recd. P.O. 24/11

Recd. No. 3743 (25)

To
The Honble the Colonial Secretary
for Ceylon.

Sir;

With reference to the
paragraphs in the Report on
the Royal Botanical Gardens
Peradeniya for 1884 on the
Subject of Erythroxylon Coca
I am directed to request
that, with the permission
of His Excellency the Governor,
you will be good enough
to arrange that full
information may be furnished
to this Govt regarding Dr
Fleming's method of preparing
the leaves, &c.

Dr. Fleming may
be asked to
furnish this Govt
with detailed

SW/17

22-7-85

Draft letter to the Ceylon Govt
for information re Erythrocyte

1000

Point 1.

Letter submitted in
accordance with
para 2 of the draft
prepared by the Secy.

Circulars to post
already
ordered

no

1067.

Colonial Secretary's Office
Colombo 12 August 1885

Sir,

With reference to your letter

N^o 3743 of the 22nd Ultimo, I am directed to transmit to you the annexed copy of a letter from the Director of the Royal Botanic Gardens, Peradeniya, and I am to request you to be good enough, with the permission of the Right Honorable the Governor of Madras in Council, to furnish me with the information asked for in the concluding paragraph of

The Secretary to Government
Fort Saint George
Revenue Department

D.

Dr. Trimen's letter.

I am, Sir,

Your Obedient Servant,

W. D. L. - 5/1
for G. C. L. - 5/1

Nº 23

Royal Botanic Gardens
Peradeniya 7 August 1886

Sir,

I have the honor to acknowledge the receipt of your letter Nº 32 of 4 August; the accompanying letter from the Government of Fort St. George is herewith returned.

1. In reply I have to state that I have prepared a single small sample only of boco leaves from trees in this Garden. This was in February last during the hot dry weather. No special precautions were taken. Fully grown leaves were carefully picked, and at once dried gradually in the air under the

The Honorable

Shade.

The Colonial Secretary
Colombo

shade of a veranda, the process being finished off in the sun. The complete drying took 10 or 11 days and the leaves lost half their weight in the process.

When finished the leaves were flat, greyish-green and mostly unbroken, forming a good-looking sample.

I am not aware whether the plan followed is the best that might be employed; possibly more rapid drying would be found preferable.

A sample packed in a tin box was sent home, and on analysis by Mr. R. Howard was found to contain 0.22 per cent of pure Cocain, a fair but not large proportion.

I published this result in the Baylon Newspapers on 10th April last.

2. I understand that some analyses of the young leaves have been recently made by Mr. Hooper the Government Chemist at Cotacamund, and I should feel obliged if you would request the Madras Government to furnish you with the result of these assays for our information here.

I am &c
S/ J. Henry Tannen

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Row 1027/10

R/18. 8. 15

W/18. 1. 15

South of Aylmer in
W/18. 1. 15
W/18. 1. 15
W/18. 1. 15

To the south of Aylmer
25. 1. 15
25. 1. 15
25. 1. 15

No.

From the Colonial Secretary
Colombo.

Dated

Recd.

No.

SUBJECT.

Request for information
of the results of the analysis
made by Mr. Hooper of
young coca leaves

Print 31/3

Read letter to Govt. of Ceylon
of 22-7-88 no 3743.

Order.

Communicated to the
Board of Revenue, the
Director of P.S. & the
the Director of the Ceylon
Cinchona Planters Board
Garden & Parks.

Hooper's experiments
the leaves of the Ceylon
coca are which is
the administrative
reports of the Ceylon
C.S., copy of which will
be forwarded in due course
to D. Trimmer through the
Govt. of Ceylon.

For this purpose I understand
the following - as
they may as well have
what information we can
give them at once.

An extract from
Mr. Hooper's report for the last
year in which the results
of his experiments with coca
experiments are given
will be forwarded to the

27-8-88
L. B. S. S.