

Gobt. of {1896} Madras.
REVENUE.

7. f. o. w. 2181 0899-897

No: 2346 W- d/14 August 96
communicated
to the Suptg. Engineer
IV circle.

(Id) D. M. N. C.

W

G.O., Nos. 326, 326A,
11th July 1896.

JULY.

Botanical Department.

Reviewing the report on the administration of
the — for the year 1895-96.

S. E. IV circle

Nos. 326, 326A, REVENUE, 11TH JULY 1896.

7

shows a saving of Rs. 877-11-7 over the budget estimate of Rs. 23,200, and a reduction of Rs. 2,677-11-7 in the revised estimate, and this latter large saving is due to there having been no Curator from August 1895 to the early part of February, and to funds having been reserved for the payment of Dr. King's deputation to these estates, a matter on which no orders of Government have been received up to the time of writing.

VII. MISCELLANEOUS—(a) *Death of the Curator, Government Gardens.*—It is a matter for regret that this report must convey the announcement of the death in his 50th year of Mr. Andrew Jamieson, who had been in charge of the Ootacamund Gardens since 1868. Mr. Jamieson was a skilful horticulturist, and a man with a genial disposition, and possessing a fund of general information. He had been in an indifferent state of health for two or three years past, and his death took place at the General Hospital, Madras, on the 17th August 1895.

(b) *Appointment of a new Curator.*—After a rather prolonged interval in the direct management of the Gardens, Mr. R. L. Proudlock of the Botanic Gardens, Calcutta, was appointed to Ootacamund, where he assumed his duties on the 11th February 1896. Mr. Proudlock had a training at Edinburgh and Kew before he came to India, and from his knowledge and capability shown during the few months he has been in office, a general improvement in the Government Gardens on the Nilgiris is assured.

(c) *Seeds for Soldiers' Gardens.*—The seeds required for the several regimental gardens in the Madras Presidency and Burma were obtained by this office from Messrs. Sutton and Sons, Reading, and sent out in February last. The cost of these seeds has now to be borne by the Garden Budget, instead of being met from a Special Provincial Grant, as hitherto, as arranged in G.O., No. 6300, Military, dated the 13th September 1889.

(d) *Lake Margin Clearance Scheme.*—Some further work was done in connection with this scheme, and the land near the margin of the lake was cleared of noxious weeds. The sum spent on this was Rs. 65-6-4 which was met from the sale-proceeds of blue gum trees, brushwood, grass, &c., as the sum of Rs. 500 allotted for the work in G.O., No. 2025, Revenue, dated the 23rd May 1895, had all been spent.

(e) *Return of stores.*—In accordance with G.O., No. 920, Financial, dated the 13th September 1893, communicated to this office under G.O., No. 3616, Revenue, dated the 2nd October 1893, an inventory of the valuable stock in the custody of the Curator has been made.

(f) *Terracotta boxes*—ordered from the Government Brickfields, Madras, arrived in a damaged state; they were handed over to the Public Works Department who had them repaired and placed them at Government House.

(g) The clerk of the Curator's office, Government Gardens, M.R.Ry. S. V. Ramanujam Chetty, has attended faithfully to his duties during an unsettled period in the history of the Gardens.

(h) *Service Registers.*—All the service books have been kept properly written up to date.

OOTACAMUND,
19th May 1896.

(Signed) D. HOOPER,
Ag. Govt. Botanist and Director.

No. 1.—Comparative statement of rainfall in the Government Botanical Gardens, Ootacamund, for 1894-95 and 1895-96.

Months.	1894-95.		1895-96.	
	Number of rainy days.	Rainfall.	Number of rainy days.	Rainfall.
April ..	12	6.37	15	3.45
May ..	16	8.86	12	3.23
June ..	15	4.27	19	11.26
July ..	18	3.96	22	4.24
August ..	26	5.32	22	4.77
September ..	15	2.80	12	5.53
October ..	17	8.82	22	8.97
November ..	10	1.32	10	1.51
December ..	3	0.08	3	5.13
January ..	..	..	..	..
February ..	..	..	..	..
March ..	..	..	..	..
Total ..	132	41.80	141	49.92

No. 2.—Statement showing the receipts of the Government Botanical Gardens and Parks, Nilgiris, for the official year ending 31st March 1895.

Particulars.	Actuals of 1894-95.			Budget estimate of 1895-96.			Actuals of 1895-96.		
<i>Government Gardens, Ootacamund.</i>	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.
Sale of plants, &c. ..	3,775	3	7	3,000	0	0	2,910	3	0
<i>Government Garden, Barliyar.</i>									
Sale of fruits, &c. ..	503	4	0	300	0	0	214	9	4
<i>Government Medicinal Gardens, Ootacamund.</i>									
Sale of jalap tubers, &c. ..	91	6	8						
Value of drugs supplied to Medical Department ..	4,369	14	3				3,124	12	4
	547	0	8				525	4	0
Grand Total ..	4,916	14	11	3,300	0	0	3,650	0	4

No. 3.—Statement of expenditure of the Government Botanical Gardens and Parks, Nilgiris, for the official year ending 31st March 1896.

Particulars.	Actuals of 1894-95.			Budget estimate of 1895-96.			Actuals of 1895-96.		
	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.
Pay of the Curator ..	3,600	0	0	3,600	0	0	1,540	10	4
Exchange compensation allowance ..	628	8	6	514	0	0	289	9	2
Travelling allowance of the Curator ..	330	3	0	100	0	0	70	2	0
Pay of the Curator's office establishment ..	722	6	1	792	0	0	792	0	0
Total ..	5,281	1	7	5,006	0	0	2,692	5	6
<i>Government Gardens, Ootacamund.</i>									
Overseers ..	1,200	0	0						
Pay of temporary establishment ..	5,665	3	6	1,200	0	0	1,200	0	0
Acclimatization of foreign plants (G.O., No. 874, dated 5th July 1872) ..				5,000	0	0	4,997	13	7
Labelling of plants ..	1,071	11	2	800	0	0	776	8	7
Contingencies ..	198	6	4	300	0	0	295	4	8
Horticultural implements and garden tools ..	1,504	6	6	1,471	0	0	1,442	14	3
Painting and repair of garden buildings ..	178	7	5	100	0	0	82	14	0
Herbarium Assistant and servants ..	710	12	1	600	0	0	587	3	6
Purchase of cabinets and materials for the Herbarium ..	206	9	0	396	0	0	384	1	0
Library ..	90	0	6	50	0	0	26	7	0
Municipal assessment ..	153	4	0	250	0	0	160	7	7
Seeds for Soldiers' Gardens ..	248	7	2	250	0	0	156	0	6
	2,476	9	6	3,400	0	0	3,397	3	3
Total ..	13,703	13	2	13,817	0	0	13,506	13	11

No. 3.—Statement of expenditure of the Government Botanical Gardens and Parks, Nilgiris, for the official year ending 31st March 1896—cont.

Particulars.	Actuals of 1894-95.			Budget estimate of 1895-96.			Actuals of 1895-96.		
	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.
Opening an experimental garden at Gádálór ..	150	0	0	150	0	0	145	0	1
<i>Government Garden, Barliyar.</i>									
Temporary establishment ..	400	0	0	500	0	0	497	7	11
<i>Government Medicinal Garden.</i>									
Temporary establishment ..	290	0	0	300	0	0	289	15	8
<i>Sim's Park.</i>									
Temporary establishment and contingencies ..	1,914	0	1	2,000	0	0	1,993	14	1
Pay of watchman (G.O., No. 843, dated 14th July 1884) ..	108	0	0	108	0	0	108	0	0
<i>Stonehouse Park.</i>									
Temporary establishment ..	600	0	0	700	0	0	691	13	10
<i>Church Hill Park.</i>									
Temporary establishment ..	99	14	7	100	0	0	95	7	8
<i>Upper Norwood.</i>									
Temporary establishment and contingencies ..	2,040	0	7	2,000	0	0	1,999	15	10
<i>Crewe and Otley Hall Estates.</i>									
Temporary establishment ..	336	0	0	319	0	0	301	5	11
Total ..	5,937	15	3	6,177	0	0	6,123	1	0
Grand Total ..	24,922	14	0	25,000	0	0	22,322	4	5

No. 4.—Return of seeds and plants distributed from the Government Botanical Gardens, Ootacamund and Barliyar, during the official year ending 31st March 1896.

Months.	Fruit trees.		Timber trees.		Ornamental shrubs and herbaceous plants.		Vegetable flower and other seeds.	
	Number of plants.	Value.	Number of plants.	Value.	Number of plants.	Value.	Number of packets.	Value.
1	2	3	4	5	6	7	8	9
April 1895 ..	..	RS. A. P.	..	RS. A. P.	..	RS. A. P.	..	RS. A. P.
May ..	..	..	2	0 8 0	80	42 7 6	62	14 10 6
June ..	20	10 6 0	..	..	30	15 0 0	140	30 0 6
July ..	..	..	..	..	78	51 2 0	299	59 1 3
August ..	..	..	..	..	50	90 6 0	139	57 7 0
September ..	..	..	17	34 0 0	78	59 0 0	123	55 6 0
October ..	..	..	..	..	60	31 12 0	53	15 3 0
November ..	..	..	..	..	4	2 0 0	..	..
December ..	..	..	..	..	15	15 2 0	3	1 6 0
January 1896 ..	..	..	..	..	..	..	8	3 10 0
February ..	..	..	..	..	1,004	220 0 0	55	20 0 0
March ..	..	..	..	..	18	36 2 0	90	108 0 3
Total ..	20	10 6 0	19	34 8 0	1,417	562 15 6	862	418 3 6

Months.				Bouquets and cut flowers.			Sundry receipts.			Total.			
				Number of bouquets.		Value.	Miscellaneous, fuel, grass, &c., and packing charges.						
							10	11	12	13	14	15	
April	1895	..	..	..	..	RS. A. P.	..	..	RS. A. P.	..	..	RS. A. P.	
May	"	..	..	..	..	10 0 0	..	..	136 10 6	..	..	203 12 6	
June	"	..	..	..	..	44 0 0	..	..	79 9 7	..	..	169 2 1	
July	"	..	..	3	..	21 10 0	..	..	35 5 6	..	..	177 8 9	
August	"	..	..	..	..	40 8 0	..	..	151 2 0	..	..	339 7 0	
September	"	..	..	..	..	10 12 0	..	..	131 11 0	..	..	256 13 0	
October	"	..	..	..	..	0 2 0	..	..	27 0 0	..	..	76 5 0	
November	"	..	..	4	..	64 2 0	..	..	807 9 1	..	..	956 14 1	
December	"	..	..	..	..	85 3 0	..	..	51 0 0	..	..	138 3 0	
January	1896	..	..	3	..	13 8 0	..	..	31 5 6	..	..	61 5 6	
February	"	..	..	..	..	..	..	..	19 0 6	..	..	22 10 6	
March	"	..	..	..	..	86 13 0	..	..	101 4 8	..	..	428 1 8	
		..	..	..	..	11 0 0	..	..	139 7 0	..	..	294 9 3	
Total				..	10	..	387 10 0	..	..	..	..	1,711 1 4	3,124 12 4

No. 5.—List of those to whom seeds or plants have been distributed gratis or in exchange for gifts made to the Government Gardens during the year 1895-96.

Date.	Names.	Particulars.	Value.
1895.			RS. A. P.
13th August ..	R. Pantling, Esq., Government Cinchona Plantations, Mungpoo, near Kurseong.	27 kinds of orchids Impatiens jerdonii Datura sanguinea A collection of ornamental plants 6 kinds of ferns Pampas plumes	13 8 0 3 0 0 1 0 0 8 0 0 3 0 0 1 8 0
22nd ..	C. Gray, Esq., Coonoor	12 Roscoeae purpurea 24 Ipecacuanha plants 1 plant Cyrtopodium Drurii 1 " Coelogyne odoratissima 1 " Cirrhopetalum	12 0 0 2 0 0 0 4 0 0 4 0
17th March ..	F. R. Griffith, Esq., Kotagiri		
16th ..	Mrs. G. L. Deighton, Peermade R. Pantling, Esq., Government Cinchona Plantation, Calcutta.		
		Total ..	46 0 0

No. 6.—List of those who have been benefactors to the Gardens during the year 1895-96.

Date.	Names.	Particulars.
1895.		
30th April ..	J. F. Price, Esq., Ootacamund	12 kinds of Eucalyptus seed
10th July ..	A. Lascelles, Esq., do.	2 Do. do. and a collection of seeds.
17th ..	F. A. Gleeson, Esq., Superintendent, Agri-Horticultural Gardens, Madras.	1 packet Passiflora jenmanii.
23rd ..	Do. do.	1 " Kennedya rubicunda. 1 " prostrata. 1 " Swainsona galeifolia. 1 " Dendrocalamus stricta.
28th August ..	C. Gray, Esq., Coonoor	4 kinds nerine species. 5 " of plants. 7 orchids. 1 packet Magnolia grandiflora. 1 " Kennedya.
1896.		
8th February ..	W. G. Smith, Esq., Yalumba Vineyards, Angaston S. Australia.	
16th March ..	W. Gollan, Esq., Superintendent, Government Botanic Gardens, Saharanpur. Messrs. Sutton and Sons, Reading, England ..	300 Roscoeae purpurea. 12 kinds of English vegetable seeds.

OOTACAMUND,
19th May 1896.

(Signed) D. HOOPER,
Ag. Govt. Botanist and Director.

ORDER—No. 326, Revenue, dated 11th July 1896.

Miscellaneous.

The foregoing report which Mr. David Hooper, the Government Quinologist, drew up as Acting Government

Botanist was received in the Government office fifteen days after the due date. The delay has not been explained, but is presumably due to the fact that Mr. Hooper had been in office for a short period only, Mr. Lawson, the permanent incumbent, having died on the 14th February 1896 and Mr. Hooper's officiating appointment having ceased by the 23rd May 1896.

During the year under review the administration of the Botanical Department was unsettled state. Certain suggestions made by the late Mr. Lawson regarding to separate it from the Cinchona Department and as to the working of the at Gardens and Parks on the Nilgiris were under the consideration of this Govt and of the Government of India during the major portion of the year.

was reduced to Rs. 3,300, as it was anticipated that there would be no sale of jalap, and a falling off was noticed in the receipts, and this sum was accepted as the revised estimate for the year in G.O., No. 701, Revenue, dated the 25th October 1895, and sanctioned in G.O., No. 928, Financial, dated the 27th November 1895, communicated to this office under G.O., No. 5048, Revenue, dated the 14th December 1895.

The actuals for the year have been Rs. 3,650-0-4, which is Rs. 1,349-15-8 less than the budget estimate (Rs. 5,000), but Rs. 350-0-4 more than the revised estimate (Rs. 3,300), and this is due to an unexpected demand for 500 lb. of jalap from the Medical Store Department, Bombay, having been complied with towards the close of the year. Compared with the receipts for the previous year, the income for the period under review shows a falling off of Rs. 1,266-14-7; and this is caused by a marked decrease under the amount realized by sale of plants and seeds and flowers from the Government Gardens, and the sale-proceeds of the produce of the Burliyar gardens.

The value of seeds, plants, &c., issued gratis, or in exchange for gifts made to the gardens, amounted to Rs. 46-0-0; and if this sum be added to the money realized during the year, viz., Rs. 3,650-0-4, it will give an aggregate of Rs. 3,696-0-4.

(b) *Expenditure*.—In September 1894, when submitting the budget estimate of expenditure to Government, it was framed at Rs. 23,200, and sanctioned in G.O., No. 971, Financial, dated the 10th November 1894. In September 1895, when submitting the revised estimate for the year, the expenditure was fixed at Rs. 25,000 by surrenders under travelling allowance and herbarium and by providing for seeds for soldiers' gardens to the value of Rs. 3,600 thus:—

	RS.
Revised estimate	25,000
	RS.
Budget estimate	23,200
Surrenders under travelling allowance and herbarium ..	1,600
	21,600
Provision for seeds for soldiers' gardens	3,400
	25,000

and this was sanctioned by Government in the following Orders:—

	RS.
Approved of in G.O., No. 701, Revenue, dated the 25th October 1895, and sanctioned in G.O., No. 928, Financial, of 27th November 1895, communicated under G.O., No. 5048, Revenue, of 14th December 1895	18,973
Approved of in G.O., No. 656, Revenue, dated the 30th September 1895, and sanctioned in G.O., No. 849, Financial, dated the 31st October 1895, communicated under G.O., No. 4649, Revenue, dated the 18th November 1895	6,027
Total	25,000

The above is due to Government passing separately the budget estimates of other public gardens (item No. 2 above) in the place of one Government review for the whole as heretofore (*vide* G.O., No. 730, Revenue, dated the 13th October 1894). Against a budget estimate of Rs. 23,200 and a revised estimate of Rs. 25,000, the actual expenditure during the past official year has been Rs. 22,322-4-5 and this

found them to be rich in nitrate of potash but failed to find an alkaloid. As these results were conflicting, fresh samples of adhatoda leaves were obtained from Madras, Calcutta and Punjab, and the enquiry was renewed in the laboratory. The existence of an alkaloid in all the specimens was proved, and a sample of acetate of vasicine in a crystalline condition and soluble in water, was sent for exhibition to the Indian Museum in Calcutta.

(13) *Eucalyptus species*.—A number of specimens of eucalyptus leaves were sent for identification, but it was impossible to determine the species from the leaves only. Flowering and fruiting specimens should always be sent if plants are to be satisfactorily named. A few enquiries were made with regard to the boiler fluid manufactured from blue gum leaves; but the correspondents were referred to eucalyptus oil distillers in the neighbourhood.

(14) *Datura Stramonium*.—A quantity of the roots of this poisonous plant collected on the hills was sent to Bombay for the purpose of testing the activity and comparing it with that of the root of *Atropa Belladonna*, with which it is allied. The Medical Storekeeper of Bombay has prepared a liniment, alcoholic extract, tincture and plaster from the roots, but he is not at present able to report on their therapeutic value, as the clinical experiments are not finished.

(15) *Nongana pulloo*.—The Assistant Surgeon of Cannanore forwarded in March to this office a weed called "Nongana pulloo." It was said to be used by the people of North Malabar as a remedy for elephantiasis, and as a substitute for tobacco. It was identified as *Fimbristylis aestivalis*, a small plant belonging to the rush family (Cyperaceæ).

(16) *Polygonum Sachalinense*.—The plants of this fodder, which were raised from seed obtained by this office from Japan and mentioned in the last year's report, have nearly all died; so the results of this experiment may be said to be a failure.

(17) *Sandalwood (Santalum album)*.—Some billets of sandalwood were sent by the Forest Department for the purpose of determining the difference in the amount of essential oil yielded by two kinds known as "male" and "female" sandal. A third specimen received at the same time, from a tree grown in the plains, gave a most remarkable result in not yielding a trace of volatile oil and being without odour.

(18) *Indian Dock (Rumex nepalensis)*.—In the cinchona report of last year reference was made to the Indian Dock, and the probable presence in it of chrysophanic acid. Dr. O. Hesse of Stuttgart has kindly examined some root sent from the Nilgiris, and found in it three colouring principles—

1. Golden yellow spangles melting at 186°, with a composition expressed by the formula $C_{15}H_{10}O_4$
2. Orange red needles, melting at 136°, with a composition of $C_{17}H_{14}O_4$
3. Greenish-yellow prisms, melting at 158°, and composed of $C_{18}H_{16}O_4$

The first of these substances is an isomer of chrysophanic acid and may prove to be useful on some future occasion in medicine and the arts.

(19) *Trees suitable for introduction as an experiment on the Nilgiris*.—In paragraph 3 of G.O., No. 5046, Revenue, dated the 14th December 1895, Government desired the submission of a general list of trees which were considered most suitable for experiment with a view to acclimatization on these hills; and also called for another list of such trees as have been proved by experiment to flourish here, and would likely to be of value if introduced on a larger scale. These lists have been drawn up and submitted to Government.

VI. FINANCIAL—(a) *Receipts*.—In September 1894, when drawing up the budget estimate of receipts for the year 1895–96, the sum of Rs. 5,000 was adopted, and this was accepted in G.O., No. 730, Revenue, dated the 30th October 1894, and sanctioned in G.O., No. 971, Financial, dated the 10th November 1894, communicated to this office under G.O., No. 4641, Revenue, dated 27th November 1894. Subsequently in September 1895, when framing the revised estimate, the above figure

(5) *Digitalis*.—In February last the Medical Stores Department, Bombay, asked to be supplied with lb. 30 of these leaves, which were sent there and charged for at the rate of As. 4 a pound.

(6) *Nilgiri Nettle (Girardinia palmata)*.—The Reporter on Economic Products, on behalf of the Imperial Institute, has been making enquiries regarding a fibre suitable for the manufacture of hats. A specimen of the Nilgiri Nettle fibre, prepared by Mr. McIvor in 1867, was forwarded through the Board of Revenue, and enquiry was made as to the cost at which a similar material could be supplied. A small quantity of the fibre, about half a pound, was prepared from some of the nettles in the Government gardens at a cost of Rs. 3. The Nilgiri Nettle is not so plentiful in the neighbourhood of Ootacamund as it used to be, and the Todas, around whose mounds it is generally found, do not appear to utilise the fibre.

(7) *Litsaea Zeylanica*.—The Litsaeas grow in profusion on these hills, and the trees are related to the cinnamon. The Reporter on Economic Products, through the Board of Revenue, applied for some of the essential oil of the leaves for the Imperial Institute. The oil exists in the leaves in a minute proportion which made the process of distillation very tedious. The oil possesses the peculiar fragrance of the tree, but it has the remarkable property of resinifying or drying up like a varnish when exposed for a short time to the air.

(8) *Indian Madder (Rubia cordifolia)*.—In December 1894, some roots of this plant collected at Naduvattam were sent to the Reporter on Economic Products at Calcutta, and in March last another consignment followed of the roots taken when the plants were in their fruiting stage. The authorities at the Imperial Institute wish to determine the difference between the varieties of this plant established in the Khasia Hills, Sikkim and the Nilgiris. The botanical characters are very slight, but it is considered that the quality and quantity of the colouring matter of the root vary according to local or climatic conditions. The *Rubia cordifolia* on these hills is a straggling shrub with long wiry stems penetrating the jungle for a great distance, which makes it a difficult matter to dig out the root.

(9) *Camphor tree (Cinnamomum Camphora)*.—A certain amount of interest was shown last year in the introduced camphor trees of Ceylon, and a discussion was raised as to the value of the leaves and twigs in affording camphor compared with the stem and root. As the question could only be settled by actual experiment, the leaves from trees grown on this plateau were examined and the results published in a paper entitled *Camphor Leaf Oil*. The leaves from trees growing in the Government gardens yielded an oil containing about 15 per cent. of camphor, and some oil distilled from the leaves of trees growing at Naduvattam, at an altitude of 6,000 feet, contained 50 per cent. of camphor.

(10) *Wild coffee (Diplospora sphaerocarpa)*.—This plant has again been sent by two planters on the Nilgiris for identification. It belongs to the same natural order as the true coffee, and bears a round fruit containing flattened seeds which at once distinguish it from its allies. Colonel Kenney-Herbert, in 1890, made an infusion of the roasted seeds prepared from this plant in the Quinologist's laboratory, and he pronounced it to be very palatable and similar to, but slightly weaker than, that made from ordinary coffee.

(11) *Sequoia sempervirens*.—A young tree of this species was planted last July by His Excellency Lord Wenlock above the Tennis courts near Government House and is now in a thriving condition. This is a Californian plant which yields the redwood of the timber trade, and, in its native climate, attains vast dimensions. The tree has been raised from seed in the Government gardens with some other conifers from North America, but the one planted by Lord Wenlock was presented by Mr. A. Lascelles.

(12) *Adhatoda Vasica*.—In 1888 a chemical examination of this plant was made by the writer and the active principle was found to be an alkaloid named "vasicine." Experiments were made with the plant and its alkaloid, and it was proved that the lower forms of animal and vegetable life were killed when brought into contact with the solutions. At the suggestion of Dr. Lauder Brunton, F.R.S., the dried leaves of the plant were sent last year to Professor Giacomini of Turin for investigation, he

found them to be rich in nitrate of potash but failed to find an alkaloid. As these results were conflicting, fresh samples of adhatoda leaves were obtained from Madras, Calcutta and Punjab, and the enquiry was renewed in the laboratory. The existence of an alkaloid in all the specimens was proved, and a sample of acetate of vasicine in a crystalline condition and soluble in water, was sent for exhibition to the Indian Museum in Calcutta.

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1. Golden yellow spangles melting at 186°, with a composition expressed by the formula $C_{15}H_{10}O_4$
2. Orange red needles, melting at 136°, with a composition of $C_{17}H_{14}O_4$
3. Greenish-yellow prisms, melting at 158°, and composed of $C_{18}H_{16}O_4$

The first of these substances is an isomer of chrysophanic acid and may prove to be useful on some future occasion in medicine and the arts.

(19) *Trees suitable for introduction as an experiment on the Nilgiris*.—In paragraph 3 of G.O., No. 5046, Revenue, dated the 14th December 1895, Government desired the submission of a general list of trees which were considered most suitable for experiment with a view to acclimatization on these hills; and also called for another list of such trees as have been proved by experiment to flourish here, and would likely to be of value if introduced on a larger scale. These lists have been drawn up and submitted to Government.

VI. FINANCIAL—(a) *Receipts*.—In September 1894, when drawing up the budget estimate of receipts for the year 1895–96, the sum of Rs. 5,000 was adopted, and this was accepted in G.O., No. 730, Revenue, dated the 30th October 1894, and sanctioned in G.O., No. 971, Financial, dated the 10th November 1894, communicated to this office under G.O., No. 4641, Revenue, dated 27th November 1894. Subsequently in September 1895, when framing the revised estimate, the above figure

GOVERNMENT OF MADRAS.

REVENUE DEPARTMENT.

READ—the following letter from D. HOOPER, Esq., Government Quinologist, Nilgiris, to the Secretary to Government, Revenue Department, dated Ootacamund, 13th June 1896, No. 57:—

I have the honour to submit the annual Administration Report on the Government Gardens and Parks, Nilgiris, for the year ending 31st March 1896, printed, as desired by Government in G.O., No. 224, Revenue, dated the 7th March 1893.

ANNUAL ADMINISTRATION REPORT OF THE
GOVERNMENT BOTANICAL GARDENS AND PARKS, NILGIRIS,
FOR THE YEAR ENDING 31st MARCH 1896.

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I. SEASON AND RAINFALL.—The rainfall for the year was 49.92 inches, or 8.12 inches more than was registered during 1894–95, or slightly below the average. The rain was heaviest at the bursting of the south-west monsoon in June, and was again deficient in the north-east monsoon. Continued dry weather lasted from December to April, and severe but interrupted frost from November to the end of February effected some damage to the plants and trees in the gardens. The season on the whole was not a good one for horticultural operations.

II. GENERAL CONDITION OF THE GARDENS AND PARKS—(1) *Ootacamund*—(a) *Government Gardens*.—The condition of the Gardens is about the same as that reported last year. Two overseers and a staff of coolies have been employed, but owing to the absence, until recently, of proper supervision, no changes or improvements have been made.

(b) *Government House Gardens*.—Some indigenous shola trees, such as species of *Elæocarpus*, *Celtis*, *Eugenia* and *Ilex* were planted up in June last in the land above Government House. The rest of the Terracotta boxes for the terraces in front of Government House have not yet been received from Madras, although the plants have been ready for them for some months. The stacks of blue gum wood from the trees felled in 1894 have decreased considerably, and must have been a source of fuel supply for the neighbourhood. The wood will, in future, be placed in charge of a responsible person who will issue the fuel only to those entitled to it.

(c) *Stone House Park*.—The ordinary duties of weeding and cleaning the paths and pruning the trees were attended to.

(d) *Church Hill Park*.—This land has been sadly neglected; the park commands one of the finest views of Ootacamund, and the new Curator intends to materially improve it during the season.

(e) *Crewe and Otley Hall Estates*.—The grounds have been kept clean, and the flower beds maintained. The dandelion bed has been extended, and the whole manured; but the root does not grow so well as in England on account of the long periods of dry weather.

(2) *Coonoor—Sim's Park*.—These gardens have been kept in very good order by the Overseer, Murrian. Watering was diligently kept up during the dry months, and a top dressing was given to the lawns before the monsoon. The summer houses and garden seats were painted. A rockery was made and planted with ferns, and a vista was cut through the park from the Wellington road giving a pretty view of the lake.

(3) *Barliyar*.—These gardens were in a very dry state when inspected in March last, so a small tank has been made to facilitate the watering. The gardeners have been left too much to themselves, and the trees have been somewhat neglected in consequence. The produce from these gardens is now being brought up to Ootacamund for sale. The nutmegs, cloves, litchis, mangoes and cocoa are of very good quality.

(4) *Gúdalar*.—This small experimental garden shows signs of neglect. The palms are doing fairly well, but the rubber trees have not grown much. Some of the fruit trees have died during the year, and the others have borne no fruit as yet. Several of the more interesting plants put down when the gardens were opened in 1888 have succumbed to the influence of the climate or to the negligence of the attendant.

III. HERBARIUM.—There have been some additions to the collection of botanical specimens in the herbarium during the past year, but they have not been so numerous as in previous years; this is due to a falling off in the number of private contributions, and to the fact that no botanical tours were made. The naming and arranging of the plants collected in Travancore were completed, and a separate collection was made of all the plants from this district. The glass cases of seeds and fruits have been re-arranged, and the contents have been labelled according to the natural system of classification.

The following among others have contributed to the collections in the Herbarium during the past official year:—

(1) *Mr. George Oakes, Ootacamund*.—A specimen of *Myristica laurifolia* or *M. Beddomii*, the fruit of a species belonging to the *Guttiferæ*, a plant of *Diplospora sphaerocarpa*, and specimens of the wood of tea and coffee bushes.

(2) *Mr. A. W. Lushington, District Forest-officer, Kistna*.—Specimens of grasses and fodder plants from the district.

(3) *Mr. Rhodes Morgan*.—A large collection of seeds from Central Africa.

(4) *Mr. H. V. Ryan, Superintendent of the Government Cinchona Plantations, Dodabetta*.—A collection of specimens of plants from North-West Provinces collected by Mr. C. Ryan.

(5) *The Curator of the Technological Museum, Sidney*.—Seed of the *Atriplex leptocarpa*.

(6) *Mr. J. Gleeson, Superintendent of the Agri-Horticultural Gardens, Madras*.—Seed of the *Exacum Zeylanicum* and of *Chianthus Dampieri*.

(7) *Mr. R. Hollingsworth, Medical College, Madras*.—A collection of *Adhatoda* leaves, cultivated in Madras.

(8) *Mr. L. W. Grey, Pykara*.—Specimens of *Ficus*, &c., for identification.

(9) *Dr. R. P. Bannerjee, Pachbadra, Rajputana*.—A collection of plants from the salt mines yielding native medicines.

Duplicate specimens of the collection of plants from Travancore were sent to Dr. King, Calcutta, Mr. Gamble, Forest School, Dehra Dun, and Mr. J. F. Duthie, Director of the Botanical Department, Northern India, Saharanpur.

IV. LIBRARY.—Under G.O., No. 971, Financial, dated the 10th November 1894, communicated to this office under G.O., No. 4641, Revenue, dated the 27th November 1894, a grant of Rs. 700 was made by Government for the purchase of books for the library; but this was subsequently reduced to Rs. 250 under G.O., No. 928, Financial, dated the 27th November 1895, communicated under G.O., No. 5048, Revenue, dated the 14th December 1895. Of this sum only Rs. 160-7-7 were sent in payment of the subscriptions for the several periodicals supplied to the office, under sanction of Government, and in payment of the charge incurred in binding all the periodicals received during the past two years. No new books were purchased during the year; but the following volumes were presented to the library:—

(1) *Hooker's Icones Plantarum, Vol. V, Parts 1 and 2*, presented by Dr. Thiselton Dyer, Director of the Royal Gardens, Kew, on behalf of the Bentham Trustees.

(2) *Trimen's Hand-book to the Flora of Ceylon, Vol. III*, with plates 51—75 presented by the Colonial Secretary, Colombo.

(3) A catalogue of the flowering plants and ferns found wild in the Island of Penang, from Mr. C. Curtis, Assistant Superintendent of Forests, Penang.

(4) *Hand-book of South Australia*, presented by the Madras Government.

(5) Reports of the Botanical Survey of India, from the Director.

(6) *The Kew Bulletin* of miscellaneous information, from Dr. Dyer.

(7) Series of *Agricultural ledgers*, from the Government of India.

(8) *Bulletin of the Botanical Department of Jamaica* by the Director of Public Gardens and Plantations, Jamaica.

(9) Indian Museum notes presented by the trustees.

V. NOTES ON PLANTS OF ECONOMIC INTEREST.—(1) *Ipecacuanha*.—The cultivation of *Ipecacuanha* does not succeed so well at Nilambur as was at first anticipated. Out of 249 plants put out in 1887, only 149 were alive last June; but they were flowering fairly well and were in a healthy condition. It seems that they require a moister climate than Nilambur, for they die down annually during the dry months between January and May, and sprout up afresh at the first burst of the monsoon. Mr. Malcolm in the Vellara Mulla Hills has discovered that a light shade under fig trees and a moist situation are more suitable for the plant than thick forest shade. Some young plants have been sent to applicants in the untried districts of Pee maad, Travancore and Coorg, and reports upon their progress have been promised.

A few flowering specimens of *Ipecacuanha* are being sent from India to London to have their botanical features investigated. A dozen plants were sent to K about a year ago, and reached their destination in good condition.

(2) *Jalap*.—Five hundred pounds of jalap tubers from a stock of lb. 1, were supplied last January to the Medical Storekeeper, Bombay, and the balance of 700 will be divided between the Medical Stores of Bombay and Madras, as application has again been made for the drug this year. A large order for jalap from Calcutta could not be complied with, as the present crop is not mature enough for lifting. For some years past the whole of the jalap has been grown in the Cinchona Plantations at Dodabetta, and it is intended this month to plant it out also on the terraces above the glass houses in the gardens.

The private planters on the Nilgiris are still holding back from cultivating this useful drug, and are not able to place any of it on the market.

(3) *Dandelion (Taraxacum Officinale)*.—The crop of Dandelion near Crewe Hall has not been taken up yet, as the roots have not grown much during the dry weather, and are still very thin. After another wet season it is hoped that the plants will be sufficiently robust to yield a large quantity of matured roots.

(4) *Sweet flag (Acorus Calamus)*.—The sample of oil distilled from the fresh plant and sent to Surgeon-Major Parker of the Medical Stores, Bombay, for experiment, was tried by him, but he reports that the results of its clinical administration were not satisfactory. The fresh root is no doubt the best part of the plant for medical purposes.

(5) *Digitalis*.—In February last the Medical Stores Department, Bombay, asked to be supplied with lb. 30 of these leaves, which were sent there and charged for at the rate of As. 4 a pound.

(6) *Nilgiri Nettle* (*Girardinia palmata*).—The Reporter on Economic Products, on behalf of the Imperial Institute, has been making enquiries regarding a fibre suitable for the manufacture of hats. A specimen of the Nilgiri Nettle fibre, prepared by Mr. McIvor in 1867, was forwarded through the Board of Revenue, and enquiry was made as to the cost at which a similar material could be supplied. A small quantity of the fibre, about half a pound, was prepared from some of the nettles in the Government gardens at a cost of Rs. 3. The Nilgiri Nettle is not so plentiful in the neighbourhood of Ootacamund as it used to be, and the Todas, around whose mounds it is generally found, do not appear to utilise the fibre.

(7) *Litsaea Zeylanica*.—The *Litsaeas* grow in profusion on these hills, and the trees are related to the cinnamon. The Reporter on Economic Products, through the Board of Revenue, applied for some of the essential oil of the leaves for the Imperial Institute. The oil exists in the leaves in a minute proportion which made the process of distillation very tedious. The oil possesses the peculiar fragrance of the tree, but it has the remarkable property of resinifying or drying up like a varnish when exposed for a short time to the air.

(8) *Indian Madder* (*Rubia cordifolia*).—In December 1894, some roots of this plant collected at Naduvattam were sent to the Reporter on Economic Products at Calcutta, and in March last another consignment followed of the roots taken when the plants were in their fruiting stage. The authorities at the Imperial Institute wish to determine the difference between the varieties of this plant established in the Khasia Hills, Sikkim and the Nilgiris. The botanical characters are very slight, but it is considered that the quality and quantity of the colouring matter of the root vary according to local or climatic conditions. The *Rubia cordifolia* on these hills is a straggling shrub with long wiry stems penetrating the jungle for a great distance, which makes it a difficult matter to dig out the root.

(9) *Camphor tree* (*Cinnamomum Camphora*).—A certain amount of interest was shown last year in the introduced camphor trees of Ceylon, and a discussion was raised as to the value of the leaves and twigs in affording camphor compared with the stem and root. As the question could only be settled by actual experiment, the leaves from trees grown on this plateau were examined and the results published in a paper entitled *Camphor Leaf Oil*. The leaves from trees growing in the Government gardens yielded an oil containing about 15 per cent. of camphor, and some oil distilled from the leaves of trees growing at Naduvattam, at an altitude of 6,000 feet, contained 50 per cent. of camphor.

(10) *Wild coffee* (*Diplospora sphaerocarpa*).—This plant has again been sent by two planters on the Nilgiris for identification. It belongs to the same natural order as the true coffee, and bears a round fruit containing flattened seeds which at once distinguish it from its allies. Colonel Kenney-Herbert, in 1890, made an infusion of the roasted seeds prepared from this plant in the Quinologist's laboratory, and he pronounced it to be very palatable and similar to, but slightly weaker than, that made from ordinary coffee.

(11) *Sequoia sempervirens*.—A young tree of this species was planted last July by His Excellency Lord Wenlock above the Tennis courts near Government House and is now in a thriving condition. This is a Californian plant which yields the redwood of the timber trade, and, in its native climate, attains vast dimensions. The tree has been raised from seed in the Government gardens with some other conifers from North America, but the one planted by Lord Wenlock was presented by Mr. A. Lascelles.

(12) *Adhatoda Vasica*.—In 1888 a chemical examination of this plant was made by the writer and the active principle was found to be an alkaloid named "vasicine." Experiments were made with the plant and its alkaloid, and it was proved that the lower forms of animal and vegetable life were killed when brought into contact with the solutions. At the suggestion of Dr. Lauder Brunton, F.R.S., the dried leaves of the plant were sent last year to Professor Giacosa of Turin for investigation; he

Govt. of {1896} Madras.

ECCLESIASTICAL.

Issued

Recd.

Encl.

G.O., No. 37, 30th June 1896.

JUNE.

Tombs and Monuments.

Requesting the Collector of Madras to arrange for the complete and careful re-examination and verification of the lists of — in the Madras City already compiled, and for the early submission of revised copies to Government for transmission to the Government of India.

A. V. CURRENT No. 7011

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