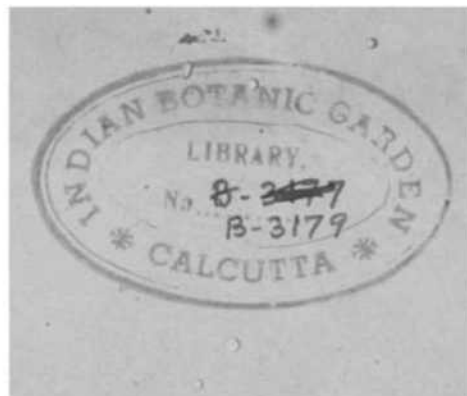




Indian Botanic Garden Library
BOTANICAL SURVEY OF INDIA

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207
Rare





of specimens of Timbe,- from Trees destroyed in the Royal Botanic Garden,
Presented— CidwUa, by the Cyclone of October 1861.

St. Petersburg.
Cij tained in two oases,
Attained in fall,
Marks 1—2.
Forwarded—

... the superior botanical

Names of Trees.	SECTIONS.		Total of specimens.
	Transverse.	Longitudinal.	
Case No. 1.			
Agle Marmelos	1	...	1
Aglaia grata	1	1	2
Albizia Julibrissin	1	1	2
" Lebbek	1	1	2
" Procera	1	1	2
" Stipulata	1	1	2
AmOra Roliitukn	...	1	1
Arajfeuria CuningEianni	1	...	1
Artocarpua CM&plaha	1	...	1
" Incisa	...	1	1
" integrifolia	...	1	1
Asterogyne Coriacea	1	...	1
Betonia parviflora	1	...	1
" Richardiana	1	1	2
Bredelia Berryana	...	1	1
Calceanthus Indica	...	1	1
Canarium Benghalense	...	1	1
Cassia florida	1	...	1
Casuarina Equisetifolia	...	...	1
Chloroxylon Swietenia	1	1	2
Cleidion Javanicum	...	1	1
Conocarpus Acuminata	...	1	1
" latifolia	...	1	1
Cordia Grandis	...	1	1
Cupressus Sempervirens	1	...	1
Dalbergia speciosa	1	...	1
" Zeylanica	1	...	1
Diospyros Montana	1	...	1
Daubanga Sonneratioides	1	...	1
Echites Picta	...	1	1
Eucalyptus Resinifera	1	1	2
Eugenia geminiflora	...	1	1
Ficus artocarpifolia	...	1	1
Fetidia Mauritanica	...	1	1
Garcinia Purpurea	1	...	1
Euga Pinnata	...	1	1
Hamamelis Tomentosa	...	1	1
Hamatoxylon Campechianum	...	1	1
Hemicyclia Lepitaria	...	1	1
Hyptis Integrifolia	1	1	2
" Odorata	1	...	1
Menispermia Courbaril	1	...	1
Miconia Apetala	...	...	1
Carried over	24	27	51

(Uernus)

Number.	Names of Trees.	SECTIONS.	
		reverse.	Longitudinal.
<i>Case No. 1.—(Continued.)</i>			
	Brought forward	24	27
44	Odina Wodier ...	*.*	1
45	Olea glandulifera ...	1	...
46	Phyllanthus Emblica ...	1	1
47	Pithecolobium dulce ...	1	1
48	Poinciana Regia ...	...	1
49	Putranjiva Roxburghii ...	...	1
50	Saccopetalum longiflorum ...	...	1
51	Sapindus Emarginatus ...	1	1
52	Sapota Acbras ...	...	1
53	Sterculia Foetida ...	...	1
54	" Pallens ...	...	1
55	" Populifolia ...	...	1
56	Syzygium Jambolanum ...	...	1
57	Tectonja Hamiltoniana ...	i	1
58	Terminalia Berryi ...	...	1
59	" Catappa ...	i	...
60	" Chebula ...	i	1
61	" Sp: ...	...	...
62	Vitex Leucoxydon ...	4 1	1
63	Walsura Piscidia
64	Xylia Dolabriferina
	^ Contents of Case No, 1	36	1
	<i>Case No. 2.</i>		

1793 to n. 5
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Botanic Ga
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Secretary
Sta,

NEEBOM Esq., *it. P.*. Siipwiniemlcncf. Royal Bobttiifnl Onrdunp. Cnkmtn/lo the
totik&vtnimenLof Ik-i.1.—(No. 1W, tftctd the 87th December 1<66.)

AVITH reference to the Orders of Government contained in
the Junior Secretary/a endorsement So. 2779 of the 24th July 1865, I
have the i that great success has attended the introduction of
the Mahogany tree into the Botanical Gardens. Several of the trees
introduced in 1795 from Jamaica as young trees, were destroyed
by the great Cyclone of J-StJl, when the trees were probably seventy-one
years of age from the time the seeds producing them sprouted. These trees
attained a very large size, averaging abopl 12 feet in
height at 4 feet above the ground. A log taken from one of these trees,
and consisting merely of the trunk to the com in cement of the first
branches at a height of 13 feet above the ground, gave, after squaring and
removal of the sap wood, 109 cubic feet of timber. This log has not been
used yet, but two others have been made for it, ranging between 4-j' annaa,
and 5' annaa for the surface foot 1 inch thick, or about Kupees 600 for
the entire log. In the Calcutta Timber Market Report which appeared
shortly after the sale, the following report was given : " country wood
sold on behalf of Government, of trees blown down in
the Botanical Gardens during the 1Su'-1 Cyclone. The Mahogany brought
the same price, and so did the Sisao, both descriptions being much wanted
by the trade. I understand that the Mahogany was found by the original
purchasers to be of so good quality that a considerable profit was obtained
by selling it by retail.

2. My numerous duties have prevented me compiling from
the records of the Botanic Garden the progress of the culti-
vation of Mahogany in Bengal, and I have, therefore, availed myself of the
offer of Assistant Surgeon Dr. James O'Connell, who volunteered to draw
up a report of the information on the subject from the records of my Office.
He also undertook the measurement of all the Mahogany trees standing in
the Garden in December 1860, in the same manner as I did in January
1861. This report and two appendices by Dr. Cleghorn now contain
embracing all the information I can give on the introduction and cultivation
of this valuable timber tree.

3. The numerous trees of Mahogany in the neighbourhood of Cal-
cutta, both in private gardens and along public roads, all obtained from the
trees in the Botanical Garden, shew that the successful growth of the tree
here is not to be ascribed to any skill on the part of the native gardeners
or to a favourable soil. I believe the Mahogany tree is one
that will grow in any soil, and has spread over all parts of Bengal as the Larch has
been in Britain, as the Firce thrives equally well in the alluvial clay of lower
Bengal and the dry sterile soil near Bhaugulpore. The only obstacle to
the extension of the tree is the difficulty of procuring
efficient quantities of seed. Mahogany is the difficulty of procurin
only a very small number of capsules, containing
one or two seeds, which do not long retain their vitality.

4. These seeds have rarely been distributed from the plant, in the distant parts of India
where they are found, and are therefore a most expensive but a most valuable
plant, in the distant parts of India where they are found, and are therefore a most expensive but a most valuable
plant, in the distant parts of India where they are found, and are therefore a most expensive but a most valuable

I think that large numbers of plants of Mahogany could be produced by artificial propagation (by cuttings and layers) as has been done in Cinchona, and although plants obtained by this process never grow good timber trees as those raised naturally from seed, still the artificially propagated trees of Mahogany, and are growing in the Botanical Gardens, and have trunks 10 feet in girth.

4. If it is considered advisable to prosecute vigorously the introduction of this tree into all parts of India, I would recommend that in the first instance reports should be obtained of the present size of the number of trees distributed to all parts of India from 1813 to 1843. The age of these trees is now sufficient to permit of a reliable opinion being formed of the amount of success which has attended the growth of Mahogany in India generally. There can hardly be any question about the tree succeeding well in at least the Sikkim Terai and over Assam, Lower Burma and Chittagon. If large supplies of seed properly packed can be sent annually from Jamaica by the West Indian Mail and direct

Southampton to India without any detention in Singapore, then a sufficient extent of plantations could be formed in a few years in the Sikkim Terai. At the proper season this year I shall practically test the utility of the artificial propagation of the plant; if large numbers of cuttings can be easily induced to produce roots then a large area of ground could be planted with trees raised from cuttings. These, if planted closely together and judiciously thinned and pruned, would eventually produce almost a first class forest. Seed from the West Indies should be packed in dry rounded charred layer of capsules containing the seeds alternating with a layer of charcoal and in this method of packing the box should be as airtight as possible. In the first instance, one box should contain five capsules, but also packed in charcoal. It would be as well to send a sufficient quantity of seeds packed securely in paper alone without any box. The seeds should be taken ripe from the trees, and should be packed dry, without being exposed to the sun. All unnecessary demonstrations should be guarded against, especially at Southampton. If possible, the seeds should be transferred from the "West Indian Mail steamer to the steamer of the Peninsular and Oriental Steam Navigation Company. Two dispatches of seed from Jamaica might be made according as the first dispatch fails. The case of seeds should be addressed to me, and the advice of their dispatch from the "West Indies should be sent to me from Marseilles and Bombay.

5. If the report I now submit is published and widely distributed, and especially if it is sent to those districts where Mahogany trees have been sent in former years for public purposes are requested to report the number, size and condition of any Mahogany known to exist near them, more information on the growth of the trees in various parts of India might be obtained.

Report on the cultivation and propagation of the Mahogany (Swietenia Mahogany) in Java.

Note.—In an old catalogue of the plants in Upper Burma by Dr. Roxburgh, the Mahogany Tree is mentioned as having been introduced into the Gardens from the West Indies in a letter dated 29th February 1783.

1793 to C. SImkcsJPare, Esq., Sub-Secretary to the Government of Bengal, mentions, among other things, that "the Muiiogany plants sent out by the Court of Directors in 1795 thrive very well." These are the earliest notices concerning this valuable tree, to be found in the records of the Botanic Gardens. These plants sent out by the Court of Directors, were the first introduced into India, and as late as 1836, every Mahogany tree in the country was certainly derived from these, either by cuttings or seeds, and I believe until August 1865 there were no new introductions. In 1805 pods containing 8,235 seeds were received from the Government of Jamaica, on requisition by Dr. Thomas Anderson, Superintendent, Botanic Gardens, and these were taken from trees grown in that Island. The pods were packed in three boxes, two of which were ventilated, and the third air-tight. The seeds in the former (6,235) were received in apparently good condition, while those in the latter (1,980) were quite mouldy; all were, however, sown on the 7th August 1805, and on the 18th of the same month they began to germinate; but in the end only 100 plants were produced, and these were from the seeds in the ventilated boxes, those in the air-tight one having entirely failed; 35 of these plants were sent to Darjeeling to be planted in the Terai, and the remaining 112 were kept in the Botanic Gardens.

Cultivation and Growth.—In 1796, one year after the planting of the trees in the Botanic Gardens, Dr. Roxburgh sent a few young plants to Mr. Pellowfield of Madras, who planted them in his garden. In a report written three years afterwards (1799) Dr. Roxburgh says of these that "they are doing well," and with regard to the plants originally sent out in 1795, he writes in the same report, that "they thrive exceedingly, and have multiplied to some hundreds, and that this useful tree is perfectly at home here, and I may venture to say that it is also fairly established in India;" Dr. Wallich, Superintendent of the Botanic Gardens, in his Annual Report of 1836 to the Government of Bengal, writes that "the Mahogany grows as well in Bengal as in its native soil, and though inferior in the fineness of the grain to the African Wood, it is at least equal in quality to that of Jamaica;" so that the seeds having been originally introduced from that Island, had not deteriorated by the change. In appendix A. I have placed, in a Tabular Form, the distribution of Mahogany plants from the Botanic Gardens, Calcutta, since the year 1803. A total of 5,518 plants have been distributed in the Bengal Presidency; of these 5,514 were supplied for planting in public gardens, along roads, &c, and 2,055 were given to private individuals, both European and Native; 251 of the former received 3,469 plants, and 40 of the latter received 210 plants; 67 plants were sent to the other Presidencies and Provinces not situated in the Bengal Presidency; 4 plants were sent to Europe and 9 to Africa. I inform whatever has been received regarding the growth of any of these plants. In addition to the above Dr. Wallich in 1817, sent a quantity of seeds to Tenasserim, and in 1841 large quantities of seed were sent to the Ceylon Government, both by Drs. Wallich and Griffith. Again in 1817 Dr. Wallich presented a few papers of Mahogany Seed, and also a box made of Mahogany Wood grown in the Botanic Gardens, to the Agricultural Society. The Society planted some of the seeds in their own garden, and the members of the Society supplied their members. In 1805 the Society gave "100 fine Mahogany plants," to the Agent, East India Company, on his requisition, for the purpose of being planted along the line of the Terai.

plants were raised from seeds gathered from trees belonging to the Botanic Gardens. In ISOJJ the Agent of the Railway Company was asked for information as to the progress and condition of the plants. He reported 05 of them, viz—

At Serampore Station...	...	...	%
*, Ghandernagore Station	...	...	3
„ Hooghly Station	...	...	5
			—
Total	...	...	10

Among these, he said, " were in a flourishing condition, about 12 feet in height and 5 or 16 inches in diameter."

The growth of the trees in the Botanic Gardens has been very satisfactory. In 1864 there were 09 trees of large size growing in the garden besides numerous small ones, averaging 1 foot in diameter. Many of the former were blown down by the Cyclone of 1864, and when they were examined the roots of the majority of them were found to be more or less decayed, owing, in all probability, to the richness and dampness of the alluvial soil in which they were planted. The dimensions of the largest tree now in the Botanical Gardens are as follows:—

			Ft.	In.
Circumference at 1 feet above ground...	...	1-k	3i	
Ditto „ 5 „ ditto	...	.14	2"	°
Ditto „ 0 „ ditto	...	1fc	2	
Length of Bole	••• j ^ ^ ^ B	•	13	0
Extreme height	... V	...	150	0
Spread of branches	»	...	102	0

and the following are the dimensions of a log cut from one of the trees blown down in the Cyclone:—

		Ft.	In.
Length	...	13	9
Mean Breadth	...	0	51
„ Depth	...	0	34
Cubic Contents	...	169	2

To contrast with the above I shall here give the measurements of the largest log cut in the Honduras up to the year 1830—

		Ft.	In.
Length	...	17	0
Breadth	...	0	57
Depth	...	0	61
Cubic Contents	...	430	5

In appendix B. I have given the measurements of some of the trees blown down in the Cyclone of 1864, and also of all the larger ones at present growing in the gardens. The particulars regarding the former I obtained from an unpublished Report " on the probable age of trees as estimated by the number of their concentric rings," by Dr. John Anderson, Curator of the Imperial Museum, Calcutta.

Value of the Botanic Gardens' Mahogany.—The Mahogany boards presented by Dr. Yachnich in 1846, to the Agri-Horticultural Society, with an unmanufactured specimen of the wood, were ordered by the Government of Bengal, to be sent to Messrs. Shearwood and Company, to express an opinion as to the quality of the wood. They reported

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that if it had stood for a few years longer it would have been equal to Honduras Mahogany." The age of the specimen at that time could not have been more than forty-nine years, whereas Honduras Mahogany is not considered fit for cutting until it is two hundred years of age.

One hundred and thirty cut logs and several lots of uncut ones, obtained from trees blown down in the Cyclone, were sold to Messrs. McKenzie, Lyall and Company in February 1800, and fetched the ordinary market price of Mahogany.

The above facts shew that the Mahogany tree, although planted in a low-lying rich soil, with little or no drainage, has succeeded admirably in this climate, and that a wood has already been obtained whose marketable value is equal to that of any other Mahogany exposed for sale in the Calcutta market.

As little is known of the general characters of the Mahogany tree, I may mention that those in the Botanic Gardens flower during the rainy season. The seeds ripen in March. The usual number of seed capsules for each tree to bear is four to five, but this number has, in one case, amounted to thirteen,—this prolific tree was struck by lightning about fifteen years ago. Each capsule contains from ten to thirty seeds. Since March 1864 the trees in the Botanic Gardens have produced no seed, although, during last rainy season the shew of flowers was abundant.

Sir Wm. Hooker in the botanical Miscellany says, that in Honduras the tree is generally cut about 10 or 12 feet from the ground, and that the trunk, on account of its size, is deemed the most valuable, but the limbs or branches are prepared for ornamental purposes, the grain of them being much closer and the veins more rich and variegated. The quality of the wood, it is said, greatly depends on the situation where the tree grows, being of a superior quality in a elevated stony ground, lighter and more porous, and of a paler colour, in low and alluvial situations.

In St. Vincent, where the Mahogany is not indigenous, the tree does not attain a greater height than 50 feet and a diameter of 18 inches.

APPENDIX A.

Tabular Statement of the distribution of Mahogany Trees (*Sicotiana Mahogani*) from the Royal Botanic Gardens, Calcutta.

GEOGRAPHICAL DISTRIBUTION OF THE MAHOGANY TREE (*SICOTENIA MAHOGANI*), PROPAGATED FROM THE PLANTS INTRODUCED INTO THE ROYAL BOTANIC GARDENS, CALCUTTA IN 1793.

RECIPIENTS OF PLANTS IN THE BENGAL PRESIDENCY.

Date of distribution.	Distribution of Plants of India.			Distribution of Plants in Europe.		Distribution of Plants in Africa.		Distribution of Plants in		Total number of plants distributed.	Private Individuals.				Total number of Recipients.
	In the Bengal Presidency.	Number of Plants.	Names of places to which the plant was sent.	Number of Plants.	Places to which the Plant was sent.	Number of Plants.	Places to which the Plant was sent.	Number of Plants.	Places to which the Plant was sent.		Europeans.		Natives.		
											Number of Plants.	Number of Recipients.	Number of Plants.	Number of Recipients.	
1802	20	...	...	...	...	...	...	...	...	20	...	...	...	7
1803	9	...	...	...	...	...	...	...	...	9	...	...	...	3
1805	7	...	...	...	...	...	...	...	...	7	...	...	...	2
1806	6	...	...	...	...	...	...	...	...	6	...	...	...	1
1807	8	Madras	...	...	...	...	...	...	...	8	...	...	...	3
1808	8	...	...	...	...	...	...	...	...	8	...	...	...	3
1812	68	...	...	...	...	...	...	...	...	68	...	...	...	11
1813	660	...	...	...	...	...	...	...	...	68	...	...	...	3
1814	235	...	...	...	...	...	...	...	...	20	...	...	...	11
1815	192	Bombay	...	...	...	...	...	...	...	6	...	...	...	2
1816	46	...	...	...	...	...	...	...	...	6	...	...	...	16
1817	66	...	...	...	...	...	...	...	...	235	...	...	...	30
1818	95	Nipaul, Rangoon, Baskiro	...	...	...	...	...	...	...	166	...	...	...	11
1819	15	Madras	...	...	...	...	...	...	...	6	...	...	...	12
1822	20	...	...	...	...	...	...	...	...	6	...	...	...	...
1823	62	...	...	...	...	...	...	...	...	10	...	...	...	...
1824	38	Kunnon	...	...	...	...	...	...	...	30	...	...	...	...
1826	31	...	...	...	...	...	...	...	...	9	...	...	...	...
1827	36	...	...	...	...	...	...	...	...	10	...	...	...	...
1828	36	Viragapatam	...	...	...	...	...	...	...	10	...	...	...	...
1830	36	Pondicherry	...	...	...	...	...	...	...	10	...	...	...	...

1837	57												19											
1838													80	6	"7	"2								a
IK»	M	!	!	!	!	!	!	!	!	!	!	!	*M	10	"8B	i								8
Lk		s											104	7	B*	4								9
Wk»	HI																							11
IMS	S																							U
18<	t																							S
18*3	I																							1
W19	t*												12	1										9
1 ft 50	SO												144	9										13
16.11	37												SO	10	"a	"3								9
1B53	4												8	2	"a	"1								3
IBM	"a	Eingaou											3	2	"a	"1								9
18S1	" 1												4	2	1	1								3
1SS8	1	"a	^f «H rim Mh										10	9	7	3								13
I W	70												la	4	ai	11								4
IMS													24	2	ft	4								a
18m													1	1	3	3								*
													"4	"1										"1
1863	1,60a												1	1										1
IBM	1,189																							4
IMS	46																							3
	10																							3
Grand Total*	6,54S	W		4		g		4i		S,673	1,863	17	3,408	»	sie	40	914							3

J; CLEGHOEN, M. T.,

Auttant Surgeon, Bengal Medical Sermet

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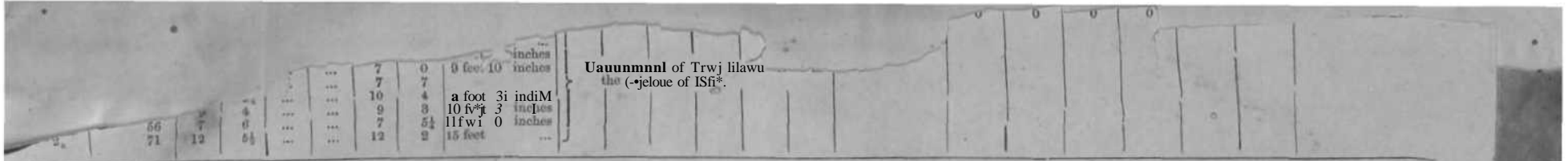
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APPENDIX B.

Tabular Statement of the Measurements of Mahogany Trees (*Suietenia Mahogani*) growing in the Royal Botanic Gardens, Calcutta.

No.	Presumed age of Tree.	MEASUREMENT OF EACH TREE ON 8TH JANUARY 1864.						MEASUREMENTS OF EACH TREE ON 7TH DECEMBER 1866.						GROWTH OF EACH TREE AS SHOWN BY THE INCREASE IN CIRCUMFERENCE SINCE FIRST MEASUREMENT OF IN 2 YEARS 337-DAYS.						Cubic contents of Bole [^] above 3 feet in every 11 feet being made for loss in squaring.				
		Circumference.						Length of Bole.	Circumference.						Height of Bole.	Increase in Circumference.								
		At 4 feet above the ground.		At 5 feet above the ground.		At 6 feet above the ground.			At 4 feet above the ground.		At 5 feet above the ground.		At 6 feet above the ground.			At 4 feet above the ground.		At 5 feet above the ground.			At 6 feet above the ground.			
ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	
4	9	11	9	9	9	7	9	11*	9	10	9	84	20 feet	0	0*	0	1	0	14	136 feet	5 inches.		
5	72	14	2	13	115	13	10*	14	3*	14	2	14	2	13 feet	0	0	0	24	0	3*	115 feet	3 inches.		
6	5	11	5	10	5	94	5	1H	5	5	5	94	14 feet	0	0*	0	0	0	0	0	0	0	0
7	10	7	10	8*	10	2	10	8.	10	10	11	24	9 feet	0	1	0	1*	0	2	28 feet.			
8	5-1 to 57	10	1	10	04	10	2	10	2*	10	8	7	11	9 feet	0	34	0	6	1	04	64 feet.			
9	8	0	8	0	7	94	8	4.	8	0*	11	7	11 feet	0	2*	0	84	0	8	60 feet.			
10	9	0	9	6	10	n	10	1	10	94	9	4*	7 feet	1	1	1	0*	0	0	44 feet.			
11							10	4	9	5*	9	9*	9 feet	.....	.....	.....	.....	.....	.....	43 feet	9 inches.	
12							10	3	12	0	0	0	12 feet	.....	.....	.....	.....	.....	.....	48 feet	9 inches.	
13							10	64	9	6*	8	44	12 feet	.....	.....	.....	.....	.....	.....	52 feet.		
14							10	3	12	0	0	0	6 feet	.....	.....	.....	.....	.....	.....	48 feet.	9 inches.	
15							9	64	9	6*	10	2i	7 feet	.....	.....	.....	.....	.....	.....	40 feet	11 inches.	
16							8	5	8	8	9	6*	7 feet	.....	.....	.....	.....	.....	.....	37 feet	11 inches.	
17							11	3	0	0	0	0	5 feet	.....	.....	.....	.....	.....	.....	15 feet	1 inch.	
18							12	6*	12	2	12	1	16 feet	.....	.....	.....	.....	.....	.....	144 feet.		
19							10	14	10	0	2	104	21 feet	.....	.....	.....	.....	.....	.....	131 feet	3 inches.	
20							8	4*	8	3*	8	3*	16 feet	.....	.....	.....	.....	.....	.....	86 feet	3 inches.	
21							8	9	8	8	8	4*	31 feet	.....	.....	.....	.....	.....	.....	112 feet.		
22							8	7	8	5i	8	3*	18 feet	.....	.....	.....	.....	.....	.....	78 feet.		
23							12	2*	12	0	12	11*	18 feet	0	6	0	4f	0	5*	99 feet.			
24							13	0	12	104	12	104	16 feet	0	2	0	2	0	3f	180 feet.			
25							10	2	10	0	9	11*	16 feet	0	0	0	6	0	6*	100 feet.			
26							9	4*	9	2	9	0	14 feet	0	4*	0	4f	0	4f	70 feet.			
27							9	6*	9	6*	9	14	15 feet	0	3*	0	34	0	2*	75 feet.			
28							9	5*	9	4	9	4	16 feet	0	24	0	24	0	3f	80 feet.			
29							11	8	11	11	11	4	14 feet	.....	.....	.....	.....	.....	.....	112 feet.		
30							10	uf	10	10*	10	10*	17 feet	.....	.....	.....	.....	.....	.....	120 feet.		
31							5	84	5	7*	5	5*	12 feet	.....	.....	.....	.....	.....	.....	21 feet.		
32							5	11*	5	6	5	0	13 feet	.....	.....	.....	.....	.....	.....	13 feet	9 inches.	
33							5	11	5	2*	5	3*	16 feet	.....	.....	.....	.....	.....	.....	28 feet.		
34	72	11	8	11*	8	11	7	5	11	5	5	5	64	8 feet	.....	.....	.....	.....	.....	.....	20 feet.	
35	72	12	10	12	7*	12	6*	5	8	5	5	5	3*	8 feet	.....	.....	.....	.....	.....	.....	60 feet.	
36	64	9	8	9	6	8	5	9	8	9	8	8	8	9 feet	.....	.....	.....	.....	.....	.....	42 feet.	
37	9	0	8	n	8	8	9	4*	9	2	9	0	14 feet	.....	.....	.....	.....	.....	.....	20 feet.		
38	9	0	9	n	8	8	9	6*	9	6*	9	14	15 feet	0	3*	0	34	0	2*	28 feet.			
39	9	n	9	1	8	114	9	5*	9	4	9	4	16 feet	0	24	0	24	0	3f	80 feet.			
40							11	8	11	11	11	4	14 feet	.....	.....	.....	.....	.....	.....	112 feet.		
41							10	uf	10	10*	10	10*	17 feet	.....	.....	.....	.....	.....	.....	120 feet.		
42							5	84	5	7*	5	5*	12 feet	.....	.....	.....	.....	.....	.....	21 feet.		
43							5	11*	5	6	5	0	13 feet	.....	.....	.....	.....	.....	.....	13 feet	9 inches.	
44							5	11	5	2*	5	3*	16 feet	.....	.....	.....	.....	.....	.....	28 feet.		
45							5	11	5	5	5	64	8 feet	.....	.....	.....	.....	.....	.....	20 feet.		
46							5	11	5	5	5	3*	8 feet	.....	.....	.....	.....	.....	.....	60 feet.		
47							8	8	8	8	8	8	9 feet	.....	.....	.....	.....	.....	.....	42 feet.		
48							7	7*	7	10	7	8	9 feet	.....	.....	.....	.....	.....	.....	30 feet.		



JAMES CLEGHORN, M. D.
 Assistant Surgeon, Bengal Medical Serpiet,

No. 21G1.

COPT forwarded to the Secretary to the Agricultural'..ajid Ho: tieultural Society for information.

V E/Drdei of the Licutcnaiit-Govrnor of Bengal,

S. C. BATLET,

Jiuwr Secretary to the Govi, of Bengal.

FORT WILLUH,

T Ae 19M January 1SC7.

3. D. H.

(6)

Report on the condition of the Royal Botanical Gardens, Calcutta, from 1st April 1867 to 1st March 1868.

The arrangement of the species cultivated in the garden was completed during the year by the planting of the plants of the natural order of Rubiacae, the only order which remained to be planted. The garden intended for the cultivation of annual and herbaceous plants, and for shrubs that were too small to be planted among the trees in the arboretum, was finished and planted during the rainy season of 1867. The species arranged according to the natural system, and each distinctly labelled. A group of trees intended for the support of large tropical climbing plants was formed on the land lying to the north of the ground occupied by the garden of the Agri-Horticultural Society. The number of large economic species cultivated in the Botanical Garden now exceeds 300. Before the Cyclone of 1864 several of the most beautiful of these plants were trained over some of the common species of trees in the garden, especially teak, sissou, and casnarina. Nearly all of them, along with the trees over which they spread, were blown down by the storm of October 1864. Considerable progress has been made in the formation of this group of climbing plants, as plants of all the species that were available have been planted at the base of the trees intended for their support. I have for the last three years devoted attention to increasing the number of palms cultivated in the garden, and especially of the species of Calamus (rattans) and its allied genera. Above 60 species of Calamus have been added to the number (1) contained in the catalogue of the plants of the Botanical Gardens, published in September 1864. Correspondents in Assam, the Rossis' hills, and Sylhet have sent me several of the species of rattan indigenous in those districts. The species from Sikkim, Chittagong, and the Amman island* were collected by myself and Messrs. Scott and Kurz, the Curators of the garden and of the herbarium. To my valued correspondents, Mr. Thwaites, Dr. Maingay, Civil Surgeon, Malacca, and Mr. Teijsman, I am indebted for the specimens peculiar to Ceylon, the Malayan Peninsula, Java, and the other Dutch possessions in the Malayau Archipelago.

A portion of the eastern part of the garden was cleared in 1860 for the cultivation of these rattans, and all seedlings which were large enough were planted there during the rains of 1867. This group of Calami is placed so as to form part of the palmatum planted by my predecessor Dr. Falconer.

The collection of orchids has been greatly increased by the receipt of collections from the Khasia hills and Sikkim. A small conservatory for the cultivation of ferns was completed before July 1867. In it a collection of Indian and Javan species has been brought together along with a few outland American and West Indian species, for which I am indebted to Dr. Hooker, Director of the Royal Gardens, Kew. The Indian and Javan ferns have been procured from the same districts and by the same agency as the rattans. The number of species of ferns now cultivated in the Botanical Gardens exceeds 250 species.

The Cyclone of 1st November 1867 inflicted great losses on the garden by the destruction of many fine trees. The Cyclone of 1864 destroyed so many trees of all species that after it a great number of unique specimens of rare species existed in the garden, many of which have been uprooted by the storm of last November. Thus although the number of trees destroyed by the Cyclone of last November is 751, while those blown down in October 1864 amounted to 1,010 trees, still the unique specimens destroyed in 1864 belonged to only 8 species; but in the storm of last November, 30 species of trees were lost by destruction of unique specimens.

Among the 751 trees blown down in the storm of last November, there were 24 full sized trees and a small tree of mahogany, 15 large trees of teak and 26 of sissou. Palms, as in the former Cyclone, suffered comparatively little damage, except in their foliage.

The rare and delicate plants cultivated in flower pots, and the seedlings of newly introduced plants, were injured by being buried under the ruins of the thatched houses in which they were cultivated. The labels attached to all of them were lost, and thus, those plants which were recovered, were without names and records of their origin. The gladiolus plant which escaped without damage, neither it nor any other plant in the conservatory received the slightest injury.

The floor of the herbarium room has been raised two rows of the building and placed under the beams. The building sustained during the Cyclone of 1864 a serious injury.

The surface drainage of the garden was improved by the cutting of two deep drains, and by building two new culverts under roads, and by opening out several new surface drains in places where water stagnated. The drainage of the ground west of the line of thatched conservatories was also promoted by connecting all the tanks in that part of the garden with the small khall which falls into the Hooghly, between the Superintendent's dwelling house and the principal ghat of the garden. The level of the sluice gate at this khall was also lowered about 1 8 inches.

Distribution of Plants.—Twenty-one wardian cases and 32 boxes of plants were distributed during the year. The greater of these cases of plants were given in exchange for plants contributed to the Botanical Gardens. These wardian cases have been distributed as follows:—

ADDRESSES.	Number of Wardian cases.	Number of Plants.
Agri-Horticultural Society, Madras	1	24
Messrs. Gillanders, Arbuthnot and Co., for England.. .. .	1	25
The Royal Gardens, Kew	3	117
The Royal Botanical Gardens, Mauritius	2	108
The Royal Botanical Gardens, Melbourne	3	67
The Royal Botanical Gardens, Ceylon	1	55
J. Virgoe Esq., Melbourne		29
R. Southby, Esq., Selim		10
Jardine des Plantes, Paris	1	39
Owner Ship <i>Radama</i> , Nantes	1	35
Captain Commell, London	1	31
—Jange, Esq., Sydney	1	49
Royal Botanical Gardens, Sydney	1	52
Botanical Gardens, Buitenzug, Java	3	222
Total	21	863

Besides these plants, 3,705 plants in 32 closed and open cases were distributed to correspondents in distant parts of India and to other Botanic Gardens; 3,337 plants were distributed in the neighbourhood of Calcutta. These plants were intended principally for planting near public buildings, and for avenues. The total number of plants distributed during the year amounts to 7,905. The numbers are as follows:—

Despatched in 21 wardian cases	863
Sent in 32 open and closed boxes	3,705
Distributed near Calcutta	3,337
Total	7,905

Valuable contributions of plants from other Botanical Institutions have been received during the year: 14 wardian cases and 17 closed boxes containing bulbs and orchids have been received during the year: these contained 1,731 species of plants.

The most valuable among these collections of plants have been received from Dr. Hooker, Director of the Royal Gardens, Kew; Dr. W. Miller, Director of the Botanical Gardens of Melbourne; Mr. Thwaites of the Botanical Gardens of Ceylon; Mr. Hill, Botanical Garden of Brisbane; Dr. Mellor, Director of the Royal Botanical Gardens, Mauritius; Mr. Teijsmann, Director of the Botanical Gardens of Buitenzug, Java; Dr. Maingay, Civil Surgeon of Malacca, and Dr. Hicklebrand of Hoimiuln.

Distribution of Seeds.—The Seed Department has been under the charge of an officer who gives all his time to the superintendence of the collection, clearing, storing, and distribution of the seeds produced in the Botanical Garden. Great benefit has resulted from the appointment of a distinct officer to the charge of this department of the garden, as is shown not only by the large increase in the amount realized from seed sold to the public, Rs. 831-11, against Rs. 380, the amount realized in 1866-67, but by the increase in the number of species received in exchange from other Botanical Gardens, and by the addition to the catalogue of seed-producing plants grown. A seed catalogue will also be published.

During the year 5,927 species of seeds were received and were sown in the garden; these many rare plants have been raised.

The ipecacuanha plant, whose successful introduction from Kew, where it was obtained by Snelson, was reported last year, continues to thrive, and the number of plants has been raised to nine by artificial propagation; all of these will yield cuttings during the rains of 1858. It is not probable that the plant can be grown in the open air in the plains of Java, as it requires shade and moisture. Thus a congenial climate for it may be found in the moist valleys of the Himalaya and the Khasia hills. I have sent one plant of the ipecacuanha to the cinchona plantations at Darjeeling where the attempt to cultivate the tin in the open air (will be made as soon as a sufficient quantity of cuttings has been obtained). The price of this most valuable drug in the London market is 100 shillings per ton, and the supply is very uncertain, as the plant is nowhere cultivated.

Tin: Herbarium.—The mounting of the specimens not yet incorporated in the herbarium was continued throughout the greater part of the year. The herbarium specimens of several monocotyledonous orders and of the *anacardiaceae* were returned from the herbarium of the Koyal Gardens, Kew, where I had been permitted by the Director Dr. Hooker to send them for identification. I am indebted to my predecessor, Dr. Thompson, for the identification of these *Anonaceae* and for superintending the examination of the monocotyledonous orders by Mr. Titchmarsh, the Assistant Curator of the Kew Herbarium.

Some very valuable additions have been made to the herbarium during the year. These consist specially of various extensive collections of plants most liberally presented by Dr. Hooker, Director of the Koyal Gardens, Kew. The presentations from Kew consist of Mathew's Peru Plants, Beldrich's Flora Attica, Hotian plant, Canariensis, Clausen's plants of Java, Lindley's Flora Texana Botteri, Mexican plants. A series of American plants from various collectors.

A set of American and African plants is from various collectors.

A bundle of Cape (of Good Hope) plants collected principally by Forbes.

A bundle of a set of Van Legumitostes, a small collection of Aden plants collected by Mr. Cleghorn.

A collection of Mexican plants collected by Sumichrast.

One bundle of diverse cryptogamic plants.

One bundle of interesting miscellaneous plants.

Professor Miquel of the Leyden University has presented a fine series of Japanese plants.

From Dr. Aitchison a collection of plants of the Punjab was received.

Dr. King presented collections of plants made near Agra and Ohoona.

From V. Lillie Esq., of the Geological Survey, plants collected in the Maunabo district.

From Dr. Stoliczka, a collection of Tibetan plants.

From Major Udden, Conservator of Forests, Madras Acanthaceae collected in Sijuth India.

From Mr. Kitta upwards of 300 specimens of rare plants collected in Bengal.

The Library.—The binding of the books in the Library was commenced in May 1867, and is still going on. Nearly one-third of the number of volumes requiring re-binding have been finished. The following additions to the Library have been made during the year:—

I Anderson, J.—Enumeration of Indian Acanthaceae. Presented by the Author.
 Udden, R. H.—Ferns of British India, Nos. 16, 17 and 18. Purchased.
 Lillie, T. and Hooker.—Genera Plantarum, Vol. 1, Part 3. Purchased.
 Bossier.—Flora orcutalis, Vol. I. Purchased.
 Braan, A. N. P. Ascherson.—Schweinfurthia et Anticharis. Presented by the Author.
 Dr. Candolle, Lois—Nomenclature botanique. Purchased.
 Exposition Internationale d'Arts et de Manufactures à St. Petersburg 1869. Presented by Dr. Egel.

Gorkham, van. Van.—Verslag omtrent de natuur van Java over het jaar 1866, presented by the Netherlands Indian Government.

Griseb., A.—(C. i. i.) us Plantarum Cubensium. Purchased.

Hance, J.—Adversaria in shapes in primis Asiae orientalis et auct. Presented by the Author.

Hegebarin, Dr. Zar.—Systematic von Callitriche von. Presented by the Author.

Hooker, J. D.—[C. Plantarum] Part I., now senes. Purchased.

Hooker, J. D.—Hand-book of the New Zealand Flora. Purchased.

Hornum, K.—Scitamineae. Purchased.

Jungkuh, IV.—Plantae Paw., I V Lugd Bat 1835. Presented by Sfc. Kurz.

Kurz, S.—Enumeratio of Liliaceae, from the Author.

Morrison, Horace.—Enumeration of Hawaiian Plants. Presented by Dr. Hillebrand.

—Ann. Mus. Bot. Batavia, fasc. 2 and 3, Vol. 5, Nos. 1 to 3 inclusive.

- c
 Miquel.—Prolusio Florae Japoniceae, Nos. 2-4, fasc. 5, 6, 7, 8. Purchased.
 Mueller.—Fragmenta Phytographiae Australiae, from the Author.
 Planta Jinn4'nae.—Presented by the Author.
 Schreffer.—M/Tsinaceae Archipelagi Indici. Purchased.
 Seeman, J.—Mora Vitiensis, Part 6. Purchased.
 Stewart.—Forest Conservancy in the Punjab. Presented by the Author.
 Weddell.—Monographic des Urticees. Purchased. drains,
 Wendland. H.—Über die systemat. Liuthie, lung des Palmen. Presented. drains
 Wilkonun, M.—Icones Plantarium Europae Austr, occid et Hispanica, fasc, No. iatched
 Purchased. garden
 Proceedings of the Asiatic Society of Bengal, No. 5, for May 1867. ' celling
 Proceedings of the Linnaean Society, No. 39. Purchased. U was
 Annals and Magazines of Natural History, Nos. 108 to 120 inclusive. Purchased.
 Annales d' Sciences Naturelles, April 1867 to March 1868 inclusive. Purchased. " ~
 Botanical Magazine, Nos. 265 to 277 inclusive. Purchased.
 Botanische Zeitang for 1866, N^s. 47 to 52 inclusive, and from 1st April 1867 to 31st
 March 1868, Nos. 1 to 51 inclusive. Purchased.
 Flore des serres Livre, 175 to 184 inclusive. Presented.
 Journals of Linnean Society, Nos. 36 to 41 inclusive, Vol. 9. Purchased.
 Journal, Quarterly, of Microscopical Science, new series, Nos. 24 to 299, inclusive.
 Journal of Botany, Seeman's, Nos. 48 to 60 inclusive. Purchased.
 Linnean, Vol. 35. Purchased.

T. ANDERSON,

Superintendent of Botanical Gardens.

W. K. K. ESQ., U. A., Officiating Superintendent of Botanical Garden, to the Secretary of the Government of Bengal,—(No. 25, dated Botanical Garden, the 7th May 1869.)

SIR,

I BEG leave to submit the report on the condition & the Eoyal Lien, Calcutta, from 1st April 1868 to 31st March 1869.

1. I took charge of the garden yesterday only, and the material for the present report has been wholly furnished to me by Mr. Scott, the Curator of the garden.

2. The arrangement of the species cultivated in the garden according to orders having been completed, improvement has been made in the general management of the garden, in cutting the grass and in clearing and leveling the boundary lands. The area under cultivation has within the last three years been nearly doubled. An extra number of men have been employed, and an increased allowance of Rupees* 250 per month for the future has been sanctioned.

3. Several of the tanks in and near the Palmehim have been deepened, and the soil excavated has been employed to raise the level of ground formerly inundated during the rains. Along the northern boundary of the Palmetum an ornamental fence of bambusa spinosa has been planted.

4. The collection of palms has been increased. Many specimens having grown sufficiently large have been planted out in their permanent sites in the Palmetum. The Pandani, which are adjoining, have also been increased by many new species sent by Mr. T. H. J. van der Burgh, to whom also the garden is indebted for the Javan bambusce which have been lately planted in the Pandani.

5. The extent of ground required for the illustration of the species in the garden is now able to be estimated, Dr. Anderson has designed to plant east of the arborescent endogens an arboretum of the prairie trees of economic value, with a view to facilitate their study by the Department for the conservancy of Forests.

6. In the month of October last the river broke in upon the western part of the garden to a considerable extent of ground lay under water for several days, and the outlet for the water; and the smaller trees and shrubs were injured. These have been in most cases replaced from the nursery. It is most necessary that a recurrence of such inundations should be prevented by the early construction of a canal and sluice-gate as recommended by Dr. Anderson.

7. The plantain avenue originally planted in 1866, between the principal garden and Kyd's monument, but completely destroyed by the Cyclone of 1867, has been re-planted. These plants while young suffer much from the sun, and are now being successfully raised under the protection of a trellis-work over which Jacquemontia violacea twines,

8. The Malabar glass conservatory erected in 1867 has proved most useful for the cultivation of tropical and delicate ferns. The more hardy and rigid species and orchids have been found to thrive under shady bamboo trellis-work, in which the pepper is generally used for the cultivation of these pan-gardens, 80 feet long by 60 feet broad, has been specially devoted to the increasing collection of orchids. Dr. Hooker has sent some South American and Mr. Teijmanu some Javan species, but the principal additions have been of Indian species. Many have been obtained from the Khasya and Assam; several rare and probably some new species were collected by Dr. J. Anderson on his Yunan expedition, including some contributed by Mr. Miissioer of Donabew, Upper Bunnah; Mr. Thwaites has sent some from Ceylon; S. Jennings, Esq., Allahabad, has sent some Manilla species; and Dr. H. H. Ingham and C. Macleod, Esq., Registrar, Foreign Department, have sent various Malacca species.

10. Similar pan-gardens have been found to suit several tribes of plants which may now be seen thriving luxuriantly, whereas before they could be kept bare alive with difficulty or not alive at all: one pan-garden with verdant acanthaceae, another with aroidae scitamineae and inarantaceae. The capacity of the garden for growing a number of species of plants has been widely extended by discovery of the efficacy of these pan-gardens.

11. One of the heavily thatched conservatories erected formerly by the Public Works Department has been altered (with the approval of the Executive Engineer) to the pan-garden model. The roof was replaced by the bamboo trellis and the sides were surrounded by similar trellis work. In this house are now thriving tree-ferns brought from Sikkim by Dr. Anderson and Mr. Scott or some few sent from the Khasiya Hills by Mr. Biermann in charge of the Government cinchona nursery there.

12. Some petty repairs have been done to the Superintendent's house and the coolies' lines and other thatched buildings blown down by the storm of November 1867 have been re-erected, Government having sanctioned a separate grant for the work. The repairs of the garden roads and walks damaged by the two cyclones have been continued during the year by the garden establishment, but much yet remains to be done to restore all to their previous condition. A short road has been opened out at the north-eastern gate to the Howrah road with the garden roads. The repair of the bridges commenced by the Public Works Department.

13. The drainage of the garden, occupied by the numerous related orders (hitherto most defective) has been greatly improved by the construction of two large drains outfalling into the eastern nullah. The drainage of the western part of the garden has been improved by deepening the surface drains.

14. During the year 15 wardian cases and 47 boxes containing 2,409 plants have been distributed as under.

	Wardian Cases.	Boxes.	Number of Plants.
Royal Gardens, Kew	3	9	147
H. Be'erley, ESQ.	...	1	6
Superintendent, Botanical Gardens Calcutta, for , Darjeeling	..	3	82
Colonel Haughton	...	3	85
W. S. Halsey, ESQ., C. S., Cawnpore	...	3	253
Dr. B. White, Civil Surgeon, Debrooghur	##	1	50
H. Pemberton, ESQ., Deputy Commissioner, Sandoway	...	1	36
The Magistrate of Purueah	...	1	17
H. L. Haughton, ESQ, Assam	..	2	32
Brigadier-General Bouchier, c. B., Dinapore	...	1	20
Captain Tronsen, Peninsular and Oriental Company's Agent, Malta	..	1	14
Superintendent of Port Blair	...	9	6
Ditto, Central Prison, Allahabad	...	4	593
W. Virgoe, ESQ., Melbourne	...	1	141
Secretary, Agri-Horticultural Society, Lahore	...	1	31
The Botanical Gardens, Saharunpore	...	2	12
Dr. J. B. King, Port Blair	...	9	719
A. Somerville, ESQ.	..	1	68
The Hon'ble Rajah Sheoraj Singh, c. s. i.	...	2	33
	...	2	29
Total	15	47	2,409

15. To the public near Calcutta were distributed 4,504 plants in pots, as against 3,337 in the preceding year. Thus the total number of plants distributed during the year has been 6,973.

16. There were received at the garden (principally by way of exchange from other Botanic Gardens) during the year, 9 wardian cases and 55 boxes, containing 3,022 plants as under.

	Wardian Cases.	Boxes.	Number of plants.
Botanic Garden, Java	...	1	56
Cinchona Nursery, Khasiya Hills	...	13	512
C. Macleod, ESQ.	2	...	275
Botanic Garden, Ceylon	2	1	109
Messrs. Peter Lawson and Sons, Edinburgh	1	...	115
W. Virgoe, Esquire, Melbourne	1	**	28
Eoyal Gardens, KPw	1	3	36
Dr. Mueller, Botanic Garden, Melbourne	1	1	41
Cinchona Nursery Darjeeling	...	7	233
Mr. Kurz from Burmah	...	1	141
G. Mann, Esquire, Sikkim	...	1	10
Dacca	...	...	8
Superintendent, Botanical Garden, Calcutta, from Pankabaree	...	1	75
Curator ditto from Sikkim	1	23	1,171
Dr. J. Anderson from Burmah	...	1	43
G. Bartlett, ESQ., from Simla	...	1	21
S. Jennings, ESQ.	...	...	30
W. M. Bourke, ESQ., from Assam	1	1	40
Botanic Garden, Mauritius	1	...	23
Total	9	55	3,022

17. During the year 4,154 packets of seeds realising Rupees 758-7-6 have been sold to the public; besides 3,931 packets have been supplied to Public Officers. A new catalogue of seeds available for sale has been published. During the year 4,597 species of seed were received and sown in the garden and a fair proportion have germinated.

18.* The ipecacuanha plant is one of those species containing two dimorphic hermaphrodite forms. Its culture was commenced in the garden with a single plant of the short styled form: it consequently produces no seeds though it flowers plentifully. The plant is a slow growing one and its multiplication by cuttings alone has been very tedious; there are in the garden now nine plants only of it, and it has unfortunately been impossible for this garden to supply stock to the Saharunpore Garden when called upon to do so. Dr. Anderson at present in Europe will make every effort to transmit additional plants to this garden, and should a long-styled plant once be got to flower here we may hope for seed.

19. The Curator of the Museum returned from deputation to Burmah in June 1865, and resumed the mounting of the unincorporated specimens belonging to the Museum. All the glued-down specimens are now, with few exceptions, arranged in their natural orders and preserved in teak wood cabinets.

20. A valuable collection of plants made by Dr. J. Anderson on his Yunan expedition has been presented by him to the Museum, and other interesting additions as under have been made to it.

1.—A miscellaneous collection, in 13 bundles, presented by A. Grote, ESQ.

2. *The* collections during the Yunan expedition in about 70 bundles, presented by Dr. J. Anderson.
- 3.—Burmese plants, about 2,000 species collected by Mr. S. Kurz. I
- 4.—A collection of chiefly Siberian and Japan plants, in 11 large bundles, presented by Professor **Regel**, St. Petersburg.
- 5.—Ceylon Ferns, collected by Mr. Breckett, presented by the Curator.
- 6.—English plants, in 2 bundles, from Mr. Charles **Bailey**.
- 7.—**Australian** plants, in one bundle, presented by*Dr. F. Mueller, Melbourne.
- 8.—A bundle of interesting Cape plants presented by Lieutenant: Colonel **Lowther**.
- 9.—Some European plants presented by Dr. J. Anderson.
- 10.—A bundle of interesting and rare Ceylon plants presented by Mr. Thwaites, Paradenia.
- 11.—A few rare Bengal Ferns presented by Mr. J. Scott.
21. The binding of the Library has been continued during the year, and the following additions have been made to it.

- P** Beddome, Ferns of British Indk, Nos. 18 to 20 inclusive.
- B. Seemann, Flora Vitiensis, ffurts 7 to 9 inclusive.
- J. Hooter, Icones plantarum, Series 3, Parts 1-2.
- "Walpers* Annales Botanicis, Vol. VII, fasc 1-2.
- Dozy and Malckenboer, Bryologia Javanica, Vol. I complete, and Vol. II, Nos. 1 to 60 inclusive.
- Miguel, F. W., Prolusio Florae Japonicae.
- Koch, Synopsis Florae Germanicae et Helveticae.
- Krempelhuber, A. V., Geschichte und Litteratur der Liehenologie, Vol. I.
- Kuhn, M., Filices Africanas.
- Maximowicz, C. T., Icones Hydrangearum Asiae orientalis.
- Kunze, Analoga Pteridographiae.
- Bentham, Flora Australiensis, Vols. II. and III.
- Du Petit, Thouars, Histoire particulière des plantes orchidées.
- Bentham, Illustrated Handbook of British Flora (2 vols.).
- Exposition Internationale du St. Petersburg 1868, presented by Professor Regel.
- Herder, F. V., Mittheilungen über die periodische Entwicklung der Pflanzen in freien Lande des Botanische Gartens in St. Petersburg, presented by Professor Regel.
- Mélanges Biologiques, Nos. 1, 2, 3 and 5, presented by Professor Regel.
- Regel, E., Botanische Abtheilung von Ostsibirien, Band I, Heft 2, presented by the Author.
- Mittheilungen des Russischen Gartenbau, Vorträge zu St. Petersburg, Heft 1 and 2, presented by Professor **Regel**.
- Herder, F. W., Die Monopetalca Ost-Sibirien, presented by Professor Regel.
- Regel, E.» Enumeratio plantarum in regionibus cis et transilientibus a cl. Senictonia, Anno 1851, collectarum, presented by the Author.
- Endlicher, Synopsis Coniferarum.
- Pritzl, Icones Botanicæ.
- F. Mueller, Fragmenta Phytographicae Australia, Nos. 46 and 47, of Tolume X.
- Martens, G. V.; Die Tange der **Preussische Expedition nach Ostasien**. Journal of Travels. Specimen number by the Publisher.
- A. **Gray**, Manual of **Botany of the North United States**.
- and **Lindsay**, contributions to new Zealand Botany.
- Miquel, F. W., Analoga Botanica Indica, Illustrationes Piperacearum.

erson, N. I., **Monographia** Salic um.
 reinfurth, **Beitrag** Zur Flora Atluopiens.
 il(e, J., Filiees Europe et Atlandis.
 h, nann, eh., Ilevisio PotentUlarum.
 at et Decaisne, Traite general do Botanique *
 Mioi-1,1' "• ^v-> **Monographia Cyeadearum.**
 jEun le, Farnkraeuter (2 volumes).
 Jacq lemont, Voyage dans l' Inde (8 volumes).
 Ga ichaud, Voyage autour du monde (5 volui les ^
 Sal tu -Dyck, aroc.
 Marti us; V., Tlora Brasiliensis Fase I to XXI.
 Web > and Bertbelot, Histoire natural le des ile W Canarie9 (7 volumes).
 Korthals, Verhandelingen der natuvur kundige 0ominissiC) vollime I.
 WillkommJ, Prodrornus Florae Hispaniire, volun g n, pars altera.
 Plants^ Junghuhnianoe, Fasc I to IV.
 DeCandolle, Prodrornus, volume XVI.
 Paxt,iii, Botanical Dictionary.
 Sa iect papers of the Agri-Horticultural So:i>t
 • presented by the Government of General y of the Punjab 1868,
 Se llections from the record of the Government of Nooth West Provinces
 1868, part I., presented by the Gove:
 Fries, 1^, Systema llycologicum (3 voli
 Elencr ma i'sfigorum (2 volumes).
 Blunae. CnJlectionldes orchides dc 1' Arc
 Salm-kt;iffei-scheitj^yck, Monograph o
 "Watson, F., Index renames of Eastern
 Powell, B^ Punjab products, volume il
 India.
 Berkelev, Outlines of British Fungolo^y.
 Birdwo&d, Vegetable products of Bombay Presidency presented by the
 Government,

Periodicals,

Transactions of the Linncean Society, volume XXVI, **Parts** 1-2.
 Proceedings of the Linncean Society*Zoology, volume IX, No. 39.
 Botany, Kos. 42 to il.
 Quarterly Journal of Microscopial Science and Transactions, Nos. 31 \<>:}:/.
 The Annuls and Mxigaziut; of Natural **History**, volume I., Nos. •! to 6;
 volume II and volume III, No. 3-
 Botanical Jlagazinc, Nos. 278 to 289.
 Seennnn. Journal of Botany, >"as. Gl to 73.
 Journal oi'the Asiatic Society of Bengal 1S(3S, No. 46.
 Annales des scierrcs naturelles, Botany Vscr, volume VII, Apl. and **Mai**
 and volume IX, Nos. 1 and 2.
 Jlotarasche Z.HtunirlSti", No. fj^ ; and 1803 Nos. 1 to 52 (except No. 49).
 LlimsRa volume XXXI, parts 3 to 6.
 Miqud. annales musei Lugd, Batav, volume III, Nos. 8 to 9.
 Flora, the whole series **from 1818** to 1S(57 inclusive; and 1868 Nos. 1
 to ::2.
 Bulletin d; 1' Acad Imp des sciences naturelles de St. Petersburg,
 volumes I. to XII, and volume XIII, Nos. 1 to 3.

568, Nos. 33 and 34, 1866, Nos.
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From C. B. GLATIKK, ESQ., M.A., Officiating Superintendent, Botanical Garden, to the Secretary
to the Government of Bengal,—(No. 21S, dated Botanical Gardens, the 28th April 1870.)
SIR,

IN reply to your takeed No. 1149 of 22nd April 3 870, I beg leave
to forward **I herewith** the annual report of the Botanical Garden.
This report was written a fortnight ago, but I delayed it in hopes of being
able to complete the financial seed account of the year. In this, it will be
seen from section 14 of the report, I have been disappointed.

From C. B. CLARKE, ESQ., M.A., Officiating¹ Superintendent, Botanical Gardens, to the Secretary
to the Government of Bengal,—(No. £17, dated Botanical Gardens, the 20th April
1870.)

I BE« leave to submifc the report of the Calcutta Botanical Gardens from 1st
April 1869 to 31st March 1870.

2. From 1st April 1869 to 24th May 1869, Mr. W. S. Atkinson was officiating superin-
tendent of this garden;ly. I received charge from him on 25th May 1860. Since 1st August 1869,
my attention has been almost entirely occupied by the cinchona cultivation and manufacture,
I regret this the less that the entire re-planting- of the natural orders with trees and large
shrubs subsequent to the devastation caused by the great cyclone, had been nearly completed
by Dr. Anderson before he left for England in February 1869, so that in this department of
the garden it will probably be advisable not to attempt much before the trees planted have
got up a little.

3. In these arborescent natural orders several hundred young trees have been planted
out during the year, either by way of replacing dead specimens or adding species which were
not available at the general re-planting of Dr. T. Anderson. The ground formerly occupied
by the Agricultural and Horticultural Society was given up by the society at the close of the
financial year 1868-69, and the natural orders destined to occupy this ground (*viz*, *Sapin-
dacea*—*Sabiaceae* and *Anacardiaceae*.) were immediately planted out thereon by my prede-
cessor.

4. The garden being now exposed fully to the south wind which, blows across the river,
even the hardy noli^enus trees, such as *Terminalia* Cituippa*, are very reluctant to start when
first planted out in the open, and many of the young plants of exotic species which grow into
large trees in their natural habitats, show an inclination to degenerate into stubborn small
shrubs. I have planted during the year large quantities of casuarina (which grows up very
quickly in the most exposed situations) to afford shelter to the young trees. These casuarinas
may of course be largely cut down as soon as they have performed their duty as nurses.

5. The collection of annual and herbaceous plants which is arranged into natural orders
and which corresponds to the principal portion of European botanical gardens has been increased
by nearly two thirds. This herbaceous garden is really available for botanic study, and supplies
specimens for the pupils of the Calcutta Medical College.

6. Several new species of palms have been obtained from the Buitenzorg botanical garden,
and several new species at Surua, principally from Buitenzorg and Kew,

7. The new large collection of orchids has been increased by some new species received
from Kew, but the principal increase has been effected by specimens obtained from the gardeners in charge or the Govern-
ment cinchona plantation in Sikkim and the Khaei HUIB. The curator of the garden
continues with increased success the cultivation and flowering of these in the bamboo-trellised
houses constructed to alter the phen of Bengalee pan gardens.

8. The rain and sun of Bengal have been favourable on the name labels attached to plants, and from this cause it is possible to keep more than a limited number of the plants in the shed. The plan of stamping the names on the metal bases has been commenced.

9. The larger old trees stand mostly isolated, and a storm of more damage than was formerly done by a typhoon. On the boat the only specimen of *Aterogyne Coriavea* that survived the typhoon and interesting species of *Syzygium* brought from Parasnath by D. P. T. A. *Grevillea robusta* just arriving at a seed-bearing state, and many young trees lately planted out were torn up in large numbers. They were almost entirely thrown down. These young trees were all set out, but they have been seriously checked, and in some cases permanently spoiled. The sides and doors of the fernery were blown down, and the fernery was tripped from the ferns. The garden also lost full half of the stock of young trees intended for distribution to the public, by the destruction of the stages on which the pots for layers were placed.

10. The damage done by this storm was nevertheless mainly of a temporary nature. When Dr. T. Anderson's design shall have been completed, solid masses as Wallich's time, I doubt typhoons.

11. Subjoined is the abstract of plants received here from 1st April 1879 to 31st March 1870.

	Wardian cases.	Boxes.	Number of plants.
Messrs. J. Veitch and Son, Chelsea, London	...	2	30
Bijlsfijl Garden, Java	8	332
W. H. Boissier, Esq., Calcutta	...	1	37
C. Macleod, Esq., Foreign Department	10
W. Virgoe, Esq., Melbourne	...	1	33
Messrs. George Wall and Co., Colombo	...	5	1,179
„ T. Linnér and Co., Ballarat	280
Dr. J. B. King, Port Blair	...	44	520
The Gardens, Barruokpore Park	2
Baboo Jeebon Kiseen Paul, Chinsurah	28
Agricultural and Horticultural Gardens, Madras	...	8	43
Botanic Garden, Bangalore	...	2	49
The Cinchona plantations, Khasi Hills	517
Dr. Jerdon, Shillong	...	5	45
(i. Bartlett, Esq., Calcutta)	31
W. S. Atkinson, Esq., from Darjeeling	...	1	12
•Officiating Superintendent, Botanical garden, Calcutta, from Darjeeling	...	1	114
Mr. Deer, ship <i>Newcatt</i>	...	1	12
The Royal Gardens, Kew	...	4	169
C. Laurie, Esq., Calcutta...	3
The Cinchona plantations, Darjeeling	...	1	87
M. Henri de Poli, des Messageries Impériales	...	2	45
J. H. Gilbert, Esq., Moulmein	...	1	54
Total	27	75	3,632

The contributions sent by Dr. J. B. King from Port Blair are large in quantity and in value. From the cinchona plantations, and from Dr. Jerdon, large quantities of Bengal hill-ferns have been sent in dry boxes. I regret to say that hardly one of them has resuscitated at Calcutta, and that I fear the only chance of getting these ferns to Calcutta is by the employment of Wardian cases.

•SG8, Nos. 33 and 34, ISGfi, Nos. 1 to 25.

an de l'Acad. Imp. des sciences naturelles de St. Petersburg, vol. XIV, Nos. 4 and 5, vol. XIV, Nos. 1 and 2.

From the Journal of Travel and Natural History, vol. 1, Nos. 2 to 6.

The nucleus of the economic museum collected by Dr. T. Anderson consists of specimens of wood and of economic products in bottles. The paper labels on both these were found by the white ants, and the whole collection has been now labelled with stamped metal.

The museum is generally in good condition, but is not safe, the building being open to an extraordinary degree by white ants. Moreover, any book left outside a closed case is liable to be eaten by rats. The curator takes every precaution to protect the herbarium and library; but though much additional labor is expended by the establishment, the curator has told me that neither the plants nor books can be considered safe from day to day. The fear is much increased by the dampness of the very insufficient museum building; but I do not think whether in any house in Calcutta, piles of dried plants, too large to be daily overhauled, and of which the arrangement must not be altered, would be secure in any building. The library is divided, and the larger portion is kept in the superintendent's house, where it is comparatively safe. However excellent a library building was provided, I believe a large part of the library would always be out of the building.

Cotton.

23. On taking charge of the garden, I found in it a very good collection of cotton plants, i.e., single specimens of many varieties cultivated after the manner of botanic gardens. The curator called my attention to the excellence of the quality of some of these, as of the Sea Island, but more especially of two of Major Trevor Clark's seedlings, and also to the great luxuriance with which these plants grew in Bengal without any particular care in the cultivation.

24. Native cottons are still cultivated in many districts in Bengal as a profitable crop, though the produce is worth but 3d. a lb. The principal cultivation now is carried on in the lower valleys of the hill and in the jungle, as in the Darjeeling Terai, the terai south of the Garo Hills, and in the low hills of Chittagong and Comilla. In such places the culture is of a very rough description, and the rent paid for the land is exceedingly small. For the higher class cottons I should prefer the alluvial soil of the delta, for which a considerable rent would have to be paid; yet I believe there is an excellent probability that such cottons as Major Trevor Clark's seedlings would prove remunerative in Bengal; one of these has been valued at 2s. per lb. in the Calcutta Chamber of Commerce, and there does not appear to be any greater difficulty in growing it than in growing any ordinary cotton. It is true that there have been many failures in the attempts to grow cotton profitably in Bengal; there were many difficulties and many disappointments in the early attempts to cultivate cinchona. When the same machinery and the same energy which succeeded in discovering how to grow cinchona shall have failed in discovering how to grow cotton, I shall still think the impossibility of growing it unproved.

25. I have this year, of Major Trevor Clark's seedlings, No. I. and No. II., fifty plants and five plants respectively, and I should add that the quality of the cotton of No. I. this year appears extremely inferior to that which it produced last year. These hybrid fancy cottons were obtained, I believe, by Major Trevor Clark by complex hybridization, and it is possible, I think, that we may not be able to produce them true from seed; but as regards the particular case of this No. I., it must be remarked that the seed was collected last year from a single plant which stood in the midst of numerous other varieties, so that it was doubtless cross-fertilized by many other kinds.

20. The only plan for giving these high class cottons, especially the hybrids, a fair chance of getting established, is to occupy far more ground with them than can be assigned to them in a botanic garden, and to cultivate each particular sort in a patch at a considerable distance from other sorts. I have lately despatched to H. Rivett Carnac, Esq., seed of Major Trevor Clark's No. II, for trial on the seed farms which he has established. I should expect the Sea Island class of cottons to thrive, however, far better in Bengal than on the high land of central India.

27. "Whether any of these fancy hybrids can be established in Bengal or no, the well-known Sea Island flourishes in Bengal, reproduces itself truly, and I think ought to be considered very profitable. I am very anxious to try a few acres of this cotton, of Egyptian, and of other kinds, but I have as yet failed in hiring land near enough to the garden to admit of a close inspection.

Ipecacuanha.

The plants of ipecacuanha in this garden are in almost exactly the same condition as they were a year ago. They have been moved into every variety of situation, and the best management of them, but they remain unhealthy - little shrubs, three to four inches high, with no growth upon them.

The plants of ipecacuanha sent to the cinchona plantations near Darjeeling have been very benefited. The stock has been increased to twelve plants, of which five are planted

altogether out of pots. The two larger plants are six inches high, and one about to produce bloom. The growth for the year is excessively small, but the growth was spoilt by taking them to the hills in the autumn, where they are kept at Calcutta. The elevation at which they are kept is from 200 to 3,510 feet; one out at 5,000 feet died, it is presumed from the cold.

30. The opinion both of the head gardener at Darjeeling and of the curator, garden is, that ipecacuanha is a plant which will not endure severe cutting, and that of successfully growing it on any large scale must be by seed. As explained in annual report, there is little chance of the plant setting seed while we have plants of its two dimorphous types.

Dr. Anderson has collected diligently plants from various European gardens, and brought out with himself forty or fifty photos: he has succeeded, moreover, in getting but long-styled and short-styled forms.

Tobacco.

31. I owe to the kindness of Dr. J. D. Hooker some seed of the finest sort of Lafc and Havanna tobacco; this has produced nourishing patches of plants, the seed from which is promised to H. Hivet Carnae, Esq. The garden possesses also Malabar and Virginian tobaccos in addition to many sorts botanically curious.

Sheea.

32. His Excellency the Viceroy having directed public attention to the cultivation of sheea, the curator of the garden has propagated by cuttings (the garden plants do not here produce seed) the specimen plants and has been able during the year to supply various public officers and private individuals desirous to experiment therewith. The curator has now 1,000 plants available for distribution.

33. In botanical works the modern name for sheea is *Bmimea nica*, and Roxburgh's old name of *Urtica tenuissima* is to be exactly synonymized with *H&T* to indicate a very trifling variety. The Secretary of State for India has lately forwarded to the Government a printed extract from the *France da Nerd of the 29th December 1817*, which states that in America the cultivation of *Urtica utilis* or *Urtica tenrecitrii* has been taken up, and that this species has been found to be superior to *Bmimea nica* in that its fibre can be worked up with perfect facility. In the absence of all specimens, I can only remark on this that it is quite possible that the fibre of one variety may be very different to that of another, as is the case in cotton, though the varieties may be considered by botanists as one plant.

But as regard the plants issued from this garden as sheea, they are produced by entire cuttings from Roxburgh's own *Urtica tenuissima*, and if the American plant has any superiority to our sheea, it can only be because it is not exactly the *Urtica tenrecitrii* of Roxburgh.

Salt-Water Lake Cultivation.

34. In December 1819, the experimental cultivation of a drained portion of the Salt Water lakes was entrusted to the Botanic Garden. As yet the curator has tried there only Bugar-eine and guinea grass, which have died straight after the same stock similarly cultivated in the Botanic garden thriving; and nearly dead plants taken up from the Salt Lake and recovering immediately on being brought back to the garden. The natives say that in drained portions of the Soondexbuns no crop will grow till two or three rainy seasons have washed U salt out of the soil. I intend to make a direct experiment on the amount of salt now present. It is possible that the land might grow the king coconut.

Fruit Tree*.

35. During the year I have obtained eighteen varieties of the most esteemed mango from Malda, three improved kinds of litchi (one almost stoneless)—and Dr. T. Anderson forwarded some of the best sorts of pine-apple cultivated in English hothouses. The thoughtful European does not fail to notice the apathy with which the Bengalee continued cultivate inferior kinds of fruit, as if the quality of each produce was that which God is pleased to give it. Only strangers to Bengal will raise the objection that market-Mudem* is not the duty of a Botanic Garden, and that for Government to embark in it is unjust interference with private enterprise.

Public Works.

36. In the course of the year the Public Works Department has executed driving to strengthen the river bank and to protect the superintendent's house. The superintendent's house has been whitewashed and some beams replaced &c. The difficulty has been made water-tight. No repairs have been attempted to the curator's house, which has been officially reported as capable of repair and uninhabitable, and it is to be that on financial grounds, Government should be driven to compel an officer to live where his health has already suffered much, and which last till months ago.

From C. B. CLARKE, ESQ., M.A., Officiating Superintendent of the Botanical Gardens, Calcutta, to the Officiating Secretary to the Government of Bengal, General Department,— (No. 373, dated Botanical Garden, Calcutta, the 25th April 1871.)

SIR,

I BEG leave to submit the report of the Calcutta Botanic Garden from 1st April 1870 to 31st March 1871.

2. The greater portion of the area of the garden is occupied by the trees and large shrubs placed out in natural orders. These are in general young plants. In pursuance of the plan commenced during the preceding year, some 10,000 quick-growing trees have been planted to serve as nurses among these natural orders.

3. The naming of the trees and shrubs by means of stamped metal labels has been commenced. A printed catalogue of the labels which had been placed *kojut* on 31st March 1871 is preparing. This will be a rough catalogue of the plants in the garden, and may serve as a seed catalogue to some extent. It is proposed to issue it annually, so that it will become a good catalogue of the trees and large shrubs; but it will not comprise the herbaceous plants or any of the plants grown in houses.

4. The collection of palms has been increased by presents from the Botanic Gardens at Buitenzorg and Kew. The collections of orchids and ferns have been considerably increased by Sikkim species sent down from the cinchona plantations.

5. A small forcing pit is in course of construction which will be of great use in inducing plants received from a distance to start.

6. Subjoined is the abstract of plants received here from 1st April 1870 to 31st March 1871.

From whom received.	No. of open and closed boxes.	Wardian cases.	No. of plants.
W. Mowbray, Esq. ... ..	.....	.....	1
Mons. H. de Poli ... ..	.....	.....	1
C. Macleod, Esq., Registrar, Foreign Department	1	.....	54
J. M. Thompson, Esq. ... ..	.....	.....	1
J. A. Crawford, Esq., c.S. ... ..	.....	.....	12
G. Bartlett, Esq. ... ..	.....	.....	12
S. Kurz, Esq., Burmah ... ..	.....	.....	13
J. H. Gilbert, Esq., Moulmein... ..	2	.....	88
The Superintendent of the Botanic Gardens, Calcutta, from Madras... ..	2	.....	27
W. Bull, Esq., London	1	.....	28
The Botanic Gardens, Ceylon	1	.....	10
A. Biermann, Esq., Khassi Hills	6	.....	200
Messrs. P. Law and Sons, Edinburgh ... ..	.....	" 2	49
W. R. Virgoe, Esq., Brighton, Victoria ... ..	.....	1	60
The Botanic Gardens, Melbourne ... ..	.....	1	28
Messrs. Haage and Schmidt, Erfurt ... ..	.....	.....	250
The Botanic Gardens, Trinidad ... ..	.....	2	160
Ditto ditto Sydney ... ..	.....	1	38
The Government Cinchona Plantations, Sikkim	11	.....	400
G. Mann, Esq., Assistant Conservator of Forests, Debrooghur	1	.....	63
The Royal Gardens, Kew, London	1	2	112
Total	27	9	1,607

7. The following is the abstract of plants distributed hence in cases and boxes from 1st April 1870 to 31st March 1871 :—

To whom supplied.	No. of open and closed boxes.	Wardian cases.	No. of plants.
Commander of "Persian Empire" ... ..	.....	1	25
G. B. Lewis, Esq. ... ..	.....	1	43
J. Smith, Esq. ... ..	.....	.....	150
H. Pearsall, Esq.	i	" i i i	50
Government Cinchona Plantations, Sikkim ... ..	.....	I	50
Lady Napier, Madras ... ..	.....	I	54
Mons. H. de Poli ... ..	.....	I	30
J. H. Gilbert, Esq., Moulmein	" i i	i	45
F. de Koepstorff, Esq., Forest officer, Moulmein ... ..	.....	.....	12
Bertelsen, Esq., Shookna, Siligoree	I	" I	40
F. Prestage, Esq., Agent, E. B. Railway	17	.....	1,500
Managing Director, Beerbhoom Coal Company, Limited	16	.....	400
J. A. Crawford, Esq., c.s.	2	" T	93
Messrs. McInosh and Kennedy	1	.....	100
Carried over	44	8	2,592

To whom supplied.	No. of open and closed boxes.	W a ^ n c a s e ,	No. of plants.
Brought forward ...	44	8	2,592
Assistant Engineer, Barraekpore Division ...	1	.....	100
S. Jennings, Esq., Assistant Accountant-General, Allahabad ...	1	.....	11
Secretary A gri-Horticultural Society, India ...	.....	1*	35
Superintendent of Port Blair ...	.....	1	36
C. S. Noble, Esq., Assistant Settlement Officer, Fyzabad, Oudh ...	6	.....	287
G. Kellner, Esq. ...	1	.....	60
H. S. Wight, Esq., Putterghutta, Siligoree ...	1	.....	50
Messrs. H. F. Wilson and Company, Serajgunge ...	2	.....	100
Dr. Berry, Dublin ...	.....	1	28
His Majesty the King of Burmah ...	3	.....	43
The Hon'ble J. P. Norman ...	3	.....	92
The Hon'ble J. B. Phear ...	1	.....	25
Dr. Stoliczka ...	.....	1	57
C. Acland, Esq., Bishop's Palace, Calcutta ...	1	.....	25
Baboo G. C. Ghose, Zemindar, Cuttack ...	1	.....	21
The Rev. Mr. Wilson, Darjeelini? ...	1	.....	31
W. Buekland, Esq. ...	1	.....	22
Agri-Horticultural Society, Lahore ...	2	.....	55
Mrs. Howe ...	2	.....	76
Baboo Baikuntha Nath Sen, Inspector of Schools, Dacca ...	1	.....	20
Deputy Commissioner, Chanda... ..	2	.....	96
Commissioner of Xagpore ...	1	.....	93
W. M. Smith, Esq., Assistant Commissioner, S. P., Nya Doomka ...	5	.....	722
Captain Grey, J. N. Commander ship "Lock Lomond" ...	.....	.....	38
The Commander ship "I'ernico" ...	.....	1	32
Captain Green, Commander S. S. "Brazilian" ...	.....	2	80
W. M. Anderson, Esq., Emigration Agent for Jamaica ...	.....	5	131
The Royal Gardens, Kew ...	2*	1	148
The Botanic Gardens, Melbourne ...	2	.....	222
Ditto ditto, Sydney ...	.....	1	32
Ditto ditto, Ceylon ...	1	.....	34
W. R. Virgoe, Esq., Brighton, Victoria ...	.....	1	39
Jardin des Plantes, Paris ...	1	.....	34
Total ...	86	26	5,415

Besides these 5,415 plants, there were issued 8,101 plants in pots, making a total of 13,516 plants as against 9,944 distributed in the corresponding previous year.

8. During the year under report the total number of kinds of seeds received was 2,252. The sum realized by the sale of seeds to the public was Rs. 214-12.

9. A general collection of the seeds of plants indigenous in Bengal was made in the autumn, and a set issued to each of the principal correspondents of the Calcutta Botanic Garden.

10. *Museum*.—Mr. Kurz, the curator of the museum, has been absent for upwards of four months in Burmah in the service of the imperial Government, and has not yet returned, I am consequently unable to present a complete report of the work done in the museum during the financial year under report.

11. The following additions to the herbarium have been received during the year:—

(a)—Australian plants (about 50 species) presented by Dr. F. Mueller of Melbourne.

(b)—A collection of plants (chiefly Greek) received from the Royal Academy of Munich through Mr. Kurz.

(c)—Two bundles of Siberian and Brazilian plants received from Dr. Reuel of St. Petersburg.

(d)—Eight bundles of plants, chiefly Dr. Falconer's collections, from Kew; one bundle of VitiCryptogams collected by Dr. Seemann from Kew; and one bundle of ericæ from Kew.

(e)—A set of Ceylon filicales and lycopodales (about 175 species), carefully named by Mr. Thwaites.

(f)—A few fine specimens of Khasiya ferns from Dr. Jerdon.

(g)—(enturie IX and X of the plants of Sicily from Professor A. Todaro of Palermo.

12. The Calcutta herbarium collections of the orders apocynaceæ and graminæ which were forwarded some years ago to Kew for determination, were received back thence

13. As explained in the last annual report, the most useful additions of Bengal plants to the herbarium are not now made by way of general collections, but by the intercalation of selected specimens. This work has proceeded steadily, and many orders have been largely strengthened out of collections made by the officers of the garden.

14. In the arrangement of the herbarium a large mass of the duplicate bundles have been worked through with care previous to their distribution. The natural orders, comelynacæ, cyrtandræceæ, urticæceæ, and portions of other orders, have been worked up so far as the Bengal species are concerned.

15. I have made a complete alphabetical catalogue of the library (omitting pamphlets) which involved the entry of 1,500 titles of books. The binding of the library has been proceeded with, but only slowly, and with the modern books. As regards very many of the ancient

arks, they possibly may have archreologic, but can hardly have any scientific value; and it can scarcely be advisable to expend Government money on re-binding them.

16. The books received from 1st April 1870 up to 17th November 1870 are as under:—

- (a)—Van der Bosch and Van der Lande *Lacaste Bryologia Javanica*, Fasc. G2, 63.
 (b)—Report of the Cotton Department for 1865-69 (presented).
 (c)—Scheffer, *Observationes Phytographicoe*, Part II (presented).
 (d)—Scheffer, *Hetgeschacht Diplanthera Banks et Sol* (presented).
 (e)—Beddorne, *Icones Plantarum Ind. Orient.* Parts I to VI inclusive.
 (f)—Report of the Commissioner of Agriculture (North America) for 1866, 1867, 1868 (presented).
 (g)—H. G. "Reichenbach, *Xenia Orchidacea*, Vol. II, parts 3 and 7.
 (h)—Baillon, *Histoire des Plantes; Legumineuses, Proteacées, Lauracées*.
 (i)—J. Miens, *Contributions to Botany*, Vol. II.
 (j)—E. Kegel, *Catalogus Plantarum quæ in horto Aksakoviano Coluntur* (presented).
 (k)—E. Kegel et P. ab Herder, *Enuineratio Plantarum in regionibus cis-et transilientibus a cl. Lemenovio anno 1857, collectarum*, Parts III and V (presented).
 (l)—E. Kegel, *Index Seminum Hort. Bot. Imper. Petropolitani*, 1868 (presented).
 (m)—E. Kegel, *Supplementum ad Indicem Seminum Hort. Bot. Imper. Petropolitani anni 1868* (presented).
 (n)—F. V. tierder, *Radde's Reisen in d. Suden v. Ost Sibirien* ausgef. M. I. Jahren, J 855-59, Vol. III, part 3 (presented).
 (o)—C. J. Maximovicz, *Diagnoses breves Plantarum Novarum Japonioe et Mandshuriav*, Decas 6, (presented).
 (p)—M. Willkomm et J. Lange, *Prodromus Floræ Hispanioe*, Vol. II, part 3.
 (q)—G. Bertham and F. Müller, *Flora Australiensis*, Vol. V.
 (r)—K. Hertoloui, *Mora Italica Cryptogama*, Part II, Fasc. 3.
 (s)—*Periodicals*.—(1) Proceedings of the Linnean-Society, Journal, Vol. XI, Nos. 52 to 55 inclusive.
 (2) Quarterly Journal of Microscopic Science, Nos. 37 to 39 inclusive.
 (3) The Annals and Magazine of Natural History, Vol. V, Nos. 25 to 30 inclusive, and Vol. VI, Nos. 31 to 33 inclusive.
 (4) Botanical Magazine, Nos. 301 to 305 inclusive.
 (5) Seemann, B., *Journal of Botany*, Nos. 85-93 inclusive.
 (6) *Annales de Science Nat. Bot.*, Vol. XI, Nos. 1-5 inclusive.
 (7) *Botanische Zeitung*, 1869, Nos. 48 to 52 inclusive, and 1870, Nos. 1 and 3-1 inclusive.
 (8) *Linnaea*, Vol. XXXVI, parts 3 and 4.
 (9) Miquel, *Annales Mus. Lugd. Bot.*, Vol. IV, Fasc. 8-9.
 (10) *Mora*, 1869, Nos. 26-34 inclusive, 1870 Nos. 1-1 and 8-17 inclusive.
 (11) *Bulletin de l'Acad. Imp. des Sciences Naturelles de St. Petersburg*, Vol. XIV, Nos. 3-6 inclusive, Vol. XV, Nos. 1-2.
 (12) *Zeitschrift für Parasitenkunde*, Hallier and Zuern, Vol. I, heft 1-3 inclusive; Vol. II, heft 1-3 inclusive.
 (13) Hooker, *Icones Plantarum*, Vol. XI, part 3.
 (14) Curtis' *Botanical Magazine*, Vol. XXVI, Nos. 300-309 inclusive.

17. Nothing has been done in increasing the materials collected for the projected economic museum, as Government appears to have adjourned *sine die* the question of how and where such museum shall be erected.

18. The museum remains, from its extreme dampness, very liable to the attack of white-ants. I am glad to be able to report that owing to the great care taken by the curator during the rainy season, neither the herbarium nor the books have suffered during the past year. Indeed, making allowance for a tropical moist climate, both the arranged collections and the books may be reported as in very good condition. With the precautions now taken, I think the arranged collections (which are kept in the tip-stairs rooms) may be considered safe; but this cannot be honestly stated of anything kept on the ground floor.

19. *Cotton*.—The following is the report of the results of the experiments with exotic perennial cottons furnished by Mr. Scott, the curator of the garden, who has conducted these experiments:—

I.—*Upland Georgian*.—Four hundred plants planted in July 1870, yielded up to the end of February 1871; one maund and eighteen seers.

II.—*Egyptian cotton*.—From 260 plants planted in July 1870, the return at the end of February was seven seers and six chuttacks.

III.—*Orleans*.—From 50 plants planted in July 1870, the return at the end of February 1871, was five seers and two chuttacks.

IV.—*Clark's hybrid cotton*.—From 30 plants planted in July 1870, the return at the end of February was one seer and fourteen chuttacks.

V.—*Egyptian cotton*.—Two and a half biggahs planted in May 1870, yielded up to end of February 1871, ten chuttacks only.

VI.—*Egyptian cotton*.—Half abiggah planted in Botanic Garden in March 1870, yielded, up to the end of February 1871, three and a half chuttacks only.

VII.—*Sea Inland cotton*.—From 100 plants planted in July 1870, the return up to the end of February 1871 was two and a half chuttacks only.

20. It is plain that these results are discouraging, and very different from the expectations formed and the hopes held out last year. It must be understood that no difficulties were met with in growing fine plants of cotton. The point where the experiments failed was in the securing the crop. Just as the plants were coming into fine bearing, a rain would come, split all the ripening bolls, and throw the plants anew into vigorous vegetative growth. By the time these were again covered with young bolls, another fall of rain would occur. This is the more disheartening, because during last season the hot weather was more free from showers than is usually the case at Calcutta. The inference would appear to be that the climate of Calcutta is too moist for these perennial cottons, and that the only chance of securing a crop is with the more rapidly-maturing annual Indian varieties. Perhaps a climate anti elevation somewhere about Chota Nagpore remain to be discovered, intermediate between the dry table land of Berar and the moist delta, which may prove a locality, where these high class exotic cottons can be cultivated at an economic profit.

21. The experience of this year moreover has been very unfavorable to the beautiful hybrid seedling cottons of Major Trevor Clark. These hybrids do not appear to maintain their characters under cultivation. I suggested formerly that this might be due to their being cross-fertilized in our mixed-beds; but Mr. Scott is of opinion, from his observation of these hybrids, that with no degree of care in their culture can they be preserved as distinct varieties.

22. The experiments with cotton are, in this garden, on a small scale, and do not involve any extra charge on Government. Mr. Scott intends to try again, varying in some particulars his management of the plants. He thinks it possible that by cutting the plants a little earlier, and thus secure it. Mr. Scott is now hopeful of a good return from those cut over in February; and more so from those so treated about the close of the rains. Experiments will in future be confined to varieties of cotton which (in the language of gardeners) come true. It is hoped to obtain a small plot of land very close to the garden boundary, and also to Mr. Scott's house, where these experiments can be carried on under close supervision.

23. *Ipecacuanfia*.—The plants of ipecacuanha in this garden are in almost exactly the same condition that they were a year ago. It is, I think, certain that this drug cannot be grown at Calcutta.

24. On the 1st April 1870 there were, at the cinchona plantations, twelve plants of ipecacuanha. Of these seven cuttings were killed by a coolie falling on them and completely smashing them. Five plants remain planted out in cool frames: three at ULJiap, (altitude 2,000 feet) measure 4½ inches, 3½ inches, 1½ inches respectively, and two at Ruugbce (altitude 3,300 feet) measure 6½ inches and 1½ inches. The largest plant has nineteen leaves, and its largest leaf is 11 inches by 3½ inches. It will easily hence be understood that while the vertical height of these ipecacuanha plants is so small, they are extremely healthy and vigorous looking plants, so much so that the head gardener thought there was a chance of obtaining seed, and it was in order to take this valuable chance that no cuttings have been taken.

25. On the whole, I think, our present experience justifies us in hoping that ipecacuanha will ultimately be produced successfully at the base of the Himalaya, but that it may be a work of much time.

26. It may call attention here to the fact that we have at present no fit place for growing ipecacuanha, or giving it (or any other economic plant as coco) a fair trial. The cinchona plantation is an extremely rocky valley; we may raise a few dozen ipecacuanha plants in frames or lines, but there is no flat land which can be used for cultivation on any scale. In the growth of cinchona there is no cultivation, i.e., the surface of the soil is never moved, as if this were attempted the little vegetable soil there is would wash away into the Teesta. It must be unnecessary to explain further that, for anything like culture, a different place is wanted. I have already (in reply to a letter of the supreme Government) recommended the Bhainun Pookree spur below Punkabari. This spur affords a comparatively level plot of 300 acres, at not more than 400 feet above sea level, at the foot of the Himalayas, facing south. The soil is good. The spur is the property of Government, and was long ago fixed upon by Dr. T-Anderson as excellently adapted for agricultural and horticultural experiments.

27. *Coco*.—The supreme Government has lately given instructions that some experiments in growing coco (*Theobroma cacao*) shall be made in Bengal. The plant can only be kept alive in Calcutta under shelter, but there is a fair expectation that it would succeed economically at a place like the Bhamun Pookree spur mentioned in last paragraph. It is difficult to get plants from Calcutta to the hill garden, unless they can endure the sun of the Bengal delta, the journey by Government bullock train being long, and the exposure great. Therefore, on the occasion of my last visit to the cinchona plantations, I had some coco plants

packed, and took with me as personal luggage, hoping to reach the hills in two days. I regret to say that this case was lost by the Railway Company between Calcutta and Sahibgunge. It may be some time before another opportunity of sending plants up rapidly may occur, and indeed there are not other plants ready for despatching. I fear this accident may greatly delay the carrying out the wishes of Government.

28. *Tobacco*.—The tobacco grown for seed last year proved the most successful of the economic cultivations attempted in the Botanic Garden; more than 10lbs. of seed of the finest kinds having been supplied to H. Kivett-Carnac, Esq. I do not see that there can be much difficulty in growing tobacco to any extent around Calcutta; but I am told that in a moist climate, no variety of tobacco will produce a leaf of high quality. At all events, the Botanic Garden, Calcutta, seems able to perform satisfactorily the functions of a seed garden.

29. *Rheea*.—In the cultivation of rheea, the Botanic Garden professes merely to keep a stock of young plants which are ready for supply to the public at a very low price.

30. His Excellency the Viceroy called my attention to the bun rhea of Bengal. Rheea is the cultivated variety of *Boehmeria nivea*, and therefore bun rhea should mean *Boehmeria nivea* itself. This plant is not, I believe, wild in any part of Bengal, unless in the extreme east of Chittagong. I supposed, from the Calcutta herbarium bundle of specimens, that it had also been found in the upper districts of Assam, but Mr. Mann, who has been assistant conservator of forests at Debrooghur for some time, informs me that he is satisfied that this is a mistake, and that *Boehmeria nivea* does not grow wild in Assam.

In any case, I do not know that there is any reason to suppose that the wild *Boehmeria nivea* would be more easy of cultivation, or produce a more valuable crop than the ordinary rheea.

31. But in making inquiries about the wild *Boehmeria nivea*, I found that the hill people, both in North and East Bengal, give the name of bun rhea to a great variety of plants, all of which, however, are (so far as I can learn) species of nettles belonging to the sub-order *Boehmeria*. It appears to be a general character of this sub-order to produce fine fibre, and it is probable that rheea is by no means the most valuable fibrous plant of the sub-order, but that species superior to this exotic plant in fibre grow abundantly wild in Bengal.

32. It is, however, not excellence in fibre that is the most necessary condition that a fibrous plant has to satisfy in order to recommend it as likely to be economically valuable. The principal merit of jute, as a valuable fibre, is that it can be easily prepared. The nettle fibres generally will not endure lengthened maceration in water to get rid of the cellular tissue. These nettles vary exceedingly in the difficulty with which their fibre can be reduced to a state that will travel to Europe, and arrive in a condition satisfactory to the European manufacturer.

33. The European manufacturer appears to object to any process that involves treating the bark with either alkaloid or acid; he wants the fibre cleaned mechanically from cellular tissue, dried, and packed.

34. A still more important requisition that a fibrous plant has to satisfy, in order that it may prove economically valuable, is that it should prove adaptable to cultivation. Fibre must be procured by the ton to prove remunerative. A wild nettle may appear abundant in the Sikkim jungles, yet it is found practically a serious matter to get in 60lbs. of dry fibre. Any wild plant can only be economically valuable if it can be grown at small cost as a dense crop.

Unfortunately, many of the nettles, though troublesome weeds by the roadside and near human habitations, prove very hungry of manure when it is attempted to grow them as a permanent crop uniformly covering the ground.

35. The whole question of selection of nettles for experiment becomes thus complicated with many considerations. As a preliminary step I have revised the Bengal species, and I give the following abstract of results:—

I have sixty-nine Bengal nettles, all of which (except four good and a few doubtful species) are known to me wild. Of these six belong to the sub-order *Urticeae*, forty-one belong to the sub-order *Procridece*, and twenty-two belong to the sub-order *Boehmeria*.

The forty-one plants of the sub-order *procrideoe* are succulent low-growing weeds. The six *urticeae*, or true nettles which sting, produce coarse powerful fibre. The twenty-two *boehmeria* (with the exception of five plants which, from their small size, are not likely to prove valuable) are all fibres of the rheea class of greater or less merit.

36. In accordance with instructions received through the Home Department, the head gardener at the cinchona plantation is now superintending the preparation of a set of samples of the fibres of the mere promising plants; each sample to consist, if possible, of 60lbs., which are to be hand-prepared without the use of acid or alkali, or protracted maceration. The head gardener is instructed to prepare these samples one by one, beginning with the most promising species, and to furnish an estimate of the actual cost per pound of preparing each, and also the best opinion he can give (from observation of the wild plant) as to the probability of its successful cultivation. It is proposed that these samples be transmitted, carefully

named, to England for report as to their respective market values as a preliminary step to any cultivating experiments. The preparation of these samples will occupy many months.

" 37. In order to provide that no further errors concerning the species meant shall arise, I have supplied the head gardener with a named dried specimen of each species worth a trial. This list comprises the following plants according to Weddell's last revision of the order in DeCandolle:—

- | | |
|----------------------------|-------------------------------|
| 1. Girardinia heterophylla | 8. Pouzolzia viminea |
| 2. Boehmeria malabarica | 9. Sarcochlamys pulcherrima |
| 3. B. comosa | 10. Villebrunea appendiculata |
| 4. B. macrophylla | 11. V. frutescens |
| 5. B. platyphylla | 12. Debregeasia longifolia |
| 6. B. cuspidata | 13. D. leucophylla |
| 7. B. hamiltoniana | 14. Maoutia puya. |

38. The above plants are all plentiful in the jungles of Lower Sikkim.

39. The plant which stands first for trial in the above list is *Villebrunea appendiculata*. The head gardener at Rungbee has already prepared small samples which have been highly approved and so far as I at present know, this plant appears to combine in itself all the conditions for economic success.

The fibre is well known to the natives as the most powerful of all the indigenous fibres, and is used for bow strings. It is also the finest and whitest, in these respects surpassing rhea itself.

The fibre can be cleared of cellular tissue, and produced in a state fit for despatch to England more easily than any other that has been tried. The head gardener* has devised a plan of working it* which costs at present Rs. 4 per maund, and which he believes capable of further reduction; and fibre thus prepared has been declared satisfactory in Calcutta.

Villebrunea appendiculata is a small tree, and it is considered more promising for cultivation than any other of the species; it is thought probable that it might be grown as osier-willows are in England.

40. It cannot be guessed which is the second best fibre in the list, but *Maoutia puya* will stand high. This is the plant of which the native cloth of the Lepchas is made. It is a powerful fibre, and about twenty years ago Dr. Campbell, then the deputy commissioner of British Sikkim, sent samples down for report to Calcutta. The fibre was then pronounced marvellously strong, and among other uses, it was found excellent for boot-laces. It appears to have been passed by, because Dr. Campbell reported the manufacture of this fibre by the Lepcha plan enormously expensive, and because this Lepcha method produces the fibre of a slaty color.

The Lepcha method of manufacturing is performed by a limited class who keep their method a secret. There is no doubt, however, that the slaty color of the fibre is produced artificially, this customary tint possessing value in Lepcha eyes. The head gardener at Rungbee will endeavour to reduce this fibre by the same plan which succeeds with *Villebrunea appendiculata*. This will be much cheaper than the native plan, and will probably produce a fibre only slightly colored. But I should add that this puya fibre does not appear to work so easily as the *Villebrunea appendiculata*.

At the time the puya fibre was sent down to Calcutta by Dr. Campbell, specimens of the plant were also sent* down to Dr. Falconer, for botanical determination. Dr. Falconer, determined puya to be *Villebrunea frutescens*, which is wrong; but it by no means follows that Dr. Falconer made any botanical mistake, for I think it quite as likely that the plant sent him as puya was *Villebrunea frutescens*, as that it was any other of the dozen bun rheas of the natives.

41. *Villebrunea frutescens* is also a very promising plant for experiment. It is a large shrub, very nearly allied to *Villebrunea appendiculata*, and though there is no reason to suppose *à priori* that it surpasses the latter in any quality, nothing but experience can decide on their comparative merits.

42. *Debregeasia longifolia* is described as the plant whence many Assamese tribes obtain their cloth, and is one of the numerous plants sent down as bun rhea. This also appears an excellent fibre, but does not promise to be so productive under cultivation as *Villebrunea appendiculata*.

43. *Debregeasia leucophylla* from the size it attains, is well worth attention. It is a comparatively local plant and rare, but may nevertheless prove manageable in cultivation.

44. *Boehmeria cuspidata* is another species which both by its size and abundance is worth particular trial. It is reckoned by Weddell as a mere variety of *Boehmeria platyphylla*, but in so far as Sikkim is concerned, the two plants are widely distinct.

45. *Girardinia heterophylla* is the only stinging nettle marked for trial. The stinging nettles, as above stated, produce in general a much more coarse fibre than the *Boehmeria*. The fibre of this species is used by the Mechis for bow strings.

appears to my eye better fitted for rope-yarn than for the adulteration of silk; and I apprehend that only fibre adapted for the latter purpose is likely to command in the town of Dundee the high prices of £50 to 60 per ton, which we hear about as obtainable for a perfectly white fine fibre.

This fibre of *Girardinia heterophylla* prepared by Mr. Moore Martin, is exceedingly like a fibre prepared many years ago by Mr. McIvor in the Nilgherries from a *Girardinia*, which grows there.

I say a *Girardinia*, because as at many other points of these difficult nettles, there is an almost inextricable muddle in the nomenclature.

Girardinia heterophylla, as described by Weddell, is the Sikkim *Girardinia*. Weddell calls this »plant *Girardinia heterophylla* of Roxburgh, which with Roxburgh's own figure before me I can say it is not. Roxburgh's *Girardinia heterophylla* is the plant described by Weddell under the name *Girardinia palmata*. Roxburgh got his *Girardinia* from the Peninsula, and appears to have got very few plants of any kind from the Himalayas. I have never seen *Girardinia palmata* of Weddell from the Himalayas, and am tolerably sure that it is not to be found there. On the other hand I saw only *Girardinia palmata* in the Peninsula, and doubt, from Mr. McIvor's report, whether any other species be obtainable there. The two species are closely allied.

46. The Urticeae besides producing generally coarser fibres than the *Boehmeria*, by reason of their acrid juices, are troublesome to handle, especially in large quantities. There is one Sikkim species, the abominable *Laportea crenulata*, which from its sub-arborescent habit and free growth, might deserve attention as a fibrous plant. And indeed the head gardener at Rungbee managed to get off a good deal of the fibre of this species with his own hands, and found it apparently a very capital and powerful fibre. But he suffered seriously from the mere exudation of this virulent plant, and it would be hardly possible to induce any laborers to work with it. The well known account by Leschenault de la Tour of what it is to be stung by this plant, can be seen in the last edition of *Lindley's Vegetable Kingdom*, page 261. The head gardener at Rungbee protected himself from being directly stung while stripping the fibre, but was seized nevertheless with a violent swelling of the limbs and extremities which lasted twenty-four hours with great severity.

I think it would be better to exhaust the long list of *Boehmeria* before recourse is had to the Urticeae for fibres.

47. Of the other species given in the list above, plentiful in Sikkim, of shrubby size, and all doubtless possessing valuable fibres, it is unnecessary to say more than that they are all worth investigation. I may sum up the present report by repeating that as yet *Villebrunea appendiculata* appears to combine in a remarkable manner all the properties required in a bun rhea to lead us to expect it will prove economically valuable.

48. *Salt Water Lake Cultivation*.—The piece of land placed at Mr. Scott's disposal for growing dry crops upon at the Salt Water Lake proved very full of salt as before reported. In the rains this piece of land became permanently inundated to a depth of more than two feet which closed the experiment.

49. *Paddy*.—The curator of the Botanic Garden was instructed to experiment in the growth of Carolina paddy. His cultivation was not very successful, as he was prevented getting the paddy dibbled out early enough from the seed-beds. He came nevertheless to the conclusion that there can be no difficulty in cultivating Carolina paddy to any extent in Bengal. I have since learnt from Mr. W. Swinhoe that he grew Carolina paddy to a large extent in the Soonderbunds, and that the difficulty is not to grow it, but to find a market for the produce, because the Bengalies consider this rice is unwholesome and poor flavored.

50. I obtained from East Bengal a considerable quantity of seed rice of two kinds of rowa, which was partly distributed among native cultivators, partly grown by Mr. Scott with fair success. These two varieties of rice are very small grained, and very poor-looking to the European eye, but are considered of superior flavor by the Bengalies, and command an exaggerated price in the bazars. They are not deep-water floating rice, but might be grown, I believe, to a considerable extent on the higher lands in this neighbourhood. I have given before at length my reasons for thinking that the main improvement to be introduced in rice cultivation is the wider introduction of the more highly esteemed varieties rather than any radical change in the methods of cultivation.

51. *Public Works*.—The curator of the garden is still condemned to live in the house which has been officially reported unfit for human habitation.

No. 585, dated Royal Botanic Garden, the 11th May 1872.
from—GKOSGK KING, Esq., M.B., Superintendent, Botanic Garden, Calcutta,
to—The Secretary to the Government of Bengal, Revenue Department.

I have the honor to submit the report of the Royal Botanic Garden for the year ending 31st March 1872,

1. *General condition of the Garden.*—The replacement of the collection of trees and shrubs destroyed in the cyclones of 1864 and 1867 having, so far as is practicable, been completed in the course of the year 1870, attention during the official year just ended, been more especially directed to the cultivation of herbaceous plants. The extent of ground out of doors devoted to these has been much increased; and the collections under cover have been considerably added to. The greenhouse in particular has received special attention; and in it are now to be found specimens of a fair proportion of epiphytall Indian and Javanese species, together with a few from America and the West Indies. The terrestrial species however are still but poorly represented and on the whole much remains to be done before the collection of this beautiful family of plants becomes worthy of the garden. Some interesting additions have been made to the collections of ferns and palms, and a large number of climbing palms (rattans) has been planted out. The collection of fine-leaved plants has also been enriched by some valuable additions from the nurseries of M. de Cock of Ghent. An entirely new feature has been added to the establishment in the shape of an aquatic garden, in which there have been brought together by Mr. Scott, the Curator, a number of very interesting water-plants. Probably from an idea that they are difficult of cultivation plants that naturally grow in water have hitherto received little attention from Indian horticulturalists; it is however hoped that this recent and successful experiment may help to rescue them from neglect in future. Many years may elapse before the gardens can recover from the effect of the two destructive cyclones already referred to. These storms reduced one of the finest collections of trees in the East to a comparatively naked plain, and as a consequence, the garden is now so thoroughly exposed to the sun and to the wind, that the growth of the young trees and shrubs which have been put in to replace the veterans planted by Roxburgh and Wallis has been anything but rapid. The slow rate of growth is however not wholly attributable to weather, and is in a measure also due to the impoverished state of the garden soil—a condition which it is intended to remedy by free manuring, if funds sufficient be granted. Even under the most favorable circumstances, years must elapse before this garden can again merit its old reputation for its series of timber trees. Continued attention ought therefore to be given to the cultivation of herbaceous plants, so that the attractiveness of the institution may be maintained. During the past year there have been about the usual number of visitors. It is hoped that public interest in the garden will be much increased when completion of a bridge across the river shall have made it more easy of access from Calcutta.

2. *Roads and Buildings.*—A good deal has been done towards making a new road from the Bishop's College gate to join and form a continuation of the palm avenue leading to Kyd's monument. This road had been first contemplated by the former superintendents of the garden, and some years ago rows of trees were planted out along its alignment. When completed it will form a fine addition to the garden drives. The older walks and roads are in a fair and comfortable condition. During the cold winter season it became necessary to erect a fence for a large part of the garden, the regular expenditure excluding carriage and the (injury threatened to the drives was more than) the funds at my disposal for repair were equal to meet. The new house of the Curator is approaching completion. Repairs have been given to the herbarium and library buildings.

It appears, however, to be questionable economy to attempt longer to patch up *i* structure so old and dilapidated. The encroachments of the river on the hank have durin" the past year been but slight, and the Executive Engineer is of opinion that "further protective measures are at present uncalled for. The glass conservatory for ferns, built by Public Works Department some years ago is now too small for the large and increasing collection, part of which has accordingly to be accommodated elsewhere. During the year the thatched bamboo houses in which the collections of orchids and other delicate herbaceous plants are kept have been thoroughly repaired, and in part entirely renewed.

3 *Interchange of Living Plants.*—Donations have been received from Dr. Hooker, of the Royal Gardens, Kew, to whom this garden already owes so many of its most valuable plants; from the Directors of the Botanical Gardens of Jamaica and Adelaide; and from Messrs. Bull, London, and Jules de Cock, of Indian contributors, the chief have been Colonel Godkin, Hodgkinson, Mr. Taylor, Buxa; Mr. Jennings, Allahabad; Mr. Rind, Forest Department, Burma; Dr. Bonavia, Lucknow; Beaumont, Indore; and King, Andamans. A detailed list is subjoined:—

Plants received from 1st April 1871 to 31st March 1872.

From whom received.	No. of open and closed boxes.	Wardian cases.	Number of plants.
Barrackpore Park	...	...	5
The Superintendent, Botanic Gardens, Calcutta	...	...	12
Dr. King, 2nd Medical Officer, Port Blair	7	...	89
William Bull, Esq., P.L.S., London	...	1	65
Br. Bonavia, Secy., Agri-Horticultural Society, Lucknow	7	...	64
Major Taylor, Bhutan	1	...	13
Public Gardens, Allahabad	...	...	9
T. Beaumont, Esq., M.D., Indore	26	1	1,510
Government Botanic Garden, Rangoon	2	1	67
Botanic Gardens, Jamaica	...	1	62
* Royal Gardens, Kew	...	1	35
Dr. Scourburgh, Botanic Gardens, Adelaide	1	...	45
M. Jules de Cock, Ghent	1	...	27
L. O. Rind, Esq., Burmah	1	...	82
Colonel Hodgkinson, Sylhet	...	...	...
	47	5	2,060

The distribution of plants to distant places has been as follows:—

To whom supplied.	No. of open and closed boxes.	Wardian cases.	Number of plants.
Jardin des Plantes, Paris	1	2	211
Royal Gardens, Kew	3	1	160
Botanic Gardens, Saharanpore	1	...	50
" " Pondicherry	...	1	23
" " Melbourne	...	1	64
William Bull, Esq., F.L.S., London	1	1	136
T. Beaumont, Esq., M.D., Indore	5	...	171
H. Carnac, Esq., Central India	1	...	45
Colonel Ryder, Jubbulpore	1	...	9
Mrs. Vivian	1	...	...
Colonel & Mr. M. G. T. and Deputy	6	...	332
Collector of Pakour	18	...	596
Dr. Vathew Civil Surgeon, Monghyr	1	...	61
Mr. Smith, Esq., Assistant Commissioner of Nya	...	...	...
D. M. S. D. ...	7	...	4:7
H. L. Johnson, Esq.	6	...	ISJT
Carried over	52	6	2,465

To whom supplied.	No. of boxes. and COK-MI	cues.	Kambor of plants.
Brought forward ...	52	6	2,465
Colonel Ramsay, B.C., Commissioner of Kuntiaon, Almorab, North-West Provinces ...	1	...	12
Public Gardens, Allahabad ...	1	...	52
K J. B. King, 2nd Medical Officer, Port Blair ...	8	1	...
Robert Smith, Esq., Meerut ...	1	...	24
Mr. H. Lilcliynden, Esq., Secretary, Agricultural and Horticultural Society of India ...	1	...	15
Mr. M. Anderson, Esq., Emigration Agent for Jamaica ...	...	5	163
Colonel Haughton, c.s.i., Commissioner of Coeh k-har ...	...	...	2
Commander of the ship <i>Clydesdale</i> ...	...	...	3
Mr. L. B. Anderson, Esq., Assam ...	4	...	107
The Hon'ble Ashley Eden, Chief Commissioner of British Burmah ...	...	2	139
Colonel Boddam, Bangalore ...	1	...	37
Dr. E. Boiiavia, Secretary, Agricultural and Horli- cultural Society, Lucknow ...	6	***	859
Colonel Rabbin, Sbillog ...	1	...	62
The Earl of Eilitpcuinbe, Plymouth ...	1	...	5L
Mr. T. McKütbar, Camdun Purk, Sydney ...	1	...	SB
Mr. O. T. Burne ...	1	...	2
Mr. J. C. Hardinso, Esq., Honorary Secretary, Agri- cultural and Horticultural Society, Rangoon ...	1	...	28
Mr. J. Henry Gilbert, Esq., Moulmein ...	1	...	17
Total ...	83	15	3,959

Besides the above, 5,210 plants of sorts have been distributed in the neighborhood of Calcutta, giving a total of 0,169 for the year.

4. *Interchange, of Seeds.*—The most important contributors have been Dr. Hooker, r.n.s. Kew; Baron Von Mailer, F.R.s., Melbourne; Sir. Tim p.n.s., Ceylon; Mr. Berneya, F.L.S., President of the Queensland Acclimatization Society; Dr. Soheffer, Java; Dr. Balfour, P.E.&B., Edinburgh Botanic Garden; Dr. Jameson, F.L.A., Shahrumpore; Dr. King, Audamana; Mr. Horn, Botanical Garden, Mauritius. By the good offices of Colonel Pearson, Inspector-General, and of the Conservators of Forests of the Punjab and North-West Provinces, a large quantity of seeds of deodar and Himalayan pines was collected and sent to the gardens. During the year 4,309 packets of seeds (many of them weighing several pounds) have been distributed to public gardens and to private parties in the Bengal and Madras Presidencies; to the Royal Botanical Gardens of Kew, Peradenia (Ceylon), Edinburgh, Dublin, Glasgow, Melbourne, and Mauritius; to the Acclimatization Society of Queensland; to the Society of Acclimatization, Algiers; the Société de l'Algérie, Paris; the Scottish Agricultural Society, Edinburgh; the Horticultural Society, Montpellier, and to various nurserymen in England, France, Belgium, and Australia. The Messrs. Lawson, of Edinburgh, have been the propagators of *ipecacuanha* gratuitously for the Indian Government. Large quantities of seeds (including 114 pounds of selected deodar) were sent them by order of the Secretary of State as some acknowledgment of their services. No function of a botanical garden is, I conceive, more important than the distribution of seeds; and now that the subject of acclimatization is receiving so much attention in all civilized countries, the effort on our part would be abundantly reciprocated in Europe and elsewhere. Seeds of the more valuable economic and ornamental plants of the world might be obtained in quantity sufficient for the whole Indian Empire were the means of distributing those of the same genus to this country increased. At present I can collect by direct purchase the seeds of plants growing in or near this garden and for those of the plants and trees of the

any thing like a regular system of collection is impossible. During the

from the Station to P P Joths

able Him aftyanpills Messrs. Ltwson and to tlic scientific iustitu-
ins already mentioned. « f * . ^ cliie f useful trees and plants of their divi-
^collet regularly * ^ \$? £ £ & these seeds could be here cleaned and
m , and to forward ^ 2, t the present establishment, and selecttoms cou d

Aid without ay countries whe L they would respectively answer best? while
be forwarded to countries whe L they would respectively answer best? while
on the other hand, the seeds received in exchange could bo despatch edwto th(j

various parts of India possessing suitable climate and facilities for growing them.
Such an arrangement would be found of the highest value to the various public
and private gardens over India and to the Forest Department itself, and would
afford a great

5. *Ipeca* stock of f. ecacuanha amounted to five plants in Sikkim and seven in this
garden. These r-in-cenelthe only surviv' o'ring
received from J. Hookey o.the Royal Gard S f a ^ f a ISC6. The nve plants

in Wnn were, early ^ ^ current year, s ^ mitted by Messrs. Gammie,
iiermann, apd Jaffrey, **><** whicha hona plantation, to a most successful expert-
in artificial propagation' by which have formed I Hon,ble the g ^ i-etay
S n e d , the greater pi-oportion of request of the Right bceu g iyen in Edinbur- h
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to the propagation of Pac JCliaT1 ^ p plants -for this country, and during the ^ st
at the sup' raised there began to arrive rive wardian cases containing

Rout 100 plants were ^ ^ ^ Dr. Balfour, of the Ro- ical
Garden, and three cases contamm? loO p plants from Messrs. LawJon, the emi-
SSUt uui-serymen. In accordance with th e ords no Government of India,

based on the result were forwarded to
Calcutta climate having proved totally unsuitable to this plant, all attempts
to propagate it in this garden have been abandoned, and the cultivation of ipeca-
nha has been accepted, like that of Cinchona, as an experiment which
st form an outlaying charge. The plants are at present under the imme-
diate care of the European gardeners of the Cinchona plantation, and propaga-
tion is being carriad on chiefly in one of the hot, deep valleys of the Rungbee
reserve. From what we have been able to learn from observation, ipecacuanha
will af rive best under deep shade, and in a hot, steamy, equahle
climat onditions are supplied most fully in the valleys on th « outer
slopes kim Himalaya which open towards the terai. A fine email
ja aiUg to Darjeeling, has accordingly been taken up as an ipecar

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rest n & Ant'n Le eds ifwLL "IVuin the Cinchona plantation,
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by cuttings and other artificial methods.

6. *Fibres*.—During the past year attention has continued to be given to the utilization of the fibre-yielding plants of Sikkiin, and with this view samples of fibre from nine species have been prepared. It is intended to send them to England for valuation, and subsequently to direct especial attention to those kinds approved of by the home manufacturers. A quantity of fibre, the product of a plantation indigenous to the Andaman Islands, was forwarded for experiment some months ago by the Department of Agriculture, Revenue, and Commerce. This has been made into ropes of various degrees of thickness at the Shalimar rope-works through the kindness of the proprietor Mr. Thorn who reports very favorably of the fibre as a material for cordage, provided it can be produced cheaply enough. Further supplies of it have been applied for from the Andamans with the view of making complete experiments, and the whole subject of fibres is receiving attention, and the results shall be recorded.

7. *Herbarium*.—During the year the following collections of dried plants have been received:—

Prom Mr. C. B. Clarke, about 500 specimens of Sikkim and Neilgherri plants.

Baron P. V. Mueller, a small collection of Australian plants.

Mr. Kurz, 1,515 specimens of Burmese plants (phaanerogams).

Mr. Kurz, Burmese mosses and hepatorae, about 100 specimens.

Mr. C. B. Clarke, 20 specimens of ^{^ ^ ^}tjerns.

Mr. Kurz, about 20 specimens of Burmese ^{^ ^ ^}plants.

Baron V. Mueller, 220 specimens of Australia ^{^ ^ ^}plants, chiefly ferns.

Baron V. Mueller, 78 specimens of Australian plants, chiefly ferns.

The collection is now in excellent order, the majority of the specimens dried, mounted, pressed, and classified. Mr. Kurz, the Curator, has, in addition to his ordinary duties, been engaged in the preparation, for the Forest Department, of a flora of the timber trees and useful plants of Burmah.

8. *Library*.—Beyond the current numbers of periodical works, and volumes completing sets, nothing has been purchased. The obtaining of books direct from book-sellers in England or the Continent having been forbidden by Government, an indent for transmission to England was submitted on the 10th of August last; the books and periodicals then indented for have not, however, yet begun to arrive.

The under-noted books have been presented during the year:—

Selections from the Records of Government, North-West Provinces, vol. parts 1 and 2.—*The Government of India* (J).

Bulletin du Congrès International de Botanique et d'Horticulture de Petersburg, 1870.—*Prof. Hegel, Eegel et Herder, Enumeratio Plantarum Transsiliensium*, Iont. III.—*The Authors*. *Melanges Brologiques*, De P. 8s *Prof. liegel*.—Herder, *Entwickburg der Freilandpflanzen im Botanischen Garten zu St. Petersburg*.—*The Author*. E. Eegel, *Formen der Entwickelung der Hohern Pflanzen n. deren Einfluss*.—*The Author*. Forbes "Watson, *Report on the Cultivation and Preparation of Tobacco in India*.—*Government of India*. Oliver, *Flora of Tropical Africa*, vol. II (vol. I wanting).—*The P. W. D. Lona*

9. In conclusion, my acknowledgments are due to Messrs. Kurz and Scott for the efficient way in which they have conducted the duties of their respective departments.

ANNUAL REPORT OF THE ROYAL BOTANICAL GARDENS, CALCUTTA.

No. 30, dated Kungbee, the 31st May 1873.

From—DR. GKO. HENDERSON, 0%. **Sapdt.**, Eoyal Botanical Gittdene, Calcutta,
The Secretary to the Government of Bengal.

1 HAVE the honor to submit the annual report on the Eoyal Botanical Gardens, Calcutta, for the official year ending 31st March 1873.

2 Dr. King was obliged to take sick leave to England in August last, and for some time before my arrival on 16th December Dr. CayJey held charge. Mr. Scott, the Curator, left in November to investigate the disease affecting the opium crop, and has been engaged on that duty ever since. Mr. Stirling, the Second Gardener, left in July, and until Mr. Joseph Lister, from the Edinburgh Botanic Garden (who is now appointed second gardener, arrived with me from England, in the middle of December, the garden had been nearly two months without a European gardener, and was not improved in consequence.

3. During January, February, and March, I endeavoured to estimate the number of visitors, and although only 1,000 names were entered in the books during that time, I have reason to believe, from having the numbers actually counted on several occasions, that the actual number was not under 1,500 each month of the cold weather. On one or two occasions I have had reason to complain of the conduct of visitors in carrying off or mutilating valuable plants, and threatening violence to the native officials when remonstrated with.

4. The general condition of the garden is still rather unsatisfactory, and will continue to be so for some years, until the trees planted out after the cyclone begin to give shade and look natural. It was a grand idea of Dr. Anderson's to take advantage of the clean sweep made by the cyclone of most of the trees in the garden to replant the whole as a gigantic arboretum, with all the trees arranged in botanical order; but unfortunately most of the trees were planted in open instead of dense clumps, to shelter and protect each other as well as to keep down the rank grass which grows so luxuriantly, and that a great many trees are not thriving, and a large number are withering or dying. During the past year a good deal of manure has been used, but this, I fear, will only make the grass grow more luxuriant next rainy season as many trees as possible will be planted out in rows, to act as nurses for the others; for until shade is obtained few trees will thrive, and the grass cannot be kept in check. Most of the roads are in many places much in need of thorough repair. It is at times extremely difficult, owing to their great extent, to keep the walks and drives in creditable repair. The existing roads appear to me to be quite numerous enough for every purpose, and I consider that it will be a great mistake to lay out any more, as this is proposed; but if that is done, some of those now existing might be abandoned, or be made into grass walks.

5. The new two-storey house for the Curator has been completed, but the accommodation for the second gardener is very insufficient, being an old, dilapidated one-storey building. The dwelling-houses in the garden ought to be two-storey, and the ground floor should be raised three or four feet off the ground, for in the rainy season the whole garden is apt to be flooded. The building in which the herbarium and library are has been put in repair, and at present is in very good order. The river has not done much damage to its banks during the season. I think something might be done to prevent its encroachments by felling along the banks at certain spots. The *Populus euphratica* may be planted if it will grow. I have got some plants of coffee. It is only at certain places where the trees are attacked

6. The new two-storey house for the Curator has been completed, but the accommodation for the second gardener is very insufficient, being an old, dilapidated one-storey building. The dwelling-houses in the garden ought to be two-storey, and the ground floor should be raised three or four feet off the ground, for in the rainy season the whole garden is apt to be flooded. The building in which the herbarium and library are has been put in repair, and at present is in very good order. The river has not done much damage to its banks during the season. I think something might be done to prevent its encroachments by felling along the banks at certain spots. The *Populus euphratica* may be planted if it will grow. I have got some plants of coffee. It is only at certain places where the trees are attacked

often happens

right place and time, will prevent damage. The sluices are now in good repair, and many of them are quite useless in their present condition. One great want of the garden is a large glass-roofed propagating house, with at least two compartments, and with tubes to give bottom heat when required. Without a house of this description it is almost impossible to multiply by cuttings such plants as ipecacuanha; and many plants arriving in wardian cases, and in a fully state, die for want of nursing in such an artificial climate as a propagating house would afford. When new plant sheds require to be built, I think they might be made a little more ornamental than the present ones are without much increase in the cost. The glass fern-house is now much too flimsy for the requirements of the garden; it is impossible to keep up a large collection of ferns without a house of this sort. Glass-roofed houses are now made cheaply of iron. I think it will be better to get them out from others are to be constructed. «The orchid-house of wood, designed by Mr. Boscott answers the purpose pretty well: its only fault is that it is too ornamental, and it is very temporary. I think this should be replaced by a house of thick frosted glass, which would have the additional advantage of preventing valuable orchids being stolen. Their facilities at Calcutta for making a large collection of Indian orchids and the ferns seem to excite interest in any oilier part of the Native and European houses suffered considerably by Mr. Scott's arrangements, when the gardener took care of them.

7. The garden establishment, with the exception of five or six good men,

Garden establishment look nil as hopelessly bad; the men who receive very small pay and do very bad work, in which of course they do not take the very slightest interest, and when found idle with, made to work properly, they at once take their discharge. I have endeavored to remedy the state of affairs by commencing a garden school for the 75 boys employed in the garden, and who are mostly garden employees. These boys only want education, care, and a prospect of fairly good pay, to become excellent workmen of their own hands (but year). All these boys come to the office for an hour or two in the heat of the day, when all out-door work is usually suspended. They are taught Bengali for an hour, and the other half hour is devoted to them to enable them to read or write plant names. They show intelligence, get more pay, and are put under the supervision of active and intelligent native gardeners in order to learn their trade. A staff of collectors used to be kept up for sending to all parts of the country and even beyond our frontiers, to collect and prepare specimens of plants and for distribution to other herbaria. I have commenced training collectors again, but find that the Bengalees are very averse to leave home, and do not like to rough it in the jungle. I have been told that a garden school was formerly established, and was given up because the boys, on getting into the service, got employment as gardeners on better pay elsewhere. I should consider this an additional reason for keeping up the school, and the services of the best men can always be retained by an offer of sufficient pay.

8. Some years ago Dr. Anderson laid out three or four acres of ground

natural arrangement near the large *Danjan* tree with all the herbaceous plants in the garden, placing them in parallel beds six feet wide with two feet grass walks between the beds: but owing to the want of shade and the necessity of renewing most of the plants every year, a large Dumber being annual, the ground had got neglected and overgrown with jungle. I have again had it laid out, and in addition to the herbaceous plants, I have put in at least one specimen of every plant in the garden, under the shade of the trees, and the shrubs and trees will prevent the others being again killed by frost and by grass; and the number of perennial plants, if not easily kept up, it were, enables the arrangement to be easily kept up. I have certainly the most beautiful part of the garden.

9. An Indian botanic garden ought to have some space devoted to plants of economic importance which are grown in the

tuuruj, as well as all such plants from other countries which can be got to grow here. I have had a commencement made to **Form a garden, and it** will be laid out during the rains; the difficulty is in native agency in keeping it up, for most of the plants have to be renewed every year, just as in the case of the herbaceous garden. A great variety of seed of fibre-yielding plants has lately been received from the commission appointed to inquire into **the jute trade**. This weed has all germinated, and when the plants flower and can be identified, they may yield some interesting information.

in. A few agricultural experiments have been made on a small scale, but the model (or more properly experimental) farms are more suitable for all such experiments, which require to be carried out on a larger scale than we have room for in the **Botanic Garden**; moreover, these experiments require European officials to devote their whole time and attention to them.

11. The attempt to introduce the cultivation of ipecacuanha into India is one of the most important works now in hand. I have given a concise account of all that has been done up to date as an appendix to this report.

12. There is some prospect of the mahogany trees about Calcutta seeding freely in the course of a few years. During the past

f year nearly two thousand plants were raised from seed produced at Calcutta and Bamickpore in the spring of 1872, and about 51K seeds were got in 1873. Almost the only mahogany tree in the garden which has ever seeded is **an old damaged** one, half of it having been blown down by a cyclone; and as it is possible that the injury it received has something to do with its seed, I have ringed the bark on several large side branches of the tree, to see if that will make them seed. The effect will not be known until 1874, but already it has had the effect of making them shed their old damaged one which usually produces seed. About 1,000 layers of seedlings have been rooted; these will probably never be of use for timber, but they will seed much sooner than seedling plants. I have tried to raise seedlings, and although these make shoots, and some appear to root, another attempt will be made in the rainy season, with a hope of success. Mahogany seed stands carriage badly, and few of the large plantations of it is to find out some locality where the grasses are growing in sets of 50, has been lately distributed to various parts of the province, a careful record being preserved of the sites where these trees have been planted.

13. In December I brought out from England some plants of *Exogonium Javanicum* which yields the jalap of commerce. It has hardly as yet had a fair trial, but it does not appear to thrive in Calcutta; it will be tried in Wikkiui.

14. The climate and soil of the Calcutta gardens are unsuitable for so many plants which it is desirable to **introduce** to the **Himalayas**, that for some years a small **brani** nursery garden has been kept up in Sikkim at the **cinchona plantations**, where it is now a European population of **tea-planters** in Sikkim, and as a rule all are anxious to try new plants. A number of plants (250) of the European sweet chestnut have been raised, and it is expected that before the end of this winter a very large number of plants will be got up for distribution. Dr. Oldham has kindly undertaken to send me some seed for me from Italy! It is also being tried, and succeeds very well. Many tea-planters now use it for home use, but it will not pay so well as tea for

15. The catalogue of plants in the Calcutta garden, published some years ago by the late Dr. Anderson, is now out of print; ^{an} ^{fa} February last, when laying out the old herbaceous ground, and taking stock as it were of all the plants in the garden, I had a rough but complete list made out, which will be printed very soon. Without some list of the kind it is impossible to exchange plants and seeds with other similar institutions.

16. There is perhaps nothing more important in such a garden as the Calcutta one than to have all the trees properly labelled. Every description of label seems to have been tried, but I do not think that a satisfactory one has as yet been discovered. Stamp'd zinc labels are permanent, but illegible; so I have had them painted ^{as} ^{we} as stamped. But the painting is a very slow process, and eight men kept at work for several months hardly got over half the garden. I now propose to try printed labels pasted on the trees and covered over with some waterproof varnish.

17. The herbarium, under Mr. Kurz's able management, is now in excellent order. The library still requires a great deal to be added (me) ^{blind} periodicals and books. The rooms in which the books are kept, being on the ground floor, are rather damp, and before many years it will be necessary to build a more suitable house for the herbarium and library. A museum is wanted very much for specimens of wood, &c, &c, which cannot be stored in the herbarium. I think some of the numerous old buildings in the garden might be utilized for this purpose until a sufficient collection is made to deserve a separate building.

18. I think there should be a standing order in the garden that no more pumps, mowing machine, or other English machinery be ordered until a much more intelligent staff of workmen has been got. Almost without a single exception every machine which has been hitherto bought has in a few months been damaged and then put aside to rust. Mr. Lister has once more had all the mowing machines put in thorough order, and is determined to make them be properly worked and taken care of if it is possible to do so.

19. I think it is questionable whether so much money and labour should be expended on the ribbon borders; they are very expensive. At the best they are not particularly ornamental, and unless kept in the most perfect order, they are positively hideous. I think there are at present far too many flower-beds, and it would add to the attractiveness of the garden if we adopted the Kew plan of having a limited area kept up in the best of order, with one road devoted to flower-beds, and all of it a model of good gardening, outside this part the ground being kept simply as a park and arboretum.

20. The nurseries have lately been removed from the centre of the garden to the extreme end: this I think is a mistake. They should be nearly in the centre of the garden, and not far from the river-bank; they can be concealed very easily by hedges or shrubberies. As the distribution of plants to the general public, which some years ago was stopped, is to be again commenced, the nursery department will have to be largely extended. I lately inspected several native nursery gardens near Calcutta, to see what private enterprise has done to supply the country with young plants; but anything more primitive than the arrangements I saw it is impossible to conceive.

21. The statements appended show that 800 packets of seeds, 2,302 plants in cases, and 2,891 plants in pots, have been sent out during the year.

22. The receipts amount to 2,415 packets of seeds and 1,404 plants. The interchange of seeds and plants was very much interfered with during additions have been made to the herbarium. Very few two very active and intelligent young native gardeners to the Andaman Nicobar Islands: they brought back specimens of every thing they came at but unfortunately very few plants were then in flower.

and the distribution of plants and seeds throughout India, I think one of the chief objects (I would even say the chief object) of these gardens, and one which of late has been too often lost sight of, is that they should form the headquarters of a botanical survey of India. Such a work cannot, however, be undertaken unless the Director of the gardens and the Curators of the herbarium and gardens are allowed to devote themselves to their own proper work. The lectures on botany at the Medical College are a very great tax on the Superintendent, and these, taken along with official reports and correspondence, almost exhaust his time and leave very little uninterrupted leisure for purely scientific work.

24. The following appendices accompany this report:—

A.—Ipecacuanha.

B.—List of additions to the library during the year. «

C.—List of contributions to the herbarium during the year.

D.—Plants received during the year.

E.—Seeds received during the year.

F.—Plants distributed during the year,

(i.—Seeds distributed during the year.

APPENDIX A. —j—

IPECACUANHA.

As the experiments being made to introduce this plant into India are perhaps the most interesting attempts at acclimatization now being made, I think it as well to give a concise history of what has been already done, and the latest results of our experience regarding the plant. The history is a very instructive one, and shows how difficult it is to carry out such an experiment rapidly, nearly eight years having now been occupied in getting up a lot of stock plants, and as yet we have only about 7,000 altogether, half of them minute cuttings. If *ipeacuanha* is over to succeed in India, I think another year will see a small plantation fairly started. There are evidently several varieties, if not species, of *ipeacuanha* amongst the plants now in the Rungbee nurseries, and I think this gives us additional encouragement to persevere, for it is possible that these varieties may require just as different treatment as the different species of cinchona do, and that although one variety may not answer here, some of the others may. Besides this, plants grown from minute cuttings and reared under glass are much more delicate than those grown from larger cuttings and kept in the open air; and I do not consider that the experiments hitherto made are of much value in showing whether or not the plant will thrive in the Bengal Presidency. It is one of the slowest growing plants I know, and one of the most difficult to propagate by (just) cuttings. I have seen some cuttings of the stem remain quite fresh for over two months without attempting at making roots. Root cuttings strike much more readily, but even they sometimes become quite stagnant, and will not put out shoots unless they are of pretty large size and get a brisk bottom heat. From all I hear of the soil and climate of the Andaman Islands I believe the plant will thrive there, and I have offered to send General Stewart some plants for trial. But to return to the history of its introduction.

In 1806 Dr. King brought a plant from Kew which had been originally got from Ba-azil; two years later, namely in

1808—This plant had been increased by cuttings to nine.

1809—Only nine plants still, but Dr. Anderson, who had gone to England, was endeavouring to get more, and succeeded in obtaining a number in Edinburgh.

1810—Mr. Clarke reported that the plants were as at last report; every thing had been done for them, but they continued unhealthy and would not grow. Some sent to Sikkim were doing better.

1811—The plants in Calcutta are reported just as before.

1812—At the beginning of the year there were five plants in Sikkim and several in Calcutta, and those in Sikkim were multiplied by root cuttings to about 100 by the end of August.

The following memorandum by Mr. Gamraie, on the introduction of *ipeacuanha* to the gardens in Sikkim, shows what has already been done. Mr. Ganimie says:—

Three plants of *ipeacuanha* were received at Rungbee from the Calcutta Botanical

Gardens in 1808. These formed part of the produce of the single plant brought out by Dr. King from the Royal Gardens, Kew in the early part of 1806.

On the arrival at Rungbee, and on the 31st of March 1807 the number of plants increased to five rooted plants and one cutting. The cutting afterwards

produced five rooted plants and seven cuttings, and again the cuttings were unfortunate, for a drunken washerman (dobbie) fell through the glass frame in which they were placed

completely destroyed them. We then determined not to cut the tops of the plants again, as we found that after cutting the plants were a very long time in throwing out fresh shoots, and even then most sparingly. We waited patiently to allow the plants to form a good supply of roots, and in consequence of this determination, and the abortive accident we had five plants only on the 31st March 1871. In the summer of that year I received at Rungbee from Sons, the Edinburgh

"September 1871	...	...	...	...	...
"March 1872	...	...	...	...	11
"December 1872	...	...	...	...	247
"January 1873	...	...	...	...	112
	...	...	...	...	10

reached Rungbee alive. On the 1st January 1873 the total number of plants and cuttings was 3,066."

On 31st March last they amounted to no less than 6,719 in Sikkim, and about 500 in Calcutta. In December last I brought out 128 plants from Kew and Edinburgh, and as the weather was then too cold to send them to Sikkim, I decided to see if they could be multiplied in Calcutta, notwithstanding that all former attempts had failed, as stated in paragraph 5 of the Annual Report. I had a second gardener, just arrived from the Edinburgh garden, propagated, set to work and made cuttings both of the first and second March about 500 new plants had been produced, and most of the 128 original ones were sent by post to Sikkim, where they arrived as fresh and healthy as the day they left Calcutta. The roots, when packed in slightly moist earth, stand well. I brought out some roots from England packed in this way, and Mr. McNab's method of packing in sphagnum moss is preferable. B.M. tried to multiply them, I planted out a number every variety of conditions,—some in the open, some under moderate shade, at dense shade. Two plants fully exposed were killed by the sun; all those under different points along the bottom of the Rungbee valley; but with the exception of one plant successful one is better than those planted under shade, and even the shade is now, at my suggestion, tried on a much larger scale than before. The plants appear to thrive better than those under shade, and even the shade is now, at my suggestion, tried on a much larger scale than before.

Mr. Jaffy's matting, but as a matter of fact, rains set in, and the plants were getting rooted leaves, and in ten months has got them up to an inch and a half long, and four shoots from the plants in, and killed about 3,000 feet above the ground, and it with but a little heat, which is more healthy in appearance than colour, and without a single spot have evidently not yet air. I believe it requires a fact resembling leaf mould.

Mr. Qammie flunks they will do, Mr. Kurz, in places subject to and L. has friven me the following note:

Memorandum by Mr. Kurz.

"It is right to state, in explanation to Mr. Gammie's remark about my statement regarding the *ipecacuanha* plant, that I have based my deductions regarding its requirements upon Professor Grisebach's recent work, and upon his review of Weddell's paper on *ipecacuanha*.

"Dr. Grisebach states therein (Bericht über die Leistungen in der Pflanzengeographie für 1849, p. 57,) that the *ipecacuanha* grows in the dense shade of certain palm and trees on marshy grounds (quellichte gründe), whereas on a perusal of Weddell's French original I find it distinctly stated that the plant grows chiefly on firm ground surrounding these little marshes (surtout sur la terre ferme qui entoure ces petits marais).

"I think that Weddell's excellent paper (Note sur le *Cephaelis Ipecacuanha*, son mode de végétation, etc., in *Annales des Sciences Naturelles*, Série 3, XI, 193-202), which I could not consult when I formed my views on the plant, should leave no doubt as to the real requirements of the *ipecacuanha* plant (l.c. p. 197-198).

I have read the excellent paper of Mr. Weddell which Mr. Kurz refers to, and as it is one of the most important documents on the subject we have yet got, I give a translation of it. It is published in the Annales des Sciences Naturelles, Troisième Série Botanique, page 193, and is entitled Note sur le Oephatilis Ipecacuanha, son mode de végétation, at son exploitation dans la Province de Matto Grosso, en Brazil. One of the most important pieces of information contained in this paper is that in three or four years after *ipeacuanha* roots have been dug up, they are reproduced from the fragments of root left in the ground: so that a crop is got every three or four years without any replanting. There is another encouraging fact which Mr. Gsmmift has just brought to my notice, namely, that some of the plants which have very little foliage, and do not seem to be thriving, are found, on being dug up, to have made a large quantity of roots; and as what is generally called the root of *ipeacuanha* is in reality an underground stem, it probably performed, in part at least, the function of foliage, particularly where grown in loose leaf-mould, which is freely permeated by air, as our plants have hitherto been grown.

G. HENDERSON.

Translation of Mr. Weddell's Paper on the *Cephaelis Ipecacuanha*.

THE medicine called by the name of *ipeacuanha* is known to be the product of several species of plants. The same name is generally given to all emetic roots, whatever may be the natural family to which they belong. The product of this name, which is now commonly used in Europe, is derived from a plant of the *rubiacea* family, the *cephaelis ipecaeantha*. Mr. A. Richard has given, in the name of an unaltered *atmeu* *ipecaetan*, the named (*strie*) *ipecaetan* of the same author (very rare in pharmacy in our day) is produced by the *pyri'hokya. emiira* of Mutis. The last is indigenous in New Granada, the *ipecaetan* on the contrary is peculiar to Brazil. It is this last which I have had special means of observing, and of which I shall here endeavour to give some account.

Several points in the history of this plant are generally known that it is useless for me to go over again, but I shall dwell on those which are only treated of in little known works, and I shall endeavour principally to make known the geographical distribution of the plants, the manner of gathering the roots, and the uses used by Nature for favoring its reproduction. This part of the question has appeared to me so important (the more interesting as its solution is a complete answer to the fears that have long entertained of this useful plant becoming extinct,

The word *ipeacuanha* appeared in Europe with the works of Pison and Marcgraff, and seems to be the name by which the *cephaelis* was known in that part of Brazil where the Portuguese first learnt to make use of it. Still it may be, as some accounts lead one to believe, that it has been with *ipeacuanha* as with Jesuit's bark, which has usurped a name which had been created for another plant. The term *ipeacuanha* is, in short, in no part of Brazil applied to the *cephaelis*, which is now known everywhere by the name of *poaya*, a term which, according to the Aduate St. Ilaire, would be a corruption of the Indian words "y cipo ayaea," which means "liaue-d-panier." This etymology is so much the more probable, as the European Portuguese still often call *ipeacuanha* by the name of '*i/i*' or '*xiiti*'. One of the best emetic roots of Brazil is indeed the product of a little plant which is remarkable for the brilliancy of its flowers, and it is not at all impossible that the discovery of this plant may have preceded that of other species of *fouyn*, and given its name to them.

The first knowledge of *ipeacuanha* appears, according to the general assent of authors, to go back to the Indians, who preceded the Portuguese in Brazil; and here, as in other circumstances, tradition has it that man was preceded by animals. There are wolves which, having indigestion, had the idea of emptying themselves by chewing the roots of the *cephaelis*, and have afterwards been imitated by the Indians. The tale will recall that of the falcon in New Granada drawing the attention of the aborigines of the country to the famous cure known as *gxtaco*, as well as that of the lions of Loxa curing themselves of their fever with the water of the ponds where the stems of *cinchona* had been macerated.

As to the introduction of *ipeacuanha* into European pharmacy, it only dated from the end of the seventeenth century, about fifty years after the publication of Haon's work, entitled "De Medicina Braiiliensis." Up to this time, though the most important properties of this root were known, the profession hesitated to make use of it: and even a few accidents, following the inconsiderate use of it, were the cause of its falling almost completely into disuse. It was only when a French merchant, named Ureux, had brought to Paris a quantity sufficient for making the following experiment that all was changed, and the "root of Brazil" took that place in the medical world which it deserved.

The physician Adriaen Helvetius, with whom Grenier had united to facilitate the diffusion of this remedy, induced no doubt by the example of the brilliant fortune which others had just procured to the Englishman Talbot, succeeded in his turn in interesting the King in the fate of *ipeacuanha*.

of the experiments made by his order in the Hotel Diea of Paris that the advantage of its secretory, was naturally proved, especially in a more or less secret, was from that moment, thanks to the munificence of the great king, published to Europeans the merit of discovering *ipecacuanha* but none can be gathered will pass over here in silence the first steps taken towards to refer at once to those of later years.

The most recent works which treat of *ipecacuanha* only indicate its existence in those parts of the Brazilian empire which adjoin more or less immediately the Atlantic Ocean; for example, the provinces of Para, Maranhao, Pernambuco, Bahia, Espirito Santo, Minas, Cearas, Rio de Janeiro, and Sao Paulo, in all of which on a larger or smaller scale the Precious root is gathered. Thus defined, the region of *cephaeiis* would have natural enough limits, since, commencing at the equinoctial line and going southwards it stops almost exactly at the tropic, and on the other it appears confined by the Atlantic on the east and to a great extent on the west by the high lands of the interior. These limits, however, are happily entirely hypothetical. Now, indeed, we know that the region of *cephaeiis ipeacuanha*, far from being limited to the comparatively narrow strip along the sea-shore, possesses, on the contrary, a much wider range of longitude than of latitude, since it extends to about 25 degrees into the interior of the continent, or to 50 degrees longitude west of Paris, that is to say, almost to the confines of Bolivia. Credible observers have even assured me that the plant has been discovered in the forests of this Republic in the province of Chiquitos, but I have not myself observed it beyond the Brazilian frontier. The fertility of the newly discovered district is after all such that they alone are almost sufficient to supply the European market.

From the little that I have said it will be seen that almost the whole of the new addition made to the field of production of *ipecacuanha* is to be found in the immense province of Matto Grosso. It was in the year 1824 that the first plants of *cephaeiis* were discovered in this part of Brazil in the neighbourhood of Vil'a Maria, a little village situated on the left bank of the Rio Paraguay. They were recognised by a Doctor of Matto Grosso, who accompanied the "Guarda-Mor" sent to test the auriferous sands of Rio Cabaal, but for a long time no one thought of making the plant an object of commerce, and the utmost expected was that its use as a medicine should spread to a small extent in the country. Later, towards the year 1830, an old forester named Motta, who had acted as guide to the expedition, and who himself gave me the details, recognised the same root in the forests which bound Rio Suputoba, and drew the attention of a merchant of Villa Maria to it. The latter, struck with the similarity between this root and that which was gathered with so much profit in the sea-bound provinces, sent samples of it to Rio de Janeiro, and from that moment the collection of it commenced.

The forests in which the *cephaeiis* thrives have a peculiar character, which it is difficult to forget; this is due to the presence of several remarkable vegetables. Almost all those of Matto Grosso are situated in the valley of the Paraguay, above Villa Maria, or even in those of the affluents which it receives at this part of its course. In order to be able to judge better of the parts inhabited by such an interesting plant, I went myself to one of these forests situated on the Rio Cabaal. Six days of navigation through a bower of verdure brought me to the end of my journey. I had quitted the Rio Cabaal some hours previously by a little river which flows into it, the Rio Vermelbo, on the banks of which a little (*hangar*) of leaves of the palm *indicaus* that the commencement of the domains of *tin* cephaeiis* is reached. This place has received the name of Port de Rueno; it was more than a year since any one had visited it.

The woods which immediately adjoin the river are situated too low for the *cephaeiis* to succeed there, and when the river is in flood, the soil is covered to a very considerable distance from the banks, a state of matters which often lasts during several months of the year. The growth of other vegetables is, however, only the more active; and when I reached on the path which leads towards the interior, I soon found myself in the heart of a vegetation of the most grievous description, which, without the large knives with which my Indians were armed, would have formed a barrier difficult to break through. The bamboos in particular have here in this part of the forest formed such a compact network that I almost became entangled in it like a fly in a spider's web. However at about a mile and a half from the river-banks the ground begins sensibly to rise; the soil now consisted only of sand, slightly humid and impregnated, if I may so speak, with the detritus of vegetables which have replaced its surface. Some new features of vegetation showed at last that I had reached a botanical region rather different from that which I had just quitted. Several species of palms, with which I had not met up to that point, arrested my attention, particularly *Euterpe oleraciw* or *Pabneto molle*, with a slim, tall trunk; and the *Bacaba* with distichous leaves were there conspicuous, and entirely replaced the *Capitata*, which had accompanied me until then. Still further, in places where the depressed surface allows some affluent source of the river to filtrate, there appeared in the

... *exorrhiza* or *Catisar*, very striking on account of the disposition of the aerial roots, which its trunk produces at fully 2 metres (6 feet) above ground, and which descend obliquely to it, forming so many natural supports upon which the tree rests. It is specially in the firm ground that surround these little marches, and in the perpetual shade of those other trees which grow in company with the vegetables, that I first named that the *cephaelis* delights. It is a small shrub, with a stem plain and bare towards the base, where it is often bent and more or less radical; its leaves, generally elongated towards the top of the plant, give it some resemblance to the daphnes of our woods.

The *cephaelis* rarely grows singly; it is much more common to find a number of plants clustered in the form of a loose round bush, which the collectors of *poai/a*, or *poayero* (as they are called), know by the name of *redoleros*.

In gathering the root of the *cephaelis* the *poayero* seizes with one hand, and if possible at one time, all the stems which form a bunch, whilst with the other he drives somewhat obliquely, into the soil and under the base a strong-pointed stick called *saracua*, with which he afterwards makes a see-saw movement. The mass of earth which imprisons the roots is thus raised, and when the operation has been dexterously made, all the roots detached to the bunch are at once obtained and almost without fracture. The *poayero* then separates the part used, shakes it lightly free from the adherent earth, and puts it in a large bag, which he carries for this purpose suspended at his side; then he proceeds to attack another clump, and so on. A workman who possesses all the requisite qualities may, under the most favorable circumstances, gather in a day about 15 kilogrammes of *ipecacuanha*, but the harvest of an ordinary laborer seldom exceeds 5 to 6 kilogrammes; some even scarcely collect 3 or 4 in the same space of time. The season also influences considerably the facility for the work.

In the rainy season, the earth being much more easy to till, the operation of gathering goes on much more rapidly, and the root then obtained is not only heavier, but is less fragile than in the dry season. Towards the fall of night the workmen dispersed in the forest and who are, as I shall be able to say later on, under a unique direction, reassemble at the camp. Each *poayero* then pours the result of his labours into the hands of a steward who weighs and spreads it upon hides to dry. The more rapid this last process, so much the more successful is it; and as far as is possible it is carried on in the full blaze of the sun. In favorable weather the root is quite dry at the end of two or three days at the most always supposing that during the night it is sheltered from the dew. When *ipecacuanha* has been dried slowly, or packed when still somewhat damp, its surface is always more or less mouldy, and it does not break so sharply as when the opposite is the case; nor has it the resinous and roseate appearance which characterise it when it has had all the wishes for care.

The *ipecacuanha* harvest continues throughout the whole year; but it generally relaxes a little in the rainy season, because of difficulty often experienced in drying the produce. Many extractors, however, prefer this time of year because of the great facilities for gathering. Now, as the flowering takes place exactly at this season, that is, about the months of January and March, there is no doubt, as Mr. Martius observes, that the fruit of the plant must suffer, and if Nature had given to the *cephaelis* only that means of multiplication which it has in common with all plants, the usual mode of collection would have been fatal to it. Happily for humanity it has been otherwise decided. It appeared to me that the *cephaelis* was much more seldom reproduced by seed than by another process, of which I ought now to speak.

No one is ignorant of the great power of reproduction which exists in the roots of some of our garden plants, particularly in that of the *machra* and of the *pauloivina*. We know that the roots, however small we may cut them, have the faculty of reproducing a new individual from each of the fragments: one may almost compare them, in this respect, to certain *polypes*. Well, this is the case to a certain extent with the root of the *cephaelis*; it is by a true system of cuttings, which the *poayero* makes in spite of himself. At the spot, where he effects the up-rooting of a plant, that the latter reproduces itself by a fragment which remains accidentally in the ground after the operation is sufficient to revive the plant. The intelligent *poayeros* of Matto Grosso, who are well aware of this facility, never fail, when they shake the earth off the plants which they have just dug from the ground, to leave intentionally the roots which have been accidentally broken off, and most of them are even careful before rising up to rapidly remove them by the extraction. Hence it is probable enough that this mode of propagation, in the clumps does not belong normally to the *cephaelis*, but that it is the result of the manipulation to which it is subjected, and which, as we see, far from destroying it, appears, is done with a small degree of intelligence, to tend to multiply it all the more.

Still, it must not be thought that the reinvigoration of the forest of *ipecacuanha* (if I may be allowed to use the expression in connection with such a small vegetable) takes place in a year. According to the most distinct information I have obtained, on this subject, it takes about three or four years necessarily to reinvigorate a district which has been

The gathering of *ipecacuanha* has place in like cases, of submitting the *cephaelis* to a kind of eminently suited for its preservation, and the circumstances that I have quoted are not the only ones that have contacted to this happy result. Another plays perhaps a no less important part, that is, the burning of the forests. Before this was vigorously practised the ground was so encumbered with the numerous vegetable remains which only did the seeds of the *ipecacuanha* not find within their reach. It even happened that full-grown plants were in time choked. On the extraction of the root was rendered more difficult owing to the necessity of the layer before being able to reach the true soil. The spongy layer which

Z^JS^J^T^

In conclusion, I may say shaken in a sieve to separate

the *ipecacuanha* is gathered. many of the extractors of Villa Maria are to serve as the means of conveyance in the very forests where

The collection of *ipecacuanha* in the Matto Grosso only commenced or twelve years ago, although it was well known before that period sold on the spot at the rate of 2 francs 60 centimes per pound and in than double. This high price attracted a numerous party to the forests of the Upper Paraguay, and after a certain time there was such an

the drug in instantly

forest of Paraguay and there spent whole months in uprooting the plant. The average price of the "arrobe," about 14½ kilogrammes, was then from fifty to sixty francs at Villa Maria, and from 78 to 90 francs at Rio de Janeiro.

Afterwards, from the glut in the market, the enterprise was suddenly and almost completely abandoned; then little by little the price mended, and the poayeros gradually returned to the woods. Now that the produce yearly obtained amounts to about 1,000 "arobes" or 15,000 kilofranks the "arrobe," and conveyed to Rio

SKI → ^ ^ ^ ^ ^ ^ ^ ^ ^ ^

APPENDIX B.

Hooker. — *Journal of Botany*, Third Series, Vol. II., Part I. *Vegetaux, &c.*

F. — *Species Algarum*. 1 Vol.

Botta. — *Notice sur un Voyage dans l'Arabie Heureuse*. 1 Vol.

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Indico, &c.
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E. Boimer.—Flora Orientalis. Vol II. (1 Vol.)

Periodicals.

- Transactions of the Agricultural and Horticultural Society of India.—VOIB. I-VIII.
to, Vola.) Presented by the Society.
Linnaea.—Vol. XXXVII, Part III.
Botanische Zeitung, 1873.—No. 1 only.
Bulletin de la Société Impériale des Naturalists de Moscou, 1872.—No. 1.
Bulletin du Congrès International de Botanique et d'Horticulture de St. Petersburg,
1870.

APPENDIX C.

List of Contributions to the Herbarium during the Official Year 1872-73.

- Dr F Stohzka.—A set of catch-plants (48 species).
 Dr Maingay's Malacca plants purchased (1,326 species).
 Diverse ferns presented by Dr. J. Hooker (713 species).
 A set of Dr. Wight's Peninsula plants from Dr. J. D. Hooker (2,671 species).
 Griffith's Indian grasses, distributed at Kew (356 species).
 C. B. Clarke.—Two bundles of Banca plants sent by Dr. Scheffer (about 150 species).
 A. L. Home, Esq.—Plants from the Sunderbuns (20 species).

Besides the above about 2,500 species of various plants (chiefly grasses and *Apocyna*) have been returned from Kew, to where they were sent for the sake of identification. All the above additions, amounting to nearly 8,000 species, have been glued and taken in the general herbarium.

APPENDIX D.

Plants received from 1st of April 1872 to 1st of March 1873.

FROM WHOM RECEIVED.	Number of open and closed boxes.	Wardian cases.	Number of plants.
Royal Gardens, Kew, London	2	2	95
Royal Botanic Gardens, Peradenia, Ceylon	2	2	176
Botanic Gardens, Jamaica	2	2	34
Messrs. B. T. Lang and Co., Ballarat	2	2	223
Messrs. Haage and Schmidt, Erfurt, Prussia	1	1	75
Captain Lowe	1	1	70
Agri-Horticultural Society, Nagpore	1	1	12
W. Bull, Esq., P. L. S., London	1	1	63
Sir W. Macarthur, Camden Park, Sydney	1	1	7
Captain, Murray	1	1	13
S. Jennings, Esq., Public Gardens, Allahabad	2	2	76
Colonel Hardinge, Rangoon	1	1	30
J. Gilbert, Esq.	1	1	21
Agri-Horticultural Society, Madras	1	1	7
Botanic Gardens, Ootacamund	1	1	25
Superintendent, Botanic Gardens, Ootacamund	1	1	6
A. Craw, Esq., Ranee Khet	1	1	38
T. Beaumont, Esq., M.D., Indore	1	1	32
Malabar, from S. S. Patna	1	1	2
Botanic Gardens, Melbourne	1	1	2
Eden Garden	1	1	17
Nicobar Islands	1	1	52
Colonel Raban	1	1	378
Total	14	ii	1,404

APPENDIX E.

Seeds received from 1st of April 1872 to 1st of March 1873.

FROM WHOM RECEIVED.	Number of kinds.
Royal Gardens, Kew, London	9
Royal Botanic Gardens, Ceylon	3
Botanic Gardens, Melbourne	83
Botanic Gardens, Java	321
Botanic Gardens, Adelaide	30
Botanic Gardens, Edinburgh	8
Haage and Schmidt, Erfurt, Prussia	177
Queensland Acclimatization Society	106 ^v
Agri-Horticultural Society, Lahore	432
William Bull, Esq., F. L. S.	96
Sir W. Macarthur	17
E. Moir, Esq., Ajmere... .. .	1

APPENDIX E.—(Continued.)

PROM WHOM RECEIVED.	Number of kinds.
C. Plate & Son, Erfurt	400
Botanic Garden, Algiers	>... 183
Barr and Sugden	52
Agri-Horticultural Society, Lucknow	133
C. B. Clarke, Esq., M.A.	1
C. A. B. Anderson, Esq., Assam	2
Government Cinchona Plantations, Rungbee	100
Superintendent, Botanical Gardens	9
Botanical Gardens, Saharanpore	3
Gustav Mann, Esq.	1
Botanical Gardens, Ootacamund	*» 11
The Commissioners appointed to inquire into production of, and trade in jute	50
Straits Settlements, Singapore	1
T. Beaumont, Esq., M.D., Indore	8
G. Bartlett, Esq.	31
—Jameison, Esq., Madras	1
Agri-Horticultural Society, Nagpore	1
Dr. King, Port Blair, Andamans	20
S. Jennings, Esq., Public Gardens, Allahabad	1
J. A. Crawford, Esq.	1
Government of Jamaica	1
Secretary to the Government of Bengal	1
Nicobar Islands	19
Total	2,415

APPENDIX F.

Plants despatched in cases from 1st of April 1872 to 31st of March 1873.

To WHOM DISPATCHED.	Number of open and closed boxes.	Wardian cases.	Number of plants.
Royal Gardens, Kew, London	1	1	53
Royal Gardens, Edinburgh	1	1	62
Royal Botanic Gardens, Peradenia, Ceylon	1	1	104
Colonel Haughton, Commissioner of Cooch Behar	2	...	60
Maharajah of Jeypore	4	...	100
Superintendent of Maunbhoom Jail	2	...	76
Rev. E. Ehoades	1	1	54
Straits Settlement, Singapore	1	...	23
— Thomson, Esq., Beehea	2	...	76
W. M. Anderson, Esq., Emigration Agent for Jamaica	2	...	48
Colonial Secretary, Jamaica	2	...	115
The Queensland Acclimatization Society	1	...	32
Lady Napier, Madras	2	...	52
G. Fairbrother, Esq., Rangoon	1	...	10
Commander of S. S. <i>Bagdad</i>	1	...	20
Koliabar Tea Estate	1	...	12
Dr. Calley	1	...	12
Dr. Mathew, Civil Surgeon, Monghyr	1	...	13
F. F. Patterson, Esq.	1	...	14
T. Beaumont, Esq., M.D., Indore	1	...	7
Commander of S. S. <i>Scindia</i>	1	...	22
"R. Morris, Esq.	1	...	32
William Bull, Esq., F. L. S., London	2	...	162
Obtain Aimerez, S. S. <i>Patri</i>	1	...	28
W. Smith, Esq., Assistant Commissioner, Nya Doomka	4	...	105
G. Bartlett, Esq.	2	...	49
Messrs. Pickford, Gordon and Co.	1	...	20
Government Cinchona Plantation, Rungbee	6	...	360

ditto, Lahore

APPENDIX E.—(Continued.)

TO WHOM SUPPLIED.	Number of open and closed boxes.	Wardian cases.	Number of plants.
Superintendent of Jail, Dinagepore	1	...	50
Ditto ditto, Arrah	1	...	50
Ditto ditto, Bankipore	1	...	50
Commissioner of Chittagong	1	...	50
Assistant Collector of Baraset	1	...	50
Total	42	17	2,302

Plants issued in pots from 1st of April 1872 to 31st of March 1873.

TO WHOM SUPPLIED.	Number of plants.
The Hon'ble Justice Markby	49
Captain Camell	9
S. Jennings, Esq., Public Gardens, Allahabad.	41
Dr. Walker	15
H. A. Mangles, Esq., c.s.	12
Dr. Waller	12
Belvidere Gardens, Alipore	114
The Hon'ble Justice Jackson	27
T. A. Apar, Esq.	38
Captain Laurell	30
Colonel Yanguerin	77
Public Assembly's Institution, Calcutta	50
T. Beaumont, Esq., Indore	42
Mint Garden	100
Church compound, Dum-Dum	100
Captain Boon	1
East Indian Railway	1,025
Babu Protapa Chandra Ghosa	1
Eden Garden	229
High Court...	309
Calcutta Wards' Institution,	100
Metcalfe Hall	510
Total	2,891

APPENDIX G.

Seeds despatched from 1st of April 1872 to 31st of March 1873.

TO WHOM SUPPLIED.	Number of seeds.
Royal Gardens, Kew, London	...
Ditto, Edinburgh	...
Botanic Gardens, Melbourne	...
Ditto, Java	...
Messrs. Haage and Schmidt, Erfurt, Prussia	53
Botanic Gardens, Ootacamund	50
Agri-Horticultural Society, Lahore	251
M. DeCock, Ghent	...
Société d'Acclimatation, Paris	23
W- M. Anderson, Esq., Emigration Agent for Jamaica	53
Superintendent of Port Blair	1
His Honor the Lieutenant-Governor of Bengal	...
Dr. King, London	...
L. Johnson, Esq., Belvidere	...
— Thomson, Esq., Beehea	20
William Bull, Esq., F. L. S.	2
» Public Gardens, Hong-Kong	no
— Kellimer, Esq.	10
A. Biermann, Esq.	36
— Saunders, Esq.	51
Agri-Horticultural Society, Lucknow	9
Total	800

ANNUAL REPORT OF THE ROYAL BOTANICAL GARDENS, CALCUTTA.

No. 30, dated Eungbee, the 31st May 1873.

From—DR. GEO. HENDERSON, Offg. Supdt., Royal Botanical Gardens, Calcutta,
To—The Secretary to the Government of Bengal.

I HAVE the honor to submit the annual report on the Royal Botanical Gardens, Calcutta, for the official year ending 31st March 1873.

2. Dr. King was obliged to take sick leave to England in August 1872. He was absent for some time before my arrival on 16th December. Dr. Cayley held charge. Mr. Scott, the Curator, left in November to investigate the disease affecting the opium crop, and has been engaged on that duty ever since. Mr. Stirling, the Second Gardener, left in July, and until Mr. Joseph Lister, from the Edinburgh Botanic Garden (who is now appointed second gardener), arrived with me from England, in the middle of December, the garden had been nearly two months without a European gardener, and was not improved in consequence.

3. During January, February, and March, I endeavoured to estimate the number of visitors, and although only 1,000 names were entered in the books during that time, I have reason to believe, from having the numbers actually counted on several occasions, that the actual number was not under 1,500 each month of the cold weather. On one or two occasions I have had reason to complain of the conduct of visitors in carrying off or mutilating valuable plants, and threatening violence to the native officials when remonstrated with.

4. The general condition of the garden is still rather unsatisfactory, and will continue to be so for some years, until the trees planted out after the cyclone begin to give shade and look ornamental. It was a grand idea of Dr. Anderson's to take advantage of the clean sweep made by the cyclone of most of the trees in the garden to replant the whole area as a gigantic arboretum, with all the trees arranged in botanical order; but unfortunately most of the trees were planted in open instead of dense clumps, to shade and protect each other as well as to keep down the rank grasses: the result is that a great many trees are not thriving, and a large number are dead or dying. During the past year a good deal of manure has been given to them, but this, I fear, will only make the grass grow more luxuriantly. During next rainy season as many trees as possible will be planted out in their natural orders to act as nurses for the others; for until shade is obtained few of the trees will thrive, and the grass cannot be kept in check. Most of the grasses which give trouble dislike shade.

5. The roads are in many places much in need of thorough repair. It is at times extremely difficult, owing to their great extent, to keep the walks and drives in creditable order. The existing roads appear to me to be quite numerous enough for every purpose, and I consider that it will be a great mistake to lay out any more, as was proposed; but if that is done, some of those now existing might be abandoned, or be made into grass walks.

6. The new two-storey house for the Curator has been completed, but the accommodation for the second gardener is very insufficient, being an old, dilapidated one-storey building. All dwelling-houses in the garden ought to be two-storey, and the ground floor should be raised three or four feet off the ground, for in the rainy season the whole garden is apt to be flooded. The building in which the herbarium and library are has been put in repair, and at present is in very good order. The river has not done much damage to its banks during the past year. I think something might be done to prevent its encroachment by

right place and time, will prevent damage. The sluices are not in good repair, and many of them are quite useless in their present condition. On Threat want of the garden is a large glass-roofed propagating house with 12 compartments, and with flues to give bottom heat when fire is on. In a house of this description it is almost impossible to multiply by cuttings such plants as ipeacuanha; and many plants arriving in wardian cases, and in a sickly state die for want of nursing in such an artificial state as a propagating house would afford. When new plant sheds require to be built they might be made a little more ornamental than the present without much increase in the cost. The glass fern-house is now much smaller for the requirements of the garden; it is impossible to keep up a large collection without a house of this sort. Glass-roofed houses are now made cheaply of iron, that I think it will be better to get them others are to be constructed. The cheap orchid house of wick designed by Mr. Scott answers the purpose pretty well its it is not ornamental, and it is very temporary. I think that replaced by a house of thick frosted glass, which has the advantage of preventing valuable orchids' S facilities at Calcutta for making a large collection and the ferns seem to excite Native and European visitors. The contents of houses suffered considerably by Mr. Scott's gardeners to look after them. I look on as hopeless and

The garden establishment with the exception of a few men and fault with, or made to work properly, they at once take their discharge. I have endeavoured to remedy this state of affairs by commencing a garden school for the 75 boys employed in the garden and

T.1.i^S-!=-i=1r?«

them enough English to enable them to read or write plant labels. Those who show intelligence get more pay, and are not active and intelligent native

train collectors do not like to was formerly established, and was given up because the boys, on getting instructed, got employment as gardeners on better pay elsewhere. I should consider this an additional reason for keeping men the services of the best

Natwai arrangement of plant, near the large Banyan tree with all the natural arrangement of the beds; but owing to the want of ground had got neglected and overgrown with grass; and the number of perennials it were, enables the arrangement to be more certain the most instructive to the students,

9. An Indian botanic garden ought to have some space devoted to plants of economic importance which are grown in the country, as well as all such plants from other countries which can be got to grow here. I have had a commencement made in the form of such a garden, and it will be laid out during the rains; the difficulty with native agency in keeping it up, for most of the plants have to be renewed every year, just as in the case of the herbaceous garden. A great variety of seed of fibre-yielding plants has lately been received from the commission appointed to inquire into the jute trade. This seed has all germinated, and when the plants flower and can be identified, they may yield some interesting information.

10. A few agricultural experiments have been made on a small scale, the model (or more properly experimental) farms are more suitable for all such experiments, which are carried out on a larger scale than we have room for in the Botanic Garden; these experiments require European officials to devote their whole time and attention to them.

11. The ultimate cultivation of ipecacuanha into India is one of the most important works now in hand. The count of all that has been done up to date is as follows:

1*. Theie are an appendix to this report.
Mahogany. I have given a detailed account of the mahogany trees about Calcutta seeding freely in the course of a few years. During the past year nearly two thousand plants were raised from seed produced at Calcutta and Barrackpore in the spring of 1872, and about 500 seeds were got in 1873. Almost the only mahogany tree in the garden which has ever seeded is an old damaged one, half of it having been blown down by the cyclone; and as it is possible that the injury it received has something to do with its seeding, I have ringed the bark on several large side branches of the other trees, to see if that will make them seed. This effect will not be known until March 1874, but already it has had the effect of making them shed their old leaves and open their buds full a fortnight earlier than any of the other trees except the damaged one which usually produces seed. About 1,000 layers of mahogany have been rooted; these will probably never be of use for timber, but they are likely to seed much sooner than seedling plants. I have tried to raise plants from cuttings, and although these make shoots, and some appear to root, most of them die after a time. Another attempt will be made in the rainy season with a better hope of success. Mahogany seed stands carriage so badly that our only hope of raising large plantations of it is to find out some locality in India where it will seed freely; and with the view of discovering this a large quantity of young plants, in sets of 50, has been lately distributed to jail gardens in various parts of the province, a careful record being preserved of the sites where these trees have been planted.

13. In December I brought out from England some plants of *Bxogonia Purga*, which yields the jalap of commerce. It hardly as yet had a fair trial, but it does not appear to thrive in Calcutta; it will be tried in Silckim.

14. The climate and soil of the Calcutta gardens are unsuitable for so many plants which it is desirable to introduce into the Himalayas, that for some years a small branch nursery garden has been kept up in Sikkim at the cinchona plantation. I should like to see these nurseries very much extended, as there is now a large European population of tea-planters in Sikkim, and as a rule all are anxious to try new plants. A number of plants (250) of the European chestnut have been raised, and it is expected that before the end of the year a very large number of plants will be got up for distribution. Dr. Oldham on his way home on leave, having kindly undertaken to get seed for me in Italy. Coffee is also being tried, and succeeds very well. Many tea-planters now but it will not pay so well as tea I fear.

15. The catalogue of plants in the Calcutta garden, published some years
Catalogue of Plants
3 *7 ^ J ^ f TM k TM >> is now out of print;
herbaceous ground, and taking stock as it were of all the plants in the garden,
I had a rough but complete list made out, which with other similar institutions.
Who has a list of the kind is possible to exchange plants and seeds

16. There is perhaps nothing more important in such a list.
Labels.

but I do not think that satisfactory zinc labels are necessary. Stamped
as stamped. But the pain is slow for several months hardly
labels pasted on the trees covered to try printed

17. The herbarium, order. The library is in excellent

A museum is wanted more suitable house for the
wood, &c., &c., which cannot be stored in the herbarium
the numerous old buildings of me of

Hew., pumps) mowing machine or S ^ V ^ no more
of workmen has been got. nery be ordered until a much more intelligent staff
which has been hitherto bought has in a few months been damaged and then
put aside to rust. Mr. Lister has once more had all the mowing machines put
in thorough order, and is determined to make them be properly worked and
taken care of if it is possible to do so.

19. I think they are not particularly
they are positively hideous.
beds, and it would add to the
Kew plan of having a limited
- • S i e S ^ ^ ^ - ^ - s s r t a ^ - ^
- • S i e S ^ ^ ^ - ^ - s s r t a ^ - ^
20. The nurseries - We lately been removed to the garden
Nursery - fe, the end
end
and n the garden
shrub a mistake.
years the garden,
have by bed.

near Calcutta, to let what inspected ivera Uat T/e ^ part nie ^ will
with young plants of the J&JIT
it is impossible to conceive/

21. The statements show that 860 packets of seed, 2,302
plants in cases, and ^ ^
Th Ji I heretofore 2,415 packets of
The interchange of seeds and plants was very
the past year owing to the changes amongst the officials - Very f
additions have been made to the list, but the March 11 Z
two very active and intelligent young men from the And
Nicobar Islands; they brought back specimens of the
but unfortunately very few plants were seen when in flower

23. Besides the interchange of useful and rare plants with other countries and the distribution of plants and seeds throughout India, I think one of the chief objects (I would even say the chief object) of these gardens, and one which of late has been too often lost sight of, is that they should form the headquarters of a botanical survey of India. Such a work cannot, however, be undertaken unless the Director of the gardens and the Curators of the herbarium and gardens are allowed to devote themselves to their own proper work. The lectures on botany at the Medical College are a very great tax on the Superintendent, and these, taken along with official reports and correspondence, almost exhaust his time and leave very little uninterrupted leisure for purely scientific work.

24. The following appendices accompany this report :—

- A.—Ipecacuanha.
- B.—List of additions to the library during the year.
- C.—List of contributions to the herbarium during the year.
- D.—Plants received during the year.
- E.—Seeds received during the year.
- F.—Plants distributed during the year.
- G.—Seeds distributed during the year.

APPENDIX A.

IPECACUANHA.

As the experiments being made to introduce this plant into India are perhaps the most interesting attempts at acclimatization now being made, I think it as well to give a brief history of what has been already done, and the latest results of our experience regarding the plant. This history is a very instructive one, and shows how difficult it is to carry out an experiment rapidly, nearly eight years having now been occupied in getting a large lot of stock plants, and as yet we have only about 7,000 altogether, half of them being cuttings. If *ipecacuanha* is ever to succeed in India, I think another year will be required. It is evident, however, that several varieties, not species, exist amongst the plants now in Europe. I think this gives us an additional encouragement to persevere, for it is possible that these varieties may require just as different treatment, as the different species of cinchona do, and that although one variety may not answer here, some of the others may. Besides this, plants grown from minute cuttings and reared under glass are much more delicate than those grown from larger cuttings kept in the open air; and I do not consider that the experiments hitherto made are of much value as showing whether or not the plant will thrive in the Bengal Presidency. It is one of the slowest growing plants I know, and one of the most difficult to propagate by cutting. I have seen some cuttings of the stem remain quite fresh for over two months without attempt at making roots. Root cuttings strike much more readily, but even they sometimes become quite stagnant, and will not put out shoots unless they are of pretty large size and get a brisk bottom heat. From all I hear of the soil and climate of the Andaman Islands, I believe the plant will thrive there, and I have offered to send General Stewart some plants for trial. But to return to the history of its introduction.

In 1866 Dr. King brought a plant from Kew which had been originally got from Brazil; two years later, namely in

1868—This plant had been increased by cuttings to a large number.

1869—Only nine plants still, but Dr. Anderson, who had gone to England, was endeavouring to get more, and succeeded in obtaining a number in Edinburgh.

1870—Mr. Clarke reported that the plants were as at last report; every thing had been done for them, but they continued unhealthy and would not grow. Some sent to Sikkim were doing better.

1871—The plants in Calcutta are reported just as before.

1872—At the beginning of the official year there were five plants in Sikkim and seven in Calcutta, and those in Sikkim were multiplied by root cuttings to about 30 by the end of August.

The following memorandum by Mr. Gammie, on the introduction of *ipecacuanha* to the Sikkim Himalayas, shows what has already been done. Mr. Gammie says :—

"Three plants of *ipecacuanha* were received at Kungbee from the Calcutta Botanic Garden in 1868. These formed part of the produce of the single plant brought out last year from the Royal Gardens, Kew, in the early part of 1866. One of the three died soon after arrival at Kungbee, and on the 31st of March 1869 the remaining two had been increased to five rooted plants and one cutting. The cutting afterwards died. On the same date in 1871 there were five rooted plants and seven cuttings, and again the cuttings were unfortunate, for when a washerman (dhobie) fell through the glass frame in which they were placed in

completely destroyed them. We then determined not to cut the plants as we found that after cutting the plants were a very poor supply of roots, and in consequence of this determination we had the plants of their roots, which we cut into very small cuttings. By this method our stock of plants and cuttings at the end of August 1871. Since then the foliage has been received at Kungbee from the Edinburgh nurserymen, the Edinburgh nurserymen :-

"September 1871	...	...	...	...
"March 1872	...	...	...	...
"December 1872	...	...	...	247
"January 1873	...	...	...	10

reached Kungbee alive. On 31st March last in Calcutta. In December and as the weather was in Calcutta, notwithstanding the adverse conditions, the plants propagated, set to work and made cuttings both in March about 500 new plants had been produced, and sent to Sikkim. The roots, when packed in slightly moist earth, stand carriage remarkably well. I brought England packed in this way, and most of them arrived in good order.

On the 1st January 1873 the total number of plants amounted to no less than 6,719 in Sikkim, and about 500 I brought out 128 plants from Kew and Edinburgh, 300 cold to send them to Sikkim, I decided to see if they attempts made in Calcutta, notwithstanding the adverse conditions, the plants propagated, set to work and made cuttings both from the Edinburgh gardens, where he had March about 500 new plants had been produced, and sent to Sikkim. The roots, when packed in slightly moist earth, stand carriage remarkably well. I brought England packed in this way, and most of them arrived in good order.

Two plants fully exposed were killed by the sun; all those under shade appear to have met with many accidents. Single plants have been placed out at five different points along the border. The plants more had all the exception of one plant under shade of cinchona, near Mr. Biermann's house, none seem to thrive, and even the successful one is no better than those planted under shade in the Terai they are at my suggestion, in plants in beds of leaf mould with grass matting, but as the plants in Sikkim are located about 3,000 feet above the sea, in glass-covered frames, and planted in a mass of well-drained leaf mould, but without bottom, only used when cuttings are being started.

and he has given me the following note:-

Memorandum by Mr. Kurz.

"It is right to state, in explanation to Mr. Gamaxie's remark about the ipecacuanha. Dr. Grisebach states therein (Bericht uber die Leistungen in der Pflanzengeographie 1848, p. 57) that the ipecacuanha grows in the dense shade of certain palms and trees on marshy grounds (quellenichte gruende), whereas on a perusal of Weddell's French original I find it distinctly stated that the plant grows chiefly on firm ground surrounding these little marshes (surtout sur la terre ferme qui quitoures ces petits marais de vegetation, etc., in Annales des Sciences Naturelles, Série 3, XI, 193-202), which I do not consult when I formed my views on the plant, should leave no doubt as to the requirements of the ipecacuanha plant (l. c. p. 197-198)."

I have read the excellent paper of Mr. Weddell which Mr. Kurz refers to, and as it is one of the most important documents on the subject we have yet got, I give a translation of it. It is published in the *Annales des Sciences et des Arts, Troisième Série Botanique*, page 193, and is entitled *Note sur le Cephaelis [ri-uinnha, son mode de végétation, et son exploitation dans la Province de Mato Grosso, en Brazil*. OUR most important piece of information contained in this paper is that in three or four years after *Uraminhanha* roots have been dug up, they are reproduced from the fragments of root left in the ground; so that a crop is got every three or four years without any replanting. There is another encouraging fact which I trust Gammio has just brought to my notice, namely, that some of the plants which have very little foliage, and do not seem to be thriving, are found, on being dug up, to have made a large quantity of roots; and what is generally called the root of *ipecacuanha* is in reality* an underground stem, it probably performed, in part at least, the function of foliage, particularly where grown in loose leaf mould, which is freely permeated by air, as all our plants have hitherto been grown.

G. HENDERSON.

Translation of Mr. Weddell's Paper on the *Cephaelis Ipecacuanha*.

THE medicine called by the name of *ipecacuanha* is known to be the product of several species of plants. The same name is generally given to all emetic roots, whatever may be the natural family to which they belong. The product of this name, which is now commonly used in Europe, is derived from a plant of the *rubiacea* family, the *cephalanthus ipecacuanha*. Mr. A. Richard has given it the name of an nutated (*wine It*) *ipecacuanha*. The striated (*striae*) *ipecacuanha* of the same author (very rare in pharmacy in our day) is produced by the *psychokya emitica* of Mutia. The last is indigenous in New Granada, the *cephalis* on the contrary is peculiar to Brazil. It is this last which I have had special means of observing, and of which I shall here endeavour to give some account.

Several points in the history of this plant are so generally known that it is useless for me to go over them, but I shall dwell on those which are only treated of in little known works, and I shall endeavour principally to make known the geographical distribution of the plants, the manner of gathering the roots, and the means of using them, regarding its reproduction. This part of the question has, I think, been little attended to, and is interesting as its solution is a complete answer to the fears of the plant becoming extinct.

The word *ipecacuanha* at present known in Europe with the works of Pison and Martini, and seems to be the name by which the *cephalanthus* was known in that part of Brazil where the Portuguese first learnt to make use of it. Still it may be, as some accounts lead one to believe, that it has been with *ipecacuanha* as with Jesuit's bark, which has usurped a name which had been created for another plant. The term *ipecacuanha* in short, in no part of Brazil applied to the *cephalanthus*, which is now known everywhere by the name of *poatfa*, a term which, according to M. Auguste St. Hilaire, would be a corruption of the Indian words "ycipo ayaca," which means "liane-a-panier." This etymology is so much the more probable, as the European Portuguese still often call *ipecacuanha* by the name of *cipo* or *mine*. One of the best emetic roots of Brazil is indeed the product of a little plant which is remarkable for the brilliancy of its flowers, and it is not at all impossible that the discovery of this plant may have preceded that of other species of *pyracantha*, and given its name to them.



The first knowledge of *ipecacuanha* appears, according to the general assent of authors, to go back to the Indians, who preceded the Portuguese in Brazil; and here, as in other circumstances, tradition has it that man was preceded by animals. There are wolves which, having indigestion, had the idea of curing themselves by chewing the roots of the *cephalanthus*, and have afterwards been imitated by the Indians. The tale will recall that of the falcon of New Granada drawing the attention of the aborigines of the country to the efficacious cure for poisoning known as *guacc*, as well as that of the lions of Loxa curing themselves of fever with the water of the ponds where the stems of *atnehomt* had been macerated.

As to the introduction of *ipecacuanha* into European pharmacy, it only dated from the Mid of the seventeenth century, about fifty years after the publication of Pison's work, entitled "De Medicina Brasiliensis." Up to this time, though the most important properties of this root were known, the profession hesitated to make use of it; and even now, in some remote accidents, following the inconsiderate use of it, were the cause of fatal accidents almost completely into disuse. It was only when a French merchant, named Gronier, had brought to Paris a quantity sufficient for making the following experiments, that all prejudices disappeared, and the "root of Brazil" took that place in the medical world which it deserved.

The physician Adrien Holvetius, with whom Grimier had united to facilitate the discovery of this remedy, induced no doubt by the prospect of the brilliant fortune which *ipecacuanha* had just procured to the Englishman Taibot, succeeded in his turn in interesting Louis XIV in the fate of *ipecacuanha*.

It was in consequence of the experiments made by his order in the Hotel Dieu ^o Paris that the advantage to be derived from the use of *ipecaquanha* in certain disease*, ^{all<*} specially in diarrhoea and dysentery, was finally proved; and the remedy, which up to that time had been kept more or less secret, was from that moment, thanks to the munificence of the great king, made publicly known.

I have said*that tradition refused to Europeans the merit of discovering *ipecaquiwh*¹Λ but none can ever contest that of their having immensely extended the limits of the* region where it is gathered. I will pass over here in silmo< f/h, f;,>j «t.... i.i-<m fwdard* these discoveries to refer at once to those of later years.

The most recent works which treat of *ipecaquanha* only inuvjitr us uu.stuico in LH parts of the Brazilian empire which adjoin more or less immediately the Atlantic Ocean: for example, the provinces of Para, Maranhao, Pernambuco, Bahia, Espirito Santo, Minas> (Paraes, Rio de Janeiro, and Sao Paulo, in all of which on a larger or smaller scale the precious root is gathered. Thus defined, the region of *cephaëlis* would have natural enough limits,' since, commencing at the equinoctial line and going southwards it stops almost exactly at the tropic, and on the other it appears confined by the Atlantic on the east and to a great extent on the west by the high lands of the interior. These limits, however, are happily entirely hypothetical. Now, indeed, we know that the region of *cephaelis ipec**'* > . **'ha, far from being limited to the comparatively narrow strip along the sea-shore, }H,v.-sses, on the contrary, a much wider range of longitude than of latitude, since it extend* to about 25 degrees into the interior of the continent, or to 50 degrees longitude west of Pari^ that is to say, almost to the confines of Bolivia. Credible observers have even assured me that the plant has been discovered in the forests of this Republic in the province of Chiquitos, but I have not myself observed it beyond the Brazilian frontier. The fertility of the newly discovered district is after all such that they alone are almost <NW;....t > cnnnlv the European market.

From the little that I have said it will be seen ^{tu.v u;iu.>> i} im: WJOKJ oi the n<ST addition made to the field of production of *ipecaquanha* is to be found in the immense province of Matto Grosso. It was in the year 1824 that the first plants of *cephaelis** were discovered in this part of Brazil in the neighbourhood of Villa Maria, a little village situated on the left bank of the Parana. They were recognised by a Doctor of Matto Grosso*, who <op^ety of conditions^a-JV6 m'fme/o test the auriferous sands of Rio Cabayal, but ^{ihT} a long time Two plants fully exposed were¹ g the plant an object of commerce, and the utmost ex]Vs Jiave^met with many accidents. >e should spread to a small extent in the country. Later, towards ^{imiyecu} Vo-r,"atλ >li) forcste^^y. l Motta, who, ^{luui noted} >• guide to the expedition, and who himself gave me the details, recognised the same root in the forests which bound Rio Suputoba, and drew the attention of a merchant of Villa Maria to it. The latter, struck with the similarity between this root and that which was gathered with so much profit in the sea-bound provinces, sent samples of it to Rio de Janeiro, and from that moment the collection of it commenced.

The forests in which the *cephaelis* thrives have a peculiar character, which it is difficult to forget; this is due to the presence of several remarkable vegetables. Almost all those of Matto Grosso are situated in the valley of the Parana, above Villa Maria, or even in those of the affluents which it receives at this part of its course. In order to be able to judge better of the parts inhabited by such an interesting plant. I went myself to one of these forests situated on the Rio Cabayal. Six days of navigation through a bower of verdure brought me to the end of my journey. I had quitted the Rio Cabayal some hours previously by a little river ^{whi< h} flows into it, the Rio Vermelho, on the banks of which a little (*hangar*) of leaves of the palm indicated that the commencement of the domains of the *cephaelis* is reached. This place has received the name of Port de Kueno; it was more than a year since any one had visited it.

The woods which immediately adjoin the river are situated too low for the *cephaelin* to succeed there, and when the river is in flood, the soil is covered to a very considerable distance from the banks, a state of matters which often lasts during several months of the year. The growth of other vegetables is, however, only the more active; and when I entered on the path which leads towards the interior, I soon found myself in the heart of a vegetation of the most grievous description, which, without the large knives with which my Indians were armed, would have formed a barrier difficult to break through. The bamboos in particular have here in this part of the forest formed such a compact network that I almost became entangled in it like a fly in a spider's web. However at about a mile and a half from the river-banks the ground begins sensibly to rise; the soil now consisted, only of sand, slightly humid and impregnated, if I may so speak, with the detritus of vegetables which have replaced its surface. Some new features of vegetation showed at last ^{ma} I had reached a botanical region rather different from that which I had just quitted, ^{bovanv} species of palms, with which I had not met up to that point, arrested my attention, ^{particu-} **larly *Euterpe oleracina* or *Palmelo molle*, with a slim, tall trunk; and the *hnocarpit** ^{Bacaba} with distichous leaves were there conspicuous, and entirely replaced the *Loco.** ^{Capita}, which had accompanied me until then. Still further, in places where the depressedV, surface allows some affluent source of the river to fltm.Λ there appeared in the midst of**

Mauritia and tree ferns the *Triarteia exorrhiza* or *Catisar*, very striking on account of disposition of the aerial roots, which its trunk produces at fully 2 metres (6 feet) above ground, and which descend obliquely to it, forming so many natural supports upon which the tree rests. It is specially in the firm ground that surround these little marshes, and in the perpetual shade of those other trees which grow in company with the vegetables, that I have just named that the *cephaelis* delights. It is a small shrub, with a stem plain and horizontal towards the base, where it is often bent and more or less radical; its leaves, generally close to the top of the plant, give it some resemblance to the daphnes of our woods.

The *cephaelis* rarely grows singly; it is much more common to find a number of plants clustered in the form of a loose round bush, which the collectors of *poaya*, or *poayiros* (as they are called), know by the name of *redoleros*.

In gathering the root of the *cephaelis* the *poayero* seizes with one hand, and, if possible at one time, all the stems which form a bunch, whilst with the other he inserts somewhat obliquely, into the soil and under the base a strong-pointed stick called *sarac* with which he afterwards makes a see-saw movement. The mass of earth which imprisons the roots is thus raised, and when the operation has been dexterously made, all the roots attached to the bunch are at once obtained and almost without fracture. The *poayero* then separates the part used, shakes it lightly free from the adherent earth, and puts it in a large bag, which he carries for this purpose suspended at his side; then he proceeds to attach another and so on. A workman who possesses all the requisite qualities may, under the most favorable circumstances, gather in a day about 15 kilogrammes of *ipecacuanha*, the harvest of which exceeds 5 to 6 kilogrammes; some even scarce collect it in the rainy season influences considerably facility!

In the operation of gathering the roots of the *cephaelis* the *poayero* goes on with his legs, and than with his hands, and who carries the camp. Each *poayero* who weighs and spreads it upon the xiore successful is it; and as far as is possible. In favorable weather the root is quite dry at the time of gathering, always supposing that during the night it is sheltered from the sun. If it has been dried slowly; or paeied when still somewhat damp, its surface is more mouldy, and it does not break so sharply as when the opposite is the case; nor has it the resinous and roseate appearance which characterise it when it has had all the wish for care.

The *ipecacuanha* harvest continues throughout the whole year; but it generally relaxes a little in the rainy season, because of difficulty often experienced in drying the produce. Many extractors, however, prefer this time of year because of the great facilities for gathering it. Now, as the flowering takes place exactly at this season, that is, about the months of February and March, there is no doubt, as Mr. Martius observes, that the fruit of the plant must suffer, and if Nature had given to the *cephaelis* only that means of multiplication which it has in common with all plants, the usual mode of collection would have been fatal to it. Happily for humanity it has been otherwise decided. It appeared to me that the *cephaelis* was much more seldom reproduced by seed than by another process, which I ought now to speak.

No one is ignorant of the great power of reproduction which exists in the roots of some of our garden plants, particularly in that of the *maelura* and of the *pauloivina*. We know that the roots, however small we may cut them, have the faculty of reproducing a new individual from each of the fragments: one may almost compare them, in this respect, to the *algae*, or to certain *polypes*. Well, this is the case to a certain extent with the root of the *cephaelis*; it is by a true system of cuttings, which the *poayero* makes in spite of himself at each spot, where he effects the up-rooting of a plant, that the latter reproduces itself. Each fragment which remains accidentally in the ground after the operation is sufficient to renew the plant. The intelligent *poayeros* of Matto Grosso, who are well aware of this peculiarity, never fail to shake the earth off the plants which they have just taken from the ground, to leave intentionally the roots which have been broken; and most of them are even careful before rising up to rapidly refill the notches caused by the extraction. Hence it is probable enough that this mode of vegetation of the *cephaelis* does not belong normally to the *cephaelis*, but that it is owing to that manipulation to which it is subjected, and which, as we see, far from destroying it, appears to it with a small degree of intelligence, to tend to multiply it all the more. It cannot be thought that the reboisement of the forest of *ipecacuanha* (if we use the expression in connection with such a small vegetable) takes place according to the most distinct information I have obtained on this subject, that about four years must necessarily elapse before a district which has been cleared and sown with equal profit.

The gathering of *ipecacuanha* has just the effect, contrary to what generally takes place in the cases, of submitting the *cephaelis* to a kind of accidental culture, eminently suited for its preservation, and the circumstances that I have only quoted are not the only ones that have contributed to this happy result. Another plays perhaps a no less important part, that is, the burning of the forests. Before this was vigorously practised the ground was encumbered with the numerous vegetable remains which accumulated on the surface, so that only did the seeds of the *ipecacuanha* not find within their reach suitable soil, but, it often even happened that full-grown plants were in time choked. On the other hand the extension of the root was rendered more difficult owing to the necessity of raising each specimen on a layer before being able to reach the true soil, owing to the existence of the leaves which are now destroyed. One sometimes sees a forest fire in the *ipecacuanha* region last for several months consecutively.

In conclusion, I may say that when the root is dry, it is broken into smaller fragments, shaken through a sieve to separate them from the sand or earth which may still adhere to them, and finally put in boles for convenience of transport. Many of the extractors of Villa Maria construct the boats which are to serve as the means of conveyance in the very forests where the *ipecacuanha* is gathered.

The collection of *ipecacuanha* in the Matto Grosso only commenced, as I have said, ten or twelve years ago, although it was well known before that period. That first collected was sold on the spot at the rate of 2 francs 60 centimes per pound, and in Rio de Janeiro it was more than double. This high price attracted a numerous population to the forests of the Province of Paraguay, and after a certain time there was such an immense quantity of the drug in the market that nobody would look at it; it was verily a *drug* in the market; instantly its price fell at least a fifth.

Kilograms of *ipecacuanha* were taken from the neighbourhood of Villa Maria; the forests were then occupied by from twelve to fifteen hundred gatherers: Men, women, and children, bond and free, advanced several days' journey into the forest of Paraguay and there spent whole months in uprooting the plant. The average price of the *ipecacuanha* in Villa Maria, afterwards, from a glut in the market, the enterprise was suddenly and almost

returned to the woods. Now that the produce yearly obtained amounts to about 15,000 arrobes, or 15,000 kilogrammes, its value is stationary. At Villa Maria *ipecacuanha* of good quality brings in about 76 to 80 francs, and conveys to Rio

APPENDIX B.

List of Additions to the Library during the Official Year 1872-73.

- Hooker.—Icones Plantarum. Third Ser., Vol. II., Part I. TT i
 M. H. Butrochet.—Memoires Anatomique et PhysioWique deB Vegetaux, &c. 2 Vois.,
 with Atlas.
 F. T. iftoV.—Species Algarum. 1 Vol.
 Botta.—Notice sur un Voyage dans TArabie Heureuse . 1 Vol.
 rwteW.—MonographiaMonimiacearum. 1 Vol.
 Fee.—Iconographie des Especes Nouvelles des Pougeres (6th to 10th mem. in '1 parts).
 De Vriese et P. Hart ing.—Monographic des Marattiacees, 1 part.
 Ch. D. Badham.—The Esculent Funguses of England. 1 Vol.
 U. Schacht.—Lehrbuch der Anatomie u. Physiologic der Gewachse, 2 parts.
 L. Rabenhorst.—Flora Europsoa Algarum, 3 parts.
 L. Reichenbacft.—Gonea Plantarum Itariorum, &c. 10 Vols.
 C. A. Affrvdh.—Species Alcarum. Vols. I and II, Part I.
 J. Macquart.—Les Plantes Herbees d'Europe d' feUrslit^CtS- ? vnls - , m/e
 J. G. Agardh.—Species, Genera, et Ordines Algarum. 2 Vols., in 5 parts. tod
 Bonplandia.—Tear 1853 to 1863. 10 Vols.
 J. A. Chatin.—Anatomie comparee des Vegetaux, 13 parts.
 E. Cosson et Durien de Maisonneuve.—Flora d'Algeria 2 Vols., with Atlas.
 Th. M. Fries.—Lichenes Arctoi Europa) Groenlandiaeqe Ilactenus Cogniti. 1 Vol.
 J. Bateman.—fiL Second Century of Archidaceae Plants. 1 Vol.
 •/. Payer.—Botanique Cryptogamique. 1 Vol.
 // Baillon.—Adansonia. Vols. II to IV, incl.
 E. Boissier.—Centuria Euphorbiarum. (V amphet
 M. Delile.—Nouveaux eristaux parmiles grains de pollen du laladium bicolor. (1
 /• W. KlqL—Revisio Jeidearum. (Pamphlet.)

- I. Mueller.*—Monographie des Eesedacées. 1 Vol.
A. Grips.—Note sur le Développement de la Graine du Eicin. (Pamphlet.)
A. Spring.—Monographie des Lycopodiaceés. Part I only.
M. B. Dutrochet.—Eecherches sur l'Accroissement des Végétaux.
M. de Mirhel.—Nouvelles Notes sur le Cambium. (Pamphlet.)
M. Decaisne.—Plantes de l'Arabie Heureuse. (Pamphlet.)
M. Decaisne.—Memoire sur le Développement du pollen de l'Ovule, &c. (Pamphlet.)
M. Payen.—Memoire sur l'Amidon, la Dextrine et la Diastase. (Pamphlet.)
Raffeneau-Delile.—Disertation sur les Effets d'un Poison de Java.
A. Jussien.—Memoire sur le Groupe des Méliacées. (Pamphlet.)
Dutrochet.—Observations sur la Forme et la Structure Primitives des Embryons Végétaux. (Pamphlet.)
J. Decaisne.—Eecherches sur la Garance, &c. (Pamphlet.)
F. Dozy et J. B. Molkenboer.—Muscorum Frondosorum Novae Speciei Archipelago, Indico, &c.
Dutrochet.—Observations sur les Tiges des Végétaux. (Pamphlet.)
A. de Jussien.—Memoire sur les Embryons Monocotylédones. (Pamphlet.)
P. Duchartee.—Observations sur la Fleur de l'Oenothera Suaveolens. (Pamphlet.)
J. E. Planchon.—Memoire sur la Famille des Simaroubacées. (Pamphlet.)
F. Marins Barneoud.—Memoire sur le Développement de l'Ovule dans les Eeoniculacées et des Broméliacées. (Pamphlet.)
A. Gris.—Observations sur la Fleur des Maracéées. (Pamphlet.)
E. Prillieux.—Observations sur la Dehiscence du fruit des Orchidees. (Pamphlet.)
A. Braun.—De Algis Unicellularibus. 1 Vol.
M. G. Thuret.—Deuxieme Note sur la Fécondation des Fucacées. (Pamphlet.)
A. Trecul.—Nouvelles Observations relatives à l'Accroissement en Diamètre des Arbres de Cotylédones. (Pamphlet.)
Trecul.—Memoire sur la Formation des Fenilles. (Pamphlet.)
A. Moquin-Tandon.—Chenopodiarum Monographica Enumerata. 1 Vol.
C. G. Stempel.—De Trunco Palmarum Fossilium.
A. Monnier.—Essai Monographique sur les Hieracium.
A. Gris.—Eecherches Microscopique sur la Chlorophylle. (Pamphlet.)
A. Richard.—Monographie des Orchidees des Isles de France et du Bourbon. (Pamphlet.)
Ch. Morren.—Eecherches sur le Mouvement et l'Anatomie du Style du Goldfussia Anisophylla. (Pamphlet.)
Oh. Morren.—Eecherches sur le Mouvement et l'Anatomie du Stylodium Graminifolium. (Pamphlet.)
J. Decaisne.—Memoire sur la Famille des Lardizabacées. (Pamphlet.)
J. B. L. Letellier.—Figures des Champignons, Livr. 1 to 18, incl.
M. B. Bocquillon.—Eevue des Verbenacées.
Fr. Koernicke.—Monographia Marantearum Prodromos. 1 Vol.
Fr. Koernicke.—Monographiae Marantearum Prodromos, II. 1 Vol.
St. Endlicher.—Iconographia Generum Plantarum.
E. Fries.—Icones Selectae Hymenomycetum nondum delineatorum. Fasc. 1—3.
Dumond D.—Voyage de l'Arabie. 2 Vols., with Atlas.
Gonnermann u. Rabenhorst.—Mycologia Europaea, Parts 1—9.
F.—Iconographia Plantarum Fossilium. 1 Vol.
A. Bunge.—Generis Astragali Species Gerontogae Enumeratio, Parts 1-2.
F.—Le Monde Primitif.
B. de Vriese.—Illustrations d'Orchidees des Indes Orientales Neerlandaises. 1 Atlas
B. G. Schott.—Prodromus Systematis Arordearum. 1 Vol.
*F.**—Genera et Species Plantarum Fossilium. 1 Vol.
J. Lindley and W. Button.—The Fossil Flora of Great Britain. 3 Vols.
J. DouvaUJouve.—Histoire Naturelle des Equistum de France. 1 Vol.
F.—Die Fossile Flora von Sotzka. 1 Vol.
B. Schott.—Arordeae, Part I.
E. Boissier.—Icones Euphorbiarum. 1 Atlas.
E. Boissier.—Flora Orientalis. Vol II. (1 Vol.)

Periodicals.

- Transactions of the Agricultural and Horticultural Society of India.—Vols. I—VIII. (8 Vols.) Presented by the Society.
 sm.n.a. - Vol. XXXVII, Part III.
 frV ftw-anische Zeitung, 1873.—No. 1 only.
 M. ova Jetin de la Société Impériale des Naturalists de Moscou, 1872.—No. 1.
 Jetin du Congrès International de Botanique et d'Horticulture de St. Petersburg, 1870.

APPENDIX C.

stat of Contribution* to the Herbarium during the Official Year 1872-73.

Dr. F. Blaziczka.--A. set of cutob-planta (48 species).
Dr. Maingay's Malacca plants purchased (1,326 species),
Pavorso ferua presented by Dr. J. Hooker (713 speeios).
A got of Dr. Wight's IVuinsula plants from Dr. J. D. Hooker (2,671 species).
Griffith's Indian grasses, distribut-l at Eew (366 species).
C. B. Clarke.--Two bundles of Bauca plants sent by Dr. Sohoffer (about 150 speoi'es).
A L. Ilonic, Esq.--Plants from the •SmuWbuns (20 sped'es).
Besides tho iv>ve about 2,500 species of various plants (chiefly grasses and Apocynus)
have been returned from Kew, to where they were sent for the sake of identifica-tion- All the
Ji?TM." addition.', amounting to nearly 8,000 species, have been glued and taken in the
general" 'orbarium,

APPENDIX D.

PlanU reeemd firm Ut of April 1872 to SUt of March 1873.

Table with 4 columns: FROM WUHH KICZITT.D., Number of ripen *nd, Wardian cases, Number of plants. Rows include Royal Gardens, Kew, London; Royal Botanic Gardens, Perudeuia, Ceylon; Botanic Gardens, Jamaica; Messrs. T. Lang and Co., Balhirat; Messrs. Haago and Schmidt, Erfurt, Prussia; Captain Lowe; Agri-Horticultural Society, Nagp^]e; W. Dull, Esq., P. L. s., London; Sir W. y.^rtbur, fkmdeu Tark, Sydney; Captain Murray; 8. Jennings, Esq., Publio Gardens, Allahabad; Colonel Hardinge, Rangoon; J. Gilbert, Esq.; Agri-Horticultural Society, Madras; Botanic Gardens, Ootacamund; Superintendent, Botanic Gardens, Ootaconmnd; A. Craw, Esq., Ranee Khet; T. Beaumont, Es<., M n., Iudore; Malabar, from S. 8. Patno; Botanic Gardens, Melbourne; Eden Gardon; Nicobar Islands; Colonel Iiaban; Total.

APPENDIX E.

Seed* received from W of April 1872 to \$Ut eftfarCA 1873.

Table with 2 columns: FROM WHOM UCEIID, Number of kinds. Rows include Uoyal Gardens, K.<w, London; lloyal Butanic Gardons, Coylou; Bottmit; Gardens, Melbourne; Botanic Gardens, Java; BQtanio Uuniens, Ade';ude; Botanic Gardens, Edinbu rgh; Haage and Schmidt, Erfurt, Prussia; QttaensLand Acclimatization Society; Agri-Hortic iltural Society-, Lahore; William Boll, l-;, l' i- 8.; 3il W. 1la. utlmr; Ei ilJir, Esq., Ajmcr.

APPENDIX E—(Continued)

FROM WHOM RECEIVED.	Number of kinds.
C. Plate & Son, Erfurt	400
Botanic Garden, Algiers	183
Barr and Sugden	52
Agri-Horticultural Society, Lucknow	135
O. B. Clarke, Esq., M.A.	1
C. A. B. Anderson, Esq., Assam	2
Government Cinchona Plantations, Rungbee	100
Superintendent, Botanical Gardens	9
Botanical Gardens, Saharunpore	3
Gustav Mann, Esq.	1
Botanical Gardens, Ootacamund	1
The Commissioners appointed to inquire into production of, and trade in jute	50
Straits Settlements, Singapore	1
T. Beaumont, Esq., Indore	8
G. Bartlett, Esq.	81
—Jamoison, Esq., Madras	1
Agri-Horticultural Society, Nagpore	1
Dr. King, Port Blair, Andamans	20
8. Jennings, Esq., Public Gardens, Allahabad	1
J. A. Crawford, Esq., Jamaica	1
Government of Bengal	1
Secretary to the Government of Bengal	1
Colonial Islands	19
Total	2,415

APPENDIX F

Plants despatched in cases from 1st of April 1872 to 31st of March 1873.

TO WHOM SUPPLIED.	Number of open and closed boxes.	Wardian cases.	Number of plants.
Royal Gardens, Kew, London	1	1	53
Royal Gardens, Edinburgh	1	1	62
Royal Botanic Gardens, Peradenia, Ceylon	1	1	104
Colonel Hauglton, Commissioner of Cooh Behar	2	...	60
Maharajah of Mysore	4	...	100
Superintendent of Maunbhoom Jail	2	...	76
Rev. E. Hoadea	1	...	54
Straits Settlement, Singapore	1	...	28
— Thomson, Esq., Boehea	2	...	76
W. Bt Anderson, Esq., Emigration Agent for Jamaica	2	...	48
Colonial Secretary, Janmiwi	2	...	115
The Queensland Acclimatization Society	1	...	32
Lady Napier, Madras	2	...	52
G. Fairbrother, Esq., Rangoon	1	...	10
Commander of S. S. Bagdad	1	...	20
Koliabar Tea Estate	1	...	12
Dr. Calley	1	...	12
—Dr. Mst., C.S.D. Surgeon, Monghyr	1	...	13
K. F. Patterson, Esq.	1	...	14
T. Beaumont, Esq., M.D., Iadore	1	...	7
Commander of S. S. Sindhia	1	...	22
R. Morris, Esq.	1	...	32
William Bull, Esq., F. L. S., London	2	...	162
W. A. Aimerz, S. S. Pahar	1	...	28
W. Smith, Esq., Assistant Commissioner, Nya Doomka	4	...	195
G. Bartlett, Esq.	2	...	...
Messrs. Pookford, Gordon and Co.	1	...	...
Government Cinchona Plantation, Tuugbee	6	...	...
Agri-Horticultural Society, Lucknow	1	...	...
Ditto ditto, Lahore	4	...	...
Mr. Chalmers	...	...	...

APPENDIX F.—(Continued.)

TO WHOM SUPPLIED.	Number of open and closed boxes.	Wardian cases.	Number of plants.
Superintendent of Jail, Dinagepore	1	...	50
Ditto ditto, Arrah	1	...	50
Ditto ditto, Bankipore	1	...	50
Commissioner of Chittagoug	1	...	50
Assistant Collector of Baraset	1	...	50
Total	42	17	2,302

Plants issued in pots from 1st of April 1872 to 31st of March 1873.

To WHOM SUPPLIED.	Number of plants.
The Hon'ble Justice Markby	49
Captain Camell	9
S. Jennings, Esq., Public Gardens, Allahabad...	41
Dr. Walker	15
EL A. Mangles, Esq., c.s.	12
Dr. Waller	12
Belvidere Gardens, Alipore	114
The Hon'ble Justice Jackson	27
T. A. Apar, Esq.	38
Captain Laurell	30
Colonel Vanguerin	77
Public Assembly's Institution, Calcutta	50
T. Beaumont, Esq., Indoro	42
Mint Garden	100
Church compound, Dum-Dum	100
Captain Boon	1
East Indian Railway	1,025
Babu Protapa Chandra Ghosa	1
Eden Garden	229
High Court	309
Calcutta Wards' Institution	100
MetcalfeHall	510
Total	2,891

APPENDIX G.

Seeds despatched from 1st of April 1872 to 31st of March 1873.

To WHOM SUPPLIED.	Number of kinds.
Royal Gardens, Kew, London	6
Ditto, Edinburgh	100
Botanic Gardens, Melbourne	50
Ditto, Java	11
Messrs. Haage and Schmidt, Erfurt, Prussia	53
Botanic Gardens, Ootacamund	50
Agri-Horticultural Society, Lahore	251
M. DeCock, Ghent	10
Société d' Acclimatation, Paris	23
His Honor the Lieutenant-Governor of Beugal	58
Dr. King, London	1
L. Johnson, Esq., Belvidere	1
— Thomson, Esq., Beehea	8
William Bull, Esq., F. L. S.	20
Public Gardens, Hong-Kong	2
— Kelliraer, Esq.	110
A. Biermann, Esq.	10
— Saunders, Esq.	5
Agri-Horticultural Society, Lucknow	51
Total	9
Total	800

RESOLUTION.

FINANCIAL DEPARTMENT.

AGRICULTURE AND FORESTS.

Calcutta, the 10th June 1874.

READ—

The Annual Report upon the Botanical Garden, Calcutta, for the year 1873-74.

IN thanking Dr. King for this very interesting report, the Lieutenant-Governor regrets to notice that the prospects of the garden continue indefinitely compromised by the destruction of the large trees therein in the cyclones of 1864 and 1867. In addition to the disadvantage of an originally poor soil, there is now a want of shade in the garden, while the growth of the new plantations under Dr. Anderson's plan, was seriously hindered in the last season by the almost unprecedented failure of the rains. The Lieutenant-Governor agrees with Dr. King that it is essential to restore the shade that is so necessary in a tropical garden, both for the growth of the plants and for the comfort of visitors; and he notices with satisfaction the efforts that are being made in this direction. Attention is meanwhile being given to the culture of herbaceous plants in the conservatories, and to the collection of orchids and other flowering plants; and Dr. King's suggestion, that we should do something in the way of landscape gardening by the outlay of a little money for this purpose on the estate, is one which the Lieutenant-Governor hopes may be carried out as soon as the existing necessity for general economy shall have passed away.

•We need not lose sight of the primary objects of the garden in so doing; and turning to its economic aspects, the Lieutenant-Governor is able to congratulate the Superintendent and his staff on the success which promises to attend their efforts to acclimatize *Ipecacuanha* in these provinces. His Honor observes from the earlier reports, that four years ago there were but twelve cuttings of the plant at the Cinchona gardens, and that of these seven were destroyed by an accident. From the report now before him he learns with great satisfaction that, under the mode of propagation by root cuttings, so successfully worked by Mr. Jaffrey, there are now not fewer than 63,000 living plants in all.

His Honor notes with satisfaction also the expression of Dr. King's opinion, that no difficulty whatever is likely to be experienced in planting *Mahogany* on a large scale in the districts of Lower Bengal. The statistics given in the report of the immense size and the fine quality of the timber planted in the early days of our rule in these gardens and the surrounding neighbourhood, are very striking, and Sir Richard Temple desires that Dr. King's proposals for the systematic introduction of seeds from the West Indies may be effectually followed up. The Superintendent of the Garden has been asked to consult with the Conservator of Forests as to the precise steps to be taken to give effect to these recommendations.

Concerning the promotion of the growth of rubber in Bengal, the Lieutenant-Governor notices with interest the introduction by Dr. King, personally, on his return from Europe, of several plants of the *Hevea Brasiliensis* or Para rubber tree. The very curious account which he has given of the parasitical nature of the indigenous *Fictis Elastica*, invests the introduction of other rubber-yielding trees with much importance, and this part of the report will be brought to the special notice of the Chief Commissioner of Assam. Sir Richard Temple would suggest also to the Superintendent the propriety of attempting, if it has not already been attempted, to introduce the *Girita percha*

tree of Guiana, (*Sapota Mullerii*, *Michi. Mimusops Balota*, *Oaert* •) • and would

In future reports, the Lieutenant-Governor will
 tendent will briefly bring up to date the
 that have been wide
 rice, rhea, and other fibres
 garden started by Mr. Scott in 1871
 description of the agricultural
 mutton
 department of
 Museum in Calcutta, the
 department for the selection
 formation of a small department
 funding; His Honor
 efforts at advancement,
 developing the powers
 continuity. Sir Richard Temple
 co-operation in these views
 power to make the Botanic Garden
 Wt a means of
 possesswms and advantages. The
 tendent of the Garden and his staff
 tions, for their labours durin*
 also, for his efficient and valuable
 absence.

By order of the Lieutenant-Governor of Bengal,

E, KNIGHT,

Asst. Secy. to the Govt. of Bengal.

No. 1626.

Copy forwarded for information to the Government of India, Department of Revenue, Agriculture and Commerce.

No. 1627.

forwarded to the Secretary, Forest, for information.

No. 1628.

Copy with copy of the report (100 spare copies of each) forwarded to Dr. King, for information and guidance.

No. 1629.

Copy forwarded to Dr. Henderson, for information.

By order of the Lieutenant-Governor of Bengal,

R. KNIGHT,

Secy, to the Govt. of Bengal.

CALCUTTA,
The 12th Decr. 1874.

No. 36, dated Royal Botanical Gardens, the 28th April 1874.
From—GEORGE KING, ESQ., M.B., Supdt., Royal Botanical Gardens, Calcutta,
To—The Secretary to the Government of Bengal.

I have the honor to submit the report of the Royal Botanical Gardens for the year ending 31st March 1874.

2. *General Condition of the Garden.*—The growth of the general collection of trees and shrubs planted out to replace those broken and uprooted by the cyclones of 1864 and 1867, has not, since last report, been very luxuriant. In addition to the two abiding potent reasons for this, namely, poverty of soil and want of shade, there was added last season an insufficient rainfall. Efforts are being made to remedy the two first-mentioned conditions by planting nurse trees and manuring heavily. Shade in a tropical garden is quite as necessary for the growth of many plants as it is for the comfort of visitors. The condition of these gardens cannot, therefore, be considered satisfactory until there be protection enough from the sun to allow a thoroughly tropical tree, such as *Amherstia Nobiles* for instance, to live happily out of doors, and to permit visitors to walk without fear of sunstroke in any part of the garden even at mid-day. These were both possibilities in this garden prior to the cyclone of 1864, and no effort should be spared to restore this desirable state of things. Some time must, however, elapse before this can be; and there is the more reason why, in the meantime, increased attention should be given to the culture of herbaceous plants in conservatories. A new orchid-house has been built during the past year, and the old one has been thoroughly repaired. The collection of orchids is very good indeed, but might be much better if facilities were given to me for the collection of orchids in parts of India other than Bengal. Burmah and the Khasi Hills are both very rich in orchids as well as in other handsome flowering plants, and were I in funds to maintain a good collection in either or both of these, a magnificent set of plants might not only be brought together in this garden, but large numbers might be sent to Botanical Gardens in other parts of the world, from which in return new and valuable plants might be got. Every large garden in Europe has either such facilities for exchange or funds to purchase, and the magnificence of the collections at Kew, Vienna, St. Petersburg, and other places, is largely owing to this cause. Improvements have also been made in some of the other conservatories; a new propagating-house fitted with a flue to secure bottom heat, and several new hot-beds on a smaller scale, have been erected. The present fern-house, which was built as an experiment some years ago, is much too small for the collection of these plants now in the garden. Experience in this house has proved that ferns can be grown very successfully in Calcutta. We have learnt what is wanted to secure these beautiful plants being in good condition all the year round, and I feel sure no addition to the garden would be more popular than a large new fern conservatory. In such a house, if properly built, tree ferns from Sikhim and the Nilgiris, as well as from Australia and New Zealand, could easily be grown in luxuriance. So large an extent of the garden being under grass, it is to be regretted that the quality of the latter is so coarse. The luxuriance of this grass is another of the numerous evil effects of the cyclone. It dislikes shade, and as long as the trees stood, it made no headway, but as soon as the shade was lost by the destruction of the trees, it began to take thorough possession of the soil, and I fear it cannot be eradicated until the trees have again grown up. At present it causes much trouble and expense, besides being unsightly. The mere cutting of it is costly, and when cut it is not readily saleable. Grazing is inadmissible, as cattle ruin young trees. Much would be gained were the grass-ground over the whole garden smooth enough to allow mowing machines to work; but levelling and smoothing are costly, and, with the present establishment, can be undertaken only at odd times, when labor can be spared. With a little money a great deal could be done in the way of landscape gardening. The Eden Garden in Calcutta affords an excellent example of what can be done in making even a level bit of ground look picturesque, and there is room in the grounds here for an Eden Garden on a large scale, look funds be spared.

3. *Roads and Buildings.*—The new road from Bishop's College gate to the Cuba palm avenue is now approaching completion, and promises to be a fine addition to the garden drives. Some of the older roads are not in very good condition, but arrangements are being made for their repair. The new dwelling-house for the Assistant Curator, although sanctioned, has not yet been begun. The encroachments of the current on the riverbank during the year have been but slight. Some injury has, however, been done at places by the wash caused by tugs and other steamers passing along the river at a rapid rate. A separate communication addressed to Government on this subject.

4. *Ipecacuanha* cultivation.—A year ago there were 6,719 *ipecacuanha* plants of all sorts in Bihhta, and 50 in the garden here. At present the stock is as follows:—

In Sikhim, planted out experimentally under various conditions...	292
AIOWU piauus, poEtea-ott and under eo'ver	13,000
Unrooted, and partially rooted cuttings...	50,000
	<hr/>
In Calcutta Botanical Garden	63,292
	131
	<hr/>
Total	63,423

late

... either in the open sun or under shade. Practically confined to whom is largely due the establishment, cinchona establishment, it has been very successful.

there were too few plants to permit of any propagation only. The plant, could be successfully grown in the year 1872, as many plants in the Darjeeling cinchona reserve and in the Darjeeling cinchona plantation. The total up to 293, were planted in the year 1873, a number of which were observed of Mr. Gammie, the Indian agent in the Darjeeling cinchona plantation. I went to the cinchona plantation in the Darjeeling cinchona plantation and I went to the cinchona plantation in the Darjeeling cinchona plantation and I went to the cinchona plantation in the Darjeeling cinchona plantation.

and evidently prefers moist shady spots where the atmosphere is cool and steamy. If these moist shady spots are not available at an elevation of about 1,200 feet above the sea level, in the Darjeeling cinchona plantation, a few plants have been put out under such conditions as possible. I propose to plant out a number more this year with the view of arriving, as soon as possible, at some definite conclusion as to the suitability of any part of the Terai for the cultivation of *ipecacuanha*, and I do not think that the plants already planted not having succeeded so well as they did in the year 1872, the plants already planted in the year 1873, and a hundred are being sent during the present year for trial in the garden at Calcutta, and a number are being sent to the Madras valley, or the Nilgiris.

definite arrangement for the cultivation of *ipecacuanha*, and until some more...

that the tree will thrive in most parts of India, it has been found that it will grow admirably in almost any part of India, in situations free from a little moisture can be secured in very dry weather. For garden cultivation in most places on the plains of India, it is therefore suitable, and in districts like Lower Bengal, I see no difficulty in getting up plantations of it on a large scale and at a moderate cost. The mahoganies here which were spared by the cyclone are by far the finest trees of any sort that the garden contains. They were planted about eighty years ago, and at present, at a height of six feet from the ground, their girth runs from 8 to 11 feet. Now the average girth of...

90 years of age is only about half that of sap is less. As to the value of the timber, the following facts speak for themselves. Kindred and thirty Jogs obtained from trees blown down by the cyclone of 1864 were sold in Bon in 1866, and fetched the ordinary market price of mahogany; and a Calcutta firm in timber and cabinet-making business, so long ago as the year 1846, reported to Government that an immature sample submitted to them (taken from a tree about 50 years old) would, "if it had stood for a few years longer, have been equal to Honduras mahogany."

6. *India-rubber*.—In returning to this country from England in November last, I brought with me six plants of the Para rubber tree (*Itevea Braziliensis*), which were given to me by Dr. Hooker, of Kew, to whom the gardens already owe so much. Para rubber is one of the finest sorts known in commerce, and in view of the possible early exhaustion of the rubber-yielding figs of Assam, the introduction to India of the plant producing it becomes a matter of some interest. The rubber of this country is obtained from fig-trees, most of which (at least in early life) are parasitical. These figs begin life by establishing themselves on the tops of other trees, along the trunks of which they send their aerial roots which ultimately reach the ground. In course of time the supporting trees are killed, but the figs remain and grow, often entirely obliterating their predecessors. It is from the long aerial roots of these figs that rubber is mostly got, and not from their branches. After a few severe tappings, a fig ceases to yield rubber from its roots. The number of mature rubber trees even in a country like Assam is limited) and it is easy to foresee their early exhaustion. It is true it is also easy to propagate these figs by cuttings, but plants produced from cuttings put into the soil cannot very well have aerial roots, and may consequently be expected to yield little, if any, rubber. The artificial formation of India-rubber plantations on the summits of tall forest trees is obviously impracticable on any large scale. The Para rubber tree has no such parasitic habits in early life. The white juice, which on harvesting yields crude rubber, is yielded freely by all parts of the plant, which moreover promises to be one easy of propagation. Already Mr. Lister, the Assistant Curator, has been able to raise a few plants from cuttings taken from the six sent by Dr. Hooker. Before another year is over I hope to be able to report a considerable increase.

7. *Sweet Chestnuts*.—The transport of fleshy seeds, such as the chestnut, to any distance as a matter of great difficulty. I have seen several importations of chestnuts arrive from England without containing one good seed. Dr. Henderson, while acting for me, arranged for a supply of chestnuts being sent from Italy. Two boxes were accordingly lately received from Brindisi, and in excellent order. The most of the nuts were at once sent to Sikhim and the Khasi Hills, where they have germinated well. A few retained here have also germinated. I have little doubt the success of this Italian importation depends very greatly on the comparatively dry climate (compared to that of England) in which the nuts were gathered and packed: it is also, doubtless, due partly to the shorter voyage. The sweet chestnut will make a very valuable addition to the food-supply of the hill districts, if it can be got to grow freely.

8. *Interchange of living plants*.—Besides the India-rubber plants already referred to, the garden has been enriched by other valuable plants sent by Dr. Hooker, of the Itiyai Garden, Kew. The gardens at Mauritius and Singapore have also contributed, and so has Mr. W. H. Ball, of Chelsea. Among Indian contributions, those of Dr. Jamtson of the Botanical Garden, Saharunpore, have been most extensive. Plants to the number of 12,812 have been distributed from the garden during the year. These were mostly taken away by the indentors. A hundred and five boxes were however sent by rail and steamer to various parts of India, and eleven Wardian cases filled with plants were sent to foreign countries.

9. *Interchange of seeds*.—The most important contributors during the year have been—Dr. Hooker, C.B., p.s.s., Kew; Dr. Thwaites, F.H.S., of the Ceylon Botanical Garden, Ceylon; Baron Von Muller, r.i.t.9., Melbourne; Dr. Eegel of the Imperial Garden, St. Petersburg; and the admirably conducted Acclimatization Society of Queensland, Australia. The Secretary of this Society, Mr. Bernays, has done a great work for his own colony by his indefatigable efforts for the introduction of plants of economic value, and this garden is much indebted to his energy and liberality for many gifts of valuable seeds. Mr. C. A. B. Anderson, of Koliabar, Assam, has collected a quantity of forest seeds in the jungles adjoining his plantation; some of these have arrived, and are most valuable. Tea planters and others, located near Forests, might render immense assistance by collecting for the garden. The Conservators of Forests of the Punjab and North-West Provinces, as well as Dr. Bonavia, of Lucknow, have sent important contributions. Altogether 718 parcels of seeds have been received, and there have been distributed to India and to various parts of the world 2,532 parcels of seeds, the number of parcels received and sent out does not, however, give a very accurate idea of the actual quantity of seed, as many of the parcels weighed as much as a hundredweight; detailed lists both of seed and plant distribution are sent as an appendix to this report. The collection of seeds by the Forest Department, proposed by me two years ago, having received the sanction and support of the Government of India, has begun to be carried out; it will not elapse before it gets into good working order.

10. *Herbarium*.—During the year the undernoted donations of dried plants were received:—A. Home, plants from the Soonderbuns—20 species; Dr. P. Hance, a collection of Chinese and other plants—400 species; Baron F. O. Muller, Australian plants, chiefly *Euphorbiacea* and *Proteaceae*—200 species; A. L. Home, Esq., plants from eastern parts of the Soonderbuns—50 species; a collection of Bavarian plants, chiefly from Munich, of the late Dr. Kummer—800 species, presented by the Curator (Mr. Kurz); A. L. Home, Esq., a collection of Andaman plants—9½ species; Dr. W. Schlich, a few Khasi Hill plants, C. B. Clarke, Esq., a few Indian *Gentianaceae*.

Thanks to the exertions of the Curator, Mr. S. Kurz, the collections are excellently arranged, and in good condition. There are still, however, many Indian plants of which good specimens do not exist in the Herbarium, but I trust in course of time to be able to remedy this.

11. *Library*.—In accordance with the orders of Government, indents for books and periodicals are now submitted through Government for execution at the India Office, London. In the past year some books, indented for in July 1871 (i.e., nearly three years ago), were duly received; the indents sent in by me in July 1872 and September 1873 remain, however, still entirely uncomplied with.

12. *Official changes*.—Owing to the continued absence of Mr. Scott, on special duty in the opium districts, the office of Curator of the garden remained vacant for the first eight months of the year, and Mr. Lister, the Assistant Curator, single-handed, did the work of that appointment in addition to his own. In the end of October Mr. Beck, late of the Omraotee cotton farm, was sent to act as Curator. On 6th March Mr. Beck was retransferred to the Cotton Department, and his place was taken by Mr. A. Parsons. I returned from sick furlough to England, and resumed charge of my appointment on 5th November from Dr. George Henderson, who had been acting for me.

13. In conclusion, my best thanks are due to Mr. Kurz for his admirable management of the Herbarium. Mr. Kurz, besides his own work, has been engaged on special duty in preparing a *Flora* of Burmah for the Forest Department. My acknowledgments are also due to Mr. Lister for the energy in which he conducts his own duties, as also for the way in which he appears to have managed the whole garden during the first eight months of the year. The native establishment in the office have also worked well.

APPENDIX A.

Seeds received from the 1st April 1873 to the 31st March 1874.

From whom received.	No. of	From whom received.	Number of
Baron Muller, Melbourne	49	W. Bull, Esq., London	27
Acclimatization Society, Queensland, Australia	78	J. C. Hayne, Esq.	1
Jute Commissioner, Calcutta	100	J. Scott, Esq., Bankipore	3
Dr. Beaumont, Indore	17	John Stalkart, Esq., Calcutta	2
Commissioner of Dacca	15	A. H. Blechynden, Esq., Agri-Horticultural Society, Calcutta	2
Dr. Regel, St. Petersburg, Russia	22	Wordie, Esq., Alipore	1
Government Cinchona Plantations, Rungbee, Darjeeling	132	Conservator of Forests, Punjab	4
Superintendent of Police, Mooltan	5	Agri-Horticultural Society, Madras	5
Agri-Horticultural Gardens, Lucknow	40	Dr. Thwaites, Botanical Garden, Ceylon	5
James Taylor, Esq., Ceylon	1	Colonel Lowther, Jubbulpore	1
Dr. Hooker, Botanical Garden, Kew	65	Dr. Tonnerre, Calcutta	4
Botanical Garden, Saharanpore	25	C. A. B. Anderson, Esq., Assam	0
J. Home, Esq., Mauritius	7	Inspector-General of Forests	1
Dr. Scheffer, Botanical Garden, Java	78	Government Garden, Hong-Kong	1
Superintendent of Jail, Mooltan	3		
Rama Varna, Travandrum	3		
Colonial Secretary, British Honduras	2		
		Total	718

APPENDIX B.

Seeds Despatched from 1st April 1873 to 31st March 1874.

To whom supplied.	Number of parcels.	To whom supplied.	Number of parcels.
F. A. Berwick, Esq., Calcutta	33	W. M. Bull, Esq., London	10
Revd. Mr. Coe, Bishop's College, Seebpore	30	Governor-General's Palace, Calcutta	30
Government Experimental Farm, Baraset	73	M. A. Bidulph, Esq., Simla	55
2den Garden, Calcutta	6	R. Jameson, Esq., M.A., Allahabad	10
Captain Impey, Morar, Gwalior	35	P. M. Lowther, Esq., Calcutta	23
Lieutenant-Colonel Gobagan, Tungoo	1	M. H. Daily, Esq., Kampore	7
Government Cinchona Plantations, Rungbee, Darjeeling	243	J. M. Ruft, Esq., Darjeeling	50
John Iccott, Esq., Bankipore	48	Mr. Price, Calcutta	21
Messrs. Cassella & Co., Calcutta	8	Officer in Command, Her Majesty's 54th Light Infantry, Fyzabad	25
Secretary to the Justices of the Peace, Calcutta	1	R. Daly, Esq., Calcutta	8
O. F. Amery, Esq., Forest Department, Goruckpore	19	Superintendent of Jail, Shillong	50
R. Graham, Esq., Darjeeling	1	J. W. Hughes, Esq., Superintendent of Jail, Now* gong, Assam	50
K. Adam, Esq., Sambur Lake, Jeypore	2	Agri-Horticultural Society, Lahore	110
Agri-Horticultural Society of India, Calcutta	103	A. B. Thomson, Esq., Shalimar, Seebpo^	1
Dr. Hooker, Royal Gardens, Kew	13	W. R. Erington, Esq., Barrackpore	1
J. Gamble, Esq., Forest Department, Siligoree	1	C. A. B. Anderson, Esq., Assam	3
The Proprietor of Medelah Estate, Debrooghur	1	W. B. Freeman, Esq., Model Farm, Shillong	55
Botanic Garden, Mauritius	6	Dr. Bonavia, Lucknow	7
Botanic Garden, Natal	14	Dr. Jameson, Superintendent, Botanic Garden, Saharunpore	19
—Russel, Esq., Kidderpore	24	Professor Balfour, Edinburgh	7
Revd. W. Wilson, Darjeeling	1	Baboo Bissumbur Ghose, Botanic Garden, Calcutta	12
J. B. Stirling, Esq., Calcutta	1	W. Lloyd, Esq., Superintendent, Model Farm, Umritsur...	3
Superintendent, Cotton Experiments, Camp Salara, Scinde	1	Secretary, Queensland Acclimatization Society, Brisbane, Australia	13
Ram Howa Garden, Jeypore	96	Colonial Secretary, Wellington, New Zealand	10
Messrs. Jules DeCock and Soeur Grand, Belgium	5	Dr. Prentis, Civil Surgeon, Goruckpore	103
Messrs. Thomas Lang and Co., Ballarat	10	G. Branning, Esq., St. Kilda Nursery, near Melbourne, Victoria, Australia...	1
Messrs. Hoage and Schmidt, Seedsmen, Erfurt	32	Dr. Dickie, Professor of Botany, Aberdeen	6
E. Lockwood, Esq., Government Experimental Garden, Monghyr	11	Dr. McKenzie, Presidency Jail, Calcutta	1
Henry Beadon, Esq., Deputy Commissioner, Hazareebagh	5	A. Colling, Esq., Akola	30
Dr. Lynch, Superintendent, Alipore Jail	8	Agri-Horticultural Society, Bangalore	1
Brigadier-General W. J. Stafford, Shillong, Eastern Frontier District	60	" " Bombay	1
R. J. Quinzel, Esq., M p., Goozerat, Punjab	66	" " Rangoon	1
J. J. Goulding, Esq., Principal, Government College, Ajmere	25	W. J. Williamson, Esq., Deputy Commissioner, Garo Hills	1
Secretary, Municipal Committee, Ajmere	60	J. Beck, Esq., Nagpore	31
J. Elster, Esq., Soojabad	7	H. C. Wood, Esq., Durrandar, Brisbane, Australia	6
R. Clarke, Esq. Secretary, Municipal Committee, Lahore	25	Botanic Garden, Melbourne, Australia	6
A. Smith, Esq., Oude	60	" " Adelaide, Australia	5
G. Elliot, Esq., Assistant Commissioner, Calcutta...	13	Dr. Thwaites, Botanic Garden, Ceylon	6
G. Robinson, Esq.,	17	Messrs. Benjamin, Reid & Co., Aberdeen, Scotland	6
Captain Cowper, Garden Reach	12	Dr. Reichenbach, Botanic Garden, Hamburg	6
J. George, Esq., Hissar	9	M. Matbieu, Nancy, France	6
Major J. a. Dyce, B.A., Umritsur	36	Professor Regel, Botanic Garden, St. Petersburg, Russia	6
Deputy Commissioner, Shillong	60	Professor Todaro, Botanic Garden, Palenno, Sicily	6
R. Morris, Esq.	30	Professor Martens, Botanic Garden, Montpellier, France	6
J. J. Monteith, Esq., Civil Assistant Surgeon, Cachar	156	Professor Parlatore, Botanic Garden, Italy	6
Charles Harold, Esq., Simla	30	Colonel Taylor	60
Baboo N. N. Roy Chowdry	70		
Major W. Warson, Agra	30		
C. Sconce, Esq., Superintendent of Jail, Midnapore	81		
James Macnab, Esq., Edinburgh	3		
		Total	2,532

APPENDIX C.

A statement of Plants sent out from the Boyal Botanical Garden, Calcutta, from 1st April 1873 to 31st March 1871.

Total	Wardian cases.	Boxes.	Number of plants.
...	11	105	12,812

APPENDIX D.

Plants received at the Royal Botanical Garden, Calcutta, from 1st April 1873 to 31st March 1874.

Month.	Date.	From.	Wardian cases.	Boxes.	Number of plants.
1873.					
April	18	E. Fanbrother, Rangoon	...	...	12
		E. Peel, Esq., Assam	...	...	6
May	10	Agri-Horticultural Society, Singapore	1	...	Theobroma cacao.
June	2	Royal Botanic Garden, Mauritius	1	...	25
August	27	W. Bull, Esq., London	1	...	67
September	12	M. Cooke, Esq., Simla	...	One packet	232
November	4	G. Bartlett, Calcutta	...	...	14
		Dr. Beaumont, Indore	...	...	5 varieties of geranium.
December	13	Royal Botanic Gardens, Kew	2	1	34
	24	Royal Botanic Garden, Mauritius	1	...	51
"		Royal Botanic Garden, Saharunpore	...	...	62
1874.					
January	18	Dr. Beaumont, Indore	...	...	10
	31	D. L. Barr, Esq.	...	In pots	18
February	17	Dr. Bonavia, Lucknow	...	...	50 rose-cutti LJs.
		Total	6	1	586

APPENDIX E.

Plants despatched from April 1873 to March 1874.

Month.	Date.	To	Wardian cases.	Boxes.	Number of plants..
1873.					
May	6	Captain Calvert, Ship <i>London</i>	...	...	27
June	16	General Assembly's Institution	...	...	87
"	16	—Sutherland, Esq.	...	...	46
"	16	J. Gammie, Esq., Cinchona Cultivation, Darjeeling	...	1	200
"	23	Baboo B. N. Sein	...	...	54
"	2J	J. Gamble, Esq., Forest Department, Darjeeling	...	...	50
"	3u	A. Somerville, Esq., Calcutta	...	...	58
"	30	—Thompson, Esq., Sallinum Eopery, Seebpore	...	...	12
July	3	Baboo G. D. Bysack	...	...	46
"	19	—Williamson, Esq.	...	...	31
"	22	Experimental Farm, Baraset	...	...	1,000*
"	23	Agri-Horticultural Society, Alipore	...	...	263
"	24	H. S. Beadon, Esq., Deputy Commissioner, Hazareebagh...	...	...	9
"	25	Earn Hawas, Public Garden, Jeypore	...	6	126
"	25	Captain J. C. Doveton, Conservator of Forests, C. P., Nagpore	...	...	12
"	28	Superintendent of Jail, Manbhoom	...	...	20
"	28	Superintendent, Port Blair	...	...	15
"	28	Colonel E. N. Play fair, Her Majesty's Consul, Algiers	...	6	148
"	29	Horo Nauth Banerjea, Nazir, Howrah	...	...	2
"	29	C. H. Denham, Esq.	...	...	1
"	30	Captain Newton, Howrah...	...	...	60
"	31	Government House, Calcutta	...	...	21
August	1	Captain Newton, Howrah...	...	...	47
"	1	Agri-Horticultural Society, Alipore	...	...	9
"	2	Secretary, Calcutta Municipality, Dalhousie Square	...	...	61
"	4	Dr. Payne, Lunatic Asylum	...	...	70
"	6	Captain Cowper	...	...	12
"	6	Agri-Horticultural Society, Alipore	...	...	727
"	6	" " Dr. Tunnier	...	...	46
"	6	Indian Museum	...	...	16
"	7	George Bartlett, Esq.	...	...	9
"	7	Mr. Barr, Hastings	...	...	2
"	7	Bengal Club	...	...	190
"	8	T. H. Turner, Esq., Garden Keach	...	...	100
"	8	Indian Museum	...	...	50
"	9	H. L. Houghton, Garden Each	...	...	16
"	11	Captain C. Garbett, Deputy Commissioner, Singbhoom	...	...	111
"	11	William Bull, Esq.	...	1	125
"	11	Earn Hawas, Public Garden, Jeypore	...	6	98
"	12	A. V. Knyvett, Esq., Chittagong	...	13	318
"	12	Secretary to the Government, North-Western Provinces, Allahabad	...	2	100
"	15	Baboo G. D. Bysack, Howrah	...	...	12
"	15	Dr. Tunnier, Agri-Horticultural Society	...	...	46
"	15	E. Murriss, Esq., Garden Each	...	...	305
"	15	G. C. Chatterjea, Seebpore	...	...	4
"	15	Dr. Law, Calcutta, Garden Each	...	...	16
"	15	C. C. Harold, Esq., Deputy Controller, Military Works, Simla	...	...	12
"	15	Dr. E. Jamieson, Superintendent, Jail, Alipore	...	2	50
"	18	Mr. S. A. Shircore	...	...	12
"	19	Dr. Beaumont, Indore	...	1	27
"	19	Eeverend C. Baumann, Cathedral Mission College, Calcutta	...	...	200
"	19	Dr. E. Jamieson, Allahabad	...	2	50
"	19	Captain J. C. Doveton, Nagpore	...	1	30
"	19	Colonel W. W. Osborn, Political Agent inBhopal, Sehore	...	...	20
"	20	Agri-Horticultural Society's Garden	...	...	126
"	20	Lieutenant Collins, Fort William	...	...	262
"	23	Mr. G. Barr, Hastings	...	...	4
"	23	A. Murray, Monghyr	...	...	200
"	23	E. Clarke, Esq., Secretary, Municipal Committee, Lahore...	...	1	21
"	24	Dr. Bonavia, Lucknow	...	1	16
"	25	Colonel E. T. Dalton, Belvedere	...	...	16
"	28	A. Yule, Esq.	...	...	63
"	28	E. Murriss, Esq., Garden Each	...	...	100
"	30	C. E. Robinson, Esq., Hastings	...	...	60
September	2	E. Clerk	...	...	36
"	3	Colonel H. Hyde, Master of the Mint, Calcutta	...	...	78
"	4	W. M. Smith, Esq., Extra Assistant Commissioner, Nya Doomka	...	2	57
"	4	C. E. Robinson, Hastings...	...	...	57
"	5	S. B. Chatterjea	...	...	5

APPENDIX E.—(Continued.)

Month.	Date.	To	Wardian cases.	Boxes.	Number of plants.
1873.					
September...	5	Baboo O. L. Bose ... ..	...	...	36
"	5	Colonel C. Murray, Secretary, Government Garden, Monghyr ... ..	...	...	50
"	10	Baboo K. B. Mullick ... ..	...	...	18
"	12	For the Executive Engineer, Caragolali ... ..	...	...	50
"	15	Baboo H. N. Doss ... ..	...	...	15
"	15	" B. L. Doss ... ..	...	...	48
"	15	Mr. Bartlett ... ..	...	...	50
"	15	Colonel Hyde, Master of the Mint, Calcutta ... ..	...	...	42
"	16	Baboo K. K. Halder, Cooch Behar ... ..	...	...	200
"	16	Dr. Irving, Allahabad ... ..	...	4	133
"	17	Hon'ble L. S. Jackson ... ..	...	...	43
"	18	G. S. Fagan, Calcutta ... ..	...	...	50
"	18	Mr. Day, Calcutta ... ..	...	...	12
"	20	W. M. Bell, Calcutta ... ..	...	...	23
"	20	Baboo J. B. Banerjea ... ..	...	...	30
"	20	Justice Macpherson ... ..	...	...	40
"	20	Baboo N. C. Mookerjea ... ..	...	...	120
"	20	Harold, Esq., Simla ... ..	...	...	100
"	20	Baboo N. N. Chowdhry ... ..	...	...	4
"	24	" B. N. Ghose ... ..	...	...	1
"	24	E. C. Sen, Serampore ... ..	...	...	5
"	25	E. G. Watling, Allahabad... ..	...	...	4
"	26	Baboo E. N. Mookerjea ... ..	...	...	66
October	6	E. Price, Esq., Calcutta ... ..	...	...	64
"	6	J. Bridgnell, Esq., Howrah ... ..	...	...	12
"	6	Baboo T. P. Banerjea ... ..	...	...	40
"	11	W. Ainsworth, Esq., Seebpore ... ..	...	...	3
"	13	Baboo Grish Chunder Halder ... ..	...	...	50
"	16	" Gour pass Bysack	2	...	34
"	17	Chief Commissioner, British Burmah ... ..	...	3	150
"	17	Major W. M. War son, Agra ... ..	...	...	15
"	18	Port Blair... ..	...	...	50
"	18	Messrs. Burnside and Co., Eangoon ... ..	...	...	41
"	18	Major F. Pollock, Gowhatty	1	...	100
"	18	W. D. Ireland, Esq., Burmah ... ..	...	...	17
"	20	W. Burbino, Esq., Calcutta ... ..	...	...	74
"	21	A. E. Medlycott, Howrah ... ..	...	1	44
"	24	Major H. Waller, Monghyr ... ..	...	...	40
"	24	F. Bridgnell, Esq., Howrah ... ..	...	...	100
"	28	Eevd. Jarbo, St. John's Church, Calcutta ... ..	...	1	52
"	28	Landale, Esq., Australia ... ..	...	3	141
"	28	Eevd. Jamieson, Allahabad ... ..	...	...	24
"	29	J. H. C. Powell, Seebpore... ..	...	1	24
November...	1	J. B. Seaton, Esq., Eangoon ... ..	...	1	30
"	1	Alex. T. Craig, Eangoon ... ..	...	1	36
"	4	Dr. H. Friendlander, Oriental Medical Hall, Eangoon ... ..	...	...	92
"	4	E. Murriss, Esq., Calcutta... ..	...	...	300
"	8	Dr. Bard, Howrah Hospital ... ..	...	...	61
"	8	Mr. Barr, Hastings ... ..	...	...	2
"	10	Abdoolgoni Kazee ... ..	...	...	30
"	11	Gl H. Madge, Calcutta Mint ... ..	...	...	36
"	15	Mr. Lowther, Howrah ... ..	...	1	50
"	21	J. Hughes, Esq., Superintendent Jail, Assam ... ..	...	1	24
"	24	Superintendent of Jail, Beerbhoom ... ..	...	...	50
"	24	Port Blair ... ..	...	...	22
"	24	Dr. G. Bonavia, Lucknow... ..	...	...	105
"	24	Shaharunpore Botanic Garden ... ..	...	...	26
"	24	Simla ... ..	...	8	183
"	27	C. A. B. Anderson, Esq., Assam ... ..	...	...	7
"	27	Baboo J. B. Mookerjea ... ..	...	...	6
"	28	" B. L. Sen ... ..	...	1	32
"	28	J. C. Carey and Co., Medilah Tea Estate, Debrooghur, Assam ... ..	...	4	77
"	29	J. Seane, Superintendent, Jail, Goalpara, Assam ... ..	...	...	1
"	29	H. Cowper, Garden Each ... ..	...	...	29
"	29	E. Murriss... ..	...	...	25
December...	8	Dr. Simons, Seebaugor, Assam ... ..	...	...	40
"	9	G. Martin, Esq., Howrah... ..	...	20	830
"	11	G. T. Peppy, Esq., Hazareebagh ... ..	...	...	12
"	11	Dr. Lynch, Superintendent of Jail, Alipore ... ..	...	...	18
"	11	Dr. Bonavia, Secretary, Agri-Horticultural Society, Lucknow ... ..	...	1	21
"	11	E. B. Browne, Esq., Secretary, Agri-Horticultural Society, Lahore ... ..	...	1	15
"	13	S. Bayley, Esq., c.s., Commissioner, Patna ... ..	...	...	100
"	13	Dr. Jarbo, St. James' Parsonage, Calcutta ... ..	...	...	12
"	13	Mr. Freeman, Shillong ... ..	...	...

APPENDIX "E.—{Concluded.}

Month.	Date.	To	Wardian cases.	Boxes.	Number of pants.
1873.					
December...	14	C. Browne, Midnapore ...	...	7	207
"	14	Baboo L. IS' Dass, Nuddea Zillah ...	...	...	5
"	29	Raja Eajcoomar ...	...	...	16
"	29	Dr. Beaumont, Indore ...	...	...	13
"	30	John Levett, Esq., Staffordshire ...	...	...	27
"	30	E. Clarke, Esq. ...	...	...	56
1874					
January ...	2	Captain Cowper ...	...	...	16
"	3	F. Fleet, Esq., Howrah ...	...	...	39
"	6	Dr. Woodford, Shilda House ...	...	...	73
"	6	E. Murriss, Garden Eeach ...	...	...	5
"	6	Kally Naray en Das s, Goal para ...	...	...	6
"	6	S. Sagnell, Sentrol ...	...	...	30
"	6	Baboo Doyal Chunder Chatterjee ...	...	...	10
"	6	Government House ...	...	...	14
"	8	Agri-Horticultural Society ...	...	...	73
"	8	" " Alipore ...	...	...	145
"	8	Hon'ble Justice Jackson, Alipore ...	...	...	25
"	8	Campbell Hospital, Sealdah ...	...	...	28
"	17	Dr. Bonavia, Lucknow ...	...	...	25
"	17	A. O. Hume, Esq., Secretary to the Government of India... ..	...	...	47
"	19	Mr. Paliant ...	...	...	19
"	19	" Coggan ...	...	...	52
"	26	" Alder... ..	...	...	20
"	30	J. Phillipe, Esq., Allahabad ...	...	...	28
"	31	Dr. Bonavia, Lucknow ...	...	2	73
"	31	C. W. Collins ...	...	...	30
February ...	2	Col. Keatinge, Shillong ...	...	2	89
"	9	Dr. Beaumont, Indore ...	...	...	18
"	10	Baboo B. L. Chowdhry ...	...	...	15
"	10	G. E. W. Allen, " The Club," Allahabad ...	...	3	36
"	11	Captain Vanstone, Ship <i>Kingston</i> ...	...	...	27
"	12	" " ...	...	...	20
"	12	A. B. R Thomson, Esq!' ...	...	...	10
"	12	Hughes, Esq., Calcutta ...	...	...	30
"	12	D. L. Barr, Esq. ...	...	...	12
"	18	Barrackpore Park ...	...	...	62
"	20	Col. Murray, Monghyr ...	...	...	40
"	20.	Dr. Bard, Howrah ...	...	...	25
March ...	7	Baboo S. N. Bannerjea ...	...	...	11
"	7	Fort William ...	...	...	165*
"	11	A. T. Murriss, Esq. ...	...	...	100
"	13	" Houghton, Esq. ...	...	...	18
"	16	Captain Williamson ...	...	...	12
"	17	H. E. C. Bayley ...	...	...	28
"	25	Baboo A. T. Chatterjea ...	...	...	1
"	25	C. B. Clarke, Esq., Calcutta ...	...	...	30
"	26	R. Jamieson, Esq., Government Garden, Ootacamund ...	...	...	46
"	26	W. S. Atkinson, London ...	...	...	46
"	26	Dr. Hooker, C.B., Eoyal Botanic Garden, Kew ...	...	...	46
"	26	Dr. Eeitenbach, Hamburg ...	...	...	46

Cuttings.

E. KING, Superintendent.

FINANCIAL DEPARTMENT.

AGRICULTURE.

CALCUTTA, THE 21ST JULY 1875.

RESOLUTION.

READ—

Report of the Royal Botanical Garden for the year ending 31st March 1875.

1. The Lieutenant-Governor is glad to notice the progress which Dr. King has made towards providing the Garden with the necessary dwelling shelter for the more delicate plants and for the comfort of visitors. The other improvements effected in the roads, in the addition of sheets of orient water and a fine new conservatory, and the proposed addition of water-fowl, will, the Lieutenant-Governor thinks, add very largely to the attractions of the Garden without detracting from its utility in a scientific point of view. In regard, however, to the latter question, the Lieutenant-Governor recognizes the disadvantages resulting from the want of a trained collector, and he concurs with Dr. King in opinion as to the desirability of appointing an officer for the purpose of collecting specimens. The question is one well deserving consideration, and His Honor would be glad to receive a well-matured scheme from Dr. King on the whole subject. It is quite possible, the Lieutenant-Governor thinks, that the Services of one such officer might be shared between the Government of Madras, Bombay, and others, within whose jurisdictions large Botanical Gardens exist. If Dr. King will submit such a scheme, laying down the duties of a collector, the salary it would be necessary to give to him, the cost of providing him with collecting apparatus and materials, the probable travelling charges, and charges for the preservation and transmission of specimens, and any other expense, Sir Richard Temple will give it his best consideration.

2. The Lieutenant-Governor regrets to see that so little progress has been made towards the introduction of mahogany cultivation: but with regard to the proposal for employing a separate agent for this work, he fears that the expense which it would involve must prove an insuperable obstacle.

3. The cultivation of both the Para India-rubber and of the IpecacuaBha is pronounced by Dr. King to be unlikely to succeed. The climate of Calcutta has proved unsuitable in the one case, and the climate of Sikkiraan the other. As, however, he proposes to make further trials before finally recommending the their cultivation, the Lieutenant-Governor will await further reports on the subject. His Honor will also look with interest to the experiment now being made for the introduction of baobab tree.

4. Dr. King expresses a very decided opinion as to the propriety of expending public money in attempting to introduce the Australian blue-gum tree, and Sir Richard Temple thinks that an opinion from such an authority, must be considered conclusive, so far as the plans of the Government are concerned.

(2)

6. The Lieutenant-Governor thanks the Superintendent and his staff for their efficient labours during the past year.

6. If Dr. King will submit a well-considered estimate for the funds he requires for the purposes mentioned in paragraphs 5 and 6 of his report, the Lieutenant-Governor will see whether he has the means of meeting the call, and will do what he can for the purpose of improving the Garden.

By order of the Lieutenant-Governor of Bengal,

H. J. REYNOLDS,

Ofg. Secy, to the Govt. of Bengal.

No. 2502.

In pursuance of the Resolution, with 100 printed copies of the Report, forwarded to the Superintendent of the Botanical Garden for information and guidance.

By order of the Lieutenant-Governor of Bengal,

GEO. EASTON,

Ofg. Secy, to the Govt of Bengal.

CALCUTTA,

The 2nd July 1875.

I No. 46G, dated Royal Botanical Garden, Howrah, the 4th June 1875.
From—GEORGE KINO, ESQ., M.B., Superintendent, Royal Botanical Garden,
To—The Secretary to the Government of Bengal.

I HAVE the honor to submit the report of the Royal Botanical Garden for the year ending 31st March 1875.

2. Notwithstanding the long-deferred and ratkorscanty rainfall of the year, the growth of the large number of recently planted young trees has been very good. The western end of the garden being still very bare, efforts were made during last rains to remedy this by planting a number of hardy and rapidly growing trees in well manured pits. It is intended to plant a number more during the ensuing rainy season, and so to secure as soon as possible, for the whole garden, that shade and shelter which are so necessary alike for the welfare of the more delicate plants and for the comfort of visitors.

3. Visitors from the Calcutta side have hitherto been obliged to reach the garden by the river, and the unpleasantness of crossing is the only kind of boat available, an ordinary dinghy, together with the necessity, after having crossed, of going through the grounds on foot, have hitherto made a visit to the garden rather an undertaking. The opening of the bridge across the river at Howrah has changed all this, and has made it possible for residents in Calcutta to drive down to and through the garden without once leaving their carriages. In consequence there has been a great influx of carriage visitors by the Howrah gate, which is situated at the extremity of a long projecting tongue of land previously unfrequented, and which had never been much better than a wilderness. A garden covering, as this does, an area of 272 acres, is much too extensive to be gone over on foot even in a temperate climate, and in this country, except in the very height of the cold season, it is needless to expect visitors to make the attempt. The roads within the garden had not, however, been originally laid out for driving, and were both too narrow and too few for that purpose. Government responded most liberally to my representations on this point, and during the year much has been done in the way of road-making. Two, more broad drives have been opened from the Howrah and Bishop's College gates to the interior of the garden; a third has been made from the river-side entrance to the great Banyan tree, and a broad circular road is now being made round the latter.

4. Hitherto this tree, one of the greatest curiosities and ornaments of the place, has been accessible only by narrow and devious routes. Although considerably damaged by the cyclone of 1864, which carried away two of its largest arms, this fine tree continues to grow vigorously. It now covers an area of ground 800 feet in circumference, its trunk girths 10 feet, and from its branches no fewer than 170 aerial roots are sent down to the ground, some of them being more than 10 feet in circumference. This fine old tree supports quite a colony of orchids, ferns, and creeping plants of about twenty distinct species, and gives shelter to innumerable birds. Its exact age is not known, but, considering how rapidly banyans grow it probably does not much exceed that of the garden, and is therefore less than a century.

5. Improvements in some of the old roads have also been made. A good deal, however, still remains to be done in this way, and, if funds can be allowed, I would propose to continue this work next cold season.

6. Besides road-making, other extensive improvements have been effected by means of the special grant of funds already alluded to. The wild and unsightly piece of ground near the Howrah gate has been laid out in undulations as a kind of park, the necessary earth for the purpose having been got by making a large sheet of ornamental water near the site of the old cooly lines, which have been pulled down. This new piece of water is in connection with the river by an underground channel on which there is a sluice. By admitting water at each spring tide, the lake can therefore, it is hoped, be kept always well filled. Two islands have been made in it, one of which I propose to locate a collection of water-fowl. From being the most unsightly, this bay now becomes one of the prettiest parts of the garden. It is intended to plant out clumps of palms and of ornamental trees, so as still further to heighten its effect as a landscape. A similar reform at the western end of the garden, near the Banyan tree, would be an immense improvement, and it is hoped the necessary funds may be granted. A large rosery has been made near the annual flower garden in what used to be a piece of waste ground. Three very unsightly small tanks, near General Kyd's monument, have been thrown into one, and an ornamental piece of water is the result.

7. The earth thus obtained has been utilized to form a raised terrace, on which a large new plant-house is now being erected. This noble conservatory, when finished, will undoubtedly be the greatest addition to the garden which has been made for years, and will give facilities for the cultivation of delicate plants hitherto unknown in Calcutta. This building is 200 feet in length by 40 feet broad. It is relieved in the centre by two spacious transepts and surmounted by a dome. No timber has been used in its construction, but only light iron beams in masonry supports. The roof will be covered with a wire netting, on which will be laid a thin sprinkling of thatching grass, and the sides will be enclosed with iron rods. Experience has shown that of all coverings that have been tried in the climate of Calcutta, these answer by far the best; glass, except in the case of a few plants and when well shaded, being worse

than useless for a conservatory. This house is at once light and strong, and as its roof will offer so little resistance to the wind, it is believed that a cyclone could do it but harm. This conservatory has been built by Major Eckford of the Telegraph Store ment from a design prepared by Mr. Parsons, curator of the garden.

8. The collections in the two orchid houses and in the other conservatories much increased during the year, considerable additions having been received from Khasi Hills, the Andamans, and Burmah, also a few plants from the Neilgherries. A number of plants were also sent to the garden by Mr. Lister, the second gardener, who accompanied the Purffa field force as a botanical collector. But when the floral wealth of Eastern Bengal, and of Burmah are considered, not to mention the west and south of the collection in this garden appears miserably small. In an imperial institution such as the natural productions of the whole Indian empire should, as far as the climate be represented. I see no way of forming such a typical collection until a good European collector be attached permanently to the establishment. At present I have to rely for supplies of plants from distant parts of India on correspondence with private parties who, although usually very willing to help, are unfortunately often unskilled in gardening, and neither know what plants to send nor how to pack them safely for The only experts, not employed in the garden, whose services I can command are confined to Sikkim. Had I a collector as one of the regular garden staff, I could send about to distant districts of which the flora is little known or poorly represented and the result would be that in a few years a very fine collection might be got together of living plants in cultivation and of dried specimens in the herbarium. Another advantage would be that this garden would be put in a position such as it has not occupied for exchanging plants with similar institutions all over the world. The cost of maintaining such a collector would not be great, and the extremely liberal manner in which the gardens have been supported by Government during the past year leads me to hope that this desideratum will soon be supplied.

9. I regret to say that no seed of the mahogany tree was received from abroad during the year. The entire supply of seeds this season consisted of one seed vessel produced in the garden, of several from the trees on the Grand Trunk Road near Barrackpore, and of pods kindly presented by Mr. W. H. Cogswell of Tatighur. It is much to be regretted that no more active measures have yet been taken to procure from its native country seed of a tree which grows so well in Bengal and which yields such valuable timber. In my own opinion, a man should either be sent to Honduras or Jamaica, or engaged in these countries, for the express purpose of collecting seeds and transmitting them here.

10. In my last report I mentioned the introduction of one of the plants yielding the Para, india rubber (*Ilex brasiliensis*). Though it would be premature yet to form a decided opinion, the behaviour of these plants during last hot season and their present appearance leads me to fear that *Ilex* will not thrive in this part of India*. It appears to suffer here equally from the damp cold of December and January and from the high temperature of the hot weather and rains. Plants have been tried at a low elevation in the Cinchona plantation under a slightly more equable climate, but with similar results. *Ilex* is a thoroughly tropical plant. It lives naturally in a climate remarkable for uniformity of temperature and for regular supply of moisture. Mr. Collins, the author of an excellent report on the Caoutchouc of commerce, informs us that in the natural home of the *Ilex* "the heat is not generally above 87° Fahrenheit in the afternoon and below 74° at night. The temperature during these years only once reached 95°. The greatest heat is about 2 P.M., from 89° to 94°, and never cooler than 73°." A comparison of these figures with the meteorological returns for Calcutta will show how very far our climate is from being that of the *Ilex*. The zone in which *Ilex* occurs does not extend to beyond ten degrees on either side of the equator while Calcutta is 22° north. In my opinion, the Andamans and Ceylon, and also Dossih Malabar and the southern part of Burmah, will prove much more suitable for *Ilex* than any part of the Bengal Presidency. The Caoutchouc-vine of Madagascar (*Voanioa* *Madagascarenis*) promises to thrive better than *Sevea*. There are a good many trees in and in Sikkim, all being the produce of seed got from Dr. Brandis, Inspector of Forests. Unfortunately this plant is a climbing one, a circumstance which makes its cultivation on a large scale more troublesome than that of a tree; moreover, it produces inferior in value to that of *Sevea*. As stated in my last report, I do not think it probable that a suitable locality for attempting plantations of the *Ficus elastica* in India-rubber cultivation is now engaging the attention of the Forest Department.

H. With the view of discovering the most favourable situations for *Ilex* iphecuanha, a number of sets of plants were put out during the early part of the year at different spots at low elevations in the Cinchona reserve in Sikkim. It has been shown that this plant requires essentially tropical conditions, warm, well watered, good virgin soil, were chosen. Some of the plants thus put out were put out in the thatch of grass. Until the temperature that prevailed in the winter of the cold season was unobtainable in Sikkim, the plants were not cultivated as an experiment in Sikkim.

It is also the opinion of Mr. Ganiniit', the resident manager of the Cinchona plantation. Hither trials will, however, be made before finally recommending the abandonment of the Jiriment in Sikkim. The provinces already mentioned as likely to be suitable for HI •<•• will also, in my opinion, probably answer for ipecacuanha, and with the sanction of Government I propose to send supplies to these provinces. The plants sent last year to the Botanical Garden in Ceylon were reported by the director, Dr. Thwaites, to be promisingly so. The propagation of the plant by root cuttings is now thoroughly understood, and there are in the hot-lands under Mr. Jeffrey's care at Eungbee more than 100,000 young plants, while two years ago there were rather less than 7,000. The plant is therefore fairly introduced into the country, and a suitable locality for growing it profitably as a crop will doubtless soon be discovered.

12. During the year a patch of two acres of ground in (his garden was planted with seedling Baobab trees, with the object of finding out whether this tree can be profitably cultivated in India as the yielder of a fibre for paper-making. Large quantities of the Baobab fibre are annually imported into England from Africa; and Dr. Hooker has suggested that, as the tree grows well in India, its cultivation might be commercially successful.

13. A further supply of sweet chestnuts was received and distributed to officials, to the planters, and to others in districts likely to prove suitable for this valuable tea.

14. Various paragraphs in scientific and other journals having given rise to an impression that the most fever-stricken portions of the plains of India might be rendered healthy if sufficient numbers of the Australian blue-gum tree (*Eucalyptus globulus*) were planted in them, inquiries for seeds and seedlings of this species have been numerous. This tree is a native of Tasmania and part of Southern Australia, where malarious fevers even of the mild type are not common, and where the virulent forms so prevalent in India probably do not occur at all. The evidence that plantations of this tree do really have the effect of drying up swamps is not very satisfactory; moreover, repeated experience has proved that *Eucalyptus globulus*, although growing with great rapidity and vigor on the Neilgherries and Khasi Hills at elevations of from 5,000 to 8,000 feet above the sea, can hardly be got to live over a year or two in the hot plains of India. It is to be hoped, therefore, that no public money will be spent in attempts to establiish it in Bengal by its means.

10. The interchange of seeds and plants with similar institutions and with private parties has been satisfactory. During the year, 5,604 living plants have been received, of which these were collected by the Cinchona establishment in Sikkim, and to Messrs. Gammie and Lister, my thanks are due for their efforts. Mr. Lister also brought a number from the Khasi country, and had it not been for the difficulties of transport incident on his attachment to the field force, he could have collected many more. Most valuable contributions have been received from Dr. Hooker, c.n., P.R.S., of the Royal Garden, Kew; Dr. Thwaites, F.B.B., of the Botanical Garden, Peradenia, Ceylon; and from the Superintendents of the gardens at Bangalore, Bombay, Ootacamund, Goneskhud, and Mauritius. The Queensland Acclimatization Society have also contributed many interesting Australian plants. For a splendid collection of Khasi Hill orchids, I have to thank Mr. Luttman-Johnson, c.s., Secretary to the Chief Commissioner of Assam. Mr. Mann and Mr. Freeman, of Shillong, have also made contributions of orchids and other plants. Mr. T. H. Prinscp, late Judge of the High Court, has presented a number of fine roses. Mr. J. H. Gilbert, of Mbulinoi, has to be thanked for my collection of fine Burmese orchids, and Mr. Q. Man, of the Andamans' Commission, for his collection of plants from these interesting islands. Donations have also to be acknowledged from Mr. Beaumont, Indore, from Mr. Dartlett, Calcutta, and from Drs. D. D. Cauntngbam and John Mackenzie. Plants have, on the other hand, been distributed to the institutions and to others, to the number of 12,244.

* The collection and distribution of seeds have gone on steadily; 4,801 parcels of seeds, varying in weight from half an ounce to a hundred-weight, having been sent to 147 recipients. To the Government of Mauritius large quantities of timber samples continue to be sent for the purpose of replacing the forests cut down in that island with the usual success that has characterised the clearing of the over-avaricious cultivator there as in India. The chief donors of seeds have been Dr. Hooker, Dr. Thwaites, the Queensland Acclimatization Society, the Botanic Gardens of Ceylon, Adelaide, Melbourne, St. Petersburg, and Edinburgh; Mr. Mann, Andamans' Commission; the Agricultural Societies of Lucknow, Kangoon, Madras, and Ootacamund, and the officers of the Indian Forest Department. The seeds received amount to 5,582 packets.

17. With the exception of the house in which the herbarium and library are located, the buildings in the garden are in good order. The new house for the second gardener has been finished by the Public Works Department, and is an excellent little building. The dike on the canal has been thoroughly repaired by the same department, and to the Executive Engineer, Mr. J. H. Wells, I am much indebted for the great trouble he has put himself to in connection with the sluice and with the garden works generally. The river bank has, I regret to say, suffered a good deal of erosion and partly from a preventable cause, viz., the wash caused by tug steamers passing at full speed. Stringent orders having now been issued in regard to the rate of speed, it is hoped this nuisance will cease.

18. For the herbarium large collections of South American and European plants have been received from Dr. Hooker, Kew, and the following donations have also been made :~
 been Baron F. von Mueller, F.R.S., about 200 species of Australian plants.
 Dr. Thwaites, ditto, about 100 species from Howe's Island.
 Dr. Kegeles Imperial Garden, St. Petersburg, a collection of about 500 species from Brazil, Russia, Siberia, Sachalin, and Japan.
 Government of India, several species of grasses from Mysore.
 O. B. Clarke Esq., about 200 species of Indian composite.
 Ditto, a collection of Behar and N.W. Himalayan plants, about 400 species.
 Dr. Thwaites, a collection of Chicago plants, about 800 species.
 Dr. Thwaites, Ceylon, a collection of the mosses of Ceylon.
 Some intended for in former years, have been supplied from the India Office, and some German books have also been received from their publishers. A new catalogue of the collection of books has been prepared by the librarian, Mr S. Kurz, to whom, for his efficient management both of the library and herbarium, my best thanks are due.
 20. No changes have occurred during the year. Mr. Scott still remains on special duty in the opium districts, and Mr. Parsons continues to act for him as Garden Curator.
 Mr. Parsons, for his energy, skill, and good taste with which he has carried out the many improvements in the garden, and particularly for his labours in connection, with the designing and construction of the new conservatory, during the year he has discharged his binary duties in the seed department and to the supervision in part of the lake and mounds in the eastern end of the garden, and I have also to thank him for his energy and skill. The office establishment have worked very well.

22. The usual returns of plants and seeds received and distributed are appended.

APPENDIX 1.

Plants received at the Royal Botanical Garden, Calcutta, from 1st April 1874 to 31st March 1875.

FROM	Wardian cases.	Boxes.	Number of plants.
Dr. Thwaites, F.E.S., Botanic Garden, Ceylon	2	38	41
Collected in Sikkim by Superintendent		1	882
Botanic Garden, Saharanpore			82
Dr. Mackenzie, Presidency Jail			8
A. H. Blechynden, Esq., Agricultural and Horticultural Society of India			164
William Bull, Esq., London	2		78
G. Bartlett, Esq., Calcutta			66
G. Mann, Esq., Forest Department, Shillong		1	118
M. Ridley, Esq., Rose-cuttings			60
Deputy Assistant Superintendent, Fort Blair		1	8
Acclimatization Society, Queensland	1		146
Government of the Straits Settlement	2	3	74
Dr. Hooker, C.B., Royal Botanic Gardens, Kew	1	3	172
Public Gardens, Bangalore		1	14
V. T. Ponder, Esq.			95
T. H. Prinsep, Esq.			57
Dr. Bonavia, Lucknow			20
Beaumont, Indore			34
Colonel Boddam, Bangalore			2
William Craw, Esq., Raneekhet			2
Captain Williamson, Garo Hills			16
Collected by Mr. Gammie, Cinchona Plantation, Sikkim			747
Ditto by Mr. A. Biermann, ditto ditto			24
Botanic Garden, Mauritius	2		76
J. M. Woodrow, Esq., Gunesbkhund Garden			24
Colonel Raban, Shillong			200
G. H. Gilbert, Esq., Rangoon			82
H. Luttman-Johnson, Esq., Secretary to Chief Commissioner, Assam			559
Collected in Duffia Hills by Mr. J. L. Lister			531
Baboo P. C. Banerjee			11
Mr. Jeffrey, Rungbee			109
S. Martand, Indore Rose-cuttings			20
Freeman, Shillong			276
Victoria Garden, Bombay			24
S. Kurz, Esq.			39
G. H. Mann, Esq., Port Blair			689
Dr. D. D. Cunningham			50
C. H. Pillans, Esq., Silligorie			69
Total	10	48	5,664

GEORGE KING,
 Supdt. Botanical Garden.

APPENDIX II.

Plants despatched from April 1874 to March 1875.

Month.	Date.	To	Wardian cases.	Boxes.	Number of plants.
1874.					
April	2	Botanic Garden, Mauritius	1		53
"	6	G. W. Barclay, Esq.			24
"	7	G. G. Anderson, Esq.			25
"	8	Dr. Mackenzie			30
"	8	Mr. Barr			29
"	9	" Robinson			53
"	9	C. T. Sutherland, Esq.			22
"	12	Dr. C. O. Woodford			10
"	17	C. Fairley, Esq.			42
"	20	Hon'ble L. Jackson			6
"	22	Dr. Tonnerre			8
"	22	Mr. G. Bartlett			1
"	22	" Sutherland			1
"	24	Colonel Chamberlain			2
"	24	" Lowther			7
"	24	E. Eastern, Esq.			40
"	24	Rev. Dr. Rotton		6	41
"	25	J. O'Connor, Esq.			100
May	6	Baboo N. B. Mookerjia			12
"	16	Mr. D'Cruz			16
"	28	J. McCorkondale, Esq.			5
"	28	Dr. C. O. Woodford			13
"	28	Captain H. Jones	I		57
June	10	Baboo Brojo Gopal Bose			4
"	12	Lieutenant Collins			40
"	16	C. C. Macrae, Esq.			12
"	17	Baboo Jogendranath Mullick			2
"	17	Ram Sing Jamadar			2
"	23	Gollap Rasin Bux			40
"	25	Dr. Mackenzie			192
July	1	Deputy Commissioner of Garo Hills		3	65
"	2	Baboo Bhobun Mohun Mookerjia			2
"	2	St. Xavier's College			21
"	2	Baboo Benode Behary Banerjia			43
"	2	Commissariat Depot, Hastings			50
"	2	Dr. Jameson		3	56
"	2	" Bonavia		4	84
"	2	Mr. G. Mann		1	20
"	2	Conservator of Forests, British Burmah		4	100
"	10	A. H. Blechynden, Esq.			9
"	10	J. C. Riley, Esq.			30
"	10	Dr. J. O'Connor			2
"	18	" N. N. Mullick			1
"	19	W. Ainsworth, Esq.			75
"	20	Superintendent of Jail, Mymensingh		3	80
"	20	C. A. B. Anderson, Esq.		4	100
"	21	Dr. Watt, Hooghly			30
"	21	Botanic Garden, Edinburgh		1	48
"	21	" Mauritius			350
"	21	Sailors' Home			20
"	22	Dr. Brandis			57
"	26	Civil Surgeon, Ghazee-pore			176
"	26	R. King, Esq.		3	75
"	26	District Engineer, Mirzapore		5	148
"	27	Baboo G. C. Datta			0
"	27	Agri-Horticultural Society of India			588
"	28	Baboo K. N. Phandry			2
"	28	Dr. J. F. T. Vinnicombe			50
"	28	S. P. Roznritt			6
"	31	Messrs. Balmer, Lawrie & Co.			50
"	31	Baboo Bissembhur Ghose			7
"	31	" Pratapa Chandra Ghosha			3
"	31	" N. C. Mookerjia		6	150
"	31	Jessore Jail Garden			60
"	31	H. C. Denham, Esq., East Indian Railway			12
"	31	Baboo G. D. Bysack			30
August	3	Dr. P. Q. Woodford			210
"	8	Agri-Horticultural Society			23
"	8	Captain A. Milne		6	130
"	8	Baboo Pratapa Chandra Ghosha			37
"	12	Mr. J. Jameson, Allahabad			12
"	13	Agri-Horticultural Society			4
"	14	Pundit E. C. Biddyasagara			105
"		Moyapore Magazine			

APPENDIX II.-(Continued.)

Month.	Date.	To	Wardian cases.	Boxes.	Number of plants
1874.					
August	14	Conservator of Forests, Punjab ...			50
"	17	Baboo G. C. Soor		2	4
"	18	D. Rozario, Esq.			2
"	18	Baboo C. G. Mookerjee			1
"	18	W. M. Smith, Esq.			94
"	20	Baboo K. D. Paul			416
"	20F	" P. C. Chowdry			3
"	20	Dr. Schlich			50
"	20	G.			63
"	23	Fort Commissioners			130
"	24	Baboo G. C. Ghosal ...			2
"	25	"			100
"	26	"			400
"	26	Baboo N. C. Alookeyia		12	8
"	27	Municipal Commissioners			20
"	28	"			100
"	28	"			3
September	29	Baboo U. G. Sapsrad Coondu			49
"	1	" G. Soor			8
"	1	Calcutta Mint			62
"	2	Arsenal, Fort William			50
"	3	H. V. ...sq.			66
"	5	Ar. G. King			24
"	5	J. Beams, Esq.		1	50
"	6	Botanic Garden, Ceylon			105
"	6	Baboo G. C. Chowdry	1		1
"	8	General Hospital			258
"	8	Dalhousie Square			262
"	10	"			80
"	10	Calcutta Mint			157
"	16	Baboo P. C. Ghose			75
"	21	" gra			115
"	23	J. I.		6	160
"	23	Calc			59
October	2	Messrs. Gisborne & Co.			200
"	2	Capt. A. Keck			75
"	2	Joyapore Magazine			20
"	3	Mudosoond Sircar			20
"	4	Botanic Garden, Natal			24
"	4	"			69
"	20	Conservator of Forests, Rangoon	1		77
November	3	Baboo Okhoy Chunder Seal		3	113
"	8	Kissorie Lai Mookerjee			60
"	14	J. A. Penhara, Esq.			8
1875.					
January	2	Mr. G. H. Gilbert			146
"	4	Dr. Payne			74
"	4	" Mackenzie			172
"	4	Messrs. J. Mackillican & Co.			14
"	6	General Hospital			12
"	6	Mr. Boddam			33
"	12	General Hospital			200
"	13	J. Hamilton, Esq.			68
"	15	Deputy Commissioner, Jubbulpore			50
"	15	Baboo A. R. Kaje...			91
"	15	The Hon'ble Lieutenant-Governor of Bengal			4
"	15	Baboo R. C. ...			100
"	20	" C. D. Ghose...			4
"	20	Capt. Williamson			114
"	21	Major-General D. M. Stewart, C.B.			18
"	21	Small Cause Court, Calcutta			38
"	22	Botanic Garden, Ceylon	1		34
"	23	D.			66
"	25	C. A. B. Anderson, Esq.	1		30
"	26	Col. Hamilton		12	14
"	29	Botanic Garden, Mauritius	1		688
"	30	Col. Raban		1	20
February	3	G. Bartlett, Esq.		2	27
"	3	Dr. Beaumont		1	105
"	5	Royal Botanic Gardens, Kew			3f
"	5	Right Hon'ble M. E. Grant Duff		1	24
"	5	Col. S. Martand, Indore			36
"	5	E. C. Bay ley, Esq.		1	111
"	5	Executive Engineer, Dinapore			13
				1	12
					24
			24		600

APPENDIX II—(Continued.)

Month.	Date.	To	Wardian cases.	Boxes.	Number of plants.
1875.					
February	5	C. T. Buckland, Esq.			25
"	6	Jail, Alipore			17
"	6	Hon'ble the Lieutenant-Governor of Bengal			6
"	6	Dr. Lynch, Alipore Jail			6
"	7	Agri-Horticultural Society			4
"	7	Hon'ble the Lieutenant-Governor of Bengal			32
"	9	Col. Robinson			24
"	9	Botanic Garden, Ceylon		1	9
"	10	J. Fayrer, Esq.		1	39
"	10	E. Knight, Esq.		1	36
"	18	G. Bartlett, Esq.			18
"	18	B. Manjee			2
"	18	Sir William McArthur			31
"	20	Agri-Horticultural Society, Madras			69
"	22	G. H. Macn, Esq., Port Blair			25
"	22	Acclimatization Society, Queensland	2		101
"	25	Dr. Bonavia			37
"	25	G. W. Allen, Esq.			107
"	25	T. H. Prinsep, Esq.			24
March	27	Public Garden, Ootacamund			52
"	3	Rajah of Durbhunga		2	32
"	9	Royal Botanic Garden, Kew		1	82
"	9	A. H. Blechynden, Esq.		1	50
"	11	W. Bull, Esq.		1	24
"	12	Governor of Hong-Kong		1	48
"	14	Mr. Roberts			4
"	14	Dr. Staples			8
"	15	Dr. C. O. Woodford			26
"	22	Dr. A. Payne			30
"	23	G. Haterott, Esq., Trieste		1	41
"	23	Agri-Horticultural Society			50
"	28	D. Newing, Esq.			63
"	29	W. Parsons, Esq.			177
"	28	G. H. Riley, Esq.			100
February	20	Botanic Garden, Java		2	92
		Dr. Bonavia		1	6
		Superintendent of Jail, Goalpara		6	130
		The Right Hon'ble the Chancellor of the Exchequer		1	13
		G. Roepstoff, Esq.		1	25
		E. J. Barton, Esq.		1	50
		Dr. Crombie		1	40
		W. Peppe, Esq.		2	100
		G. Martin, Esq.			6
		C. E. Price, Esq.			4
		High Court, Calcutta		1	30
Total			12	141	12,244

GEORGE KING,

Superintendent, Botanic Garden.

APPENDIX III.

Statement showing seeds distributed from 1st April 1874 to 31st March 1875.

To whom supplied.	Number of parcels or packets.
Royal Botanic Garden, Mauritius	168
Dr. Mackenzie, Superintendent, Presidency Jail, Calcutta	6
Dr. Thwaites, Botanical Garden, Peradenya, Ceylon	70
Colonel Boddam, Secretary, Agri-Horticultural Society, Bangalore	28
William Bull, Esq., Chelsea, London	67
Government of Mauritius	22
Secretary, Agri-Horticultural Society, Bombay	1
P > Lahore	1
>> t Lucknow	51
>> a Madras	45
a of India, Calcutta	123
William Jameson, Esq., Superintendent, Botanical Garden, Saharanpore	247
The Superintendent, Taj Garden, Agra	2
Station Staff Officer, Futtehghurh	53

APPENDIX UI.-(Continw<.i)

To whom supplied.	number of parcels or packets.
Commanding Officer, Her Majesty's 1-14th Regiment, Benares	22
» TT » „ „ %' 2 n 22 nd w Hazareebagh	19
Messrs. Haage, Schmidt, Erjurt, Prussia	54
Secretary, Queensland Acclimatization Society, Brisbane, Australia	39
The Commanding Officer, Her Majesty's 109th Regiment, Dinapore	19
r, TT „ r> ^ > * . V r, ^ 2 nd Battalion > 19th Regiment, Allahabad	12
Dr. Hooker, C.B., Royal Botanical Garden, Kew, London	311
Dr. Regel, Imperial Garden, St. Petersburg	92
H. C. Wood, Esq., Dummdan, Brisbane, Australia	43
H. L. Johnson, Esq., Secretary to the Chief Commissioner Assam	45
Colonel Lowther, Jubbulpore	10
Principal, Uajkomar College, Rajcote, Kattywar	45
Society d'Acclimatization, Paris	9
G. It. Miller, Esq., Darjeeling	9
Majors. R. C. Bradford, Political Agent, Jeypore, Rajpootana	30
Captain R. J. H. Wyllee, 1st Regiment, Central India Horse, Goonah, Central India	30
Baboo Bishumbhur Ghose, Calcutta	5
R. H. Bysack, Calcutta	2
Professor Balfour, Royal Botanical Garden, Edinburgh	88
Dr. Henderson, Superintendent of Jail, Lahore	4
Deputy Conservator of Forests, North-Western Provinces, Goruckpore	6
Mr. Lear, North-Western Provinces	6
Commanding Officer, 11th Brigade, Royal Artillery, Saugor	3
James Gammie, Esq., Cinchona Plantation, Darjeeling	17
General Biddulph, C.B., Bombay	49
Messrs. Ballantyne and Sons, Dalkeith, Edinburgh	30
William Thompson, Esq., Galashiels, N.B.	7
W. B. Freeman, Esq., Model Farm, Shillong	101
Dr. R. Scheffer, Royal Botanical Garden, Benteng, Java	3
Garden de Plantee, Paris	3
Dr. Clark, Esq., Secretary, Agr-Horticultural Society, Eastern Down, Queensland	6
Royal Botanical Garden, Adelaide, South Australia	62
J. Beames, Esq., Collector, Cuttack	38
William Miles, Esq., Executive Engineer, Jeypore	43
Dr. Dickie, Professor of Botany, Aberdeen	52
M. M. Jules, de Cock-et-Sieur, Gand, Belgium	3
Messrs. B. Reid and Son, London	2
Society Algerieme, Paris	2
C. Winter Stein, Esq., Alexandria, Egypt	5
The Colonial Secretary, Wellington, New Zealand	6
W. R. Guilefoyle, Esq., Royal Botanical Garden, Melbourne	52
Colonel Yule, C.B., Palermo, Italy	^
Deputy Magistrate and Collector, Cutwa	^
District Engineer, North Western Provinces, Mirzapore	49
Assistant Collector, Kirwee, Banda...	2
The Superintendent, Andamans and Nicobars	2
Conservator of Forests, Mysore	1
Deputy Conservator of Forests, Chikaldu, Berar	2
11. Paltom, Esq., M.D., Jeyuore, Rajpootana	1
Deputy Conservator of Forests, Gurdaspur, Punjab	1
Lieutenant-Colonel H. W. Gulliver, Officiating Chief Engineer, Bengal, Irrigation Branch, Calcutta	1
E. T. Buckland, Esq., Burdwan	1
Superint3nding Engineer, Orissa Circle, Cuttack	28
G. Branning, Esq., St. Kilda Nursery, Brighton Road, Melbourne	35
Messrs. T. Lang & Co., Nurserymen, Melbourne, Australia	36
Colonel Play fair, British Consul, Algiers	5
Mr. Wood, Purneah	1
Captain Roberts, Political Agent, Bhurtpore	1
Captain Miller, Central India Horse, Goonah	1
Dr. Beaumont, Indore	1
C. A. B. Anderson, Esq., Koliabar, Assam	1
M. Craw, Esq., Raneekhet	221
Dr. Moor, Aboo	1
Colonel Baugh, Almoorah	1
General Ramsay, C.B., Almoorah	2
S. E. Peal, Esq., Seesagor, Assam	1
R. P. Colvin, Esq., Deputy Conservator of Forests, Gurhwal	1
J. Nelson, Esq., Dehra-Doon	1
Colonel Chamberlain, Raneekhet	223
Major Ashton Mayne, Political Agent, Tehri, Lullutpore, Central India	101
A. T. Jeffrey, Esq., Rungbee, Darjeeling	184
W. D. Haskott, Esq., Hyderabad, Deccan	49
Hon'ble Justice Afarkby, Calcutta	10
W. M. Clay, Esq., Bajsbabye	1
pprtarw to the MHncipal Commissioner, Allahabad	1
G T Peppe, Esq., Manager of the Dimnowar Estate, Dhunowar	27
Secretary to the Government, Demerara	3
The Alfred Park, Allahabad	1
K I I I Smit & Co. Consil for North Gen^y, C^cutta'	46
The Collector of Balasore	1
Messrs. Robert and Charriol, Calcutta	140
Royal Botanical Garden, Natal	16
H. B. Knowles, Esq., Akola	8
P. M. Lowther, ^ ^ Calcutta	8

APPENDIX III.—(Continued.)

To whom supplied.	Number of parcels or packets.
Mr. Lockhart, Hastings, Calcutta	2
Messrs. Cowan, Burdwan	6
Deputy Commissioner, Garo Hills, Tura	1X
Colonel R. P. Macpherson, Calcutta	93
H. L. Dampier, Esq., Calcutta	33
Deputy Commissary-General of Ordnance, Fort William	24
John Murdoch, Esq., Calcutta	101
Surgeon of Steam Ship <i>Africa</i> , G. Marshall Woodrow, Esq.	52
Superintendent, Botanical Garden; Gunesh Khund, Khirkee	2
C. H. Pillans, Esq., Silligoree	49
John Wai the w, Esq., Stock ford, England	30
— Kack, Esq., Garden Reach	1
Richard Lea, Esq., Extra Assistant Commissioner, Burmah, Tejpore	24
R. Jameson, Esq., Botanical Garden, Ootacamund	14
Mr. Parsons, Calcutta	25
Royal Botanical Garden, Berlin	U
A. O. Hume, C.B., Secretary to the Government of India, Calcutta	21
Dr. Collis, General Hospital, Calcutta	17
J. Johnston, Esq., Dooteria, Darjeeling.	4
W. Christison, Esq., Tea-planter, Darjeeling	5
J. E. J. Barton, Esq., Magistrate, Barisal, Backergunge	1
Colonel Ainsley, Calcutta	2
Mr. Ponder, Cachar	3
John Bolland, Esq., Manchester	65
Covenanted Deputy Collector in charge, Balasore	2
T. W. Jones, Esq., 42, Queen's Road, Jamalpore	1
Dr. Gunn, Meerut	2
J. Pellew, Esq., Magistrate, Hooghly	b2
Walter Hill, Esq., Botanical Garden, Brisbane, Australia	8
Mr. Bolland, Railway Department...	20
E. Wing, Esq., Assistant Engineer...	2
Messrs. Jardine, Skinner & Co., Calcutta	1
Signore di Berenger, Direttore dell Istituto Forestale de Vollombrose, Florence, Italy	7
Colonel Puckle, Director, Government Gardens, Bangalore	5
H. Leeds, Esq., Forest Department, Hurda, Central Provinces	6
Secretary to the Government, Auckland, New Zealand	2
Dr. Colles, General Hospital, Calcutta	50
Peppe, Esq., Sub-Deputy Opium Agent, Eanchee	1
Deputy Conservator of Forests, Berar, Chikulda	1
A. T. Morris, Esq., Ghoosery Cotton Mills	40
Commanding Officer, F. Battery, 19th Brigade, K. A., Cawnpore	5
Lady Muir, Calcutta	50
C. P. Bird, Esq., Calcutta	53
Commanding Officer, H. M.'s G. Battery, 11th Brigade, R. A., flowgong	9
Rama Vadri, Trevandrum	1
Count Belton, Brescia	1
Superintendent of Jail, Backergunge	62

APPENDIX IV.

Statement showing seeds received from 1st April 1874 to 31st March 1875.

From whom received.	Number of parcels or packets.
Executive Engineer, 24-Pergunnahs	1
W. H. Cogswell, Esq., Barrackpore	2
Government Garden, Ootacamund	29
William Jameson, Esq., Superintendent, Botanical Garden, Saharunpore	53
Dr. Mackenzie, Presidency Jail, Calcutta	2
Queensland Acclimatization Society, Brisbane, Australia	59
*Tardin d6s planted, Paris	1
Botanical Garden, Ceylon	6
J. Sykes Gamble, Esq., Assistant Conservator of Forests, Cooch Behar	9
W. B. Freeman, Esq., Superintendent, Government Model Farm, Shillong	1
James Gammie, Esq., Darjeeling	7
Agri-Horticultural Society, Lucknow	91
Government of Bengal, Calcutta	1
Assistant Conservator of Forests, North-Western Provinces, Raneekhet	1
Botanical Garden, Brisbane, Australia	2
Ditto St. Petersburg	1>13*
Bindtwer Brothers, Viena	61*]
G. Brnning, Esq., St. Kilda Nursery, Melbourne	f
Inspector of Forests, Madras	f
Mr. Lear, North-Western Provinces	*
Dr. Beaumont, Indore	10
J. E. O'Connor, Esq., Agricultural Department of Government of India, Calcutta	*
Chief Engineer, Northern Bengal Railway Station	**
Dr. King, Superintendent, Botanical Garden, from Mungpoo	LX 6
Deputy Superintendent of Police, Burdwan	>
Royal Botanical Garden, Buetenzorg, Java	f
G. Mann, Esq., Deputy Conservator of Forests, Assam	9
Superintendent of Model Farm, Bulundshuhar	o.f
Deputy Conservator of Forests, Gurhwal	t?L
B. Ried & Co., Seedsmen and Nurserymen, Aberdeen	o^
Deputy Conservator of Forests, British Kurmah	^
Royal Botanical Gardon, Kcw, London	u

APPENDIX IV - (Continued.)

From whom received.	Number of parcels or packets.
Conservator of Forests, Rangpur	1
Conservator of Forests, Jounsar Division, Esq., Alexandria	9
Botanical Oatden, Adelaide, South Australia	1
" " Melbourne	64
Messrs. Hugo & Schlimm, Erfurt, Prussia	121
Colonial Settlement, Singapore	319
Di. Brandig, Inspector-General of Forests, Calcutta	1
Deputy Conservator of Forests, Uonlmain	2
Aanant Conservator of Forests, Dehra-Dooi	1
Government of Bengal, Calcutta	1
Baron Von Moller, Holbourne, Austrillin	2
Sit W McArthur, New South Wales, Australia	31
G. Ma	17
Assist	97
Resident in charge, Andamans and Nicobars	2
Central Provinces, Saugor	5
Forests, Hurdeo, Central Provinces	5
Bangalore	43
Deputy Conservator of Forests, S. Divisions	4
O. B. Stt, Esq., Calcutta	1
Willmott, Esq., Calcutta	1
Deputy Conservator of Forests, Punjab	4
Assistant Conservator of Forests, Hynce	3
Assistant Conservator of Forests, Hynce	2
Botanical Garden, Mauritius	6
W. Purao, Esq., Seedsman and Nurseryman, Broadway, London	19
W. B. Kimball, KMI, Model Farm, Bhillon	4
Royal Botanical Garden, Natal	9
Andaman Islands Society, Moulmein	1
Assistant Conservator of Forests (Ponjab), Chamba, UivUion	1
Deputy Conservator of Forests, Fereata, Linn	1
The Officer in charge of the Government Timber Department, Kn...	14
Colonial	2
Dr. B. Crake, Esq., Calcutta	21
Dr. B. Crake, Aden	11
Messrs. J. & Co., Son, Dull, Assam	150
U. Andreon, Esq., Koliabar, A	3
C. Bensou, Esq., M.H.A.C. Assistant Superintendent, Government Farms, Sydasset	1
Major C. Batchelor, Deputy Conservator of Forests, Sutta	1
Dr. Nicholson, Andiunni and Nieoban	1
Dr. Simpson, Boni Uflb, Assam	3
L. Aster, Esq., Deoted Superintendent, Duffla	136
C. J. Lynn, Esq., Assistant Secretary, Government of India, Depn...	1
of Agriculture, and Commerce, Calcutta	1
T. Linn & Co., Melbourne	11
Dr. J. K. J. Deputy Conservator of Forests, Kullu Befit Division	9
Dr. s. Neil, Big., Civil Surgeon, North-Western Province	1
Dr. H. Notch, Wlnuupoo, HonK-King	3
Conservator of Forests, Worth-Western Provinces, Nynco To	1
Superintendent, Botanical Garden, Bdinbrgh	57
HDY*1 Botanical Garden, Pain...	1
S. A. P. Esq., Snppnlrotti, Seelbagar, Assam	2
Secretary in the Government of Bengal	4
Deputy Conservator of Forests, Bhagaruttee Division	8
Conservator of Forests, Central Province*, Western Divisions	3
Superintendent Port Blair, Ammbans	12
Colonial Chamberlain, Raneekbei	18
Dr. J. J. Esq., St. Killa NIVMTV, Melbourne, Australia	1
Total	3,582

Howe, M. V. M. C. H. UTTA :

7V, e

1875

GEORGE KING,

Supdt., Botanical Garden.

so early in the season as was desirable. In January he left for the Chittagong Hill Tracts, a little known district, from which, in the early days of this garden, Eoxburgh got many of the trees with which he stocked it. Mr. Lister has sent in a considerable quantity of living plants and also seeds, many of which are of considerable value and interest. These will, when planted out, add largely to the out-door collection. He has also sent a quantity of orchids, and it is no exaggeration to say that the orchid houses never before were so well and largely stocked. To be complete, the botanical garden of an empire should contain representatives, if not of every species, at least of every genus indigenous within the limits of that empire. In a temperate climate it may be possible to manage this, because it is easy to provide plants with the climate that suits them if this has to be done by raising the natural temperature. The matter becomes very much more difficult when a climate has to be made for plants by lowering the natural temperature. It is therefore quite hopeless to expect that living representatives of the flora of the higher and colder parts of the Indian Empire can ever be brought together in Calcutta. To effect that, branch gardens in a more temperate climate would be an absolute necessity. But a great deal could be done to extend the collection in this garden of tropical and sub-tropical species, the only real difficulty in the way being the soil, which here is purely alluvial, and moreover very sandy and poor. This can be to some extent met by manuring; and if Mr. Lister's services are continued for a few years, and sufficient funds be granted to provide for the cultivation of the plants he may send in, there is no reason why this garden should not become as good as ever it was in the past, and regain its old reputation of containing a really fine collection.

5. *India-rubber*.—In former reports I have narrated what has been done in this garden in the way of introducing the Madagascar rubber-vine and the *Hevea Braziliensis*, which yield two of the most valuable sorts in commerce. During the current year it has become more apparent than ever that neither of these valuable species can be grown for commercial purposes in the climate of Bengal. Both have alike failed in this garden and in the warm tropical valleys of the Sikkim Himalayas. And in my opinion a home will not be found for them further north than Tenasserim, Ceylon, or perhaps Malabar. The appliances existing in this garden probably render it the most suitable place in India for raising seedlings of these plants for transport to places possessing a suitable climate for their growth to maturity. It was with much regret, therefore, that I had to report to Government the utterly hopeless condition of a large consignment of *Hevea* seed sent out by the India Office during September last. This consignment was packed in large barrels—a singularly unfortunate arrangement for such oily and perishable seeds as those of *Hevea*. The India-rubber experiment cannot, therefore, be said to have progressed during the year. With regard to the cultivation of the chief indigenous India-rubber tree of this country (an epiphytal species called *Fleas elastica*), the Forest Department are understood to be making some experiments. ~~It may be said~~ as well here to allude to the fallacy that this tree cannot be grown from seed—an entire mistake; for if the seed be carefully collected and properly sown, it germinates freely in soil.

6. *Vanilla*.—Some very sanguine forecasts having been made of the future of vanilla cultivation in Bengal, a number of plants were, two years ago, put out in this garden under sheds similar to those in which the pepper vine is grown. The growth of these plants has not been satisfactory, probably from over-shading. Many have therefore been recently put out under the shade of mango trees. The finest old vanilla plants in the garden grow against a north wall. One of these was this year laden with pods, but an unusually high temperature for a day or two caused these to drop prematurely. Recent as well as former experience leads me to think that vanilla will never become a staple product of Bengal.

7. *Ipecacuanha*.—Quantities of ipecacuanha plants have been sent to Ceylon, to the Neilgherries (for trial at Barliar, a garden in a hot low valley below Ooonoor), and to Burmah. It is to be hoped that a locality may soon be found where this invaluable specific for one of the worst of tropical diseases can be profitably grown as a crop. I fear it cannot be thus grown so far north as Bengal. The secret of successful propagation being now perfectly understood, any number of plants can be sent out. During the year I supplied a quantity of the drug itself (the dried root) to the Surgeon-General, for trial in hospital practice. This was carefully administered in cases of dysentery by Dr. Crombie, late Officiating Physician to the Medical College Hospital, and was pronounced by him to be quite as efficient as the best South American drug.

8. *Baobab*.—The experimental patch of this tree which was put out eighteen months ago has thriven fairly well. The growth has, however, been less rapid than I was led to expect.

9. *Mahogany*.—The demand for seedlings of this timber tree is far greater than I can meet. This is not at all to be wondered at, as the tree has been proved to thrive admirably in Bengal, to grow faster than the two best Indian timbers, teak and sal and to produce wood equal in quality to the best Honduras-grown logs. The difficulty in extending mahogany-planting in Bengal lies solely in the scarcity of seed. The species though thriving well in the climate of Bengal, is very shy in seeding. Hardly a pod is yielded by the large trees that remain in this garden, and I am dependent for my supplies of Indian-grown seed on a few trees on the grand trunk road near Barrackpore. Last year from all sources, I was able only to collect 3,717 seeds. I have already proposed that special efforts should be made to get seed sent from Honduras and Jamaica.

10. *Bamboo*.—For some time past, much attention has been directed by an English paper-maker to the possibility of producing from the young tender shoots of bamboo, at a very small cost per ton, a rough paper-stock suitable for transport to England, there to be made into paper. The utilization of the immense amount of bamboo which annually goes to waste in the forests of this country is so important that any proposal with this end in view naturally received much consideration. Mr. Routledge's process requires the use of expensive machinery, and as the outturn must be very low in price, it is necessary for success that a factory turn out a large quantity per annum. This of course involves a large supply of raw material. Now, if old bamboos would answer for this process, or if young shoots of bamboo could be produced all the year round, a fine revenue from bamboo would be in prospect for the Indian Forest Department. But old bamboos will not answer, and young bamboo shoots are produced in India only during a period not exceeding four months in the year, and, moreover, they are too heavy to float, and there is no margin for the payment of land carriage. The only hope, therefore, of the success of the scheme is either to fit up (as has been proposed) the necessary machinery on a river steamer and keep it roving along some river in a good bamboo district during the few months when young shoots are to be had, or to discover a means by which the bamboo may be induced to yield a crop of young tender shoots with regularity and rapidity, irrespective of season, and in spite of its natural tendency to yield shoots only during the rainy season. With the latter object, some clumps of bamboo have been cut down in the way suggested by the patentee of the bamboo paper-stock, and treatment is to be instituted to secure, if possible, the desiderated regular crop of shoots.

11. *Distribution of plants and seeds*.—Most notable amongst the collections of plant sent out during the year is one for EL R. H. the Prince of Wales. His Royal Highness during his visit to Calcutta came to the garden, and was pleased to express his admiration of the plant houses and grounds. Five thousand plants were supplied to the Zoological Garden now in course of formation at Alipore, and large quantities have also been supplied for the stations of the Northern Bengal State Railway, and to Magistrates of districts for planting roads. Various collections have been sent to botanical gardens in Europe and the colonies. The total issues for the year amount to 23,106 plants. In like manner 6,343 parcels of seeds have been distributed to public institutions at home and abroad, and also to private individuals, the weight of these parcels varying from half an ounce to half a hundredweight. The chief donors of plants and seeds during the year have been Dr. Hooker, C.B., President of the Royal Society and Director of the Royal Garden, Kew; Dr. Thwaites, F.R.S., Director of the Botanical Garden, Ceylon; the Directors of the Botanical Gardens of Mauritius, Melbourne, Adelaide, Queensland, Java, Natal, and Chicago; the Queensland Acclimatization Society; the Superintendents of the gardens at Saharanpore and Ootacamund; and several officers of the Indian Forest Department. Many private individuals have also sent valuable contributions; full details will, however, be found in the appendices to this report.

12. *Herbarium*.—During the year but few donations have been received. Mr. C. B. Clarke, of the Educational Department, contributed a collection of Behar plants amounting to 520 species; from Mr. Babcock, Director of the Chicago Garden, a collection of 800 North American plants was received; and finally, from Mr. Kurz, the Curator of the Herbarium, a collection of about 250 species from the Nicobar Islands. Mr. Lister, who accompanied the Dufla Field Force, brought home a number of dried plants which have not yet been incorporated in the Herbarium.

13. *Library*.—Indents for books have now, by the orders of Government, to be sent to England, and very great inconvenience is experienced from the delays which appear to be inseparable from this mode of supply. In former days the Superintendent exercised the power of himself buying what books were wanted for the library—an arrangement which, whatever its demerits may have been, had the advantage of being efficient and rapid.

Official changes.—Mr. Scott, the curator of the garden, still remains on special duty at the Opium Department, and his post has been filled by Mr. Parsons (of the late Cotton Department), and lately by Mr. Biermann, of the cinchona plantation. Mr. Lister, having been appointed botanical collector in November last, made his first tour to the Chittagong Hill Tracts. The abolition of the appointment of assistant curator of the garden (which I trust is only to be temporary) has thrown mainly on myself the management of the collection and distribution of seeds. A large amount of additional work has also fallen on me during the past year in connection with the laying out of the new Zoological Garden—a duty which has involved many visits to Alipore and a great expenditure of time and strength. Ibis, when added to my labours as Professor of Botany at the Medical College, to my correspondence, and to my multifarious duties in connection with the garden itself, has left me even less time than usual for scientific work. During the year I have prepared for the Government of India a manual of cinchona cultivation, and for the *Gazetteer* of the North-West Provinces, of the floras of the hills and plains of that part of India. I have also edited the botanical portion of a book on Sanskrit materia medica which has been prepared by Baboo Ooday Chandant, lately Civil Surgeon of Noakholly. Mr. Kurz's "Forest Flora of Burmah," undertaken at the request of the Government of India, has been finished and is now passing through the press. In conclusion, my acknowledgments are due to Messrs. Kurz, Parsons, Biermann, and Lister, to the office establishment, and to the garden overseer and sirdar, for the efficient and hearty way in which they have discharged their respective duties.

APPENDIX I.

Plants received at the Royal Botanical Garden, Calcutta, from 1st April 1875 to 31st March 1876.

FBOM	Wardian cases.	Boxes.	Number of plants.
Dr. Hooker, C.B., Royal Gardens, Kew ...	1	.....	58
„ Thwaites, F.B.S., Botanic Garden, Peradeniya, Ceylon ...	3	.....	111
Botanic Garden, Mauritius ...	3	.....	149
Botanic Garden, Buitenzorg, Java ...	1	.....	50
„ * „ Natal ...	1	.....	16
» » fiptacamund ...	1	.....	67
» » Saharunpore ...	2	.....	48
Government House Garden, Calcutta ...	.....	.....	390
Barrackpore Park ...	.....	.....	72
Agri-Horticultural Society, Madras ...	[[	.....	110
„ „ Calcutta ...	3	.....	249
Eden Garden, Calcutta ...	.....	.....	18
Superintendent, Model Farm, Cawnpore ...	.....	2	48
W. Bull, Esq., Nurseryman, London ...	1	.....	77
Messrs. S. Price & Co., Calcutta ...	.....	.....	6
Baboo Shreenath Doss ...	.....	.....	9
„ Haree Doss ...	.....	.....	4
„ Sham ...	.....	.....	1
Collected in Sikkim by the Superintendent ...	.....	.....	1,762
J. Leister, Esq., Government Botanical Collector, collected in Duffla Hills and Chittal ...	.....	68	1,224
J. Kennedy, Esq. ...	.....	26	44
P. Melville, Esq. ...	.....	2	119
J. Langham, Esq., Burmali ...	.....	.....	22
Colonel J. MacDonald ...	1	.....	86
J. Coies Hardinge, Esq., Rangoon ...	2	.....	86
Dr. Cunningham, Presidency Jail, Calcutta ...	2	.....	107
„ Mackenzie ...	.....	.....	140
Messrs. MacNeil & Co. ...	.....	.....	53
Baboo Mohendronath Goopto/Deputy Collector, Chittagong ...	.....	1	25
J. H. Gilbert, Esq., Rangoon ...	1	.....	57
Dr. Beaumont, Indore ...	.....	.....	47
Captain H. H. P. Cowper ...	.....	.....	3
Colonel Newdegate, C.B., Rifle Brigade ...	.....	.....	40
Drs. Saunders and Mackenzie ...	.....	.....	34
G. Man, Esq., Port Blair ...	3	.....	287
Sir W. MacArthur, Sydney ...	1	.....	20
Robert Mitchell, Esq., Emigration Agent for Trinidad* ...	1	.....	48
Dr. Moore, Mount Aboo ...	.....	.....	3
„ Watt, Hooghly ...	.....	.....	3
J. Ainsworth, Esq., Howrah ...	.....	.....	12
R. Kemp, Esq., Calcutta ...	.....	.....	12
J. Ponder, Esq. ...	.....	.....	22
J. O'Connor, Esq. ...	.....	.....	13
H. R. Cooke, Esq. ...	.....	.....	71
D. L. Barr, Esq., Hastings ...	.....	.....	45
J. H. Peppe, Esq., Ranchee ...	2	.....	22
Baboo Rajendronauth Mullick ...	.....	.....	4
Dr. Stewart ...	.....	.....	24
Baboo Nilcomul Doss, Calcutta ...	.....	.....	1
G. Mann, Esq., Shillong ...	.....	6	176
C. J. Simons, Esq., Assam ...	.....	6	123
G. Bartlett, Esq., Calcutta ...	.....	.....	7
Captain Henderson, S. S. India ...	.....	.....	130
J. S. Gamble, Esq., Assistant Conservator of Forests, Sikkim ...	.....	7	76
J. Gammie, Esq., Darjeeling ...	.....	19	917
A. Parsons, Esq., „ ...	1	.....	127
A. Jaffrey, Esq., „ ...	[[	.....	9
A. Biermann, Esq., „ ...	.....	1	349
W. S. Halsey, Esq. ...	]]	.....	26
J. MacPherson, Esq. ...	.....	.....	43
Baboo N. N. Mullick, Andool... ..	[[	.....	84
„ Pratapa Chandra Ghosha ...	.....	.....	21
W. Bourke, Esq. ...	.....	2	27
Colonel Berkeley, Madras ...	]]	.....	5
„ Jones, Fort William ...	.....	1	3
Major Mant, U. S. Club ...	.....	.....	30
H. A. Firth, Esq. ...	.....	.....	14
Total ...	25	164	8,086

APPENDIX II.

Plants despatched from April 1875 to March 1876.

To	Wardian cases.	Boxes.	Number of plants.
H. R. H. The Prince of Wales	7	9	500
Agri-Horticultural Society, Calcutta			424
A native nurseryman			74
Kajee Abdool Gunny			4
Shaik J. B. Ahamad			2
J. Ainsworth, Esq., Howrah			2
W. G. Amos, Esq.			6
Baboo A. P. Kundu			6
G. G. Anderson, Esq.		1	25
J. B. Anderson, Esq.			30
A. Apar, Esq.			
Assistant Conservator of Forests, Assam		1	6
Baboo Bany Madhub Ghose			1
Barrackpore Park			243
D. L. Barr, Esq.			35
G. Bartlett, Esq.			52
Colonel Berkeley, Madras			7
Dr. Beaumont, Indore		4	60
H. Benwell, Esq.		1	4
Messrs. Bissonath Law & Co., Calcutta			2
Baboo Bissumbhur Ghose			153
T. T. Bond, Esq.			114
Dr. Bonavia, Lucknow		4	75
W. Boston, Esq.			5
G. Boucher, Esq.			2
W. Bourke, Esq.		6	139
Major Bradford, as I.			6
*evd. J. H. Budden, Almorah		1	10
W. Bull, Esq., Chelsea, London	2	2	208
^aptain J. Butler, Naga Hills		3	50
Baboo C. C. Chatterjee			1
>> C. C. Mookerjee			8
>> Cally Doss Seal			7
>> Cally Prosad Roy			12
^ampbell Medical School, Calcutta			26
* R. Carnac, Esq., Opium Agent, Ghazee pore		1	6
^ Carrington, H. M.'s Serapis		1	44
^ Colonel Chamberlain, Rancekhet		2	28
B ev d. j. Cogswell, Esq.			3
W. H. Cogswell, Esq.			2
Messrs. Cohen Brothers & Co.			7
Collector of Dacca		1	5
Rector of Hooghly		4	102
^ommissariat Depdt, Hastings		55	1,980
^ Ptam H. Cowper			42
^ptain P. Cox			28
^ r. Cunningham, Presidency Jail			24
Di. Dallas, Punjab			54
*}. Dear, Esq.		1	16
N. Dear, Esq.			24
Baboo Deendro Nath Seal		2	50
C. De nham> Esq. Eusfc Indian Railway			4
Dr. Dickie, Aberdeen			101
^strict Road Fund Office, Arrah		1	44
Baboo Doyal Chand Doss		3	55
G. Doucett, Esq.			2
^DSouza, Esq.			3
^w Grace The Duke of Buckingham		1	39
C. Duval, Esq. » of Sutherland		1	64
Eden Garden, Calcutta			4
Baboo Essur Chandra Roy			18
Dr. E			1
Wn 7-art, /or General Hospital, Calcutta			260
Executive Engineer, Nuddea Division		2	50
Hi, H' A »» Rancee...		2	31
* Highness the ex-King of Oudh			21
Si. A. kiPth, Esq.			12
Miss foulkes, Government House			9
G. F ncell, Esq.			8
O. A. G a %> Esq., Australia		1	12
J. Gar			4
Baboo mie, Esq., Darjeeling		1	4
C. H. > Chunder Roy Chowdry			10
J. Se' Garrett, Esq.			4
J. H. ? sq., German Consul, Calcutta	4		237
M. J. Gib		3	15
Baboo Goonaindro Nath Tagore			4
			46

APPENDIX II.—(Continued.)

To	Wardian cases.	Boxes.	Number of plants.
Baboo G. C. Dutta	4
„ Gopal Chandra Soor	8
Government Garden, Allahabad	...	1	10
„ House Garden, Calcutta	720
„ School, Utterparah	148
A. L. Grant, Esq.	...	1	8
T. J. C. Grant, Esq., Collector of Howrah	112
Captain Green, Torpedo Committee	49
Albert Grey, Esq., London	...	2	71
Baboo Griedhur CJwterjee	2
R. Grimmond, Esq.	...	1	20
Mrs. Haig...	8
T. Hollocks, Esq....	12
W. S. Halsey, Esq.	89
J. Hamilton, Ksq.	6
J. Coles Hardinge, Esq.	...	3	104
M. C. Hardinge, Esq.	...	1	10
Dr. Hooker, C.B., Royal Garden, Kew, London	„ 1	3	214
Horee Mallee	10
Baboo Horee Mohun Mookerjee	4
„ Horo Nath Roy	2
Mrs. Hutcheson	6
The Hon'ble R. Hutchinson, H. M.'s <i>Serapis</i>	...	1	70
H. L. Howard, Esq.	40
Colonel Hyde, for the Calcutta Mint	...	2	640
Indian Museum, Calcutta	683
Hon'ble L. Jackson	14
A. T. Jaffrey, Esq., Rungbee, Darjeeling	...	3	72
A. C. John, Esq.	13
N. A. John, Esq.	4
H. L. Johnson, Esq., Shillong	...	1	44
Baboo Juddoo Gopal Chowdry	8
Colonel Keatinge, c.s.i., Chief Commissioner, Assam	...	1	26
W. Kemble, Esq., c.s., Collector of Purneah	...	14	420
W. Kemp, Esq.	2
A. C. Kennedy, Esq.	...	1	42
Baboo Khetter Mohun Doss	2
„ Kissory Lai Mookerjee	60
Hon'ble Kristo Doss Pal	...	5	281
Baboo Lall Mohun Ghose	25
Captain Lamb, Ordnance Department	71
Hon'ble the Lieutenant-Governor of Bengal	44
„ C. R. Lindsay, Lahore	...	5	100
P. Lowther, Esq.	64
Colonel W. H. Lowther	...	3	35
A. C. Lyall, Esq., Aboo	...	2	33
Sir W. Me Arthur, Sydney	...	1	25
Messrs. Macneil & Co.	...	1	105
J. Mackay, Esq.	1	36
Messrs. Mackillican & Co.	10
Mahomed Kholil	5
Baboo Mohendra Nath Gupta	3
G. Mann, Esq., Andamans	...	1	95
H. A. Mangles, Esq.	7
R. Mangles, Esq....	1
G. Man, Esq., Shillong	...	2	71
Miss Martin	20
J. Wood-Mason, Esq., Calcutta	32
Mauritius Government	...	2	560
R. Milne, Esq., Central Prison, Benares	...	8	141
His Highness the Maharajah of Johore, by W. Hole, Esq., Private Secretary	„ 1	...	65
„ „ „ Vizianagara	...	1	24
Dr. Moore, Aboo	...	1	3
J. Moses, Esq., Ballygunge	8
Baboo Motee Lall Sein	4
H. B. Magor, Esq.	50
Municipal Commissioners, Howrah	405
General C. Murray, Monghyr	...	18	328
G. O. Nash, Esq.	4	58
Colonel Newdegate, C.B., Rifle Brigade	...	2	31
Baboo N. C. Doss	1
„ Nobo Coomar Dutta	4
„ N. N. Muliick	101
Noorwooddeen Khan	4
Baboo N. L. Bose	21
The Chevalier Oswald de Cortanze	...	3	198
S. Owen, Esq.	5
Palaram Mallee	20
Baboo Paree Mohun Roodur	1
C. H. Pillans, Esq., Siligoree...	...	1	21
Baboo P. C. Ghose	26

APPENDIX U.—(Concluded.)

To	Wardian cases.	Boxes.	Number of plants.
Baboo Poorno Chunder Mookerjee	10
•Port Commissioners, Calcutta	173
Baboo P. N. Sett	2
C. E. Price, Esq.,	23
F. H. Prinsep, Esq., Bangalore	...	4	100
Public Garden, Bangalore	...	3	84
For 22 Railway Stations, Northern Bengal State Railway	...	64	1,848
Baboo Rajendro Nath Mullick	86
a R. C. Mookerjee	12
» R. N. Mullick	17
» Rameshur Mullick	18
y> Ram Chunder Ghose	6
» Ram Gutty Dey	16
General the Hon'ble Sir Henry Ramsay, Kumaon Z	1	...	10
i o (Chil) » Esq. » wrah	94
H. fe. Reynolds, Esq,	24
J. Ridley, Esq,	...	2	51
J. Roberts, Esq.,	9
E. B. Roberts, Esq.	4
W. S. Robinson, Esq.	2
&t. Xavier's College, Calcutta	26
^ s. Salmon	2
Right Hon'ble the Secretary of State for India	2	...	30
Baboo Shama Churn Mitter	6
...» Shama Churn Mistry ... III	1
^ nam, Mallee, native nurseryman	3
^ * Simons, Assam	...	4	85
^ */- Simpson, Esq.	11	259
Baboo S. K. Chatterjee	2
I	7
^ btain Stewart	8
Superintendent of Jail, Goalpara	7
" » Garden, Manbhoom	...	5	448
" » S» Dacca	...	2	46
" » Midnapore	...	6	141
J. Sut. V. » Public Garden, Allahabad	...	12	300
...» Esq. » Presidency College	...	29	326
j . boo Suttochurn Bunerjee	9
j ^ . Th. Suttochurn Bunerjee	1
Br. n ^ aites, Esq. » Botanical Garden, Ceylon	5	...	174
T. P. Tenlohr, Esq., Calcutta	96
S ppton, Esq.,	6
...» E. Ward, Jubbalpore	40
...» Esq. » s., Judge of Purneah	...	1	10
B. Watson, Esq.	1	28
W. Winton, E	2
J. B. Wi... » Ho... College	1	10
G. Wince, Esq. »	496
...»	14
...»	16
Baboo wooma churn Law IV	3
^ J. Wyman, Esq.	60
...» Botanical Garden, Alipore	5,181
Total	30	351	23,106

APPENDIX III.

Statement showing Seeds received from 1st April 1875 to 31st March 1876.

From whom received.	Number of parcels or packets.
government Botanical Garden, Adelaide, Australia	64
Superintendent, Lall Baugh, Agra ...	9
Botanical Garden, Chicago, America...	82
Armington, Esq., Barrackpore	12
^ * Inwaites, Botanical Garden, Ceylon	198
Government Garden, Hong-kong	1
W. B. Guille... » Royal Botanical Garden, Melbourne	28
Botanical Garden, Mauritius	5
ft j " ... Natal	12
Givameson » Esq. » Superintendent, Botanical Garden, Ootacamund	9
Government Botanical Garden, Brisbane, Queensland	2
Botanical Garden, St. Petersburg, Russia	46
Superintendent, Botanical Garden, Saharunpore	77
Botanical Garden, Buitenzorg, Java...	48

APPENDIX III.—{Concluded.)

From whom received.							Number of parcels or packets.
Deputy Conservator of Forests, Assam	...	...	...	...	...	...	1
" " " » Bias Division	...	...	...	...	...	...	8
" " " " Berars	...	...	...	...	...	...	1
" " " " Central Provinces	...	...	...	...	...	...	1
" " " " Jounsar, Chuekrata	...	...	...	...	...	...	5
" " " " Checkulda, Central Provinces	...	...	...	...	...	...	11
" " " " Dehra Doon	...	...	...	...	...	...	2
" " " " Darjeeling	...	...	...	...	...	...	4
Assistant " " Bhagiruthee Division	...	...	...	...	...	...	8
Deputy " " Gurhwal	...	...	...	...	...	...	5
" " " " Madras	...	...	...	...	...	...	1
" " " " Kumaon	...	...	...	...	...	...	6
" " " " Tinnevely	...	...	...	...	...	...	2
Inspector-General of Forests, Simla	...	...	...	...	...	...	1
Assistant Confiissioner, Bangalore	...	...	...	...	...	...	1
Jules de Cock et Scour, Gand, Belgium	...	...	...	...	...	...	18
J. Parsons, Esq., Dorchester	...	...	...	...	...	...	46
W. Bull, Esq., London	...	...	...	...	...	...	267
Messrs. T. Lang & Co., Melbourne	...	...	...	...	...	...	5
A. H. Blechynden, Esq., Secretary, Agri-Horticultural Society, Calcutta	...	...	...	...	...	...	39
Colonel Boddam, " " Bangalore	...	...	...	...	...	...	14
Dr. Bonavia, Agri.-Horticultural Society, Lucknow	...	...	...	...	...	...	12
L. A. Bernays, Esq., Hony. Secretary, Queensland Acclimatization Society	...	...	...	...	...	...	73
Secretary to Government of India, Department of Revenue, Agriculture, and Commerce	...	...	...	...	...	...	2
India Office, London	...	...	...	...	...	...	348
Baron F. Von Mueller, Melbourne	...	...	...	...	...	...	3
Dr. G. King, Superintendent	...	...	...	...	...	...	80
A. Biermann, Esq., Darjeeling	...	...	...	...	...	...	112
J. Gammie, Esq., "	...	...	...	...	...	...	7
A. T. Jaffrey, Esq., "	...	...	...	...	...	...	1
A. Parsons, Esq., "	...	...	...	...	...	...	181
Deputy Superintendent, Port Blair, Andamans	...	...	...	...	...	...	45
S. Peal, Esq., Assam	...	...	...	...	...	...	1
W. Waterfield, Esq., Accountant-General, North-Western Provinces	...	...	...	...	...	...	1
Colonel Davis, Barrackpore	...	...	...	...	...	...	1
J. Scott, Esq., Opium Department, Bankipore	...	...	...	...	...	...	7
C. T. Buckland, Esq., Commissioner of Burdwan...	...	...	...	...	...	...	3
Dr. Mackenzie, Presidency Jail	...	...	...	...	...	...	2
Messrs. Stanley Price & Co., Calcutta	...	...	...	...	...	...	1
Dr. Cunningham, Presidency Jail, Calcutta	...	...	...	...	...	...	1
Government of Bengal, Department of Agriculture	...	...	...	...	...	...	1
H. A. Frith, Esq., Emigration Agent, Calcutta	...	...	...	...	...	...	1
Baboo Bisumbhur Ghose, Howrah	...	...	...	...	...	...	20
Messrs. Williamson, Major & Co., Calcutta	...	...	...	...	...	...	2
G. W. Bartlett, Esq., Calcutta	...	...	...	...	...	...	13
Assistant Commissioner of Kumaon	...	...	...	...	...	...	1
J. Webb, Esq., Nagpore	...	...	...	...	...	...	1
Professor Todaro, Palermo	...	...	...	...	...	...	1
Colonel Chamberlain, Raneekhet	...	...	...	...	...	...	4
H. H. Prince Rama Varna, Trevandrum	...	...	...	...	...	...	5
Major Tottenham	...	...	...	...	...	...	1
W. Davison, Esq.	...	...	...	...	...	...	2
Purchased	...	...	...	...	...	...	42
Botanical Garden, Florence, Italy	...	...	...	...	...	...	1
Total number of packets received	...	...	...	...	...	...	2,015

APPENDIX IV.

Statement showing Seeds distributed from 1st April 1875 to 31st March 1876.

To whom supplied.							Number of parcels or packets.
H. R. H. The Prince of Wales	...	...	...	...	...	...	290
H. Harris, Esq., Mirzapore	...	...	...	...	...	...	1
Secretary to the Chief Commissioner of Assam	...	...	...	...	...	...	28
" " Government of India, Agriculture Department	...	...	...	...	...	...	7
Deputy Conservator of Forests, Gurhwal	...	...	...	...	...	...	13
Dr. Hooker, C.B., Pres., R. S., Royal Garden, Kew, London...	...	...	...	...	...	...	259
" Thwaites, F.B.S., Royal Botanical Garden, Ceylon	...	...	...	...	...	...	213
Colonel Boddam, Agri-Horticultural Society, Bangalore	...	...	...	...	...	...	11
Agri-Horticultural Society, Calcutta...	...	...	...	...	...	...	51
J. H. Elwes, Esq., London	...	...	...	...	...	...	1
Acclimatization Society of Queensland, Australia	...	...	...	...	...	...	53
J. Home, Esq., Superintendent, Royal Botanical Garden, Mauritius	...	...	...	...	...	...	6
Dr. C. j/Simons, Upper Assam	...	...	...	...	...	...	5
Captain Williamson, Garrow Hills, Assam	...	...	...	...	...	...	10
Dr. Balfour, Botanical Garden, Edinburgh	...	...	...	...	...	...	338
Colonel Gastrell, Calcutta	...	...	...	...	...	...	51
The Officer Commanding at Buxar, Bhootan Dooras	...	...	...	...	...	...	1
Superintendent of Jail, Hazareebagh	...	...	...	...	...	...	1
" " Ranchee	...	...	...	...	...	...	1
" " DarjeeliDg	...	...	...	...	...	...	41
Dr. Moore, Aboo	...	...	...	...	...	...	53

APPENDIX IN.—(Continued.)

To whom supplied.	Number of parcels or packets.
S. Peal, Esq., Sappakati, Assam	1
The Officer Commanding at Puchmaree	1
J. Munro, Esq., Darjeeling	1
T. Stalkart, Esq., „	1
Colonel Chamberlain, Raneekhet	88
Revd. J. H. Budden, Almorah	102
G. Kennedy, Esq., Darjeeling	2
J. Ware Edgar, Esq., c.s.i., Darjeeling	6
J. Gammie, Esq., „	6
G. Man, Esq., Forest Department, Shillong	4
Captain Atkinson, Ship <i>British Navy</i>	50
D. L. Barr, Esq., Hastings	20
Right Hon'ble M. E. Grant Duff, London	127
A. T. Jaffrey, Esq., Darjeeling	4
A. Wood, Esq., M.D., Bijnour	86
H. H. Babcock, Esq., Director, Botanical Garden, Chicago	i 463 >
W. Craw, Esq., Doonagiri, Raneekhet	40
J. Routledge, Esq., Sunderland	1
The District Engineer, Mirzapore	87
Colonel Herbert, Oodeypore	300
C. H. Pillans, Esq., Silagoree	34
B. Errington, Esq., Barrackpore	7
J.-B. Anderson, Esq., Assam	25
W. Cannon, Esq., Executive Engineer, Ranchee	50
Dr. G. E. Saunders, Dehra Ismail Khan	50
Baboo Debendro Chunder Ghose, Calcutta	1
His Highness the Maharajah of Vizianagram	1
Dr. Bonavia, Lucknow	6
Botanical Garden, Saharunpore	132
G. H. Gilbert, Esq., Rangoon	1
Major J. Miller, 1st Central India Horse, Goonah	32
Colonel Newdegate, c.B., Rifle Brigade	50
Ur. Barclay, Murree	40
J. Albuquerque, Esq., Rio de Janeiro, Brazil	17
Russel, Esq., Commissariat Depdt, Hastings	20
R. M. Milne, Central Jail, Benares	30
Northern Bengal State Railway	200
Nazib Khan, Patna	1
J. H. Peppe, Esq., Ranchee	20
J. Sim, Esq., M.D., Goalpara	1
D. Lock wood, Esq., Monghyr	1
Henderson, Esq., M.D., Lahore	1
Bhaskes Mahodera Gokhlay, G. I. P. Railway	25
Beames, Esq., Collector, Cuttack	21
*. * Christison, Esq., Sreekhund	23
Chairman, Road Cess Committee, Hooghly	66
Professor Todaro, Royal Botanical Garden, Palermo, Sicily, Italy	22
Ur. Mackenzie, Presidency Jail	1
W. Bull, Esq., Chelsea, London	79
Secretary to the Government of Mauritius	8
Gray, Esq., Secretary and Curator of Museum, Bombay	2
Ur. Watt, Hooghly College	154
The Collector of Dacca	2
Mrs. Wellesley, Meerut	1
Dickie, Professor of Botany, Aberdeen	16
Chairman of Municipality of Howrah	3
Captain J. Butler, Political Agent, Naga Hills	48
Port Commissioners, Calcutta	1
A. R. Grant, Esq., Forest Department, Goruckpore	50
Botanical Garden, Toulouse	46
M. Jules de Cock et Scur, Gand, Belgium	2
Messrs. Haage and Schmidt, Erfurt, Prussia	9
Officer Commanding Battery 11th Brigade, R. A., Saugor	17
Government House, Calcutta	1
Hon ble Kristo Doss Pal, Calcutta	16
Overley, Esq., Cliff Hall, Mussoorie	9
Superintendent, Botanical, Garden, Trinidad	70
Assistant Commanding Officer Detachment H. M.'s 44th Regiment, Pachmarri	15
» E. Battery, 11th Brigade, R.A., Allahabad	80
>> „ H. M.'s 1-14th Regiment, Benares	32
» „ D. Battery, 11th Brigade, R.A., Benares	16
>>> „ F. „ 19th „ R.A., Cawnpore	36
» „ H. M.'s 109th Regiment, Dinapore	68
>>> „ F. Battery, 11th Brigade, R.A., Nowgong	33
n^n „ „ Detachment 11th Regiment, Saugor	18
Conservator of Forests, Nagpore	1
R u-^ >>> Rangoon	1
Cannon, Esq., Calcutta	40
Enev alier Oswald de Cortanze	262
Head Master, Utterparah School	21
Officer Commanding & H. M.'s 73rd Regiment, Cawnpore	45
The p-9	1
Civil Surgeon, Sumbulpore	1
Me C. R. Lindsay, Lahore	20
Superintendent, Government Model Farm, Cawnpore	68
„	12
„	16

APPENDIX IV.—(Concluded.)

To whom supplied.	Number of parcels or packets.
T. Grant, Esq., Magistrate of Howrah	12
W. Davis Haskott, Esq., Hyderabad...	8
Dr. Scheifer, Botanic Garden, Java ...	156
Mrs. Mackellar, Howrah...	16
C. Moore, Esq., Botanic Garden, Sydney, Australia	97
Sir W. McArthur, Sydney, Australia	8
C. A. O'Donnell, Esq., as., Goruckpore	16
W. Palmer, Esq., Calcutta	6
G. Mann, Esq., Assistant Superintendent, Port Blair, Andamans	1
J. Kennedy, Esq., Darjeeling	5
Baron P. Von Miiller, Melbourne, Australia	8
Dr. Kegel, Imperial Garden, St. Petersburg, Russia	64
General the Hon'ble Sir H. Ramsay, c.B., Almorah	1
R. Troup, Esq., Raneekhet	7
P. Beasley, Esq., Calcutta	9
W. Thacke, Esq.	2
Mr. Head, Ship <i>St. Lawrence</i> , Calcutta	16
Secretary to the Government of Punjab, Lahore...	2
Government Cinchona Plantation, Darjeeling ...	2
H. W. Hill, Esq., M.B., Civil Surgeon, Pooree ...	2
J. Coles Hardinge, Esq., Secretary to Agri-Horticultural Society, Rangoon	1
The Officers of H. M.'s <i>Serapis</i> and <i>Osborne</i>	211
Messrs. Dykes & Co., Waterloo Street	2
His Excellency Lord Napier of Magdala	5
Messrs. Lang & Co., Seedsmen, 52, Elizabeth Street, Melbourne	9
Major J. H. Gregory, A.D.C. to His Excellency Lord Napier of Magdala	5
General Roberts, Fort William	5
The Principal of the Medical College, Lahore ...	133
Revd. H. Graham, Berks, England ...	8
T. Chappie, Esq., Bond Street, London	8
Direttore Dell Giardino Publico, Milano, Italy ...	8
W. Bruce, Esq., Dublin ...	8
Mrs. Howlett, Hanover Square, London	8
Director, Botanical Garden, Adelaide, South Australia	13
R. Jameson, Esq., Botanical Garden, Ootacamund	24
George Chendrow, Esq., Moscow	248
M. Rovelli, Lago Maggiore, Italy ...	7
Director, Botanical Garden, Cape Town, Cape of Good Hope	22
A. T. Jaffrey, Esq., Rungbee, Darjeeling	10
W. Kiet, Esq., Botanical Garden, Natal, South Africa	19
Officer in Medical Charge Convalescent Depôt, Kussouli	52
Hon'ble E. C. Bayley, Calcutta	50
W. Freeman, Esq., Government Model Farm, Shillong	4
Major Lindsay, E.B., Chief Engineer, Northern Bengal State Railway ...	30
Total number of packets distributed	<u>6,343</u>

CALCUTTA,

The 7th June 1876.

GEORGE KING,

*Supdt., Botanical Garden**

FINANCIAL DEPARTMENT-

AGRICULTURE.

CALCUTTA, THE 10TH JULY 1876.

RESOLUTION.

READ—

Report of Royal Botanical Garden for the year ending 31st March 1876.

THE Lieutenant-Governor observes with pleasure the report of the successful growth of the trees and shrubs in the Botanical Garden during the year, and especially of the ornamental group of trees from the Sikhim Terai. The new plant-house that was erected under Dr. King's supervision last year promises to afford an equable temperature for the growth of those plants which cannot stand extremes of climate. The funds specially granted for the improvement of the garden appear to have been generally laid out to the best advantage. The Lieutenant-Governor desires particularly to acknowledge Mr. King's services in this respect.

2- It is to be regretted that, notwithstanding the stringent orders which were issued last year, there should still be reason for complaint that the river bank continues to be cut away by the wash of tug-steamers passing at an excessive rate of speed. Further measures, however, will be taken to prevent the recurrence of this source of damage to the garden.

3. The Lieutenant-Governor notices that Mr. Lister's researches in the Nittagpung Hill Tracts have resulted in supplying the garden with plants and seeds of considerable value and interest, and particularly in enlarging the collection of orchids. In connection with this subject, Dr. King remarks on the difficulty of bringing together in Calcutta the flora of the higher and colder parts of the Indian Empire. In the present state of provincial finances it has been found impossible to supply this defect by establishing branch gardens in the lower Himalayas; until this is done, the Indian collections must be incomplete, but the Lieutenant-Governor fully recognizes that the Calcutta garden well maintains its reputation as a representative collection of tropical and sub-tropical plants. The Lieutenant-Governor will see whether the newly opened garden at Rungaroon near Darjeeling cannot render some assistance in this respect.

The present season has placed it beyond a doubt that neither the Madagascari rubber-vine, nor the *Hevea Braziliensis*, can be grown for commercial purposes in Bengal; but Calcutta still remains the most suitable place for the seedlings, and the Lieutenant-Governor considers it a matter for regret that, on account of defective packing of a large consignment of seeds from England, no progress was made during the past year in the experiment of growing India-rubber.

The attempt to grow vanilla appears to have failed in consequence of the trees being overshadowed. Dr. King expresses his opinion that vanilla can wish to become a staple product of Bengal, but the Lieutenant-Governor would be desirous to see the experiment renewed for at least another season. Although the vanilla cannot be grown as a regular crop in Bengal, the plants have been propagated in the gardens that large numbers of them were sent to the Nilgerry hills, and Burmah; while Dr. King says that the yield can be indefinitely increased. It is satisfactory to find that the vanilla supplied to the Surgeon-General for trial in hospital practice was reported to be quite as efficient as the best South American drug.

6. Mahogany seedlings are said to have been in great demand, and Dr. King states that the difficulty in extending mahogany planting in Bengal lies solely in the scarcity of seed, which he proposes to supply by arrangement from Honduras and Jamaica. The Lieutenant-Governor, however, already expressed an opinion on this subject that, having regard to the absence of any effective local demand for mahogany, and the difficulty of competing with the West Indian timber in European markets, the resources of Government had better be applied to promoting the growth of trees of undoubted usefulness in this country.

7. A correspondence upon a proposal to utilize bamboo shoots for the manufacture of paper stock has recently been under consideration; and, in connection with these papers, the Lieutenant-Governor will await with interest the results of Dr. King's experiments in treating the bamboo so as to induce it to yield a continuous crop of shoots irrespective of season. It is to be hoped that in another year the baobab trees in the garden will have advanced far enough for Dr. King to be able to report on the quality of their fibre, and upon its fitness for manufacture into paper.

8. The number of plants sent out from the Botanical Garden during 1875-76 is almost double that of the preceding year. The increase is mainly caused by the supply of a large collection of plants to His Royal Highness the Prince of Wales, to the Zoological Gardens at Alipore, and to twenty stations on the Northern Bengal State Railway. A large number of plants was also supplied to the Magistrate of Hooghly for planting in the district roads.

9. The Lieutenant-Governor thanks the Superintendent and his staff for their efficient work during the past year. Dr. King has materially added to his labors by assisting in laying out the Zoological Garden at Alipore by preparing a manual of cinchona cultivation for the Government of India, and in other ways. A proposal to relieve the Superintendent of his duties as Professor of Botany at the Medical College is now under the consideration of Government, and it is hoped that this arrangement, if found practicable, will leave him more ample leisure for independent scientific research.

By order of the Lieutenant-Governor of Bengal?

H. J. REYNOLDS,

Offg. Secy, to the Govt. of Bengal.

No. 2132.

COPY of the Report, and of the Resolution, submitted to the Government of India, Department of Revenue, Agriculture, and Commerce.

No. 2133.

COPY of the Report, and of the Resolution, forwarded to the Conservator of Forests.

No. 2134.

COPY of the Resolution, with 50 printed copies of the Report, forwarded to the Superintendent of the Botanical Garden for information and guidance.

By order of the Lieutenant-Governor of Bengal,

H. H. RISLEY,

Acting Asst. Secy, to the Govt. of Bengal

CALCUTTA,
The 10th July 1876.

No. 600, dated Simla, the 22nd May 1877.

From—O. J. LYALL, ESQ., Under-Secretary to the Government of India, Department
of Revenue, Agriculture, and Commerce,

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

I AM directed to acknowledge the receipt of the endorsements noted in
No. 2345, dated the 25th July 1876. ^{the margin} submitting reports by the
» -734 „ 12th March 1877. Superintendent of the Botanical Gardens,
» "17 „ 25th April „ Howrah, and the Conservator of Forests,
on the experimental cultivation of the baobab tree in Lower Bengal, and to
state that the Governor-General in Council is glad to learn that the results
have been so far successful.

2. I am, however, to say that in future it will be convenient if the
progress of the plantations, and any points connected with them that may be
of interest, are recorded in the annual forest reports; and His Honor the
Lieutenant-Governor will not perhaps object to the Conservator of Forests
bring furnished by the Superintendent, Royal Botanical Gardens, at the close
of each official year, with a note on the subject of the progress of the experi-
ment in the gardens at Howrah. This note can then be submitted by the
Conservator in his annual report, together with his own remarks on the
Soonderbuns plantation.

3. It appears to the Governor-General in Council that one of the aims
of these experiments should be to ascertain, when the trees are sufficiently
advanced, whether the baobab can be successfully grown as coppice wood.

No. 1612.

COPY forwarded to the Superintendent, Royal Botanical Gardens, for
information and guidance, with reference to the correspondence ending with
his letter No. 45G., dated 21st July 1876.

By order of the Lieutenant-Governor of Bengal,

H. J. S. COTTON,

Junior Secy, to the Govt. of Bengal.

CALCUTTA :
FINANCIAL Dm.—Agriculture,
The mh May 1877.

No. 674F, dated Simla, the 12th June 1877.

From—C. J. LYALL, ESQ., Under-Secretary to the Government of India, Dept. of Revenue, Agriculture, and Commerce,

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

IN continuation of No. 444(A) of the 6th April last, from this Department to your address, I am directed to inform you that small packets of the seed of the species of Australian trees noted in the margin, received from the Botanic Gardens at Brisbane, Queensland, have been forwarded direct to the Superintendent, Royal Botanical Garden, Calcutta, for experimental cultivation, and to request that it may be stated whether the seed germinates, and that a report regarding the success of the plants may be appended to each Annual Forest Administration Report.

Eucalyptus hemiphysalis
Ditto Sassafras
Ditto terebinthifera
Syringia laurofolia

No. 1822.

COPY forwarded to the Superintendent of the Botanical Garden for information and guidance, in continuation of endorsement No. 1045, dated 10th April 1877.

By order of the Lieutenant-Governor of Bengal,

H. H. RISLEY,

Offg. Asst. Secy, to the Govt. of Bengal.

CALCUTTA:
FINANCIAL *Dwv. Agriculture,*
The 19M June 1877.

Seventhly.—The collection is, and will always be, most useful in dealing with questions regarding the naturalization of plants, the introduction of new vegetable products into the country, the adaptation of raw produce to the growing requirements of manufacturing industry, the management of the forests and the scientific improvement of agriculture.

Eighthly.—Such a collection is essential to those who wish to prosecute botanic study to a high degree ; and it is to be hoped that the number of students, both European and Native, will be constantly increasing.

Ninthly.—The collection will be an authentic record of species, and even genera, which are in danger of becoming extinct from the ravages and other destructive influences to which so many parts of the vegetable kingdom are exposed.

Tenthly.—Such a collection affords absolutely the only means of obtaining in one place anything like a view of the vegetable kingdom ; certainly no Botanic Garden, however well stocked, can afford such a sight, as it would contain hardly more than a fractional part of the aggregate of known plants in Nature : for instance, the Botanic Garden at Calcutta contains specimens of some four thousand species ; but what are they among the tens of thousands of species in India alone, and the hundreds of thousands of species in the world.

In order to fulfil these several purposes, the herbarium ought to be as complete as possible in respect to the Indian flora, in the broadest sense and to the minutest degree, according to the latest development of our knowledge ; and, in the Indian flora, there is represented, as I understand, the greater part of the vegetable kingdom. But inasmuch as many of the plants found in India also occur in other countries, and as some families of plants existing in other countries are not found in India, the herbarium ought to contain examples of the flora of foreign regions.

It is therefore desirable to see how far our collection is complete, and, in what respects, if any, it is especially deficient—firstly, as regards the Indian flora ; and secondly, as regards the foreign floras.

Now, by inquiry I have ascertained, after verification by Mr. Kurz, the Curator, concerning the Indian flora, that the herbarium contains specimens nearly all the species classified under the following natural orders* :—

Banunculaceae.	Rhizophoreae.	Myristicaceae.
Dilleniaceae.	Lytharidae.	Proteaceae.
Berberideae.	Ouagrariaceae.	Elaeagnaceae.
Nymphaeaceae.	Samydaceae.	Santalaceae.
Papaveraceae.	Passifloreae.	Nepenthaceae.
Besedaceae.	Datisceae.	Buxaceae.
Violaridae.	Ficoideae.	Corylaceae.
Pittosporae.	Cornaceae.	Juglandaceae.
Polygaleae.	Caprifoliaceae.	Ulmaceae.
Portulacae.	Valerianeae.	Podostemmaceae.
Tamariscineae.	Dipsaceae.	Piperaceae.
Elatineae.	Composite.	Chloranthieae.
Hypericineae.	Grodenovieae.	Boxburghiaceae.
Ternstroemiaceae.	Campanulaceae.	Gnetaceae.
Lineae.	Plumbagineae.	Typhaceae.
Malpighiaceae.	Myrsinaceae.	Lemnaceae.
Zygophylleae.	Ebenaceae.	Burmanniaceae.
Butacaceae.	Styraceae.	Juncaginaceae.
Ochnaceae.	Salvadoraceae.	Melanthaceae.
Olacineae.	Loganiaceae.	Amaryllidaceae.
Ilicineae.	Gentianeae.	Liliaceae.
Celastrineae.	Convolvulaceae.	Pontederaceae.
Bhamneae.	Solanaeae.	Xyridae.
Sabiaceae.	Scrophularineae.	Alismaceae.
Anacardiaceae.	Orobanchaceae.	Butomeae.
Coriariaceae.	Lentibulariaceae.	Commelyniaceae.
Moringeae.	Acanthaceae.	Bestiaceae.
Leguminosae.	Verbenaceae.	Cyperaceae.
Saxifrageae.	Labiatae.	Equisetaceae.
Droseraceae.	Plantagineae.	Marsileaceae.
Hamamelideae.	Phytolaccaceae.	Filices.
Haloragaceae.	Nyctagineae.	

* In these lists I have followed the list of orders as given by Bentham and Hooker in their work on *Genera Plantarum* so far as it goes ; and for the remainder on Candolle's *Prodromus* and Kunth's *Enumeratio*.

It is satisfactory to find that the collection is so far complete in respect to orders so economically important as the Ternstroemiaceae, the Rutaceae, the Leguminosae, the Verbenaceae, and others; and in respect to an order of such beauty and interest as the Filices.

Next, I find that the collection is imperfect in regard to the species in the following natural orders:—

Magnoliaceae.	Melastomaceae.	Thymelaceae.
Menispermaceae.	Cucurbitaceae.	Loranthaceae.
Fumariaceae.	Begoniaceae.	Lauraceae.
Cruciferae.	Umbelliferae.	Aristolochiaceae.
Capparidaceae.	Araliaceae.	Euphorbiaceae.
Bixineae.	Bubiaceae.	Cupuliferae.
Caryophylleae. Va	cciniaceae.	Myricaceae.
Malvaceae.	Ericaceae.	Betulaceae.
Sterculiaceae.	Monotropeae.	Salicineae.
Tiliaceae.	Primulaceae.	Urticaceae.
Geraniaceae.	Sapotaceae.	Halanophoreae.
Simarubeae.	Oleaceae.	Coniferae.
Meliaceae.	Asclepiadeae.	Cycadaceae.
Chaillotiaceae.	Boraginaceae.	Hydrocharidaceae.
Ampelidaceae.	Cresneraceae.	Scitamineae.
Sapindaceae.	Bignoniaceae.	Marantaceae.
Connaraceae.	Pedalinese.	Taccaceae.
Eosaceae.	Salsolaceae.	Iridae.
Crassulaceae.	Amarantaceae.	Dioscoreae.
Combretaceae.	Polygonaceae.	Juncaceae.
Myrtaceae.		

Of these orders, many are beautiful and interesting, while some are economically important; and having regard to importance, I hope soon to hear of the collection being made complete in respect to such manifestly useful orders as the Magnoliaceae, the Malvaceae, the Tiliaceae, the Myrtaceae, the Rubiaceae, the Cupuliferae, the Urticaceae, the Coniferae, and others.

Then I learn that the collection is defective in regard to the species in the following natural orders:—

Anonaceae.	Connaraceae.	Aroideae.
Guttiferae.	Apocynaceae.	Orchidaceae.
Dipterocarpeae.	Palmeae.	Gramineae.
Hurseraceae.	Pandaneae.	Lycopodiaceae.

that it is almost blank as regards the species in the following sections:—

Characeae.	Hepaticae.	Lichenes.
Musci.	Algae.	Fungi.

It is unsatisfactory that the collection should be deficient in respect of such manifestly important orders as the Dipterocarpeae, the Palmeae, and the Gramineae.

But, further, specimens differ perceptibly within the limits of a species, within even each of the varieties of a species, finer specimens of the same variety being met with in one place, poorer in another place, average specimens in another place, and so on; the very finest specimens being perhaps found only in particular spots; fresh specimens, too, being sometimes found finer than any previously known. These diversities, for better or poorer, generally depend on soil and climate. It is therefore necessary that the herbarium should contain not one or two, or a few specimens of each species and variety, but as many specimens as possible from all parts of India. But, in fact, it very often happens that the herbarium, while possessing, for a species or variety, a specimens from some parts of India, is quite deficient in specimens from other parts—and those perhaps very important parts—of the country. For instance, we have as yet but few specimens from the west coast of India, from the Concan, Malabar, and Travancore; from the Neilgm, Shevaroy, and Pulnee Hills; from the southern extremity of the Indian Peninsula; from Tipperah, Munnipore, and the Khasia Hills; from the lower Himalayan ranges immediately north of Assam; from Bhootan and Nepal; from the Chota Nagpore country to the west of Bengal; from the valley of the Nerbudda in Central India; from the valley of the Mahanuddy in the C. en 5J Provinces; from the Andamans and the Nicobars.

as v*ius ^ ^ h a t, even with those natural orders which are above set down as represented comparatively well in the herbarium, the collection is yet far from being complete in the fullest sense of the term.

This cursory review then shows that, despite the efforts sustained for so many years, and although the herbarium contains more than half a million of specimens, still a vast work in collecting specimens remain to be undertaken, which can be accomplished only by persistent efforts being put forth, season after season. I have requested the earnest attention of the Superintendent to this, and I trust that each year will bring additions to the herbarium.

By deputing one or more of the trained assistants from the Botanic Gardens to provide (under a technical designation), we may hope to gradually supply the deficiencies which exist, and which may be done during the winter season; and, as I hope, during the ensuing season.

Considering that the trained officers of the Government have the opportunity of collecting specimens from the abundant vegetation of that neighbourhood.

It is the duty of the Conservator of Forests to cause the officers of his department to avail themselves of the many opportunities which the

Already some collections have been received from our forest officers, and I am sure that these gentlemen will take pride and pleasure in their regular work. As the Conservancy is so largely expanding, I should expect to receive such contributions in yearly increasing numbers.

Again, although most of our civil officers may have hardly leisure or opportunity for collecting plants for the herbarium, still in the districts, or in districts such as Tipperah, may have the inclination to collect specimens for the herbarium. I shall be glad whenever they are able to do so. I observe that the Superintendent has issued a paper of directions for drying and mounting all those like

Further, whenever plant collectors are deputed to gather specimens, they must be enjoined to make drawings and field notes on the spot of the plants, the importance of which work has been previously observed. The work of making drawings and notes has already been done to a certain extent in the herbarium, though manifestly there remains a vast amount undone.

The Calcutta School of Art, where the students are employed to engrave on the stone, while receiving their instruction in lithographic art. Indeed, they have already done this very satisfactorily in several instances for botanical illustration.

In respect to foreign flora, that is, orders found in India, or Indian order, found in other countries, but not modifications of form, the herbarium has many specimens from Australia, and from some of the countries of Europe, some a few from North and South America and from South Africa, especially Ceylon; might almost say none, from some of the principal countries of Asia, such as Persia, Georgia, Northern and Central Africa, from the West Indies; while from the Arctic and Antarctic regions the specimens we possess of foreign plants are obtained from the Royal Garden at Kmv; also from the Botanic Garden at Batavia, Melbourne, Adelaide, St. Petersburg, Jjiu, Palermo, Chicago. Having regard to the support continuously rendered by Dr. Hooker, and to his peculiar cognizance of the needs of an herbarium in India, we may hope to receive from him, in the future, that assistance which he is pre-eminently able to afford. By keeping up communication with the Kinio Gardens and institutions of other countries, we may send them specimens of our flora, and obtain specimens of theirs in return. Such a system of

interchange will afford the best means of supplying the deficiencies of our herbarium in respect to foreign flora. The attention of our Superintendent has been specially directed to this point.

— Lastly, I am anxious that the Superintendent of the Botanic Garden and Herbarium, Dr. King, should, during a portion of each season, visit some part or parts of India and collect specimens for the herbarium—a task which he would discharge with special efficiency, as he must know so well what the herbarium most wants: he should be accompanied by a competent botanical draftsman. I have given him directions accordingly, and I shall hope to receive in due course a general though brief report of the collections he may have succeeded in making. I would leave him to select the ground for his exploration. It is to be borne in mind that he has to deliver a course of lectures in Botany at the Medical College, but it can easily be managed, and I* have accordingly ordered that the lectures shall be delivered during months other than those few months when travelling is safely possible in regions botanically interesting.

As already stated, I do not forget that this Minute does no more than touch on systematic botany and the means of studying it, while leaving untouched the other great divisions of botany—the morphological and the physiological. Heretofore the work of the scientific establishment in the Botanic Garden at Calcutta has been mainly in the direction of the systematic branch of botany, in other words, the classification of plants. Whether it will be possible in future to do something in the direction of the other parts of the science—morphological and physiological—will be matter for separate consideration.

RICHARD TEMPLE.

No. 22GK, dated Eoyal Botanical Garden, Calcutta, the 5th June 1877.
From—GEORGE KING, ESQ., M.B., Superintendent, Royal Botanical Garden, Calcutte,
To—The Secretary to the Government of Bengal.

I HAVE the honor to submit herewith the Ninetieth Annual Report of the Royal Botanical Garden.

ANNUAL REPORT OF THE ROYAL BOTANICAL GARDEN, CALCUTTA,
FOR THE YEAR 1876-77.

1. *General Condition of the Garden.*—The progress of the garden during the year has been, on the whole, satisfactory. The growth of the out-door collection was favoured by a comparatively mild hot and by an unusually showery cold season, while little damage was done by storms of wind. The success of the plants in the large conservatory built in 1874, in the recently-instituted succulent plant-house, and of the groups and avenues planted out during the years 1874 and 1875, is especially noteworthy. The improvements in the laying out of the garden which were begun in 1874 have, as far as the funds at my disposal would admit, been continued during the year. These have now so far advanced that the condition of the part of the garden lying nearest to Howrah leaves little to be desired; much, however, still remains to be done in the palmetum, while the eastern part of the grounds (more especially in the vicinity of the great banyan-tree) is still very unsightly.

2. *Improvements effected during the year.*—The two plant-houses which I reported last year as dilapidated and useless have been pulled down, and instead of putting anything on their sites (which were but ill adapted for buildings,) a single new plant-house has been erected at another spot. This house is built in the style of the large conservatory erected in 1874, and which has been proved so successful. Like the latter, this new house is built entirely of iron and masonry, the only wood-work in it being the doors and door-posts. This house was also designed by Mr. Parsons, the Curator of the Garden, on whose skill and good taste it reflects great credit. The new house stands on a raised platform of earth about two feet high; in shape is cruciform, consisting of a nave with two large semi-circular transepts. Its greatest length is 168 feet and its greatest breadth 108 feet, the roof along the central ridge of the nave and transepts being sixteen feet from the ground. The roof and sides are enclosed by galvanized iron wire netting. It is intended to cover the sides by a pretty scandent fig, while the roof will be formed of a thin thatch of dried grass tied in bunches to the wire netting. A roof of this kind admits a gentle broken light, and, without excluding, modifies the force of the rain. Experience has already proved that a structure of the kind just described is by far the best adapted for the growth of plants and other plants which cannot without protection withstand the peculiarities of the climate of Calcutta, including, as that climate does, a cold season with chilly damp nights, a hot season with burning unclouded skies, strong steady drying breezes, with a thermometer standing at about 100° Fahr. in the shade; and a rainy season with an atmosphere calm, steamy, stifling, the latter being the only thoroughly tropical part of the year. Except during the height of the cold season, glass for a conservatory is found to be worse than useless, while a solid roof or solid walls are equally fatal to plants, although for different reasons. The structure of structure just described (if its area be large enough) is found to secure during the hot weather an efficient protection against the direct rays of the sun, and during the cold weather an equally effective protection against loss of heat by radiation at night. An equable day and night air temperature is thus obtained during both these trying seasons; moreover, the temperature of the soil is kept comparatively steady. It is interesting to observe how well such conditions appear to suit plants naturally inhabiting the most varied climates. In the conservatory built in 1874, the visitor may see growing side by side in perfect health *Marantas* from damp, shady spots in the forests of the Amazon Valley, *Crotons* from the South Sea Islands, and ferns from elevations of 5,000 feet in the Himalayas. But to secure success the area must be large, for it is found impossible to prevent the atmosphere of small houses from becoming assimilated, both in respect of humidity and temperature, to that of the surrounding open air. It is intended to put the new house to put out as far as practicable all the plants in open soil, experience having shown how infinitely better plants thrive when so treated than when cultivated in pots. In addition to the usual difficulties of pot culture in all parts of the world, there is in India, the impossibility of securing judicious watering, left as this operation must often be to unintelligent labourers. Most pot-plants in India have to struggle

against excessive over-watering in the morning or evening (or at both times) alternated with severe grilling from the direct action of the sun's rays on the sides of the pots by day. Against over-watering a plant in a pot has no protection. But if planted out on a well-drained rockery, the evil of deluging is obviated by the free escape of the excess water, and a cultivator is thus made to some extent independent of his labourers. Another essential point in the construction of a successful conservatory on the plains of Bengal is to put it on slightly elevated ground (a platform two or three feet high is sufficient), and to choose an open site free from the drip and shade of trees. These precautions secure good ventilation and prevent plants damping off.

The two tanks near the conservatories have been thrown into one, and the result is a fine piece of ornamental water. The road emerging from the date-palm avenue has been diverted so as to run between this piece of water and the new plant-house and to join the road leading to the, Howrah gate. The removal of the two old plant-houses already alluded to afforded an opportunity, which I willingly embraced, of opening out the lawns about the flower-garden, so as to give pretty views of distant parts of the grounds, and of securing roomy gravel spaces and wide roads; and the result is that the appearance of the central part of the garden is very much improved. To complete the reform in this neighbourhood, two old-fashioned plant-houses, one of which was lately converted into a visitor's house, still block the way. Instead of spending any money in giving these the repairs which will soon become necessary, I would strongly urge their entire removal and replacement by a single more suitable house in a better situation. To improve and comply the landscape effect of the north end of the flower-garden a mound of earth has been thrown up. This will be an excellent situation for an effective group of palms or other ornamental trees.

Soon after taking charge of this garden, six years ago, the opinion began to be forced upon me that the scheme of planting out the garden on a formal systematic arrangement was a mistake. According to this scheme each individual plant stood in a very small plot of cultivated land, the intervening spaces being occupied by grass. Even had the trees and shrubs so planted thriven well, the result would have been a successful plantation, but not a garden. Landscape effects are impossible where trees stand at regular intervals. But, as a fact, this kind of planting is a failure; for few species of plants, however robust their nature, are found to be able to contend successfully with the deep-rooting coarse grass which has taken such thorough possession of the soil since the cyclones of 1864 and 1867, and the result has been that many large patches of ground are filled with dwarfed lichen-covered bushes, which have increased but little in size since the day they were planted. Two years ago I began to take some of these patches in hand, and, digging out the best of these dwarfed plants, to replant them in groups in large well-trenched beds, which I intend to keep in a high state of cultivation. During the year which has just ended this particular work has, from want of funds, progressed but little. The parts of the garden which still require treatment of this sort are shown in the accompanying map, on which they are coloured green. The parts so coloured are moreover, very low and swampy, and no measure for their better cultivation will be complete which does not include raising their level; but this can easily be done at a small cost by digging a few tanks and spreading on the remaining surface the soil thus obtained. The improvement of these parts of the garden in the way indicated shall be steadily kept in view; but without a special grant of money for the purpose, it must progress slowly. Were this once finished, the main reforms suggested by me to Government three years ago would be complete, with the exception of the repairs to roads presently to be mentioned.

3. *Reads and Buildings.*—The new roads made during the year have already been referred to. Some of the older roads (and especially that running from the river entrance through the mahogany avenue, past the great banyan-tree, and Boxburgh's monument to the flower-garden) are sadly in need of being widened and repaired, and, in many places, of having their level raised a few inches. The sum required for this would not be very great (probably about Es. 2,500); but I do not see how it is possible to meet the charge from the ordinary budget allotment of the garden. The older buildings are in fair order and answer their purposes fairly well, with the exception of the small and leaky house in which accommodation has to be found for the herbarium, library, office, and stock of seeds. This house is now quite insufficient for its purpose. An addition to it was sanctioned by Government eighteen months ago, but the building of that addition had ultimately to be postponed in consequence of the existing necessity for economy in all departments* *

4. *Garden Collector.*—For the concluding few months of the year a European collector was engaged in exploring the country near Moulmein. His efforts promise to give interesting results; but prior to the termination of the year his collections had only begun to arrive.

5. *India-rubber.*—A warden case of seedlings of the Para rubber-tree of South America (*Revea Brasiliensis*) was sent out from Kew, by Dr. Hooker, under the care of Mr. Duthie, the newly-appointed Superintendent of the Botanical Garden at Seharunpore. These seedlings, thanks to Mr. Duthie's good management, reached me in excellent order. Calcutta and Sikkim having proved alike unsuitable for this species, a third part of these plants was sent to Mr. Mann, of the Assam Forest Department, for trial in that province. Sixteen plants were sent to Major Seaton, Conservator of Forests for Burmah, in the

hope that in the moist equable climate of the southern parts of that country a suitable home may be found for this valuable tree. The remaining plants have been retained here for artificial propagation, in which, I trust, the experience we have gained of the habits and requirements of the species may enable us to be successful.

6. *Vanilla*.—Last year I reported that a number of vanilla plants had been put out under the shade of mango-trees, in the hope that in such a situation they might thrive better than in the thatched sheds under which vanilla has hitherto been grown in Bengal. I regret to say that these plants afford just as little-hope of a profitable crop as any I have seen. —oy far our finest plant of vanilla grows on the north side of an old wall. This bore, as usual, a good crop of pods, and, as usual, dropped them unripe on the occurrence of an especially hot day. I am more than ever confirmed in my opinion that the establishment of vanilla culture as a profitable industry in Bengal is not hopeful.

7. *Ipecacuanha*.—During the year, plants have been distributed to Geylon, Singapore, Wuman, and the Adamans. The peculiarly slow growth of this plant tends to prevent the cultivation of it from being taken up with spirit by European planters, who, noi, being Colonists but merely temporary settlers in the east, naturally look with little favour on crops that yield slow returns. The insignificant straggling appearance of the plant is, besides, little calculated to excite enthusiasm, or even interest, among the planting community. These facts make it still more a matter for regret that the profitable cultivation of ipecacuanha as a crop at the cinchona plantation seems so hopeless, owing, as I have stated in former reports, to the cold of the wiuiter season, even in the warmest valleys, being too great for a species so thoroughly tropical.

8. *Bamboo as a paper fibre*.—In my last report I referred to the sanguine expectation of an English paper-maker that in the young shoots of bamboo he had found a raw material which, by a simple treatment in this country, could be transmitted in a rough dry state there to be manufactured into paper. It is essential to the success of Mr. Kentledge's process that the bamboo shoots be quite young and succulent, and the great difficulty which at once presented itself to persons, with any knowledge of the mode of growth of Indian bamboos was that such shoots, being produced in moderate quantity from each clump and only during a limited season of the year, the proposed paper stock-making machinery must, for a large part of the year, necessarily lie idle. To meet this difficulty Mr. Kentledge suggested that bamboo clumps might, by proper treatment, be induced, after most of their old shoots had been cut away, to send up from the stools thus bared, regularly and irrespective of season, crops of succulent shoots suitable for conversion into paper-stock. Mr. Routledge's expectations implied a very complete change of habit in the bamboo; for it is pretty well known that bamboo clumps, if entirely cut down, yield for several years but few and small succulent shoots, and, in fact, not unfrequently die. In order, however, to submit the proposed scheme to a trial under my own eye, six clumps of bamboo were cut down last year at the beginning of the rains (i.e. between 10th and 20th June) when the buds of the young shoots of the season had completely formed, and were seen to burst through the soil. Soon after the cutting of the old stems, these buds began to show symptoms, of becoming hard, and on 21st July they were all cut down. They were at once weighed with the following result:—

Clump No.	Number of young shoots.	Weight in pounds.
1	11	166
Ditto 2	7	102
Ditto 3	6	78
* Ditto 4	9	100
Ditto 5	5	42
Ditto 6	12	192
Total	—	680

This gives an average of 113 pounds of wet young shoots per clump. The time of cutting was the most favourable that could have been chosen, and the crop of shoots yielded was probably as good as it would have been had the clumps remained untouched by the knife! Judging from the size of the clumps, I calculate that at most 80 similar clumps could be grown on an acre of ground. This allows an area of 576 superficial feet to each clump, and such close planting would probably necessitate manuring. Taking the yield of these six clumps as an average, and excluding all loss from death and accident, the yield on an acre during the first year of cutting would therefore be 9,066 pounds of fresh shoots. It must not be forgotten that freshly-cut bamboo shoots are extremely bearable, and that the amount of dry paper-stock that could be got from them would be a very small proportion to their original weight. An additional difficulty that attends the scheme is that, since only fresh succulent shoots will answer, and these are of too high specific gravity to float, the cost of land carriage to the factory (a very heavy one in Bengal) would have to be incurred. The cut clumps above mentioned were well cared for; and a tank gail were laid round them, and, as compared to similar clumps in

the forest, they had the great advantage of immunity from fire and from being grazed on by cattle. Since their young shoots were cut, a considerable number of thin woody twigs have arisen from the bases of the old stems. No fresh young root shoots have however appeared. Some such will doubtless appear at the usual time, which would be the beginning of the ensuing rainy season. These shoots shall be cut at the time recommended by Mr. Routledge, *i.e.* when they are just beginning to become hard and woody, and with the cutting of these the crucial part of the experiment will begin. The results shall be duly recorded in next annual report:

9. *Baobab*.—The young plantation of baobab which, at the suggestion of D*. Hooker, Director of the Kew Garden, was made two years ago, is progressing; but it is too young yet to afford any data as to the possibility of cultivating baobab for a paper fibre with good financial results. My own opinion is that a plant yielding an annual crop of fibre is, for economical reasons, more likely to answer than one from which a crop can be collected only at distant intervals. Among the numerous Gramineae and herbaceous Urticaceae and ~~May weas~~ ^{many} abounding in the reserves under the charge of the Forest Department, there may be some which would yield, in sufficient quantity and at a low enough cost, a fibre suitable for paper. This matter is, I think, well worthy the attention of Forest offices in all parts of India. Several of the wiry grasses so abundant on the sea-coast might also possibly furnish as good a fibre as the now practically exterminated esparto of Spain and Algeria.

10. *Interchange of living plants and seeds*.—This has gone on actively during the year, & the appended lists will show. The total number of seed packets distributed amounts to 7,053, while, on the other hand, 3,270 packets have been received. Of living plants 24,000 have been issued and 12,246 have been received. To the undernoted gentlemen the garden is specially beholden for donations of plants and seeds: His Highness Prince Bania Varna, of Travancore; Dr. Hooker, C.B., F.R.S., of the Royal Garden, Kew; Dr. Thwaites, F.B.S.J. Ceylon; Messrs. Haage and Schmidt, Erfurt; Messrs. Gilbert and Hardinge, Eangoon; Sir William Macarthur, Sydney; Mr. Franklin, Pomoong; Major Mant, R.E., and Dr. Kegel* St. Petersburg. The garden is also highly indebted to Messrs. Apcar and Company, of Calcutta, as well as to the agents for the Peninsular and Oriental and British India Steam Navigation Companies, for the extremely liberal manner in which they have allowed boxes of plants for the garden to be conveyed free of all charge.

11. *Herbarium*.—The additions to the herbarium during the year consist of a collection (amounting to about 300 species) received from Baron Von Miiller, Melbourne; of 1,724 species from Gay's Herbarium received from Dr. Hooker, Kew; of 270 species of Chinese plants from Dr. Hance, H. M.'s Consul at Hankow, and of small collections from Mr. Nix, Minnesota, United States, and from Mr. A. J. Green, New Zealand*. Dr. John Anderson, of the Imperial Museum, also made over to the herbarium a number of plants acquired during the life-time of his late brother, formerly Superintendent of this garden. These have all been incorporated in the general collection. Besides these, I have received the collections made by Mr. Lister last year in the Chittagong Hill Tracts, and by Mr. Gallatby during the early part of the present year near Moulmein; also a number of plants collected in Sikkim under the supervision of Mr. Biermann* Mr. Parsons, and myself. The latter have not as yet been incorporated in the collection.

12. *Library*.—Some books, indented for in previous years from the India Office, were received during the past year. The delay that occurs before receiving anything indented for through this source continues as great and as perplexing as ever.

13. My acknowledgments are due to the curators of the herbarium and of the garden, to the second gardener and to the botanical collector for their services. The office establishment and garden overseer also deserve commendation.

14. The usual returns are sent as appendices.

GEORGE KING,
Superintendent, Royal Botanical Garden.

APPENDIX I.

Plants received at the Royal Botanical Garden from 1st April 1876 to 31st March 1877.

FKOM.	Wardian cases.	Boxes.	Number of plants.
Royal Botanical Garden, Kew	2	.....	101
» » » Ceylon	1	.....	42
Botanical Garden, Singapore	1	24
» » Mauritius	1	.....	79
» » Java	2	.....	78
» » Natal	2	1	100
» » Ootacamund	1	.....	99
» » Saharunpore	14	158
» » Brisbane, Australia	1	19
Government Garden, Hong-Kong	2	.....	38
Eden Garden, Calcutta	67
Barrack pore Park	114
Alfred Park, Allahabad	6	100
Agri-Horticultural Society of India	356
» » Rangoon	2	232
» » Madras	3	97
Acclimatization Society, Queensland	1	130
Messrs. Haage and Schmidt, Seedsmen, Nurserymen, Erfurt, Prussia	1	91
W. Franklin, Esq., Pomoong	6	645
Major Mant, Darjeeling	2	245
J. Gammie, Esq.	4	399
W. Freeman, Esq.	27	1,569
to. L. Barr, Esq.	35
C. F. Nepean, Esq.	8
Major Berkeley, Madras	1	65
» Knight, Esq.	33
if s. Arable, Esq., Darjeeling	2	72
» I. Beaumont, Indore	7
Baboo P. C. Sein	109
»eppe, Esq., Ranchi	9
Baboo N. C. Dass	16
J. H. Gilbert, Esq., Rangoon	1	45
Colonel Boddara, Bangalore	2	81
» Colonel Boddara, Bangalore	1	10
» j. Q. Watt, Hooghly	22
» j. Q. Watt, Hooghly	41
» j. Q. Watt, Hooghly	159
» j. Q. Watt, Hooghly	228
» j. Q. Watt, Hooghly	1	12
» j. Q. Watt, Hooghly	8
» j. Q. Watt, Hooghly	11
» j. Q. Watt, Hooghly	3	95
» j. Q. Watt, Hooghly	2	29
» j. Q. Watt, Hooghly	1	8
» j. Q. Watt, Hooghly	30
» j. Q. Watt, Hooghly	1	20
» j. Q. Watt, Hooghly	2	40
» j. Q. Watt, Hooghly	14
» j. Q. Watt, Hooghly	234
» j. Q. Watt, Hooghly	1	31
» j. Q. Watt, Hooghly	1	17
» j. Q. Watt, Hooghly	3	51
» j. Q. Watt, Hooghly	20
» j. Q. Watt, Hooghly	1	121
» j. Q. Watt, Hooghly	507
» j. Q. Watt, Hooghly	1	14
» j. Q. Watt, Hooghly	14
» j. Q. Watt, Hooghly	314
» j. Q. Watt, Hooghly	31
» j. Q. Watt, Hooghly	2	166
» j. Q. Watt, Hooghly	7
» j. Q. Watt, Hooghly	80
» j. Q. Watt, Hooghly	12
» j. Q. Watt, Hooghly	872
» j. Q. Watt, Hooghly	18
» j. Q. Watt, Hooghly	597
» j. Q. Watt, Hooghly	28
» j. Q. Watt, Hooghly	2,084
» j. Q. Watt, Hooghly	1,093
Total	18	101	12,246

APPENDIX II.

Platids despatched from April 1876 to March 1877.

To	Wardian cases.	Boxes.	Number of plants.
H. R. H. the Prince of Wales	...	1	220
His Excellency the Viceroy, Government House, Calcutta	300
His Honor the Lieutenant-Governor of Bengal	123
Sir Joseph Fayrer, London	...	1	192
Royal Botanical Garden, Kew	1	4	333
" " " Ceylon	2	2	236
Botanical Garden, Saharunpore	...	10	117
" " " Hong-Kong	2	...	147
" " " Java	2	2	94
" " " Cape Town	...	1	42
" " " Sydney, Australia	1	1	40
" " " Singapore	1	1	106
Mauritius Government	4	...	5,000
Government Farm, Cawnpore	...	1	116
Zoological Garden, Calcutta	3,159
Barrackpore Park	212
Wingfield Park, Lucknow	...	12	312
Eden Garden, Calcutta	350
Khoosroo Bagh, Allahabad	...	2	24
Chief Commissioner of British Burmah	...	1	251
General Hospital, Calcutta	...	1	24
Win. Bull, Esq., Chelsea, London	...	1	106
St. Xavier's College, Calcutta	82
Presidency College, Calcutta	285
Commissariat Depot, Hastings	142
A. Weekes, Esq., Furreedpore	650
Mission Chapel, Hastings	50
Garrison Hospital, Calcutta	24
Lunatic Asylum, Calcutta	24
Midnapore Jail	...	4	100
Hoyvrah Municipality	1,075
Central Prison, Benares	...	8	160
Manbhoom Jail Garden	...	2	134
Wards' Institute, Calcutta	55
Calcutta Municipality	591
St. Thomas' School, Howrah	230
Conservator of Forests, Soonderbuns	200
Assistant Magistrate, Baraset	176
Public Garden, Allahabad	...	3	36
Major Money, Durbhunga	...	4	152
Kishnaghur College	...	4	138
Agri-Horti. Society, Rangoon	3	2	265
" " " Madras	3	...	244
" " " Lucknow	...	6	328
" " " Calcutta	1,311
D. L. Barr, Esq.	14
Baboo B. Hossein	26
Captain E. Baring, G.S.I.	...	1	36
Colonel Earle, C. S. I.	...	1	26
Baboo R. N. Mullick	123
R. Knight, Esq.	55
C. Bedford, Esq.	29
Baboo N. N. Mullick	36
J. Hardy, Esq.	...	1	24
H. T. Handford, Esq.	15
J. H. Peppe, Esq., Ranchi	...	3	46
Wade, Esq.	12
Messrs. Fitz and Co., Calcutta	...	2	37
J. Driscoll, Esq.	U
Dr. O. C. Raye, Presidency General Hospital	17
J. H. Gilbert, Esq., Rangoon	...	1	16
H. R. Cooke, Esq.	26
Messrs. Stanley, Price and Co.	11
A. T. Jaffray, Esq.	...	3	30
J. Bashford, Esq.	17
J. W. Edgar, Esq., C.S.I., Darjeeling	...	1	17
Col. Boddam, Madras	...	1	42
G. Mann, Esq., Assam	...	2	35
Earl of Kinnoull, Dupplin Castle, Scotland	...	1	47
Baboo N. N. Mookerjee	12
" " " N. C. Dass	22
Major S. Berkeley, Madras	...	2	75
Baboo M. P. Dass	...	1	17
" " " H. M. Mookerjee	28
R. M. Daly, Esq.	65
T. R. Doucett, Esq.	13
Dr. Shircore	18
A. Apcar, Esq.	9

APPENDIX II. - (Continued)

To	Wardian cases.	Boxes.	Number of plants.
Captain Lamb, Ordnance Department ...			61
German Club, Calcutta *			11
C. T. Metcalfe, Esq., c.s.i., Patna		7	200
Baboo D. N. Nuskur			9
" D. C. Roy			4
C. T. Buckland, Esq., c.s.			16
Baboo D. N. Seal			15
H. Kallmyer, Esq.			12
T. J. C. Grant, Esq., c. s., Howrah			22
J. S. Gamble, Esq., Darjeeling		1	25
His Highness the First Prince of Travancore		2	50
J. L. Mackay, Esq.			82
R. B. Magor, Esq.			90
Davis, Esq.			14
Baboo K. At. Seal			29
Mrs. G. C. Grant, Kidderpore *			no
T. Beatson, Esq.			15
J. Thomson, Esq.		2	66
Rani Hora Soondery Dabi, Raneegunge ...			22
H. H. Nawab Abdool Ghunny, o. S. I., Dacca		14	327
^ B. Garrett, Esq., c. s., Dacca		3	159
Dr. D. D. Cunningham, Calcutta			27
Wells, Esq.			100
Dr. T. Beaumont, Indore			32
J. Macnamara, Esq.		7	590
Baboo R. C. Dutt			17
J. Hamilton, Esq.			37
G. Bartlett, Esq.			38
£ E. O'Connor, Esq.			251
H. T. Prinsep, Esq., c.s., Hooghly			8
Arjun Moolah			78
L. Jarbo, Esq., Chittagong ...			48
Worble C. R. Lindsay, Lahore		1	12
Messrs. Ashburner & Co.		1	60
T. Greenway, Esq.			31
Sir William Me Arthur, Sydney, New South Wales		2	186
Dr. J. Fullerton Beatson, Calcutta			20
Rev. O. R. Batchelor, M. D. ...			27
Anc Chaplain of Vizianagrain			12
L. Beames, Esq., Cuttack ...			25
^ aptain C. A. Carthew			105
*v. Bourke, Esq., Bengal Club			9
2. J. Apcar, Esq.			18
A he Hon'ble Sir E. C. Bayley		1	69
paries Macnamara, Esq. ...			69
£awab Hajee Murdun Ali Khan, Mooradabad		3	48
£• B. Powell, Esq., Lahore ...			23
J*. Cockerell, Esq.			12
Uptain Badgley, Shillong		4	72
L. Calvert, Esq.		2	39
^ aboo B. C. Bose, Cutwa		2	190
p >> R. B. Sanyal			13
* * ? Jones, Esq.			42
Z' *P- Urquhart, Esq.			192
i. A. Apcar, Esq.			8
^ Palmer, Esq.			30
R- B. Smyth, Esq.			148
J*- 8 C. Mackenzie			50
Utterparah School		1	70
^ r. Armstrong			6
** on, Esq.			90
D. ^ e n d a l e, Esq.			14
J. Wyman, Esq.			60
E. ^ e n d a l e, Esq.			198
R. T E S f A, Backergunge			50
Dr. E. Gray, Assam, Maidah		1	16
Baboo N. G. Dass		12	200
Miscellaneous distribution			22
			262
Total	22	160	24,027

APPENDIX III.

Statement showing seeds received from 1st April 1876 to 31st March 1877.

From whom received.	Number of parcels or packets.
Dr. Regel, Imperial Garden, St. Petersburg), Russia ...	948
Botanical Garden, Java ...	18
" " Graaf Reinet, South Africa ...	27
" " Adelaide, South Australia ...	85
" ">> Edinburgh ...	72
" " Sydney, Australia ...	63
" " Melbourne, Australia ...	3
" " Hong-Kong ...	3
" " Mauritius ...	4
" " Ceylon ...	663
" " Saharunpore ...	175
" " Gunesh Khund, Poona ...	1
Queensland Acclimatization Society, Queensland, Australia ...	58
Botanical Garden, Ootacamund ...	33
Government Model Farm, Cawnpore ...	5
" Central Museum, Madras ...	1
Wingfield Park, Lucknow ...	4
Conservator of Forests, British Burmah ...	30
" of " Madras ...	5
" of " North-Western Provinces ...	1
Assistant Conservator of Forests, Kumaon Division, Nynce Tal ...	1
Deputy Conservator of Forests, Tinnivelly, Palamcotta, Madras ...	87
" of " Nilambore ...	1
Sub-Assistant Conservator of Forests, Palamow ...	15
Assistant Conservator of Forests, Palamow ...	1
Deputy Conservator of Forests, Koliabar, Assam ...	4
Conservator of Forests, Punjab, Lahore ...	1
Assistant Conservator of Forests, Punjab ...	1
" of " Beas Division, Punjab ...	1
Deputy Conservator of Forests, Bhagiratee Division, Hurdwar ...	11
Assistant Conservator of Forests, Sealkote ...	1
Agri-Horticultural Society, Bangalore ...	12
" " Madras ...	1
" " Lahore ...	28
* ">> " Lucknow ...	51
" " " India, Calcutta ...	168
Dr. Beaumont, Indore ...	4
General O. E. Babcock, in charge, Public Buildings, Washington, United States ...	H
Secretary of State for India, London ...	8
Under-Secretary to the Government of India, Calcutta ...	1
Secretary to the Government of Bengal ...	3
Assistant Secretary to the Government of India, Department of Revenue, Agriculture, and Commerce... ...	1
His Highness Prince Rama Varma, First Prince of Travancore ...	6
Resident of Travancore and Cochin ...	2
Superintendent, Port Blair, Andamans ...	1
Deputy Commissioner, Sylhet ...	1
Barrackpore Park, Barrackpore ...	4
Officer in charge of Grand Trunk Road, Barrackpore ...	50
Mr. Beck, Cashmir ...	12
Messrs. Stanley, Price and Co., Calcutta ...	42
" Williamson, Magor and Co., Calcutta ...	1
J. Martin, Esq., Calcutta ...	4
Captain Waterhouse, Calcutta ...	1
C. *T. Buckland, Esq., " ...	1
John Scott, Esq., Opium Department, Deegah, Bankipore ...	13
Dr. Hance, H. M. Consul, Whampoo, China ...	1
D. L. Barr, Esq., " ...	1
Dr. Geo. King, Superintendent ...	19
A. Biermann, Esq., Cinchona Plantation ...	53
A. T. Jaffray, Esq., Cinchona Plantation, Rungbee ...	4
A. Parsons, Esq., Darjeeling ...	6
J. L. Lister, Esq., Cinchona Plantation, Darjeeling ...	12
James Gammie, Esq., " " Mungpoo ...	246
G. Gallatly, Esq., Rangoon ...	179
Total ...	3,270

Appendix IV.

Statement showing seeds distributed from 1st April 1876 to 31st March 1877.

To whom supplied.	Number of parcels or packets.
Dr. Hooker, C.B., P.E.S., & C, Director, Royal Garden, Kew, London	386
Dr. Regel, Imperial Garden, St. Petersburg, Russia	78
Professor Balfour, Royal Botanical Garden, Edinburgh	88
W. Keit, Esq., Botanical Garden, Natal, South Africa	239
Botanical Garden, Graaf Reinet, South Africa	7
<i>a</i> Queensland, Australia	2
" Palermo, Italy	1
" Sydney, Australia	1
" Melbourne	9
" Hong-Kong	65
Royal Botanical Garden, Mauritius	0
Botanical Garden, Brisbane, Queensland, Australia	47
" Melbourne, Australia	2
" Adelaide, South Australia	9
" Buitenzorg, Java	63
" Peradeniya, Ceylon	31
" Seharunpore, N.-W. P.	338
" Gunnesh Khund, Poona	1
" Hobert Town, Tasmania	8
" Ootacamund, Madras	
" Rungyroon, Darjeeling	893
Agri-Horticultural Society, Lahore	144
" Bangalore	1
" Lucknow	36
" Calcutta	77
Secretary, Queensland Acclimatization Society, Queensland, Brisbane, Australia	177
W. Bull, Esq., Chelsea, London	50
J. R. Thynne, Esq., Glasgow	72
Messrs. Jules de Cock & Co., Ghent, Belgium	6
" Haage, Schmidt & Co., Erfurt, Prussia	29
Mr. George Dickson, Nurseryman, Newtownwards, Ireland	6
M. Louis Von Houtte, Royal Nursery, Ghent, Belgium	1
Conservator of Forests, Bahawulpore State, Punjab	10
of Bengal	1
Deputy Conservator Forests, Trichinopoly, Madras	1
H. H. Davis, Esq., Forest Department, Chittigong	2
The Industrial Museum, Melbourne, Victoria, Australia	26
Dr. Gray, Museum, Bombay	49
Dr. Bidie, Museum, Madras	10
Messrs. Rovelli, Lago Maggiore, North Italy	7
W. B. Freeman, Esq., Model Farm, Shillong	16
Col. Michael, as L., Ootacamund, Nilgheries	1
His Honor the Lieutenant-Governor of Bengal, Belvedere	3
Secretary to the Government of the Punjab, Lahore	1
Colonel Napper, New Ross, Country Wexford, Ireland	7
Captain Walker, Saint Magus, London	18
His Excellency Lord Napier of Magdala, Gibraltar	14
Secretary to the Government of Mauritius	9
Sir W. Mac Arthur, Sydney, Australia	1
Major Money, In charge of Rajah's estates, Durbhunga	14
Agent for the Governor-General, Indore	6
Zoological Garden, Alipore	6
A. Weeks, Esq., Chairman, District Road Cess Committee, Furreedpore	23
S. J. Umeurah, Esq., Japanese Commissioner	208
Dr. Beaumont, Indore	
Executive Engineer, Dagshai Division, Dagshai	17
" Bijnore	13
" Jeypore	75
" N. B. State Railway, Darjeeling	36
District Engineer, Trichinopoly	25
Assistant Engineer, Nuntherie	6
Chief Commissioner, Assam	1
The Magistrate of Howrah	21
The Principal of the College, Cuttack	66
" Kishnagar	30
Collector of Cuttack	3
Officer commanding F. Battery, 11th Brigade, Royal Artillery, Saugor	44
" Detachment, 1-11th Regiment,	20
" Convalescent Depdt, Puchmarhi	11
" G. Battery, 11th Royal Artillery, Nowgong	23
" C. 11th Battery, Royal Artillery, Dinapore	39
" 109th Regiment, Dinapore	100
" 14th Regiment, Benares	27
" G. Battery, 11th Royal Artillery, Allahabad	204
" Detachment, 39th Regiment, Nowgong	2
Reverend J. Coe, Bishop's College, Howrah	12
" J. H. Budden, Almorah	100
Bengal Club, Calcutta	126
& Troup, Esq., Holme, Raneecket	11
H. H. Prince Rama Varma, First Prince of Travancore	1
JJ. Kidley, Esq., Wingfield Park, Lucknow	30
^ Pillana, Esq., Phoolbari Tea Estate, Si%oorie	23

APPENDIX IV.—(Continued.)

To whom supplied.	Number of parcels or packets.
J. Peppe, Esq., Opium Department, Ranchi	1
J. Scott, Esq., " " Deegah, Bankipore	1
James Gammie, Esq.* Mungpoo	62
A. T. Jaffray, Esq., Rungbee, Darjeeling	1
Messrs. Stanley, Price and Company, Calcutta	7
S. S. Apcar, Esq., Garden Reach	68
Messrs. Andrew, Yule and Company, Clive Row, Calcutta	283
Arthur Barclay, Esq., 1st Central India Horse, Goonah, Central India	1
Colonel Chamberlain, Cantonment Magistrate, Raneekhet	9
W. Craw, Esq., Superintendent, Forest Plantation, Raneekhet	1,197
George Henderson, Esq., Civil Surgeon, Rawul Pindee	1
For Northern Bengal State Railway	20
Civil Surgeon, Sambalpor	6
The Commissary of Ordnance, Fort William	23
Municipality of Howrah	50
Captain Glasgow, Her Majesty's 12th Regiment, Calcutta	48
Baboo H. M. Mookerjee, Calcutta	28
W. J. Mountain, Esq., "	100
W. Maclean, Esq., "	6
A. C. Trotter, Esq., 17, Elysium Row, Calcutta	30
Mr. Todd, Arsenal, Calcutta	24
A. V. Wichelu, Esq., "	6
R. J. Sisson, Esq., Barrh	8
G. Ricketts, Esq., Allahabad	50
General Macpherson, v.C, O.B., Mooltan	30
F. Mangles, Esq., Mercara, Coorg	27
Captain Meikle, S. S. <i>Trafalgar</i>	4
J. Mylne, Esq., Beeheah, Shahabad	5
Davis Haskett, Esq., Hyderabad, Deccan	36
Mrs. A. M. Hughes, Kotah, Rajpootana	110
Dr. DeFabeck, Deolee, Rajpootana	35
W. Franklin, Esq., Pomong, Darjeeling	bo
Dr. Eddowes, 2nd Goorkhas, Dehra Doon	4
Captain Badgley, Shillong	9
Mr. Errington, Barrackpore	2
T. H. Oakes, Esq., Calcutta Gate, Fort William	102
H. T. Blandford, Esq.	6
Captain Abbot, Jhallawar, Rajpootana	55
H. C. Bathe, Esq., Banda	12
J. Bashford, Esq., Calcutta	3
G. Bartlett, Esq., Calcutta	25
Mr. Daly, Howrah	
Mr. Maclellann, Fort William	
Total	7,053

ROYAL BOTANICAL GARDEN,
HOWRAH, NEAR CALCUTTA ;
The 5th June 1877.

GEORGE KING, M.B.,
Superintendent, Royal Botanical Garden,
Calcutta.

FINANCIAL DEPARTMENT.

—◆—
AGRICULTURE-No. 868.

—◆—
CALCUTTA, THE 23RD MARCH 1877.

FROM COLMAN MACAULAY, ESQ.,

Acting Asst. Secretary to the Govt. of Bengal,

TO THE SUPERINTENDENT, ROYAL BOTANICAL GARDEN.

SIR,

I AM directed to forward herewith, for experimental cultivation in the Botanical Garden, a quarter of a pound of carob seed recently received by the Government of India from Italy, and to request that the Lieutenant-Governor may be favored in due course with a report on the result of the experiment.

I have the honor to be,

SIR,

Your most obedient servant,

COLMAN MACAULAY,

Acting Asst. Secy, to the Govt. of Bengal.

FINIUSTCIAX. DEPARTMENT.

AGRICULTURE.

CALCUTTA, THE 26TH JULY 1877.

RESOLUTION.

READ—

Report of the Royal Botanical Garden, Calcutta, for the year 1876-77.

Read also—

The Government Resolution on the Report for the year 1875-76.

THE Lieutenant-Governor is glad to observe that the progress of the garden during the year has been, on the whole, satisfactory. The season was peculiarly favorable both to the out-door collections and to the plants in the conservatories and plant-houses. The new style of open conservatory continues to answer expectations, and the large cruciform-house built during the year will give additional facilities for the growth of exotics and plants which cannot stand the out-door variations of a Calcutta climate.

The appearance of the garden has been much improved under the directions, and now, on the Howrah side, leaves little to be desired. The want of funds stands in the way of completing all that the Superintendent would wish to see done, and the Lieutenant-Governor cannot promise any immediate increase of the grant. Dr. King has, however, made the best possible use of the money at his disposal, and will no doubt continue to do so.

3. The special experiments which have been going on during the year do not, on the whole, seem to have been very successful. The para rubber tree of South America will not flourish in Calcutta, but the artificial propagation of seedlings for distribution to Burmah and elsewhere has not been abandoned. Vanilla culture must now be decisively pronounced a failure. The distribution of ipecacuanha plants has been continued, but the cultivation does not appear to be growing popular. The cultivation of young bamboo shoots for paper-making purposes Dr. King thinks not likely to succeed. The real test will, however, come this year, and the result will be awaited. The plantation of *baobab* is not yet sufficiently advanced to be cut for fibre.

It is suggested that more practical good would be done if the attention of forest officers were given to the numerous Gramineae and herbaceous Umbelliferae and Malvaceae which abound in the forest reserves, and several of which would probably be found to yield a fibre suitable for paper-making. He also thinks that some of the wiry grasses of the sea-coast might turn out to be as good as *esparto* grass. Dr. Schlich will, no doubt, bear in mind the suggestion, and the Lieutenant-Governor would be glad if Dr. King would communicate with the Collectors of the Oiissa and Chittagong districts, to see if any such grass, as he describes exists along the Bengal littoral. * Kind of grass fit for paper making grows on the banks of the Adjai, Daraooda and other rivers of Burdwan and Chota Nagpore, and may come to be utilised for this purpose. It is described at page 216 of volume I of the statistical Reporter.

5. The interchange of plants and seeds has gone on actively during the year. The thanks of the Government are due to the gentlemen mentioned in the report for their donations of plants and seeds, and more especially to Messrs. Apar and Co., and the Agents of the Peninsular and Oriental and British Indian Steam Navigation Companies, for their liberality in allowing boxes of plants for the garden to be conveyed free of charge.

menL ^ ^ ^ ^ ^ , he collecti^o as received from them for the herbarium.

7. The Lieutenant-Governor thanks thG ^P^intendent and his staff for their useful labours during the year.

ORDE de submitted ^ Q S ^ n J India ^ ^ ^ and of ^ Resolution be and Commerce, for information Dep artme ^ of Revenue, Agriculture, to t t o o ! 2 i K ^ ^ ^ « f r t and; * the Resolution be forwarded be communicated to th T i n i e Z ^ T T f and * a C o ^ of the Resoluti of l mation and guidance. P b o P ^ d e n t of the Botanical Garden for i n f o r -

By order of the Lieutenant-Governor of Bengal,

A. MACKENZIE,

Ofg. Secy, to the Govt. of Bengal.

No. 2268.

Copy, with Department of **B K & ^ ? » J L ? ; ° . 7 " T ' f * *** ^ » tor information.

No. 2269.

Copy, with copy of the report, f^oTMA t. the Conserrator of Forest, for information.

No. 2270.

Copy of the Resolution forwarded to the Superintendent of Botanical Garden for information and guidance.

By order of the Lieutenant-Governor of Bengal.

RAJENDRA NATH MITRA,

Acting Asst - Secy, to the Govt. of Bengal.

CALCUTTA,
The ZUH July 1877.

No. 797F, dated Simla, the 9th July 1877.

From—0. J. LYALL, ESQ., Under-Secretary to the Govt. of India, Department of Revenue, Agriculture, and Commerce,

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

IN continuation of the letters from this office, No. 441(A), dated the 6th June last, and No. 674, dated the 12th ultimo, to your address, I am directed to inform you that small packets of seed of the species of Australian trees noted in the margin, received from New South Wales, have been forwarded direct to the Superintendent, Royal Botanical Garden, Calcutta, for experimental cultivation, and to request that it may be stated whether the seed germinates, and that a report regarding the success of the plants may be given in Chapter IV, "General Remarks," of each annual Forest Administration Report.

The species as some of those received from the same source are interesting to compare the plants reared & the seed obtained from those two colonies.

No. 2121.

forwarded to the Superintendent of the Royal Botanical Garden for information and guidance, in continuation of endorsement No. 1822, dated the 11th June 1877.

By order of the Lieutenant-Governor of Bengal,

A. MACKENZIE,

Offg. Secy, to the Govt. of Bengal.

CALCUTTA:

FINANCIAL
The 15th July 1877. *ulture,*

No. 444A, dated Calcutta, the 6th April 1877.

From—LIEUTENANT-COLONEL W. M. LEES, Offg. Secretary to the Government of India, Department of Revenue, Agriculture, and Commerce,
To—The Offg. Secretary to the Government of Bengal, Financial Department.

1. Eucalyptus hemiphloia—	I AM directed to forward the accompanying
) white b	Copy of a letter dated the 10th February last,
8) dark bo x*	(with enclosure), from Mr. W. Hill, Director of
2. Eucalyptus hemastoma.	the Botanical Gardens, Brisbane, Queensland, and
4. " P ^{aniculata} .	to advise you of the despatch to your address of
5. " siderophloia.	* eucalyptus seed noted in the margin, which
7. " longifolia.	I am to request may be forwarded to Dr. King,
8. " ^{etia} ^{omi8#}	Superintendent of the Botanical Gardens, Howrah,
9. " meianoxylon.	tor experimental cultivation.
10. feyncarpaiaurifolia.	

Dated Brisbane, the 10th February 1877.

From—W. HILL, ESQ., Director of the Botanical Gardens, Brisbane, Queensland,
To—The Offg. Secretary to the Government of India, Dept. of Revenue, Agriculture, and Commerce.

I HAVE the honor to inform you that, by the direction of the Government of Queensland, I have forwarded per this mail, *via* Suez, to your care, a packet containing eleven species of seeds of the eucalyptus of about an ounce each.

I have also enclosed herewith a list of the botanical names, properties, and habits of each* as also a memorandum of a few things I shall be glad to receive in exchange.

There are many other valuable trees which flourish here that would no doubt acclimatise, *in* India, seeds of which I shall take the opportunity of forwarding to you, as well as other varieties of the eucalyptus, as they are obtained.

Li of contents contained in the parcel per sample post forwarded to the HON'BLE T. O. HOPE, Calcutta, *nih* February 1827.

Eucalyptus hemiphloia, F. M. (yellow box.)—A moderate sized tree, found on dry, stony ridges, producing an excellent timber, famous for hardness, toughness, and durability; height 40 to 60 feet, 20 to 30 inches in diameter.

Eucalyptus hosmastoma S. M. (white gum.)—A good sized tree, from 80 to 100 feet in height, with a diameter of 3 to 4 feet, inhabiting dry rich ridges. Considered one of the best woods for ship-building, and very much used for wheelwright work.

Eucalyptus paniculata, S. M. (blood wood.)—A middle sized tree, from 40 to 60 feet, occupant of low-lying ground. Timber much used for hard posts.

Siderophloia (iron bark.)—A good sized tree, from 80 to 100 feet in height, with a diameter of 2 feet. The timber is of the highest reputation for strength and durability, and much used for beams in building stores for heavy goods, railway bridges, and other purposes where strength is required. Occupant of many ridge, stony, forest grounds, and good rich forest ground.

Longifolia, Lindl. (wooly butt.)—A tree attaining a height of 60 to 70 feet, with a diameter of 2 feet. The timber is much used for house carpentry. Inhabits good rich forest ground.

Eucalyptus globulus, Labill. (blue gum of Tasmania.)—A lofty tree, sometimes exceeding with a diameter of 4 to 5 feet; occupying rich, deep ravines. The timber is much used for boards and paling fences.

Eucalyptus tereticornis, S. W. (red gum.)—A moderate sized tree: height 60 to 80 feet, with a diameter of 2 feet. Found in rich alluvial flats. Timber much used in fencing, building plough beams, poles, and shafts of drays.

Eucalyptus bicolor (red iron bark.)—A fair sized tree, inhabiting rich, stony ridges. The timber is red, close and soft, and easily worked. Found in dry stony ridges.

Eucalyptus nitens, P. M. (silver-leaved iron bark.)—A small tree, occupying rich forest ground, with a diameter of 15 to 18 inches in diameter. Timber much used for sleepers and railway purposes.

Syncarpa laurifolia, Teu. (pea beam.)—A magnificent tree, attaining a height of 150 to 200 feet and a diameter of 5 to 6 feet, with a great length of bole. Timber valuable for piles and posts; also very durable for underground. Said to resist the *teredo navalis* in ^{sa^gt}-water.

List of desiderata for the Botanic Garden, Brisbane, Queensland.

Cassia acutifolia, Tinnevely senna—Half pound.

„ *obovata*, Aleppo senna—Half pound.

Oryzia siliva (paddy), Mountain rice—One hundredweight, for sowing.

W. . HILL.

No, 1045.

CCVPY ?* this letter and of its enclosures* with the packets of seeds, forwarded to the Superintendent, Botanical Gardens.

By order of the Lieutenant-Governor of Bengal,

COLMAN MAOAULAY,

Acting Asst. Secy, to the Govt. of Bengal-

CALCUTTA;

FINANCIAL DEPT.—Agriculture,

The 10th April 1877.

No. 674F, dated Simla, the 12th June 1877.

From—C. J. LYALL, ESQ., Under-Secretary to the Government of India, Dept. of Revenue, Agriculture, and Commerce,
To—The Secretary to the Government of Bengal, Financial Dept.

IN continuation of No. 4M(A) of the 6th April last, from this Department to your address, I am directed to inform you that small packets of the seed of the species of Australian trees noted in the margin, received from the Botanic Gardens at Brisbane, Queensland, have been forwarded direct to the Superintendent, Royal Botanical Garden, Calcutta, for experimental cultivation, and to require that a report be made when the seed germinates, and that a report regarding the success of the plants may be appended to each Annual Forest Administration Report.

Eucalyptus hemiphoria
Ditto
Ditto
Ditto
• synmpia

No. 1822.

Copy forwarded to the Superintendent of the Botanical Garden for information and guidance, in continuation of endorsement No. 1045, dated 10th April 1877.

By order of the Lieutenant-Governor of Bengal,

H. H. RISLEY,

Offy. Asst. Secy, to the Govt. of Bengal.

FINANCIAL

CALCUTTA:

Th* |m June 1877.

CIRCULAR NO. 41 F.

Extract from the Proceedings of the Government of India, in the Department of Revenue, Agriculture and Commerce,—dated Simla, the 21st October 1877.

FORESTS.

RESOLUTION.

READ—

A Circular letter from the Government of India, in this Department, No. 20, dated the 18th August 1876, forwarding a memorandum by the Inspector General of Forests, dated the 19th July 1876, on the cultivation of the different species of Eucalyptus in Northern India, and a Note by Mr. J. E. O'Uonour, on the cultivation of the Eucalyptus globulus and other Australian gums in India.

Read—

A Circular letter from the Government of India, in this Department, No. 1, dated the 10th January 1877, forwarding a report by Major Seaton, Conservator of Forests in British Burma, on the Forests and Alpha resources of Algeria.

Read also the following report:—

Supplementary Report by LIEUTENANT-COLONEL R. L. "PLAYFAIR, Consul General at Algiers, on the cultivation of Eucalyptus in Algeria.

IN the report of my journey to Tunis last year, I stated my conviction and I endeavoured to prove that the principal cause of the decadence of that country and of the exhaustion of its soil was the destruction of its forests, which has been going on ever since the Arab conquest and more especially during the past hundred years. Since then I have given much consideration to the reboisement of Algeria; especially as to whether this process, so conducive to the public good, could not be made one of advantage to the individual speculator. When duty and profit can be made coincident, it is wonderful how easy the former becomes, and I determined to visit leisurely the whole of the plains of the Metidja and see whether in any part, if anywhere, suitable land might be found. I read everything that has been written on the subject of Australian trees, and I purpose now to record, not only the result of my own observations, but the opinions of those far better qualified than I am, as to the best means of restoring to Algeria the forests which were formerly the cause of its great agricultural wealth, and of opening out a means of employment for superfluous capital and energy.

The most interesting papers which have been written on the subject, and to which I more particularly allude, are:—

- 1. R6le de l'Eucalyptus en Alg6rie, par M. Trottier, 1876; and
2. l'Eucalyptus au point de vue de l'Hygi6ne en Alg6rie, par le Dr. E. L. Bertherand,

have the effect of the destruction of forests on the climate of Algeria.—The same causes which in the case of Tunis have produced similar results though in a less degree in Algeria, has rendered the destruction of the forests has been less complete, therefore the country remained more fertile, but the climate is changing in an appreciable degree every year.

This tolerably correct meteorological observations exist at Algiers since 1838. If we divide the lapse of time into three periods, we find the annual rainfall as follows:—

Table with 2 columns: Period, Millimetres. Row 1: 1st period of 12 years, 800. Row 2: 2nd period, 12 years, 770. Row 3: 3rd period, 14 years, 639.

It can be no doubt as to the cause of this decrease. At the period of the conquest of the Sahel and a great part of the Metidja was covered with wood or scrub, which acted not only as a parasol to the earth, preventing the undue evaporation of its dampness; but also as a means of attracting and condensing the moisture in the atmosphere, and causing it to fall in refreshing dews or rain.

* I need hardly apologize for using the French metric system, which is so much more rational than the English one. The reader need only recollect that a hectare is equal to 2 1/2 acres, a pouce to 2 1/2 lines, and a metre to 3 1/3 feet.

The first serious clearings in this district were made in 1845, since which time the operation has been going on with ever-increasing rapidity. The diminution in the rainfall commenced in 1855. In the seventeen years prior to this date, it was only on two occasions more than 1,000 millimètres, and on eight occasions more than 800. In the twenty-one years which follow, it has only twice reached 800 millimètres, and the present year is almost the worst of all, and something very like famine is imminent in Western Algeria/

Reboisement of Algeria by Australian trees.—The question not only of restoring to the country the wood that it has lost, but of providing a supply of a constantly decreasing article, is the most important one that can engage the attention of the statesman or the colonist. For this had to be effected by planting such trees as oak, ash, pine &c, all of which are indigenous to the country, it may well be imagined that a speculator would hesitate about ensuing his capital in an enterprise which could hardly yield him a return in his lifetime; but with Australian trees, which grow as freely in Algeria as in their native country, he may expect to cover his expenses in ten or twelve years, and after twenty or twenty-five to obtain as great results as could be realized by oak forests of a century's growth.

It is hardly more than fifteen years since the first Eucalyptus trees were introduced into Algeria by M. Ramel, and very few indeed exist in the colony of a greater age than ten years; even now it can hardly be said that any attempt has been made to grow them on a great scale.

In the following remarks I intend to confine myself exclusively to the Eucalyptus. There are many other Australian trees suited to almost every condition of soil found in this colony, such as the beautiful *Acacias* or wattles, the *Grevillea*, *Camarinas*, &c.; these are no doubt destined to play an important part in the *reboisement* of the country, but it is the Eucalyptus alone which merits to be planted over extensive areas for the sake of its timber.

There may be parts of Europe where this tree could be cultivated as well as in Algeria, though that is very doubtful, but hardly anywhere is the price of land sufficiently moderate to enable it to be grown with a certainty of profit.

As a rule, wherever the orange tree flourishes, so does the Eucalyptus. In Algeria it attains in six or seven years the same dimensions as the oak does in twenty, and in its twentieth year it may be expected to furnish such logs of timber for shipbuilding or other purposes, as could not be furnished by an oak tree under 100 years old.

Quality and density of Eucalyptus timber.—There are trees which even in Europe, under certain circumstances, grow with great rapidity; but the marvel is that, growing with the rapidity it does, the Eucalyptus should produce at the same time hard and dense timber. A short time ago, wishing to send a Eucalyptus tree of four or five years of age to England for experiment, it was found impossible, on account of its great length, to put it into a boat to convey it to the steamer. The boatman naturally decided on towing it alongside, but the moment he put it into the sea, it sank to the bottom, and divers had to be employed to raise it. When properly seasoned its specific gravity becomes less, and it then floats on water.

To illustrate the quality of the timber, I may instance the case of a vessel the "Marie" of 230 tons burden, which entered the port of Algiers with a cargo of timber in 1875. It was built in Melbourne in 1848, the hull being of blue gum (*Eucalyptus globulus*) and the interior fittings of red gum (*Eucalyptus resinifera*). At 27 years of age it was still rated by the Bureau* *Veritas* as of the first class.

Rate of growth.—The first trees ever planted in Algeria were sown in 1862. The following table shows the dimensions of these and of others planted subsequently, taken in September 1874, by M. Trottier:—

Year in which planted.				Age of trees in 1874	Circumference at one metre from the ground.	Where grown.
				Years.	Mètres.	
1862	...	...	...	12	1-52	Jardin d'Essai, upper part.
1863	...	...	...	11	1-42	" "
1864	...	...	...	10	1-28	" "
1867	...	...	...	7	0-90	" road side.
1871	...	...	..#	3	0-30	M. Trottier's, Hussein-Dey. Maison Carrie.

These results were obtained not under the most favourable circumstances. During the last few days I measured one, planted in deep and fresh alluvial soil, nine years of age and 1.55 metres in circumference, about six inches more than I could place with both arms. In Austr mean circumference from 6 to 8 metres, 60 and 70 metres, and their

h ... *Principally* results of plantation.—M. Trottier gives the following as the pecuniary results ne thinks obtainable from a hectare of land planted with Eucalyptus :—

Age of trees.	Length of trunk.	Mean circumference.	Price per cubic metre.	Value of the cut.	Employment of timber.
Years.	Metres.	Mètres.	Francs.	Francs.	
3	5	020	...	•500	As staves.
6	8	075	20	3*120	Carpentry, telegraph posts, &c.
10	9	1-30	30	7*140	Railway sleepers.
15	10	1-85	40	12-160	Large timber.
20	12	2-30	50	27-900	" "

Thus a plantation of one hectare which gives appreciable results in the first year will yield in the tenth a minimum of 7,000 francs, and in double the time it ought to produce four times the value. This estimate may be exaggerated, but even allowing a liberal margin for pardonable enthusiasm, the result cannot fail to be most remunerative.

But to arrive at these results with Eucalyptus they must be planted in the best land, and for the first years at least be carefully cultivated. Thus treated they may be expected to realize immense returns. For instance, the average yield of a hectare planted in cereals in Algeria may be estimated at 250 francs, and without taking any account of the years when such land must of necessity remain fallow, the total produce in twenty years may be stated at 5,000 francs.

During the twenty years the cost of cultivation, the value of the seed, the transport to the place of planting, the cost of the labour required to plant the trees, and finally the cost of cutting them down, would have a value of 27,900 francs; or, for the sake of being well within the mark, 20,000 francs. If the cultivator has to remain a long time without any return for his money, surely the result is worth waiting for.

Effect of the extra care in cultivation.—The time during which these trees occupy the soil may be divided into periods of ten years each, the first the period of growth, the second the period during which the ligneous products are condensed and consolidated.

If during the first period the land is kept clear and the same amount of culture is given to a vineyard, the cost, calculating 5 per cent, interest on the sums expended, might amount in round numbers to 1,000 francs. During the second period no care of any kind would be required. Under the circumstances there is every reason to think that the trees would make as much progress in twenty years as they otherwise would in thirty. The cost of this extra care would amount to 1,000 francs, and the profit to 13,000 francs.

Comparison between Oak and Eucalyptus.—A. Moving to the tables of Cotta a hectare of land produces 450 cubic metres of oak in 100 years, the value of which at 105 francs the metre amounts to 47,235 francs.

The sum of money which would be produced in twenty years and would be realized at compound interest from 20 to 100 years would give the enormous sum of 816,800 francs.

No doubt that with so highly inflammable a substance as Eucalyptus an essential oil, the risk of fire is a matter to be taken into serious account. It cannot however be much greater than in a pine forest; and the danger may to some extent be avoided by planting the land in blocks of ten hectares each, and leaving a wide strip of pasture between them which may be utilized either for the cultivation of cereals or as pasture land.

In the case of forest catching fire, the destruction to the trees is absolute. Eucalyptus, though checked in its growth for the time, sends out fresh shoots in many cases.

The number of species of Eucalyptus is infinite, but for the purposes of commerce two or perhaps three species only should be cultivated. The first, the gum, is best suited to warm positions, deep, fresh and moist soil. The second, the red gum, resists drought in a remarkable manner, and should be used in dry or sandy soil, or at greater altitudes than the other. It is hardly probable, however, that either of them will flourish at a greater altitude than 200 or 300 metres. The third species, which promises well, is the *Eucalyptus colosseae*, but the rate of growth of it is limited, and we have not sufficient data on which to calculate its rate of growth.

Sanitary effects of Eucalyptus.—There is another point of view from which the cultivation of Eucalyptus must be regarded, namely, its action in improving the sanitary condition of unhealthy districts, and in dissipating miasmatic influences, which created such havoc amongst the colonists in the first years after the conquest.

To place the subject as far as possible beyond doubt, an inquiry was instituted by the Society of Physical and Natural Sciences at Algiers, under the presidency of Dr. Bertherand, and the results received from thirty localities, extracts from a very few of which only are given.

Eucalyptus at Lake Fetzara.—In 1869, 60,000 young trees of *Eucalyptus globulus* were planted on the banks of Lake Fetzara, near Bône : now they have attained the height of 7 or 8 metres each, and have produced a very marked effect on the locality.

Such was the feverish condition of this district on the annual fall of the water and the denudation of its banks, that the Director of the Jardin d'Essai who went to examine the condition of the plants was immediately seized with a violent fever which lasted twenty days. That same gentleman now reports that the miasmatic influences which affected him so strongly there have disappeared, and the mosquitoes which rendered the place uninhabitable have disappeared with them.

Eucalyptus at MoJeta el-Hadid.—Formerly it was impossible for the workmen at the great iron mines of Mokia el-Hadid to remain there during summer ; those who attempted to do so died, and the company was obliged to take the labourers to the mines by train every morning and to carry them back to Bône every night, a distance of 33 kilomètres each way. From 1868 to 1870 the company planted more than 100,000 *Eucalyptus*, and now the workmen are able to live all the year through on the scene of their labour. The entire works and the railway leading to them are bordered with thick belts of these trees, and each of the miners has his cottage and kitchen garden surrounded with them.

Eucalyptus at the Maison Carée.—At the mill of St. Corinne, belonging to the late M. Saulière, at the Maison Carée, near Algiers, a marsh situated to the south of it rendered the place uninhabitable at certain seasons of the year.

M. Saulière, in despair at having to renew his workmen every two months, called in the services of Dr. Payn, begged him to visit the place regularly, and placed liberally at his disposal every remedial agent that he could suggest. Dr. Payn proposed that the marsh should be planted with *Eucalyptus*. In two years these trees attained a gigantic size, and fever almost entirely disappeared.

Method by which Eucalyptus improves climate.—It is unnecessary to multiply instances, almost every one of the thirty competent persons interrogated bore testimony to the fact that the introduction of this tree had exercised a salutary influence on the health of the district.

In some places the trees destroyed miasma by utilizing the moisture of the soil in which they were planted and thus draining marshes. The emanations from their leaves also have produced a salutary effect. They contain a large quantity of essential oil very similar to turpentine, which they emit in great quantities, especially when stirred by the wind, and this acts, it is supposed, as a febrifuge.

Localities suited for the growth of Eucalyptus.—There is another subject worthy of consideration, the localities best suited to the growth of the plant on a large scale, and the price of land available for the purpose.

To ensure the commercial success of the scheme the trees must be planted on a line of railway and as close as possible to a station. The soil ought to be rich and deep, and there ought to be sufficient water available for irrigating the trees during the first year, not frequently, but once when they are planted in autumn, and twice or thrice during the course of the subsequent, summer. They will grow in the driest soil, but their growth is infinitely more rapid when planted under the above conditions.

Plain of Metidja.—There is no doubt that the locality which fulfils these conditions best is the plain of the Metidja. Between Algiers and Blidah, on the line of rail, it is hardly possible to obtain land for less than 500 to 700 francs the hectare; some has recently been sold for 1,000 francs. Further from the railway it may be had in some few places for 300 francs, but the cost of transport would neutralize the saving.

Plains of the Chelif and Mina.—In the plains of the Chelif and the Mina there is an enormous quantity of land which may still be obtained for a merely nominal price. It would be an immense boon to the country if some of this were planted with *Eucalyptus*, but the chances of profit to the cultivator would not be so certain. The soil is hardly inferior to that of the Metidja, but the hydrometrical conditions of its climate are very different. The range of hills stretching westward from Miliana cuts it off from the sea breezes, which always afford a certain quantity of moisture; rain is more scarce, and the farmer can hardly hope for more than one good year out of three. From Affreville, where it commences, to Oran, is a distance of about 300 kilomètre. It is traversed by the most important river in Algeria, the Chenoua which rises in the Sahara and falls into the sea near Mostaganem.

Barrage of the Chelif.—A barrage has been built near Orleansville, and it is possible that there may be good irrigable land procurable in that locality, but as it is the only part of the plain which I did not carefully inspect, and the only irrigational work that I did not see, I cannot speak positively on the subject. I have been assured, however, by the Government of Algeria that from 2,000 to 3,000 hectares of land, situated between the Oued Ouran and the Oued Iias, irrigable by the barrage of the Chelif, might be found there well suited for the purpose.

Barrage of La Djidiouia.—The most important barrages are in the valleys on the south side of the river, at La Djidiouia 263 kilomètres from Algiers; a magnificent dam of cut-stone and hydraulic cement has been built across a gorge in the course of the river, thus forming a lake containing 2,000,000 cubic mètres of water.

^B Barrage of the Mina.—At Relizane there is a barrage of another nature; at a spot where the river Mina leaves the level plain in which it has hitherto flowed to enter by a series of rapids a lower rocky bed, a dyke has been constructed to raise its level and to divert the water into canals on either side for the irrigation of the country around.

^F Barrage of the Oued Ferzoug.—The finest of all, however, is the barrage of the Oued Ferzoug, near ^PPerre Saux, 346 kilometres from Algiers, and 76 kilometres from Oran. This work, near the railway, now being constructed between Arzew and Saïda, is due to the ^PProf. P. Debrousse, who received no guarantee of interest, but a concession of 24 millions of francs for 99 years. It covers 1000 hectares of irrigable land between Perregaux and the sea, most of which is at present unreclaimed, either in the state of tamarisk forest or of pestilential swamp, and the barrage is situated at the junction of three rivers; it measures 500 metres in length and contains the enormous quantity of 32,000,000 cubic metres of water. I need not allude to the other works of a similar nature; I only wish to show that, dry as the plain of the Chelif is, there are not wanting considerable tracts of land capable of artificial irrigation.

^Q Quantity of land in the plain of Me Chelif.—The price of land is nowhere high, almost any quantity can be purchased at 50 or 60 francs a hectare, and I was shown beautiful cleared and irrigable, which might be had at 100 francs.

^O One property particularly struck me; it consisted of 600 hectares. One side was bounded by the plain of the Chelif, the other by the Dahra, the range of hills along its right bank. A part of the bank was watered by a stream descending from those mountains, and I saw on the opposite bank a stream which brought water to the surface of the ground, from which I learned that the same thing might be practicable on the property to which I allude, and was traversed by a high road, and a bridge across the river was about to be constructed; an important Arab market took place on the land every week, and in addition it had a large dwelling-house, which was, however, much out of repair; with all these advantages the property was for sale for 60,000 francs (2,400/).

^C Considerable numbers of Eucalyptus have been planted all along the line of railway from Algiers to Oran. Where this line passes through the Metidja the trees have grown most luxuriantly, but in the Chelif they have failed in almost every case. It is true that they have not been tended in any way, they have merely been planted and left to their fate. The ^TTinjan, ^FFoucauld, and ^PPlages in this plain they have thriven better, but still never so well as in the first high plain of the Macta, conceded to M. Debrousse, which at the present time appears a very good position for them; they have not done well at all. The reason for this is that the soil is saturated with salt and the more the trees are watered after being planted, the more the capillary attraction brings the salt to the surface and kills the trees or checks their growth.

^P Province of Constantine.—These remarks apply only to the two great plains over which I have travelled this year: there are no doubt localities good situated elsewhere, especially in the plain of Bone and on the line of railway now being constructed to Guelma. I cannot speak with any certainty of the price of such, but regarding its suitability for the growth of Eucalyptus there can be no doubt.

^C Careful consideration of the whole subject, I feel more convinced than ever that no other tree offers such prospects of success as Eucalyptus, if the cultivator can afford with a considerable time without any return for his capital, that in the long run it is more economical to purchase land for the purpose at 600 francs a hectare than at 60 francs, but that to ensure success the experiment should be made close to a line of railway in a comparatively cool and salubrious position.

ORDER.—Ordered, that copies of this Report be forwarded for information to
 Bengal, British Burma, the Local Governments and Admin-
 N. Mysore and Coorg. istrations noted in the margin,
 Panja. Assam. with reference to paragraphs 9 to 11
 Central Provinces, Hyderabad. of Mr. Brandis' Memorandum on the
 cultivation of Eucalyptus in Northern India, and Chapter II of Major Seaton's
 Report on the Forests and Alpha resources of Algeria.

and that copies be forwarded to the Governments of Madras and Bombay, the Commissioner of Ajmere, together with copies of Major Seaton's Report on the Forests and Alpha resources of Algeria.

also, that copies be forwarded to the Superintendent of Forest Surveys, and Mr. O'Connor's note on the cultivation in India of the Eucalyptus globulus and other Australian gums.

(True Extract.)

1877

GOVERNMENT OF INDIA-

DEPARTMENT OF B ^ ^ ^
AGRICULTURE AND COMMERCE

FORESTS.

RESOLUTION.

To.

Circular No- 411

Dated Simla, the 1st October 1877.

SUBJECT.

FORWARDING a supplementary Report, b ^ L ^
ant-Colonel R. L. Playfair, Consul c p ^ ^ p
Algiers, on the cultivation of ^ algy ^
Algeria.

(6)

No. 3636.'

COPY forwarded to the Superintendent of the Botanical Garden for information in continuation of endorsement No. 2901, dated the 4th September last.

By order of the Lieutenant-Governor of Bengal,

RAJENDRA NATH MITRA,

Offg. Asst. Secretary to the Govt. of Bengal.

CALCUTTA;

FINANCIAL Dtn.—jgricuUure,
The 2nd November 1877.

FINANCIAL DEPARTMENT.

AGRICULTURE.

CALCUTTA, THE 10TH AUGUST 1878.

RESOLUTION.

READ—

Report of the Royal Botanical Garden, Calcutta, for the year 1877-78.

Read also^

The Government Resolution on the Report for 1876-77.

THE Superintendent is quite justified in saying that the appearance of the Garden, particularly on the eastern or Howrah side, has been considerably improved by the alterations which have of late years been carried out under his orders, and which are now beginning to show their full effect as the plants grow up. The scattered tanks have been enlarged, improved in shape, and connected, and the trees that were not too large to be transplanted have been collected into groups, while the soil has been rendered undulating, and the ground generally treated with a view to producing good landscape effects. The Conservatory built in 1874 has been extended, and the new Plant-house constructed last year has proved successful. The western end of the garden, however, lies very low and presents an unsightly appearance. The changes suggested by Dr. King, with a view of laying out this part of the Garden, have the Lieutenant-Governor's entire approval, and estimates should be made for deepening and widening the serpentine water, and throwing the earth obtained by excavation into slopes and undulations. The general improvement in the garden of late years has been very marked, and the new Plant-houses have been thoroughly successful.

2. Considerable additions have been made to the Herbarium during the year. The chief of these is the collection of the late Mr. S. Kiirz, Curator of the Garden, who, prior to his death, presented to the Garden the whole of the specimens of plants collected by him from all parts of India, besides a number of Malayan species and European plants. A very interesting collection of Plants, made at the Cape of Good Hope in 1797 by the late Dr. Roxburgh, has also been presented by his surviving daughter. The building in which the Herbarium and Library are placed is not suited for the purpose, and the accommodation which it affords is insufficient. The necessity for enlarging this building was admitted in 1876, but want of funds has hitherto prevented this necessary improvement being carried out. Arrangements have now been made to secure the enlargement and improvement of this building, and the work, if possible, to be done during the current year. The Superintendent should at once place himself in communication with the Public Works Department in regard to the additions and alterations required for the Herbarium and Library.

3. The present report, again, shows that the experiments which have been made for some years past in cultivating in Calcutta *f* ^ *J* ^ *J* ^ in We not been attended with success. It is useless to attempt to grow in Calcutta plants to which the climate is entirely unsuitable, " ^ . distribu- tion, to endeavour to import, propagate, and raise young stock: of artificial propagation, to grow a su Dr. King is endeavouring, by means *Ceara rubber* plants of South A formed into

it >>>w a d S e d f a l T T h I / y << ! T * also cannot be successfully grown in

Calcutta as a crop, owing to the low night temperature of the cold season
too sev
for dis

climate of Saharunpore; but the Govern^m has prize for the invention of a machine for cleaning the fibre Dr. King has very properly put a few acres of ground under the Slant for green stems. The *Eucalyptus* has not been found to afford excellent fodder

Some of the trees have during the year given seed: the pod is quite as sweet as that of the carob, and is abundantly produced, while, as a rapid grower, the tree is unrivalled.

4. Dr. King has paid particular attention to the important experiment of growing the various kinds of paper fibres which have from time to time been

to the subject of paper manufacture of paper, have a practical test during the last two or three years. Although the experiment has been

Mr. Routledge's process, and, on the whole, Dr. King's process, that the proposed plants were found to be suitable for paper-making.

that they could be employed in the manufacture of paper.

The Government Resolution on the subject of paper from the Orissa and Chittagong, and hopes to report the result of the experiment.

will be glad to enquire whether the grass cannot be utilized as a paper fibre.

5. The Government has been carrying on by him in some of the experiments may be as a regular industry.

The Government has continued to be made during the year. The thanks of Government are due to the Lieut. Governor for the contributions received.

7. The Lieut. Governor fully concurs with the Government in the resolution.

his acknowledgments of the Government are due to Dr. King for his management of the Garden during the year.

and Commerce, for information. The department of Revenue, Agriculture and of the Resolution be forwarded to the Inspector-General of Jails, and that a copy of the Resolution be forwarded to the Superintendent, Botanical Garden, for information.

By order of the Lieutenant-Governor of Bengal,

P. BARBOUR,

Ofg. Secretary to the Govt. of Bengal,

(3)

No. 3385.

COPY forwarded to the Superintendent, Botanical Garden, for information.

By order of the Lieutenant-Governor of Bengal,

D. BAKBOUR,

Offg. Secretary to the Govt. of Bengal.

CALCUTTA,

Me 15th August 1878.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR
THE YEAR 1877-78.

No. 38GK, dated Botanical Garden, Howrah (near Calcutta), the 10th July 1878.

From—GEORGE KING, ESQ., M.B., Supt., Royal Botanical Garden, Calcutta,

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

I HAVE the honor to submit herewith the ninety-first annual report of the
Royal Botanic Garden.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA,
FOR THE YEAR 1877-78.

!• *General Condition of the Garden.*—The changes effected during the past
years on the eastern end of the Garden are now beginning to tell, and the
appearance of that end is gradually improving. These alterations consisted in
sharpening, and connecting the numerous scattered pieces of water,
in collecting into groups such trees as were not too large to be transplanted, in
undulating the soil, in altering old roads and aligning new ones, in planting
avenues, and, in short, in treating the grounds with a view to good landscape
effects. At the same time a great deal has been done to improve cultivation
and drainage. The western end of the Garden, however, still remains untouched,
and a considerable area near the great banyan tree is little better than an
unsightly swamp. A long, winding piece of water runs through this part of the
Garden, and it would neither be difficult nor costly, by deepening and widening
this to a sufficient extent, to raise the level of the remaining part of the ground,
it is not more to keep it in really good order than is now annually
expended in preventing it from being absolutely offensive. The success of the
recently-built iron plant-houses has been gratifying: the species planted in
them presenting masses of dense and healthy foliage, while the
orchids have grown and flowered well.

Improvements effected in the Garden during the year.—Two of the old
plant-houses having fallen into dangerous disrepair have been pulled down,
and the old iron posts thus obtained have been utilized in extending the large
improved plant-house built in 1874. To that house an addition in the
style was planned some time ago by Mr. Lister, who was then acting as
Curator of the Garden. This addition has now been completed, and the ori-
ginal house has thus been enlarged to a total length of 287 feet. Besides the
accession of space for planting out fine tropical species which had begun
to accumulate in our nurseries, the addition adds greatly to the effect of the
renewed house. In the palmetum several mounds have been thrown up so as to
raise the dead monotonous level that formerly prevailed: the earth to form
them was got by excavating an entirely new tank and by enlarging
improving the shape of three old ones. By these means this part of the
Garden has at once been effectively drained and greatly improved in appear-
ance. In addition to these changes, several roads have been altered, and
rows of palms have been planted out. A much-required
addition has been made to the west of the plant-house built last year, and a long
road has been added to a tank in that neighbourhood. By no means the least
improvement that has been carried through during the year has been
the diversion of the main road to the right of the river entrance, so as to give
room for condensation near the Curator's house of the whole of the nurseries
previously scattered at distant parts of the Garden. The seed and propagating
houses, the willow garden, the young garden, the potting sheds, tool and
shed, the carpenters and blacksmiths' shops will shortly be accommodated
in an enclosure quite close to the Curator's house (and therefore under
his eye) it is believed that this arrangement will greatly conduce both
to efficiency and economy.

Roads and Buildings.—The new roads made during the year have been
fully described. The old roads have been kept, as far as possible, in repair.

The road, however, which (running westward from the water entrance) leads to the great banyan tree and Roxburgh's monument, is in such a radically bad state that repairs are but of little avail. This road is by far too low, and nothing short of heightening and relaying it will do it any good. But the funds at my disposal have not been sufficient to enable me to take in hand this which, after all, is not so pressing as the improvement of the swampy ground referred to in the preceding paragraph. The buildings in the Garden are in fairly good order, with the exception of the old and utterly insufficient house in which are crowded the Herbarium, Library, Office, and the establishment for the collection and issue of seeds. This building, originally a single-storeyed one, was some years ago heightened by the addition of another storey. Shortly after this had been done it showed symptoms of insecurity, and a number of iron pillars had to be introduced on the ground floor. The building has never ceased to leak, and in addition to this defect, the accommodation which it affords is now quite inadequate. The upper storey is devoted to as many of the herbiviv.- cabinets as can be stowed away in it. The herbarium now consists of 9d cabinets of dried plants. Six years ago, when there were only 48 cabinets, there was just sufficient space for consulting specimens and for working at systematic botany. Now the room is so crowded that there is neither light nor space to consult specimens or to carry on efficiently the kind of scientific work for which a herbarium is intended to afford opportunity. My scientific duties are therefore conducted under a great disadvantage. I have had to give up four rooms in my own house to the accommodation of cabinets and unmounted specimens, and the loss of time and labour incurred by frequent reference to collections in another building are very great. This Calcutta collection forms the only large herbarium in India; it contains authentic specimens from almost every Indian botanist from Heyne to Kurz, including excellent sets of Wallich's and Hooker and Thomson's plants; the great majority of the specimens are carefully named, and altogether it is a collection of which it would be hard to estimate the scientific value, and which assuredly deserves to be better housed than it now is. But not only has the herbarium been increasing, but the seed operations have been largely extended within late years. — The library also has regularly been added to, while to the office of the Botanic Garden has in recent years been added that of the cinchona plantation.

4. *Garden Collector*.—The Garden Collector returned in the early part of the year from exploring the country near Moulmein. The living plants sent by him have been added to the Garden collection, and his dried plants have been mounted, but I have not yet had leisure to name and incorporate them with the herbarium. The Collector is now on the Khasia hills, and will probably remain there during the rains.

5. *India-rubber*.—The seedlings of Para rubber received in the beginning of 1877 were partly retained in this Garden and partly sent to the Cinchona plantation in Sikkim. Several of these plants have died during the year. The plants that still remain here (14 in number) are, however, healthy, and have grown fairly well. Every care is being taken of them, and I hope soon to be able to report that they have been increased in number by artificial propagation; but former experience has made me wary of allowing cutting to be made until the parent plants have had plenty of time to establish themselves. A quantity of Ceara rubber plants, collected in South America by Mr. Cross and sent to this Garden by Sir Joseph Hooker, were received along with the Para rubbers. About one-third of the new consignments were found on arrival to be in bad condition or spoiled. Of the remainder, five were sent to the cinchona plantation, and the rest retained here. One of the plants here is now ten feet high and they all vary in height from two to five feet; but they all look more or less lanky as if the climate were too damp for them. The species of *Manihot* was found by Mr. Cross in quite a different kind of Para rubber, and it appears more likely to succeed in India. My object both with the Para and Ceara rubbers will be to raise a stock of young plants of each as possible, to find out suitable places, and to have small plantations made wherever efficient super-

6- # *Vanilla*.—Further experience has only strengthened my conviction that *vanilla* cannot be grown as a crop in the climate of Calcutta with any prospect of success. I observe that even in Bangalore, where for a time it was supposed to have promised well, a similar conclusion has lately been arrived at. The plants now in the Garden will, of course, be attended to, but I do not think it is worth while to go to any further expense in attempting to make a plantation of it to be conducted on commercial principles.

7< *Ipecacuanha*.—A number of plants of *Ipecacuanha* have been sent to the Botanical Garden at Singapore, which enjoys a climate that ought to suit *ipecacuanha* perfectly. A considerable stock of young plants is kept on hand at the Cinchona plantation ready for issue to any applicant. But, like *vanilla*, I fear this valuable drug can never be grown successfully as a crop in any part of Bengal. We have been perfectly successful in propagating the plant from root, cuttings, and seed, and it grows luxuriantly under cover. But out of doors the low night temperature of the cold weather proves too severe for it. During the year 26 pounds of the dried root, taken from plants grown in frames under Mr. Jaffrey's care at Rungbee, were sent to the medical department for use, previous trials having established the excellence of the Sikkim-grown drug.

8. *Bheea*.—The Government of India having decided again to offer a prize for the invention of a machine to clean Rhea fibre, a couple of acres of ground were put under this plant in order that intending competitors might be supplied with green stems to work with. The ground having been trenched and manured, the crop offers to be a good one; but Rhea does not appear to me to grow with such luxuriance here as in the drier climate of keharunpore, where the competition for the Government prize is to be conducted.

9. *Baobab, Bamboo, and other Paper Fibres*.—The curious baobab tree is a native of Africa, but appears for a long time to have been a favourite with the Mussulmans in India. Large trees of it are found planted near Calcutta, Patna, Agra, and at many other places in India. Baobab bark began some years ago to be largely imported into London from the Portuguese settlements in Africa, and proved an excellent paper fibre. At the suggestion of Sir Joseph Hooker, I made three years ago a small plantation of it with the view of testing the possibility of growing it sufficiently cheaply to be used as a paper fibre. For the past two years the plants put out here received a rough kind of cultivation and the grass between them was regularly cut, but, as this proved scarcely the care afforded in a plantation conducted on commercial principles, I did not think it fair to the experiment to continue even the little cultivation which the plants had hitherto received. During the past year the young Baobabs have therefore had to fight their own battle, and it is quite clear that the majority of them are going to be mastered by the coarse, deep-rooting grasses which infest the soil everywhere in the plains of Bengal. Such plants as find the shade of a large tree in the neighbourhood of the plantation continue to look very fairly healthy, but those that stand in the open look very sickly. If baobab were to be grown to a profit, it would be hardly feasible to give it cultivation, however rough, after the first year, and it might not always be possible to give it shade. Considering, moreover, the comparatively slow growth of the species (a tree of 20 years old grown in the open girths of a forest is about 15 feet at the base and is about 15 feet high), I am driven to the conclusion that baobab is not likely to afford in India a sufficiently cheap paper fibre. My own impression is that a plant yielding an annual crop is more likely to fulfil the financial conditions of success than any perennial which, like baobab, yields a crop only after many years. Acting on this conviction I sent to the India office samples of four common Indian plants, and suggested that their value as paper fibres should be ascertained. The samples consisted of the stem and leaves of (1) the *bhabar-ghas* (*Eriophorum wnosumj*) of the North-Western Provinces, which is so largely used as a material for paper in Upper India; (2) of *Saccharum spontaneum*, a tall, coarse grass which, under the name of *hash*, is only too abundant in waste places over a large part of India; (3) of *Imperata cyUndrica*, the well-known *ooloo*, the commonest grass in Lower Bengal; and (4) of *Typha elephantina*, the *hoda* of Bengal, a large bulrush abundant all over Lower Bengal in marshy places and by the sides of tanks and streams. *Eriophorum*, not growing naturally in

lower Bengal, would reach a seaport weighted by the cost of long carriage, and may therefore practically be excluded from competition in the export market; but the other three are common plants all over the Gangetic delta, and could be brought to Calcutta in any quantity and at very low rates. The four samples were reported on by Mr. Routledge, of the Ford Paper Works, near Sunderland, who has devoted so much attention to the utilization of the young shoots^ of bamboo as a paper* fibre, Mr. Routledge states that "all four will unquestionably make paper." "*Eriophorum* is," he says "the best and most easily-worked of the four, as a small quantity of bleach brings it into good order." "The ultimate fibre is," he continues, "very fine and delicate, rather more so than *esparto*, and of about the same strength. The yield (42 per cent.) is somewhat less I think." "Mr. Eoutledge goes on to say, "it will make a quality of paper equal to *esparto*. The remainder of Mr. Routledge's report is not very encouraging, but I give it *verbatim*, for I know that the increasing deficiency in the supply! and consequent rise in price of materials suitable for paper-making, have bv,efi texciting a good deal of interest for some time, and under such circumstanpes the records of failures, entire or partial, are nearly as useful as the records of success.

"The grass marked *Saccharum spontaneum* ranks next to *Eriophorum* in quality; it is more tender, and certainly not equal to *esparto*; it yields 44 per cent. of fibre.

"The grass *Imperata cylindrica* I do not think suitable for paper, certainly not for printing, although it may suit for what are termed small hands and rough packing papers. It is full of small joints and knots (especially the lower portions of the stalk), which result in harsh, woody sheaves. It gives an yield of 41 per cent.

"The *Typha latifolia* gives a very strong fibre when purged of the glutinous compounds living in its cellular tissue; but, in consequence of this mass of 'gluten, the yield is very small (only 28 per cent.); it is also extremely difficult to bleach, and loses most of its strength when subjected to that process.

"I do not consider that it would pay commercially to attempt to treat any one of these fibrous materials for conversion into 'stock' for European use, although very possibly, if procurable in abundance and at cheap rates, they might be employed for paper-making locally with advantage.

"To come into this (the home) market, any material must be superior to *esparto* in quality, as no matter how cheap the raw material may be in India* the cost and charges for converting it into stock and transport to Europe will bring its price to afford any profit to the producer as high or nearly &^s high as *esparta*"

"The Importer therefore must be prepared to sell his stock as cheap or nearly as cheap as *esparto* reduced to the same condition of stock, and must also give the inducement of superiority of quality."

In the resolution on my last annual report it was suggested that I should get from the Orissa and Chittagong coasts specimens of the wiry grasses growing on the beach. This has been done, but no report on the samples has yet been got. I propose to continue to give attention to this subject of paper fibre, and hope to note the results in future reports.

It will be remembered that several years ago Mr. Routledge, an English paper-maker, drew the attention of Government to the value as a paper material of the fibre yielded by the immature shoots of bamboo. Healthy bamboo clumps, as everybody in India knows, send up during every rainy season a certain number of new shoots which, growing with ettornious rapidity, in a few weeks attain their full height and afterwards slowly harden, and develope leaves. Mr. Routledge expressed his belief that by a simple treatment in this, country a "stock" might be extracted from these shoots which might be profitably transmitted to England for manufacture into paper. During the past two or three years I have put Mr. Routledge's proposals about coppicing bamboo to a practical test, and in my last report I recorded my observations so far as they had gone. I shall now bring them up to date, but before doing so it may be convenient to reproduce what I wrote last year. I therefore quote from my last report:—

"It is essential to the success of Mr. Routledge's process that the bamboo shoots be quite young and succulent, and the great difficulty which at once presented itself to persons

with any knowledge of the mode of growth of Indian bamboos was that such shoots, being produced in moderate quantity from each clump, and only during a limited season of the year, the proposed paper stock-making machinery must, for a large part of the year, necessarily lie idle. To meet this difficulty Mr. Routledge suggested that bamboo clumps, by proper treatment, be induced, after most of their old shoots had been cut away, to grow up from the stools thus bared, regularly and irrespective of season, crops of succulent shoots suitable for conversion into paper-stock. Mr. Routledge's expectations imply a very complete change of habit in the bamboo; for it is pretty well known that bamboo clumps, if entirely cut down, yield for several years but few and small succulent shoots, and, in fact, not unfrequently die. In order, however, to submit the proposed scheme to a test under my own eye, six clumps of *Bambusa Balcooa* were cut down last year, i.e. at the beginning of the rains between 10th and 20th June, when the buds of the season had completely formed, and were nearly ready to burst through the soil. Soon after the cutting of the old stems, these buds developed into shoots which showed characteristic rapidity. These were allowed to grow until they began to show signs of becoming hard, and on 21st July they were all cut down. They were at once weighed with the following result:—

Clump No.	1	2	3	4	5	6	Total	Number of young shoots.	Weight in pounds.
	...	...	...	...	...	...	...	U	166
Ditto	2	...	...	...	...	...	...	7	102
Ditto	3	..	...	...	...	...	...	6	78
Ditto	4	...	...	...	...	...	...	9	100
Ditto	5	...	...	...	...	...	...	5	42
Ditto	6	...	...	Z	...	...	...	12 *	192
								—	—
							Total	50	680
								—	—

This gives an average of 113 pounds of wet young shoots per clump. The time of cutting was the most favorable that could have been chosen, and the crop of young shoots probably as good as it would have been had the clumps remained untouched by the old shoots. Judging from the size of the clumps, I calculate that at most 80 similar clumps could be grown on an acre of ground. This allows an area of 576 superficial feet to each clump, and such close planting would probably necessitate manuring of these six clumps as an average, and excluding all loss from decay and rot, the yield on an acre during the first year of cutting would therefore be 9,066 pounds of young shoots. It must not be forgotten that freshly-cut bamboo shoots are very succulent, and that the amount of dry paper-stock that could be got from a very small proportion to their original weight. An additional difficulty in the scheme is that, since only fresh succulent shoots will answer, and these are of a specific gravity to float, the cost of land carriage to the factory (a very heavy one in Sengal) would have to be incurred. The cut clumps above mentioned would be cared for; if mould and tank soil were laid round them; and, as compared to similar clumps in the forest, they had the great advantage of immunity from fire and from being grazed on by cattle. Since their young shoots were cut, a considerable number of thin wood shoots have arisen from the bases of the old stems. More fresh young root shoots have, however, appeared. Some such will doubtless appear at the usual time, which would be the beginning of the ensuing rainy season. These shoots shall be cut at the time recommended by Mr. Routledge, i.e. when they are just beginning to become hard, and shall with the cutting of these the experiment will begin, the results shall be duly recorded in next annual report.

In the beginning of the rainy season of this year the brushwood of third foody twigs which had been produced by the brushwood was cut. The twigs there were none of the soft, succulent shoots proceeding from the underground stem which are required for Mr. Routledge's process. The effect of the rain of the present season was particularly favourable to the young shoots, and the clumps have just again (10th July 1876) been cut. The result is that every twig produced by them since the previous cutting. The result is that just as last year, the most of the growth consists of hard wood, and proceeds from the bases of the stems cut two years ago. The old shoots of the succulent shoots proceeding from underground, and the materials succulent enough for Mr. Routledge's process is, on an average of 20 pounds of green material per clump. In a material, it is one subject, Mr. Routledge estimates that the green raw material, is one-fourth of its weight, and that the dry material gives about 17 per cent. of good paper-stock. I am therefore in a position to give the yield of these six clumps during three years. The yield is 60 pounds Pounds per clump, equal (allowing 80 clumps to the acre) to about 1,000 Pounds per acre.

per acre. During the second year the yield was nothing, and during the third year it was 3 pounds per clump, or equal 240 pounds per acre. Mr. Routledge estimates that (according to a method of planting which he proposes, but w^W, I believe to be quite impracticable) the yield per acre would be 6 tons, *and that this yield would be annual*. The value of the paper-stock delivered in England would be from £20 to £25 per ton, so that, even assuming (which is by no means the case) that green bamboos are of very little value, the proposed new industry does not present a hopeful financial aspect.

10. *Carob and other economic trees*.—A smaller quantity of the seed of the Carob of the Mediterranean (the *Ceratonia siliqua* of botanists) w^{ts} sent some time ago to the Garden to be sown, with the view of introducing this tree into Bengal. The pod of this species, as Government are aware, contains a sweet nutritious pulp which forms an excellent food for [^]cattle and horses. But the tree does not naturally affect a climate and soil in the least like those of the Gangetic delfa, and I never looked on the attempt to add it to the fodder plants of Bengal as at all likely to succeed; and, as a fact, the majority of the seedlings damped off before they were six inches high. About 50 seedlings remain, some of which have been planted out, while the others, which are too small for planting out, remain in pots. But although all have been duly cared for, none a^{Te} vigorous. An American tree, which also yields a sweet nutritious pod, has been much more successful than the Carob. This is the *Pithecolobium saman*, a native of Peru, which, from its supposed property of inducing local showers, is in that country known as the "rain-tree." An exact description and explanation of the phenomenon which gave rise to this name has only quite recently been given in the columns of the English periodical *Nature* by Dr. Dyer, who quotes from the eminent South American traveller, Mr. Spruce, as follows: "A little after seven o'clock we came under a lowish spreading tree, from which, with a perfectly clear sky overhead, a smart rain, was falling. A glance upwards showed a multitude of cicadas sucking the juices of the tender young branches and leaves, and squirting forth slender streams of limpid fluid* We had barely time to note this when we were assailed by swarms of large black ants, which bit and stung fiercely, and obliged us to beat[^]a retreat, ray companions calling out as they ran '*tamia-caspi!* *tamia caspi!*' When we had shaken off our assailants, I ventured to approach the spot so near as to make out that the ants were greedily licking up the fluid as it fell" There are in the Garden two sets of this tree, one consisting of five #ees about eleven years old, and the other consisting of 84 trees which were planted in an avenue four years ago. The tree is an extremely rapid grower, and seems perfectly at home in the climate and soil of Lower Bengal. It has a thick trunk, which, at a comparatively short distance from the ground, divides into large branches, which form a spreading and very dense crown. This habit, together with the softness of the timber, make the tree of little value as a source of material for building, but it would probably answer very well as a firewood tree, and as a shade tree I know nothing jto equal it in Bengal. It grows faster than any indigenous tree known to me, and \$^c only introduced tree which rivals it is the *Casuaria* \$t *equisetifolia*. [?]The five older trees in this garden girth on an average seven feet nine inches at three feet from the ground; while of the four-year old trees, which are planted 32 feet apart as an avenue on either side of a road 20 feet wide, the heads now meet across the road and afford an excellent shade. The average height of these younger trees is about 20 feet, and the average girth of their stems-at three feet from the ground is 29 inches. The older trees have this year, for the first time, given seed; the pod is quite as sweet as that of the Carob, and is abundantly produced, and altogether I consider *Pithecolobium saman* a much more hopeful source of cattle fodder than the Carob while, as a rapid grower, it *^s unrivalled. Quantities of seeds of various species of *Eucalyptus* were sent by the Government oi India during the year for trial in the garden. Of these a considerable proportion failed to germinate, and of those which did germinate the majority of the seedlings damped off during the rainy season, and at the end of the year only three plants remained alive. This result is quite in accordance with former experience, which goes to show that the project of ameliorating the malarious climate of Lower Bengal by the free planting of *Eucalyptus* is perfectly Utopian. The water-logged alluvial soil and hot steamy climate of this part of

India are totally unsuited to any species of these Australian trees which has yet been tried. Moreover, it seems highly doubtful whether, even where it grows vigorously, the *Eucalyptus* has any especial effect on malaria. I understand that many species of *Eucalyptus* grow well at Shillong and at several of the stations on the North-Western Himalaya—a fact which in itself offers a strong argument against the probability of their success in a climate so totally different as is that of Calcutta.

11. *Interchange of Seeds and living Plants.*—The total number of seed-packets issued during the year amounts to 5,142, while 2,437 were received. Of living plants, 18,510 have been issued, and 10,177 have been received. The contributors to whom the Garden is chiefly indebted are Sir Joseph Hooker of the Royal Garden, Kew; Dr Thwaites, F.R.S., C.M.G., Ceylon; Sir W. Macarthur Sydney, who has from time to time presented magnificent collections of new crotons; Major Badgeley, Shillong; and Mr. Man, Port Blair, an indelible contributor of Andamanese plants, to whom the Garden is particularly beholden.

12. *Herbarium.*—Considerable additions have been made to the herbarium during the year. The chief of these is the collection of the late Mr. S. KUK, who, prior to his death, presented the whole of his dried plants to the Garden. Mr. Kurz's herbarium comprises specimens from all parts of India, but is especially rich in Burmese, Andamanese, and Bengal plants, it contains also a number of Malayan species and a good many European plants. Altogether, it forms a great and useful addition to the Government collection. A very interesting collection of plants, made at the Cape of Good Hope in 1841, by the late Dr. Roxburgh, has been presented by Dr. Roxburgh's surviving daughter. Dr. Roxburgh, who is justly named the father of Indian Botany, was for a long period the Superintendent of this Garden; but, until the receipt of his daughter's gift, the Garden herbarium did not contain a single authentic specimen of his collecting. It is some satisfaction to have received, even at this late date, so interesting a relic of this eminent botanist. Dr. J. Scully has contributed a valuable series of plants from Nepal—the only collection received from that country since Dr. Wallich's expedition there nearly 60 years ago. I have also to thank Dr. O. T. Duke for an interesting set of Beluchistan plants collected near Khelat and Quetta. Colonel Beddome has contributed a considerable number of rare plants from the south of India, as well as 64 species of Nighi mosse. To Mr. J. Sykes Gamble, of the Forest Department, the herbarium is indebted for a fine set of Simla plants comprising about 500 species, and also for a number of Sikkim plants. Mr. J. F. Duthie, Superintendent of the Seharunpore Botanic Garden, has given about 150 specimens of plants of the North-West Himalaya; and Mr. J. Ware-Edgar, c.s.i., late Deputy Commissioner of Darjeeling, contributed about 20 species collected by natives in the Chumbi Valley. A considerable number of dried plants have been sent by the Garden Collectors from Tenasserim and the interior of Sikkim.

13. *Library.*—Very few books have been added during the year; a considerable number of volumes indented for in former years still remain to be sent out by the India Office.

14. *Official Character.*—Not only this Garden, but the science of Botany generally, has sustained an irreparable loss by the death of Mr. Sulpus Kurz. Mr. Kurz, a native of Munich, after spending some years in Java, was appointed Curator of the Herbarium here in 1864. He worked indefatigably and published numerous papers on botanical subjects, his last having been a Forest Flow- of British Burmah. Mr. Kurz went on leave in the East, and proceeded on a coasting tour to Burmah and the Straits for the benefit of his health. He died at Penang on 9th February of fever, caused by abscess in the thigh. Mr. Parsons having resigned the office recently by agreement, his place as Curator was filled by Mr. Later, and more recently by Mr. Bierman, to both of whom my best acknowledgments are due for their hearty devotion to their duties.

15. The usual returns are sent as appendices.

APPENDIX A..

Plants received at the Royal Botanical Garden from April 1877 to 21st March 1878.

FEOM	Svardian cases.	Boxes.	Number of plants, v
Eoyal Botanical Garden, Kew ...	4	1	241
" " Ceylon...	3		7*
Botanical Gardén, Cape of Good Hope ...	1	3	1,557
" " Madras ...	1		40
" " Bangalore ...	1		37
" " Ootacamund ...	1		11
" " Singapore ...	2		82
" * " Melbourne ...	1		74
" " Natal ...	1	1	20
Acclimatization Society, Queensland ...	1		19
Agri-Horticultural Society, Madras ...	1		33
" " " Calcutta ...			298
Eight Hon'ble Lord Napier of Magdala ...			2
Sir William Me Arthur, Camden Park, Sydney ...	1		20
G. Brunning, Esq., Melbourne ...	1		44
B. Jameson, Esq., Ootacamund ...		" 2	52
A. Gray, Esq., Penang ...	" *3	2	114
M. Louis Van Houtte ...		1	47
Messrs. Bryant and May, London ...		1	25
Captain Eiwes, England ...		1	105
Conservator of Forests, Punjab ...		1	3
Major Badgeley, Shillong ...		6	146
Colonel E. H. Bed dome, Madras ...			3
Major Seaton, Burmah ...			4
S. Kurz, Esq., from Pegu ...		1	4
General the Hon'ble H. Eamsay, Almorah ...		1	9
Dr. Cornish, Madras ...	" 1		12
" " " Pilcher, Howrah ...		" 1	7
" " " Watt, Hooghly ...			29
J. E. O'Connor, Esq., from Burmah ...			128
Major Berkeley, Madras ...		1	157
E. H. Man, Esq., Port Blair ...	" 2		81
Dr. Nicholson, Presidency Jail, Calcutta ...			70
W. H. Gilbert, Esq., Eangoon ...		1	26
J. Peppe, Esq. ...		1	2
J. C. Hardinge, Esq., Eangoon ...		4	202
J. Jarbo, Esq., Chittagong ...		1	54
A. E. Warwick, Esq....		id	60
Dr. Armstrong ...			287
Government House, Calcutta ...			3
Eajah Eaj Co > nar Eoy ...			5
G. Bartlett, Esq. ...			10
Collected by the Superintendent in Sikkim ...		5	471
" " " by J. L. Lister, Esq., in Sikkim ...		11	528
" " " by G. Gallaty, Esq., in Burmah ...		13	3,571
J. Gammie, Esq., Government Cinchona Plf mtation, R'ingbee ...		22	882
A. Biermann, Esq., Monghoo ...		1	25
Captain Eeiley, Howrah ...			15
C. Sutherland, Esq. ...			13
Baboo S. P. Chatterjee ...			139
" " " N. N. Mullick ...			14
J. Owen, Esq. ...			1
T. J. Morton, Esq. ...		1	43
S. Price, Esq. ...			1
H. E. Cooke, Esq., from Simla Hills ...		4	48
G. Eicketts, Esq., Allahabad ...		3	41
W. Judge, Esq., Darjeeling ...			1
W. Waterfield, Esq. ...			1
Horee, a Native nurseryman, Calcutta ...			93
Shreenath, a Native nurseryman, Calcutta ...			82
L'nknown ...	I		12
Total ...	26	90	10,177

APPENDIX B.

Plants despatched from April 1877 to March 1878.

To	Wardian cases.	Boxes.	Number of plants.
His Excellency the Viceroy, Government House, Calcutta	.....	.....	81
His Honor the Lieutenant-Governor of Bengal	.....	.....	395
Right Hon'ble Lord Napier of Magdala	1	7	31
Royal Botanic Garden, Kew	5	1	34L
»» Ceylon	1	1	205
Botanic Garden, Glasgow	.....	1	107
» Natal	1	1	273
» Bangalore	1	.....	34
» Melbourne	1	.....	50'
» Singapore	2	.....	200
» Mauritius	2	.....	265
» Ootacamund	1	.....	49
» Mussoorie	.....	3	325
» Eungyoon	.....	3	305
A. Gray, Esq., Penang	2	.....	55
Acclimatization Society, Queensland	4	1	239
Colonel Beddome, Ootacamund	.....	1	96
Zoological Garden, Calcutta	.....	.....	2,267
Agri-Horticultural Society, Calcutta	.....	4	280
» Lahore	.....	.....	86
Eden Garden, Calcutta	.....	.....	148
O. Brunning, Esq., St. Kilda Nursery, Melbourne	1	.....	41
E. H. Man, Esq., Port Blair	4	.....	122
Major E. C. Impey, Oodeypore, Rajpootana	.....	2	49
His Highness the ex-King of Oudh	.....	.....	46
Hon'ble Baron Henby, Gellong	1	.....	50
Colonial Secretary, Western Australia	1	.....	18
Sir William McArthur, Camden Park, Melbourne	2	.....	51
Baron Van Wittgenstein	.....	1	37
Chief Commissioner, British Burmah	.....	1	3
General Hospital, Calcutta	.....	.....	158
Dum-Dum Hospital	.....	.....	20
Howrah Hospital	.....	.....	254
Presidency College, Calcutta	.....	.....	334
St. Thomas' School, Howrah	.....	.....	12
Wards' Institute, Calcutta	.....	.....	44
LaMartiniere College, Calcutta	.....	.....	83
Government Salt Golahs, Sulkeah	.....	4	804
Manbhoom Jail Garden	.....	6	58
Midnaporefc	.....	7	456
Superintendent, Central Prison, Benares	.....	2	190
» Jail, Bhagulpore	.....	2	66
» Cotton Experiment Economic Garden, bcmde	.....	1	20
Conservator of Forests, Moulmein	1	.....	14
Cantonment Magistrate, Dum-Dum	.....	.....	500
Hon'ble P. B. Kemp, c.s.	.....	.....	1
Howrah Municipality	.....	.....	413
Ahpore	.....	.....	44
Hooghly	.....	.....	100
J. C. Hardinge, Esq., Kangoon	.....	1	111
-K-Cooke, Esq.	.....	.....	156
C. T. Buckland, Esq.	.....	.....	59
oir George MacCay	.....	1	139
ftev. W. Ayerst	.....	1	70
C. H. Pillans, Esq., Silligoorie	.....	6	77
£. C. Kane, Esq.	.....	4	76
£- S. C. Mackenzie	.....	.....	5
£. B. Beeve, Esq.	.....	7	14
Major W. F. Badgeley, Shillong	.....	.....	78
• Baboo J. B. Law	.....	.....	2
Mrs. Anderson	.....	.....	1
Baboo It. B. Sanyal	.....	5	4
J. Mathews, Esq.	.....	1	124
« H. Peppe, Esq., Eanchi	.....	1	24
A. T. Grant, Esq.	.....	4	24
J. Schalch, Esq.	.....	.....	97
A. Parsons, Esq.	.....	.....	L3
L Hamilton, Esq.	.....	1	62
£ae Hon'ble H. Cockerell	.....	.....	8
£ Baboo H. N. Hoy	1	.....	23
Lionel Cadell, Madras	.....	1	33
£esrs. Balmer, Laurie & Co.	2	.....	24
£aptain Hughes, British Burmah	.....	2	206
£st Superintendent of Police, Dacca	.....	.....	82
Y ^o missary of Ordnance, Calcutta	.....	.....	58
£ Beames, Esq., Cuttack	.....	.....	18
£ urgeo ^o ner J. F. Beatson, Calcutta	.....	.....	10

APPENDIX B—continued.

To	Wardian cases.	Boxes.	Number of plants.
F. E. Pargiter, Esq. ...		2	50
Baboo N. G. Chatterjea, nurseryman, Calcutta			136
W. E. Kobertson, Esq., Madras			6
For Kifle Eange, Ballygunge	1		600
Dr. D. D. Cunningham			36
W. M. Smith, Esq., JNya Doomka		5	195
Dr. K. Bonavia, Lucknow		1	8
Baboo H. M. Banerjea			58
Colonel Watson, Buxa, Bhutan		2	264
Prince Noorooddeen Khan, Tallygunge			50
Miss Fendall			106
Dr. Payne			22
S. T. Apar, Esq.			23
Baboo G. C. Banerjea...			30
G. D. Banerjea, Bhagalpore		4	50
E. Turnbull, Esq. ...			4
Moonshee Mallee ...			8
Baboo K. K. Ghose ...			6
P. C. Sein ...			62
S. P. Chatterjea ...			62
C. Palmer, Esq. ...			17
Baboo O. K. Dutt ...			33
K. L. Dey ...			1
S. C. Eoy ...			2
T. Grant, Esq., Sooree		8	131
C. Davis, Esq. ...			6
Baboo K. K. Bose ...			4
T. Palmer, Esq. ...			22
Colonel Lees ...			34
A native nurseryman, Calcutta			50
Baboo X. M. Mookerjea			5
E. C. Sen ...			4
— Thomson, Esq., Sealdah			2
T. V. Mackintosh, Esq.			6
Baboo H. C. Mookerjea			1
Prosonno Coomar Bidayruttno			6
N. C. Dey ...			2
Quarter-Master, Fort William			150
Major E. F. Angelo, Chunar		9	298
F. Jarbo, Esq., Chittagong			14
Baboo E. N. Mullick ...		1	33
S. S. Mullick ...			1
Captain Clayton			20
Baboo IST. IST. Mullick...		*	1*
F. Greenway, Esq. ...			8
H. B. H. Turner, Esq.			44
G. Bartlett, Esq. ...			13
S. Price, Esq. ...			76
Shreenath, nurseryman, Calcutta			24
H. Jebens, Esq. ...		1	16
Baboo E. M. Mullick			8
JST.C. Eoy ...			35
Eaj Coomar Eoy			72
H. E. Williams, Esq.		3	24
Captain Eeynolds		1	30
D. McCorkindale, Esq., Seebpore			6
Lieutenant-Colonel Tulloch, Assam			1
Baboo H. M. Mookerjea			2
U. P. Coondoo			11
H. C. Gossain ...			13
J. Brenian, Esq. ...			3
Baboo J. K. Mullick ...			3
IST. IST. MuUick...			4
D. L. Barr, Esq. ...			12
Captain Harman			25
D. E. Lyall, Esq. ...			200
Lieutenant-Colonel E. E. Chambers		8	40
J. E. O'Conor, Esq.		2	27
W. H. Irvin, Esq. ...	at.		12
M. G. Eoberts, Esq. ...	H.		3
J. Owen, Esq. ...	H.		26
Shaik Amsuddin			48
Captain J. H. Eei ly			11
W. H. Holmes, Esq. ...	<		300
Baboo H. P. Sen			1
W. J. Ainsworth, Esq.			44
E. Cockburn, Esq. ...			12
D. Low, Esq. ...		1	9
J. B. Anderson, Esq.			36
C. B. Garrett, Esq., c.s.		3	445
		7	

APPENDIX B—concluded.

To	Wardian cases.	Boxes.	Number of plants.
^ V H. Garding, Esq.			2
^ L. Michael, Esq.		1	20
* Kev. Phillips, Midnapore			5
^ n O. B. Batchelor, M.D.			10
^ T. Apar, Esq.			13
Baboo B. L. Boy			16
- Lunatic Asylum			4
P Sprenger, Esq.		2	36
ster, Fort William			200
Sergeant Russell		1	48
			4
		1	21
			5
Baboo P. C. Laho		2	24
Dr. L. Spencer, Agra			8
C. A. N. Wal		1	20
G. M. Kneeb	Darjeeling	2	36
W. G. Lemesurier, Esq.,	"	2	36
G. S. Lemesurier, Esq.,	"	2	36
P. U. O. Scanlan, Esq.	"	2	36
& Anfield, Esq.	"	2	36
Ms. Scott		1	27
urves, Darjeeling			26
Alhousie Square Garden		1	18
Baboo N. M. Mullick			22
For Fort William			9
H. T. Blanford, Esq.			6
Mrs. Cockerell			20
H. B. F. Thompson, Esq.			27
Surgeon-Major Pichall			28
T. Hudson, Esq.		1	27
J. Gammie, Esq.			5
Government Cinchona Plantation, Mungpoo		4	50
Dr. Bryan		1	120
Coish Madras		1	37
ee Mallee			31
Mrs. Ferres			8
C. J. Waterhouse			35
oo M. Mundul			102
J. B. McPhun, Esq.			2
J. W. Esq., C.S.I., Arrah			12
Mrs. S		5	108
J. Liste, Esq., Mungoo			100
R. Barry, Esq.		2	71
H. Turner, Esq.			2
G. Backetts, Esq.			7
Mount Aboo		2	36
tain Jhanke		4	34
Atkins			15
McIntosh, Esq.		1	12
			87
Total	38	177	17,483

APPENDIX O.

Statement showing Seeds received from 1st April 1877 to 31st March 1878.

From whom received.	Number of sacks, parcels, or packets.
Government of India, Department of Revenue, Agriculture, and Commerce	11
Inspector-General of Forests	7
Conservator of Forests, North-Western Provinces	1
" " British Burmah	1
" " Mysore	13
Deputy Conservator of Forests, British Burmah	3
Assistant " " Rangoon	1
Deputy " " Chi tt agon g ...	2
" " " Chickalda, Hyderabad	1
" " " Eanikhet *	2
" " " Gurhwal	12
" " " Bhagirutty Division	1
" " " JVaini Tai	1
" " " Dehra Doon	4
" " " Xumaon	7
Assistant " " Jounsar Bawar	4
" " " Berars	19

APPENDIX C-concluded.

From whom received.	Number of sacks, parcels, or packets.
Sir J. D. Hooker, C.B., Eoyal Garden, Kew, London	10
Dr. Eegel, Imperial Garden, St. Petersburg, Eussia	998
Botanical Garden, Seharunpore	107
„ „ Jamaica	16
„ „ Peradeniya, Ceylon	288
„ „ Buitenzorg, Java	26
„ „ Adelaide, Australia	50
„ „ Brisbane, „	4
„ „ Melbourne	1
Baron Von Muller, Government Botanist, Melbourne	58
Botanical Garden, Mauritius	16
Queensland Acclimatization Society, Queensland	111
Agri-Horticultural Society, Calcutta	5
„ „ Lucknow	65
„ „ Bangalore	4
„ „ Madras	2
M. Louis Yan Houtte, Eoyal Nursery, Ghent, Belgium	112
M. Jules deCock, Ghent, Belgium	47
His Excellency Lord Napier of Magdala, Gibraltar	1
His Highness Eama Yarma, First Prince of Travancore	2
Dr. Cunningham, Calcutta	1
Collected by Superintendent	149
„ by Mr. Gammie in Cinchona Plantation	11
„ by Mr. Lister in Sikkim	39
„ by Mr. A. T. Jafirey in Sikkim	100
Mr. E. Errington, Barrackpore	9
G. Man, Esq., Andamans	6
John Scott, Esq., Opium Department, Bankipore	2
Dr. G. G. Sutherland, Aboo	1
Colonel Chamberlain, Eanikhet	1
E. A. Sterndale, Esq., Municipality, Alipore	1
J. H. Gilbert, Esq., Eangoon	1
Mr. Eidle, Lucknow	5
Messrs. Stanley Price & Co., Ballygunge	79
Mr. G. Chendroff, Moskow	7
Dr. Simons, Jorehat	1
Purchased	6
Total	2,432

APPENDIX D.

Statement showing Seeds distributed from 1st April 1877 to 31st March 1878

To whom supplied.	Number of parcels or packets.
Officiating Assistant Secretary to the Government of Bengal	4
Assistant Secretary to the Government of India, Department of Eevenue, Agriculture, and Commerce	2
Conservator of Forests, Sikkim	1
„ „ Lahore	1
Deputy Conservator of Forests, Moulmein	35
Government of Mauritius	14
His Excellency Lord Napier of Magdala, Gibraltar	135
The Earl of Auckland, Edenthorpe, Doncaster	35
Lord Ulick Browne, Darjeeling	1
The Countess of Mayo, London	56
Lady Muir, London	67
Sir J. D. Hooker, C.B., Eoyal Garden, Kew	287
Dr. Eegel, Imperial Garden, St. Petersburg	14
Professor Balfour, Botanical Garden, Edinburgh	3
Botanical Garden, Melbourne, Australia	11
„ „ Brisbane, Queensland, Australia	33
„ „ Golden Spring, Jamaica	59
„ „ Graff Eeinet, Cape of Good Hope	1
„ „ Sidney, Australia	1
„ „ Tasmania	3
„ „ Adelaide, Australia	13
„ „ Buitenzorg, Java	28
„ „ Mauritius	14
„ „ Peradeniya, Ceylon	4L
„ „ Palermo, Italy	2
„ „ Seharun pore	796
„ „ Eungyroom, Darjeeling	785
Baron Von Muller, University, Melbourne	27
Agri-Horticultural Society, Madras	3
„ „ Lahore	37
„ „ Lucknow	4
„ „ of India, Calcutta	12G

APPENDIX D—continued.

To whom supplied.	Number of parcels or packets.
Secretary to the Queensland Acclimatization Society, Queensland, Australia	91
M. Louis Van Houtte, Ghent, Belgium	66
MM. Jules deCock et Scur, Ghent, Belgium	7
Messrs. Hibge and Schmidt, Erfurt, Prussia	29
M. A. Van Geert, Ghent, Belgium	8
Mrs. Bladen Neill, Victoria, Australia	1
Mr. J. Brunning, St. Kilda Nursery, Melbourne, Australia	1
Messrs. J. G. Thynne & Co., Glasgow	1
Veitch & Co., Chelsea, London	15
Mr. William Bull, Chelsea, London	64
The Secretary, Public Library and Museum, National Gallery, Victoria, Australia	64
Commanding Officer, F. Battalion, 11th Brigade, Saugor	30
2-1 Eoyal Scots, Saugor	48
Convalescent Depôt, Pachmarhi	36
39th Kegiment, Nowgong	38
8th Battalion, Eoyal Artillery, Nowgong	45
1st Battalion, 2nd Eegiment, Cawnpore	61
7th Battalion, 6th Brigade, Darjeeling	73
109th Eegiment, Dinapore	30
92nd Highlanders, Benares	1
Station Staff Officer, Neemuch	24
Major E. Langdale, 73rd Eegiment, Subathoo	1
Angelo, Commandant, Chunar	50
Sir William Eose, Upper Tooting, Surrey, England	10
J. H. Elwes, Esq., Cirencester	28
-Rev. G. Homer, Mills Eectory, Frome	116
Dr. Bennett, Mentone	2
M. Decaisne, Jardin des Plantes, Paris	24
Baron Wittgenstein, care of German Consul, Calcutta	3
James Dickensoh, Esq., Port Arlington, Victoria, Australia	1
Italian Consul, Bombay	30
Captain Stanley, ship <i>County of Lancaster</i>	3
J. Martin, Esq., Singapore	161
Rev. D. E. Kinkaid, Kansas, United States, America	3
ii H. Corbyn, Hazara, Punjab	3
B. M. Keys, Esq.	4
D. Clerke, Esq., Brisbane, Australia	47
Municipality, Howrah	61
C. T. Nepean, Esq., Moulmein	10
Dr. Purves, Darjeeling	1
D. M. Murray, Esq., Darjeeling	1
Major Lewin, Darjeeling	1
A. T. Jaffrey, Esq., Eungbee	2
J. Kennedy, Esq., Darjeeling	1
A. J. L. Tyndal, Esq., Darjeeling	45
Jafarro, Esq., "	28
J. L. Lister, Esq., Mungpore	45
James Gammie, Esq., "	31
C. C. Kane, Esq., Attreekheth, Mungledye, Assam	2
Dr. Parsons, Borsilla Tea Company, Upper "	1
Thomas S. Tram, Esq., Kumaon	7
J- E. Bellaris, Esq., Almorah, "	73
Major Impey, Political Agent, Oodeypore, Eajputana	27
Dr. G. G. Sutherland, Aboo, "	5
Captain Abbot, Jallowar	50
" Wyllie, Commissariat Department, Lucknow	5
r- Eidle, Esq., Wingfield Park, Allahabad	15
Mrs. Marindin, Buxar	12
Baboo Inderdeo, Murree	1
W. Haskell, Esq., Hydrabad	1
Messrs. Delenge, Eeid & Co., Galle	45
J. F. Staples, Esq., Prome	67
Dr. Bryan, S.S. <i>Hydaspes</i>	50
> Garden, Tezpore, Assam	66
Chester Macarthur, Esq., Kattywar	3
J. M. Woodrow, Esq., Poona	1
F. J. Moore, Esq., Deputy Commissioner, Eotack	1
G. Caine, Esq., Ghazipore	12
J. Harrison, Esq., Sumbulpore	1
Collector of Cuttack	12
John Scott, Esq., Opium Department, Bankipore	20
Mr. S. Errin-K, Barrackpore	143
Dr. G. Watt, Hooghly	12
Mrs. M'Corkindale, Seebpore	10
Bev. H. J. Corbyn, Hazara, Punjab	6
Deputy Commissioner, Sirsa, "	7
J. Eoeck, Esq., Singapore	6
Captain S. S. Jones, Cantonment Magistrate, Hydrabad	6
J- Coles Hardinge, Esq., Eangoon	1
H. H. A. Sashiah Sastri, Dewan of Travanoore, Travendrum	10
Dr. Wheeler	3
Messrs. Begg, Dunlop & Co., Calcutta	1
> Gillanders Arbuthnot & Co., "	1
> Hoare, Miller & Co., "	1

APPENDIX D—concluded.

To whom supplied.				Number of parcels or packets.
Messrs. Mackilican & Co.,	Calcutta	...	...	1
„ Stanley, Price & Co.,	„	...	...	116
C. A. Jebens, Esq.,	„	...	...	10
Mr. George Bartlett,	„	...	...	20
J. E. O'Connor, Esq.,	„	...	...	20
Mr. A. Parsons, Botanical Gardien,	„	...	...	14
R. N. Plum^Esq.,	„	...	...	36
M. Bourke,ii]sq., Bengal Club,	„	...	...	50
Mr. Price	„	...	...	1
A. Ferryman, Esq., ship <i>Wiltshire</i>	„	...	...	51
W. INTieholls, Esq.,	Calcutta	...	...	50
Mr. Cooke, Eegistrar, Foreign Office,	„	...	...	3
E. H. Stanton, Esq.,	„	...	...	2
Total				5,142

FINANCIAL DEPARTMENT.

AGRICULTURE.

CALCUTTA, THE 22ND AUGUST 1879.

RESOLUTION.

READ—

Letter from the Superintendent of the Royal Botanical Garden, Calcutta, No. 49G, dated 10th July 1879, submitting the Annual Report of the Garden for 1878-79.

Read also—

The Government Resolution on the Report for 1877-78

NOTWITHSTANDING the excessive drought of the cold season a number of young plants, it is satisfactory to find that the recently planted groups is fairly good. The improvements proposed in the previous year's report have been partly carried out. The Main Walk therein, have received considerable additions to the entrance and continue to attract visitors. A broad straight road from the ghât to the great banian tree on the west, the Xl was a mpy ground in the commenced during the year under review. The most unsightly vicinity of the banian tree, which has hitherto appeared, design has been fully carried out, it will presently improve the appearance of the garden. Changes have also been made in the form of a tree of very large size. Many other minor improvements have been effected in parts of the garden.

2. As ordered last year, the building in which the Herbarium and office are placed has been enlarged and the building which has hitherto existed.

3. The experiments which have been made for some years past in cultivating in the garden certain special plants, such as the rubber tree, will not mostly unsuccessful. It is now decisively shown that the rubber tree will not grow in Calcutta. It is therefore useless continuing the experiment further.

2. cannot be grown to profit, it is found to have been put under plant to supply fresh stems to the Government prize for a machine for clearing the trees.

A large quantity of mahogany seed was received from Jamaica, and was partly distributed and partly sent to the Forest Department. The Forest Department have commenced mahogany cultivation in Chittagong, and many seedlings have been

sent to the Assistant Conservator there. The rain trees of which a quantity of seed was received from the India Office three years ago, flowered during the year and large quantities of seed and seedlings have been distributed. The sweet succulent is an excellent food for cattle, and it may become highly useful as a fodder plant.

The Carol and the Eucalyptii have been again introduced into the climate of Bengal. The plants of Prosopis pallida have not yet flowered.

5. The further experience gained during the year in the process of cropping clumps of *bamboos* in the way recommended by Mr. Routledge confirmed Dr. King in the opinion previously formed of the unsuitability of the plan originally proposed by Mr. Routledge. Mr. Routledge, however, is understood to have changed his plan, and to have recommended that instead of cutting down all the shoots of a bamboo clump only a few shoots should be annually taken from each clump. Dr. King says that this is the principle on which bamboos have been cut in India from time immemorial, and that no experiments on its feasibility are required. The value of the fibre contained in the succulent shoots of bamboo as a material for the manufacture of paper can only be tested by practical paper-makers. Even, accepting Mr. King's estimate of its value, the questions which, Dr. King says, should be settled whether commercial success can be obtained—(1) by forming clumps of bamboos for the collection of succulent shoots; (2) by collecting the shoots of wild bamboos in the forests, and carrying them to a paper mill or (3) by fitting up a floating paper-stock mill and moving it about on rivers by the banks of which bamboos naturally abound.

The *baobab* cannot be grown in this country so as to be a source of paper fibre. The samples of wiry grasses of the Orissa coast which Dr. King sent to the India Office have been unfavourably reported on by the paper-makers in London, to whom they were submitted for opinion. Dr. King does not seem to have yet examined the grass which grows on the banks of the Adjai and Damoodah, as was suggested to him in the Government Resolutions on his Reports for the two previous years. As he is making further investigations on the subject, the Lieutenant-Governor will be glad to hear the result of his enquiry into the capability of the above grass to produce a paper fibre.

6. The interchange of plants and seeds has gone on steadily. The thanks of Government are due to Sir Joseph Hooker, of the Royal Garden, Kew, to the directors of the gardens in Ceylon, Mauritius and Australia, as well as to the garden collector, for the contributions received from them during the year.

7. The thanks of Government are also due to the gentlemen named in paragraph 11 of the Report for the large and valuable collections of dried plants presented by them to the Herbarium.

8. The branch Botanical Garden which was established at Rangaroon some years ago not being found a success, owing principally to its distance from Darjeeling, a garden has lately been opened at the station of Darjeeling, where a suitable piece of land has been presented for the purpose by Mr. W. Lloyd, an old and well-known resident of the place. This land is being cleared and laid out under the superintendence of Mr. Jaffary, late of the cinchona plantation.

9. The Lieutenant-Governor observes that it has not been the practice hitherto in these annual reports to state the expenditure incurred during the year in maintaining the gardens. In future years a statement should be appended showing the expenditure incurred in the Calcutta and in the Darjeeling gardens separately, also the receipts if any.

10. The Lieutenant-Governor thanks Dr. King and his staff for their useful labours during the year.

ORDER.—Ordered, that a copy of the Report and of the Resolution be submitted to the Government of India, in the Department of Home, Revenue and Agriculture for information.

Ordered, further, that a copy of the Resolution be forwarded to the Conservator of Forests, and a copy of the Resolution to the Superintendent, Botanical Garden, for information.

By order of the Lieutenant-Governor of Bengal,

H. L. HARRISON,

Offg. Secretary to the Government of Bengal.

(3

No. 216,

COPY forwarded to the Superintendent, Botanical Garden, for information-

By order of the Lieutenant-Governor of Bengal,

H. L. HARRISON,

Offg. Secretary to the Govt. of Bengal

CALCUTTA,

AKNTJAL REPORT OP THE SQYAX, BOTANICAL GAHDBW, CALCUTTA,
FOR THE YUAIt 1878-79.

H9, dated Boyal Botanic Gardea, nowrah, near Calcutta, the 10th July 1879.

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

I HAVE the honor to submit herewith the ninety-second annual report of the Royal Botanic Garden.

ANNUAL REPORT OF THE ROYAL BOTANICAL GARDEN,
CALCUTTA, FOR THE YEAR 1878-79.

condxtion of the Garden.— The excessive drought of the cold season has affected severely on many of the trees recently planted out, and a great many of the more delicate species were killed by it. In spite, however, of the general condition of the recently planted group, is fairly good, doubt, largely due to the deep cultivation which has been given to them, they stand. The improvements suggested in last annual report have been partly carried out, and their effect promises to be good. The Viruses erected during the past five years continue to be very attractive and the collection of plants grown in them has been considerably increased. Some of the stronger-growing plants are now beginning to press against the walls of the house, and it would be desirable, were funds available, to build a higher roof for the reception of these. As they are of a nature that will not succeed, out doors, the only alternative to this will be to cut them down.

improvements effected during the year.— The great banyan tree, although situated in the garden, had hitherto been accessible by no very direct path, and a long-projected improvement of connecting it with the main road by a broad straight road has at last begun to be carried out. The alterations necessary to the ground by the sides of the new road cannot be completed for some time yet, but it is satisfactory to have at last been able to make a beginning. A design for laying out part of the ground to the north of the silk-oak avenue leading to the main road has been partly carried out and this, which used to be one of the most interesting parts of the garden, now promises to be one of the prettiest. Several changes have been made in the roads towards the garden, by one of which a second banyan tree of very large size has been opened up to visitors. The alterations in the garden last year have been completed and a good many other minor improvements last year have been completed, and a good many other minor

improvements have been effected in various parts of the grounds, and the building in which the Herbarium, Office and Seed Department are situated. The new space thus provided affords much relief from the overcrowding which previously existed. The original building to which this addition has been made is, however, satisfactory. The road which runs from the entrance gate through the main avenue to the banyan tree and thence to Roxburgh's monument, at nothing short of re-making it is worth consideration. However, have not been available. The rest of the garden are for the most part in good order.

Excursions.— Mr. G. Gailatly was out collecting in the Khasia hills and a good many living plants, chiefly orchids, were collected. Mr. Gailatly also prepared dried plants for the

India Rubber.— (Beved Braziliensh), of which fourteen plants were grown in the garden at the end of last report, continues to be as usual. Most of these fourteen plants are still alive, but they have not grown much, and it is quite clear to me that it is vain to hope that this species can ever be cultivated to profit in this part of India. Plants may be coaxing into growing in conservatories, but the species is by far too thoroughly

tropical to withstand without protection the vicissitudes of the climate of Northern India. As I have before reported, I believe it is useless to try anywhere in India except in the south of Burmah or the Andamans, and perhaps in Malabar. I learn from Dr. Thwaites that in the Botanic Garden Peradeniya in Ceylon, there are plants of *Hevea* of about thirty feet high that these are of the same age as the plants here, the highest of which are barely six feet in height. The Ceará rubber (*Manihot Glaziovii*), on the other hand, promises to grow well in Calcutta. The seedlings received from Kew and thriven vigorously and some of them are now twenty feet high. The List of the Botanic Garden in Ceylon having, at the request of the Secretary of State for India, undertaken the propagation of this species, a quantity of seeds were distributed by him to Indian officers during the year. Supplies I understand, sent to the Conservators of Forests in Burmah and Assam and the Inspector-General of Forests for Madras. A large supply was received at this garden, and a thousand seeds were sent, at the request of the Conservator of Forests for Bengal, to the officer in charge of the forest plantation near Chittagong. The seeds received here have begun to germinate, and I expect before long to be in a position to issue supplies of seedlings for trial in different parts of the country. The plant appears to thrive very well in Upper India and, if the quality of rubber yielded by it in this country should be found to be good, its introduction may prove of much importance. Some seeds of an African species of rubber (*Landolphia*) were received towards the end of the year from Dr. Kirk, Her Majesty's Consul at Zanzibar. These seeds look very promising, but possibly some of them may germinate.

6. *Ipecacuanha*.—Supplies of young plants continue to be sent out, as already reported, I have been obliged to give up all hope of the successful cultivation of this drug in Northern India, the climate being unsuitable.

7. *Rheea*.—About two acres of rhea were put out to supply stems to intending competitors for the Government prize for a machine for cleaning the fibre. And to all who have applied supplies have been given gratuitously.

8. *Bamboo and other paper fibres*.—In my last report I gave the results of three years' experiments in cropping bamboo in the way recommended by the English paper-maker (Mr. Routledge) in a pamphlet published by him and entitled "Bamboo considered as a paper-making material." Mr. Routledge's pamphlet the first appeared to me to be unsuitable, but I felt bound to try it, following his own printed instructions. The result showed that the yield was far short of Mr. Routledge's calculations, and that to grow bamboos in the vicinity of Calcutta as a source of paper fibre did not promise to be a profitable investment for money. The six clumps of bamboo reported upon have been carefully protected during the year, and to-day (July) I have collected from them all their succulent young shoots according to Mr. Routledge's process. The total weight of these shoots is one hundred and twenty pounds, or at the rate of twenty pounds per clump, and (allowing eighty clumps to the acre) at the rate of sixteen hundred pounds per acre. This result affords still further confirmation of the unsuitability of the mode of cultivation and cropping originally advocated by Mr. Routledge. I understand, however, that Mr. Routledge does not now approve of his own process of cutting down all the shoots of a bamboo clump, but recommends that only a few shoots should be taken annually. As this is the principle which bamboos have been cut in India from time immemorial, no experiments on its feasibility are required. The value for paper stock of the fibre contained in the succulent shoots of bamboo is a matter to be settled by practical paper-makers and is one on which I have no opinion to offer. If Mr. Routledge's estimate of its value as correct, the questions that remain to be settled are whether commercial success can be obtained (1) by forming plantations of bamboo in order that a certain proportion of the succulent shoots yielded by them may be collected annually, or (2) by collecting in the forests and conveying to a paper-stock factory, the immature shoots of wild bamboos, or (3) by fitting up a floating paper-stock mill and moving it about on rivers and banks of which bamboos naturally abound, so that the expense of cultivating and of carrying the raw material may alike be obviated.

The little plantation of baobab, begun some years ago, has made but little progress during the year. The rate of growth of this tree in India appears to have been greatly over-estimated. It requires moreover an amount of cultivation and of shade while young which will, I fear, prevent its ever taking rank as a practicable source of paper fibre in this country.

In continuation of the attempt recorded in my Ust report to find amongst the common coarse grasses of this country some that might be useful as paper fibres, I sent to the India Office for trial samples of eight grasses of the Orissa coast, but I regret to say that the opinion of the papery makers in London to whom they were submitted was unfavourable to any all. I am not, however, without hope that farther enquiry may bring to light one which may meet the requirements of the paper trade, and which may one day become an article of export from this country.

I

9. *Mahogany and other economic plants*.—Through the exertions of Sir Joseph Hooker, of the Royal Garden, Kew, a large quantity of mahogany seed has been received from Jamaica. This was partly distributed and partly sown in the garden. Large numbers of seedlings have also been distributed. The possible quantities of mahogany cultivated in the Government plantation near Chittagong, and as many seedlings as were sent & the Assistant Conservator in charge. The rain trees (*Albizia saman*) in this garden seeded for the second time and large quantities of both of seed and seedling have been distributed. The sweet succulent of this tree is said to be an excellent food for cattle, and if it prove to the Indian bullock, the rain tree may become highly useful as a Plant; its rapid growth and umbrageous habit will certainly make it a favourite for planting by road sides and near cantonments. A seed was received without name from the India Office some three years ago. It was duly sown but, the seedlings not having flowered I was unable in my last report to identify the species. Several plants having flowered during the year in the gardens in the north-western India that the seedlings belong to the species known planted some years ago at the request of the Government to languish and they show no signs of accommodating the arid soil so totally different from those of which this species is a native. The Plants of *Protoperla* reported in last year continue to flower yet. The *Eucalypti* from Queensland give little more hope of success than the more southern species by the planting of which in the plains of Bengal sanguine people hoped to abolish malaria.

B

10. *Change of living plants and seeds*.—This has gone on steadily, and during the year 22,771 plants have been issued and 9,595 have been received. Of seeds, 3,972 packets have been issued as against 1,307 received. The chief contributors during the year have been Sir Joseph Hooker, of the Royal Garden, Kew; the Directors of the Government Gardens in Ceylon, Mauritius and of the several botanic gardens in Australia; and the Garden Collector.

I

11. *Herbarium*.—Very considerable additions have been made to the collection of dried plants during the past year. Chief of these is the collection made by late Mr. Dalziel, for some time Conservator of the Botanic Garden at Ootacamund. This collection contains several forms from the west of India which were previously but poorly represented in the garden herbarium. It also contains sets of plants gathered by well-known botanists in Scinde, Arabia, Abyssinia; and the south-west of Europe. It is to the credit of Sir Joseph Hooker that the garden is indebted for this valuable addition. I have also to acknowledge a most interesting named collection of Indian plants presented by Mr. C. B. Clarke, formerly Superintendent of the garden, who is now assisting Sir Joseph Hooker in the publication of the *Flora of British India*. Valuable contributions have also been received from Mr. J. G. S. S. of the north-western Himalaya; from Mr. J. S. of Forest's, of plants from the Wimala hills in Upper and Central India and in Bajputana prior to my appointment

to this garden have been added to the herbarium, as also a collection made by me in the Nilgiris during my recent visit to attend the meetings of the Cinchona commission held at Ootakamund. The plants dried by Mr. Gallatij in the Khasias have been mounted, but have not been yet incorporated in the herbarium. Last, but not least, I have to acknowledge the receipt from excellent Lepcha Collector named Dungboo, of a beautiful collection made him in the higher parts of Sikkim and in the Chumbi and Phari valleys.

12. Mr. John Scott, who had been for several years on special duty in the Opium Department, returned to the garden in September last and appointed Curator of the Herbarium in succession to the late Mr. Kurz. v January Mr. Biermann, Curator of the Garden, was severely wounded by a tigress which, having escaped from the menagerie of the ex-King of Oudn, swam across the river and landed in the garden. Meeting Messrs. Scott and Biermann shortly after she landed, the tigress attacked the latter and after mauling him severely about the head and leaving him lying insensible on the ground, she herself retired under a bush about twenty yards distant. ~~And~~ there Mr. Biermann would probably have died but for the splendid gallant* of his companion Mr. Scott, who, in full view of the tigress, approached Mr. Biermann, lifted him up and, after getting him restored to consciousness, conveyed him from the spot. Mr. Biermann's wounds were so severe that it was found necessary to grant him sick leave to Europe. Since his departure, Mr. Biermann's duties have been carried on by Mr. Scott in addition to his own. A black panther, which escaped from the same menagerie six weeks later, after spending a night in the garden, was shot by me before it had time to do any mischief. It is to be hoped that a long time may elapse before the garden be again visited by such dangerous animals.

13. The formation of a branch establishment in the Himalayas in connection with the chief garden here has for a long time been a desideratum. About fourteen years ago my predecessor, Dr. T. Anderson, did actually begin to make such a garden in conjunction with a Cinchona nursery at Rungy*^{om} a spot about six miles distant from Darjeeling. But Rungy*^{om} turning out to be unsuitable for cinchona cultivation, the place was abandoned about six years after it had been opened. A recent effort to resuscitate the garden at Rungy*^{om} was made by Mr. J. Ware Edgar, c.s.i., then Deputy Commissioner of Darjeeling, but Mr. Edgar shortly afterwards left the district and the garden began to languish. Its distance from the station of Darjeeling made Rungy*^{om} rather an awkward site for such a garden, and the Lieutenant Governor decided that if a garden in the Himalaya were to be maintained at all, it should be situated in or near the station. But as Government possesses no suitable land within municipal limits, the difficulty of securing a site at once arose. This difficulty was immediately solved by the munificence of Mr. William Lloyd, an old and well-known resident of Darjeeling, who with the greatest heartiness offered to make over to Government a beautiful piece of land within the station, in an accessible situation and with an excellent aspect. This land is now in process of being cleared and laid out under the superintendence of Mr. A. T. Jaffrey, late of the Cinchona plantation. The garden, which promises to be a very pretty one, has been named, in commemoration of the liberality of the donor of the site, the *Lloyd Botanical Garden*.

14. My best acknowledgments are due to Messrs. Scott, Biermann, and Jaffrey for their earnest devotion to their respective duties.

15. The usual tabular returns of the distribution of plants and seeds are annexed.

APPENDIX I.

Statement showing Plants received from Isi April 1878 to 51st March 1879.

From whom received.	Wardian cases.	Boxes.	Number of plants.
Botanic Garden, Kew, London ...	5	2	260
Botanical Garden, Mauritius ...	3	.....	92
" Ceylon ...	.....	2	91
" Natal ...	.....	6	25
Melbourne, Australia ...	1	.....	45
Brisbane ...	1	.....	28
Sydney ...	1	.....	33
Singapore ...	1	.....	30
Saharanpore ...	.....	1	2
Botanic Garden, Bombay ...	1	.....	13
Botanic Garden, Calcutta ...	.....	.....	12
Government Farm, Cawnpore ...	.....	30	347
Agri-Horticultural Society, Calcutta ...	.....	.....	320
" " Eangoon ...	.....	1	151
" " Madras ...	1	1	74
" " Bangalore... ..	1	.....	44
" " Lucknow ...	.....	9	74
Honble the Secretary of State for India, London ...	.....	1	16
Mr William Macarthur, Sydney, Australia ...	2	.....	51
Deputy Surveyor-General of India, Calcutta ...	.....	.....	14
Colonel Hawkes, Public Garden, Rangoon ...	.....	1	61
Deputy Conservator of Forests, Assam ...	.....	1	4
Mr & Mrs Gamble, Esq., Forest Department ...	.....	.....	18
Lieut. Col. F. S. Superintendent in Sikkim... ..	.....	31	778
J. L. Lister, Esq., Government Cinchona Plantation ...	.....	3	4
J. L. Lister, Esq., " " " " ...	.....	4	127
Major Munt, E.E., Bombay ...	.....	88	5,775
Messrs A. Haage and Schmidt, Erfurt, Prussia ...	.....	1	171
William Bull, Esq., Chelsea, London ...	1	.....	61
E. A. Man, Esq., Port Blair ...	2	.....	75
W. Owen, Esq., Calcutta ...	.....	.....	1
A. Deche, Esq., Moulmein ...	1	2	181
Lieut. Barr, Esq., Calcutta ...	.....	.....	30
Captain Badgeley, ShiUong ...	.....	2	202
A. Gordon, Esq., Calcutta ...	.....	.....	21
W. Pilcher, Howrah ...	.....	.....	20
Major Munt, E.E., Bombay ...	.....	.....	83
Major Munt, E.E., Bombay ...	.....	.....	36
Lieut. Win, Esq., Calcutta ...	.....	.....	1
Lieut. Cooke, Esq., Calcutta ...	.....	.....	18
Lieut. Simson, Esq., " ...	.....	.....	15
Lieut. Mitchell, Esq., " ...	.....	2	40
Lieut. Scott, Esq., Bankipore ...	.....	2	51
Lieut. Mallee, Calcutta ...	.....	.....	14
Lieut. " " " " ...	.....	.....	64
Lieut. Simpson, Esq., Chittagong ...	.....	.....	8
Total ...	21	190	9,595

APPENDIX II.

Statement showing Plants sent out from 1st April 1878 to 31st March 1879.

To whom sent.	Wardian cases.	Boxes.	Number of plants.
Her Excellency the Lady Lytton	13	364
Belvedere Garden, Calcutta	2	891
Chief Commissioner, Andaman Islands	1	48
Government of Fiji	1	32
Royal Botanic Garden, Kew, London	3	162
" " " Edinburgh	2	72
" " " Ceylon	2	162
Botanical Garden, Jamaica	1	40
" ? Mauritius	3	113
" " Java	1	75
" " Singapore	1	57
" " Saharunpore	1	24
Public Garden, Bombay	1	12
" " Bangalore	1	47
" " Ootacamund	1	41
" " Rangoon	1	251
" " Umritsir	1	107
Government House Gardens, Calcutta	1,673
" " " Simla	3	48
Eden Garden, Calcutta	318
Zoological Garden, Alipore, Calcutta	4,265
Government Cinchona Plantation, Darjeeling	4	73
" Farm, Cawnpore	1	6
Acclimatization Society, Queensland, Australia	80
Agri-Horticultural Society, Alipore, Calcutta	1	856
" " " Rangoon	1	98
" " " Madras	2	97
H. B. M.'s Consul, Cairo	1	32
Medical Officer, Levuka, Fiji	1	86
District and Sessions Judge, Cawnpore	12
The Deputy Magistrate of Baraset	20
" Commissioner of Baraset	52
The Cantonment Magistrate of Dum-Dum	50
Assistant Commissary-General, Calcutta	110
Officiating Garrison Quarter-master, Calcutta	174
Pott Commissioners, Calcutta	116
Municipality of Howrah,	290
Assistant Conservator of Forests, Assam	2	50
Divisional Engineer, Ferozepore	127
Executive Engineer, Buxar	2	1,000
" " Northern Embankment, Calcutta	3	1,600
Northern Bengal State Railway	48	1,300
Eastern Bengal Railway Company, Howrah	200
Messrs. Haage and Schmidt, Erfurt, Prussia	2	139
" Mackinnon, Mackenzie & Co., Calcutta	1	42
" Balmer, Lawrie & Co., Calcutta	1	100
" Mackenzie, Lyall & Co., Calcutta	1	26
" Lazarus & Co., Calcutta	50
" Begg, Dunlop & Co., Calcutta...	3	40
Dr. Barr, Garden Reach, Calcutta	150
J. Coles Hardinge, Esq., Rangoon	1	25
Howrah Hospital	12
Reformatory School, Alipore, Calcutta	24
The Principal of Rajshahye College	5	111
" La Martinie're School, Calcutta	100
Male Orphanage School, Calcutta	145
Sir William MacArthur, Sydney	1	79
Sir S. Baker, Newton Abbott, Devonshire	1	62
The Hon'ble H. Cockerell, Darjeeling	2	36
J. Humbert, Esq., London, England	3	10
A. Dickens, Esq., Manchester, England	1	62
Miss Sanderson Cockeremouth, Cumberland, England	1	62
Count A. deVilliers, Neulench, Austria	1	27
G. Peche, Esq., Moulmein	1	20
E. H. Man, Esq., Port Blair	1	24
Dr. Gordon, Tezapore, Upper Assam	20
C. Kane, Esq., Assam	1	22
Baboo K. C. Chatterjea, Mundulghat	13
Major W. F. Badgeley, Shillong	4	53

APPENDIX II—continued.

To whom sent.	Wardian cases.	Boxes.	Number of plants.
D. H. B. Purves, Darjeeling	...	2	59
Colonel F. S. Stanton, Darjeeling	...	3	51
J. C. TVK, E. S., Tukvar Estate, delin	...	2	21
ine Maharajah of Durbhunga	...	12	296
Baboo G. D. Banerjee, Bhalulpore	...	4	83
» & P. Roy, Bhowanipore	17
» E. D. Sen, Berhampore	6
A. Sanderson, Esq., Jubbulpore	...	1	...
R. Bradshaw, Esq.	...	6	112
J. B. Groves, Esq., "	...	1	22
J. Scott, Esq., Bankipore	...	5	140
J. C. 7 d 4 S q, Bho gobanpore-	...	1	18
B. C. 7 d 4 S q, Bho gobanpore-	...	1	6
r A G n f i n, Esq., Dinapore	...	8	68
J. Ridley, Esq., Lucknow	...	2	24
W. I. Beaumont, Indore.	...	1	14
K. Man, Esq., Candray	5
M. a j o A Angel o, Chunar	...	12	262
TK Chaplain of Chunar	...	3	64
ing. J. P. J. P. E. f. q. Arrah	...	2	34
p. - Parke, Esq., Koorkee	...	1	24
gol. Cadell, C. X. Madras	...	1	31
n. - P. Stewart, Cuttack	...	8	26
an, Russapuglah	5
ahs	78
...	...	1	13
... W. H. Bray, Calcutta	600
Baboo W. C. Sen, Cooch Behar	8
" Z. Rohoman, Moorshedabad	299
Mrs. G. A. Beabhoom	...	1	18
r. G. Watt, Hooghly	82
Baboo £ i ? > Chandernagore	32
Rajah W. Mullick, Calcutta	12
Baboo W. H. M. Mookerjee, Seebpore	44
J. Madge, M. Mookerjee, Seebpore	14
C. Gosling,	7
F. Owen, Esq.,	13
Dr. Tonnerre	...	2	103
D. L. Barr, Es	47
Fort William q n Calcutta	44
W. Westfield, Esq., Calcutta	...	1	25
In tector-General o Prisons, Calcutta	63
Mallee, a J	19
Baboo Soodh native nurseryman, Calcutta	50
" P. C. angsoo Eoy, Calcutta	8
W. Davis, - Ghidhwarah	1
Baboo H. - iswas, Calcutta	4
" G. C. Ghose,	4
" S. N. Roy,	24
A. Simson, Esq.,	40
Sergeant Russell, Hastings	17
Baboo S. C. Ghose, Calcutta	1
Captain	7
Baboo N. C. ?atter, Calcutta	100
Narain Malle	1
S. N. Dass, a native nurseryman, Calcutta	206
Amsuddy Mallee, thana Makoa	1
Baboo Ramchurn, Calcutta	1
" T. N. Banerjee	16
G. Keith, Esq., Calcutta	1
Dr. S. C. Mackenzie, Calcutta	18
E. A. D'Silva, Esq.,	17
A. Paul, Esq.,	1
J. Wilkinson, Esq.,	7
Abdul Rohoman Khan,	46
Baboo B. Roy,	23
Baboo S. C. Chatterjee	1
Rajah R. C. Roy, Calcutta	42
J. Eva Esq.,	7
Baboo Hindoosthani, Calcutta	60
Secretary Reading Rooms, Seebpore	34

APPENDIX II—continued.

To whom sent.	Wardian cases.	Boxes.	Number of plants.
S. H. Apcar, Esq., Calcutta	31
F. Barry, Esq.	200
P. Hardinge, Esq., Kangoon	...	2	46
Baboo D. N. Seal, Calcutta	14
J. R. Adels, Esq., "	4
The Principal, Government School of Art, Calcutta	19
Baboo C. Dutt, Calcutta...	15
Dr. Cunningham, "	9
P. M. Lowther, Esq., "	42
Baboo G. C. Datta, Seebpore	68
R. S. Mitchell, Esq., Calcutta	6
G. D. Oswell, Esq., Bishop's College	8
G. N. Tagore, Esq., Calcutta	26
Capt. G. Lamb, "	50
Baboo Sagur Dutt, "	IS
J. Wood, Esq., "	8
Baboo H. C. Sen, "	47
Major St. John, "	250
S. M. Paul, Esq., "	103
W. Ainsworth, Esq., Seebpore	18
Baboo P. C. Sein, "	25
" J. Bhutta, Bishop's College	5
" A. C. Mullick, Calcutta	50
" S. K. Banerjea, "	7
" K. L. Mookerjea, Seebpore	63
H. Johnson, Esq., Calcutta	55
C. Ross, Esq., Seebpore	18
Baboo T. C. Mookerjea, Seebpore	12
T. Watson, Esq., Calcutta	24
Baboo S. Mobarick, "	6
Badul Khan, Sirdar, Thamwakoa	7
Baboo S. P. Chatterjea, Calcutta	66
Rajah R. C. Dutt, "	7
Baboo A. C. Banerjea, Seebpore	8
" K. N. Roy, Calcutta	17
" Hurrymohun Dass, Calcutta	10
C. T. Buckland, Esq., Calcutta	25
The ex-King of Oude, Garden Reach, Calcutta	25
Baboo K. P. Sookul, Nattore	33
W. H. Irvine, Esq., Calcutta	...	3	30
Baboo Hurree C. Sen, "	47
" S.N.Koy, "	57
E. Cooke, Esq., "	11
E. G. Chester, Esq., Forest Department, Chittagong	...	25	1,040
Divisional Engineer, Barraset	4
R. Groundwater, Esq., Upper Assam	...	9	143
Baboo J. S. Shaw, Calcutta	7
S. N. Paul, Esq., "	102
Baboo N. C. Dutt	4
" O. K. Dutt, Bally	15
" O. C. Mullick, Calcutta	50
" Sooroondro Nath, "	3
" S. G. Ghose	1
G. F. Carmichael, Esq., Fort "William	26
Total	24	237	22,771

APPENDIX III.

Statement of Seeds received from 1st April 1878 to 31st March 1879.

From whom.	Number of parcels or packages.
The Eight Hon'ble the Secretary of State for India, London ...	3
Conservator of Forests, Punjab ...	5
" " Bengal % ...	10
" " Kumaon ...	2
" " Assam ...	2
" " Berar ...	3
" " British Bunnah ...	1
" " Jounsur, N. W. P. ...	91
Baron Von Muller, r.B.s., Melbourne, Australia ...	16
Sir Joseph Hooker, K.C.S.I., P.E.S. ^ Royal Gardens, Kew, London ...	4
Dr. Regel, Imperial Garden, St. Petersburg, Russia ...	15
Botanic Garden, Brisbane, Australia ...	50
)y " Melbourne, " ...	82
>j " Adelaide, " ...	3
>y " Tasmania ...	17
a " Mauritius ...	14
?> " Jamaica ...	11
» " Ceylon ...	1
» " Java ...	8
JJ " Saharunpore ...	18
Public Garden, Bangalore ...	2
» " Poona ...	2
» " Rangoon ...	15
Agricultural and Horticultural Society, Calcutta ...	50
" " " Lahore ...	9
" " " Lucknow ...	21
" " " Bangalore ...	1
" " " Rangoon ...	25
Queensland Acclimatization Society, Australia ...	27
Collected by the Superintendent ...	63
» " Garden Collector ...	3
J. Scott, Esq., Bankipore ...	78
J. L. Lister, Esq., Government Cinchona Plantation ...	193
A. T. Jaffrey, Esq., Darjeeling ...	3
Messrs. Haage and Schmidt, Erfurt, Prussia ...	78
?, Jules de Cock, Ghent, Belgium ...	1
j, Ahmuty & Co., Calcutta ...	6
?, Stanley Price & Co., Calcutta... ...	243
E. H. Man, Esq., Port Blair ...	3
•Dr. Hance, Hong-Kong ...	1
» Scully, Nepal ...	1
s- G. Sutherland, Esq., Calcutta ...	9
Dr. Cunningham ...	1
"&- Errington, Esq., Barrackpore Park... ...	1
H. H. Prince Rama Varma, Travancore ...	1
Mrs. G. Battey, Calcutta... ...	1
&ev. C. A. Wakes ...	1
Collected in Sunderbunds by Garden Collector ...	48
" Khassya Hills ...	51
-Brought in Bazar ...	3
L. Gammie, Esq., Government Cinchona Plantation ...	6
Government Botanist, Melbourne, Australia ...	1,307
Total	1,307

APPENDIX IV.

Statement showing Seeds despatched from 1st April 1878 to 31st March 1879.

To whom supplied.	Number of packages*
Sir Joseph Hooker, K.C.S.I., P.B.S., & C, Director, Royal Botanical Gardens, Kew, London	^
Dr. Eegel, Imperial Garden, St. Petersburg	A
Professor Balfour, Royal Gardens, Edinburgh	L^
Royal Botanic Garden, Ceylon	^
Botanic Garden, Melbourne, Australia	^
» » Brisbane, Queensland, Australia	4
» » Adelaide, South Australia	12
» » Sydney, Australia	4
» » Jamaica	2
» » Natal, South Africa	5
» » Mauritius	11
» » Buitenzorg, Java	2
» » Gunness Khund, Poona	^
» » Saharanpore	g
Lloyd Botanical Garden, Darjeeling	708
Public Garden, Murree	1
» » Bangalore	^
» » Rangoon	y
» » Bombay	g
Baron Von Muller, Melbourne, Australia	2
Sir William Macarthur, Sydney	10
Secretary, Acclimatization Society, Queensland, Australia	^
Agri-Horticultural Society, Calcutta	g
» » Madras	63
» » Lahore	5
» » Lucknow	^
» » Rangoon	74j
Messrs. Van Houtte, Royal Nursery, Ghent, Belgium	1
» A. Van Geert, Nurseryman, Ghent, Belgium	^
» Jules de Cock, Ghent, Belgium	1
» Haage and Schmidt, Erfurt, Prussia	g
» Keys and Co., Hampstead, London	^
» Bull and Co., Chelsea, London	g
» Mackinnon, Mackenzie and Co., Calcutta...	1
» Williamson, Magor and Co., Calcutta	1
» Stanley, Price and Co., Bally gunge, Calcutta	1
» Benj. Reid and Co., Aberdeen	ft
H. B. Hyde, Esq., Broadway, New York	&^
Conservator of Forests, Central Provinces	^
» » Punjab	lb
Deputy Conservator of Forests, Assam	4
Additional » » British Burmah	i
Assistant » » Dehra Dun	i
» » Raneekhet	^
Superintendent, Government Farm, Cawnpore	^
» » Bangalore	^
District Engineer, Baraich	U
» » East Indian Railway, Howrah	^
Executive » » »	i
» » Darjeeling	^
Government House Garden, Calcutta	^
Political Agent of Kattywar	60
Magistrate of 24-Pergunnahs, Alipore	\
» » Neemuch	65
» » Dinagepore	9
» » Catwa	1
Deputy Commissioner of Murree	1
Consul-General for Italy, Calcutta	57
» » for the German Empire	^
The Earl of Auckland, England	64
Sir H. Daly, C.B., Indore	1»
General Stewart, Kandahar	52
Major Badgeley, Shillong	67
Prince Rama Varma, of Travancore	12
The Thakore of Gouridhur	60
» » of Virpur	60
Motee Singh Rao, Bahadoor, of Joudpore	66
G. Takeda, Japanese Mission	£
Government of Mauritius	£
Government School, Promé	67

APPENDIX IV.—*continued.*

To whom supplied.	Number of parcels or packages.
J. Kennedy, Esq., Darjeeling	5
Major Miller, Mhow	73
W. J. Westfield, Esq., Calcutta	2
Baboo N. G. Chatterjea, Nursery, Paikparrah	2
W. Jennings, Esq., Calcutta	13
Mrs. Young, Vizkiipatam	1
E. H. Man, Esq., Port Blair	7
G. Peppe, Esq., Arrah	1
J. D. Ward, Esq., as., Purneah	1
District Judge, Dacca	1
Nawab Abdool Gunny, c.s.i., Dacca	1
J. Munro, Esq., Darjeeling	22
Dr. W. Cattell, Rawal Pindie	7
J. Gammie, Esq., Government Cinchona Plantation	61
Dr. Garden, Assam	40
J. B. Henessey, Esq., Mussourie	1
J. B. Smart, Esq., Hazareebagh	1
Major Angelo, Chunar	1
Dr. Barry, Calcutta	24
H. Beverly, Esq., Calcutta	38
J. Perrin, Esq., Berhampore	72
J. H. Prinsep, Esq., Cawnpore	6
Mrs. Diago, Chandernagore	25
Secretary, Government of Bengal	1
Head-master, Rajshahye College	14
Mrs. Roscoe, Shibpore	50
Dr. Bennett, Mentone, Italy	64
G. H. Jameson, Esq., Shahpore	2
The Principal Storekeeper, Northern Bengal Railway, Sara	16
J. N. Wood, Esq., Calcutta	1
Col. Ramchunder, of Gwalior	72
Baboo B. L. Ghose, Lahore	50
R. M. Michell, Esq., Calcutta	1
Dr. Dickie, Aberdeen, Scotland	63
Rao Baket Sing, Oodeypore	61
C T. Buckland, Esq., Calcutta	6
Dr. Brown, Medical College, Lahore	57
C Ross, Esq., Seebpore	50
Reformatory Grounds, Calcutta	13
L. Bailly, Esq., Dehra Dun	1
Commissioner of Arracan	4
Collector of Cuttack	1
Cantonment Magistrate, Morar	34
Messrs. C. Dinshaw Brothers, Bombay	1
Manager, Dook Da Boo Tea Estate, Darjeeling	40
Executive Engineer, Mozufferpur	5
W. Jennings, Esq., Calcutta	13
G. Mann, Esq., Shillong	1
Mrs. B. Neill	1
J. Parsons, Esq., Musoojrie	1
Dr. Sutherland, Presidency Surgeon, Aboo, Rajpootana	54
* Warduper, Esq., ship <i>Lady Lillborne</i>	1
Total	3,972

FINANCIAL DEPARTMENT.

AGRICULTURE-

CALCUTTA, THE 21ST AUGUST 1880.

RESOLUTION.

READ—

Annual Report of the Eoyal Botanical Garden, Calcutta, for 1879-80.

THE work of remodelling the garden made considerable progress during the year. Additions were made to the ornamental water; land was levelled and raised; avenues were opened out and connected with the main road. A swampy ground was reclaimed and prepared for planting. The avenue of Albizzia Paludosa, which was laid out some years ago, promises to become one of the principal ornaments of the garden. Dr. King hopes to complete the laying out of the garden in two years more. It will then be possible to devote more minute attention to neatness and general maintenance.

2. Experience appears to have shown that Rhea cannot be raised in Lower Bengal as cheaply or as plentifully as was supposed. The little progress in the cold season, and the stems produced at that time the year are short and woody. To secure even a moderate yield of well-sized stems, deep-hoeing, manuring, and irrigation are necessary, and it is only on good land and at a considerable outlay that three cuttings in the year can be looked for. At present the practical importance of this enquiry is of great measure upon the result of the attempts to produce an efficient machine for cleaning the fibre.

3. The results of the trial in England of certain coarse grasses to test their suitability for paper-making, are not discouraging. The two varieties known as Ranikharia and Tiansi are little inferior to grass, which is so largely exported from Spain for this purpose. This grass also appears to be of good quality. Dr. King's correspondent writes, regarding Ranikharia and Tiansi, that "if they can be had, in large quantities and at the price of Esparto, they might be worth trying on a large scale." Larger quantities will be lent to England for further trial at the present rainy season, and the Lieutenant-Governor requests that he be specially reported as soon as it is known. Dr. King explains his failure to examine the long grasses on the banks of the Damuda rivers. The Lieutenant-Governor trusts that this work will be taken up during the ensuing cold season.

4. Among the economic plants of which the garden, the Carol, the Eucalypti, the Pard rubber, and the fodder-tree Peregrinum must now be pronounced failures, and the Lieutenant-Governor sees no advantage in further attempts to induce them to grow in an soil and climate? The Ceara rubber, on the other hand, it is extremely hardy and is readily propagated. The Lieutenant-Governor hopes that it may be possible to tap the trees and test the produce during the current season. Dr. King anticipates that indigo and tea plantations in the Plains will find it to their advantage to cultivate this valuable and hardy tree. He has made a plantation of young plants and seeds." Dr. King makes the following observations on the Guango or Rain-tree (Pithecolobium Saman): "This tree grows faster than any hitherto introduced into Bengal, with the exception of the Casuarina. It gives a beautiful shade and a sweet pulp, which is greedily eaten by cattle. For avenues, squares, and situations where dense shade is required, it is more than this." The Lieutenant-Governor has already directed the District Road authorities to the advantage of planting trees along the sides of the roads and in the district, while promoting the comfort of travellers. It is well adapted for this purpose, and also for the formation of fuel reserves at stations.

5. Altogether 46 Wardian cases of plants were received from different parts of the world and 59 were despatched, against 21 and 24 respectively in the previous year. Dr. King justly points to this increase as evidence of the growing usefulness of the garden in the distribution of exotics. A number of plants sent out in open boxes and pots was 19,447, and plants so received, 6,055 in 1878-79. In the interchange of seeds there was a large increase, 6,457 packets having been distributed, against 3,974 in the previous year, and 2,448 received, against 1,307. There were also considerable additions to the herbarium. Among the chief donors of plants and seeds were Mr. Bull of Chelsea, M. LeBoeuf of Argenteuil, Messrs. Haage and Smidt of Erfurt, and Mr. Van Houtte of Ghent. Those who made the most valuable contributions to the herbarium were Mr. Brandis, Inspector General of Forests, Mr. Sykes Gamble, Conservator of Forests, Mr. Dutmer, Superintendent of the Botanical Garden at Saharanpore, Mr. Fisher, of the Assam Forest Department, Mr. Ford of the Hong-Kong Botanical Garden, Major Collett, M. Godefroy Le Boeuf, Archdeacon Hose, and Mr. H. O. Forbes. Dr. King himself was able to add his own collection made during his visit to the Straits and Java. To all these gentlemen the thanks of Government are due.

6. The garden sustained a serious loss during the year by the death of Mr. Biermann, an officer of much experience and worth. Dr. King refers to the departure of Mr. John Scott on sick furlough, and the Lieutenant-Governor has, since the submission of this report, heard with regret of Mr. Scott's death in Europe. Mr. Scott had been connected with the garden for seventeen years, and had held charge of the herbarium for a considerable period.

7. The progress of the *Lloyd Botanical Garden* during the year reflects much credit on the Curator, Mr. Jaffrey; several thousands of seedlings were raised, and considerable quantities of plants and seeds were received and distributed.

8. The Lieutenant-Governor again tenders his acknowledgments to Dr. King for the thorough efficiency displayed by him in the management of the garden.

ORDER.—Ordered that a copy of the report and of the Resolution be submitted to the Government of India in the Department of Home, Revenue and Agriculture, for information.

Ordered further that a copy of the Resolution be forwarded to the Conservator of Forests, and to the Superintendent, Botanical Garden, for information.

By order of the Lieutenant-Governor of Bengal,

COLMAN MACAULAY,

Off. Secmtry to the Govt. of Bengal

No. 189.

COPY forwarded to the Superintendent of the Botanical Garden for information.

By order of the Lieutenant-Governor of Bengal,

HEM CHUNDER KERR,

Off. Asst Secretary to the Government of Bengal.

CALCUTTA,
The 21st August 1880.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA,
FOR THE YEAR 1879-80.

No. 42G of 1880—dated Royal Botanic Garden, Howrah, the 14th July 1880.

From—GEORGE KING, ESQ., M.B., Supdt., Royal Botanic Garden, Calcutta,

To—The Secretary to the Government of Bengal, General Department,

I HAVE the honor herewith to submit the ninety-third annual report of the Royal Botanic Garden.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN,
CALCUTTA, FOR THE YEAR 1879-80.

CONSIDERABLE progress has been made during the year in carrying out the programme of remodelling the garden which was begun some years ago. Aae ornamental water near the Howrah gate has been extended so as to get Boil to fill up some very low ground by the side of the riverbank road; an unsightly rubbish hole near Wallich's mount has been filled up; the land occupied by the fine collection of ratan palms has been heightened; and various minor improvements have been effected in the palmetum; the straight avenue leading from the main river entrance to the great banyan tree has been finished; the ornamental water to the north of this avenue has also been completed; and a large area of ground which used to be little better than a swamp, has been raised in level and is now ready to be planted with groups of trees. A fine avenue of *Albizia paludosa*, designed and planted by my predecessors, the late Dr. Anderson and Mr. C. B. Clarke, has been paved. This avenue has also been connected with some of the main roads of the garden and will one day be one of its chief ornaments. The peculiar habit of this beautiful tree makes it especially well adapted for avenue planting, and its selection by my predecessors was a happy one. It is, however, rather a slow-growing species, and some years must elapse before this avenue acquires its full beauty. Many new groups of trees and shrubs have been planted out during the year, and the flower-beds near the conservatories have to a large extent been replanted. The two large conservatories, built in 1855 and 1877, continue to be most successful. Further experience has only confirmed my opinion that houses of their structure are very far the best adapted for growing delicate tropical plants in the somewhat variable and not thoroughly tropical climate of Calcutta. The good health of the plants in these conservatories is not, however, wholly due to the suitability and not to the structures, but also partly to the fact that the plants are in the ground and not in pots. About three-fourths of the garden have now been laid out on the level of the soil has been raised; ornamental water has been formed; old ways have been repaired; new roads and paths have been formed; and but one way remains to be repaired. The remaining fourth still remains untouched, which, if granted, I hope within the next two years to finish this also, to keep the whole in a state of order and efficiency. During the past five years have been devoted to construction rather than to maintenance.

Rheea.—Two years ago about two acres of land were planted with mung in order that attending competitors for the Government of India prize competition should be supplied with fibre for their preliminary experiments. A considerable quantity of green stems was supplied to various applicants prior to the competition at Allahabad, and about 65 maunds were sent to Seharunpore during the year to supplement the supply from the garden there. Having now had 10 years' experience in growing rhea, I begin to doubt whether, in this part of India at least, rhea fibre is ever likely to be produced very cheaply. An efficient machine for cleaning the fibre will, no doubt, be invented sooner or later; but the cost of the raw material is greater than most people

imagine. It is true that the rhea plant is a perennial, and that the same individuals yield shoots which may be cut several times a year. On the other hand, it is an exhausting crop, and it is quite clear that, in order to secure even a moderate yield of stems from four to six feet long, deep hoeing and manuring between the plants and (in the dry season) irrigation are absolutely necessary* It is generally supposed that, at least, three crops a year can easily be got from rhea plants. This is not my experience. During cold weather rhea hardly grows at all here, and the stems which can be got at the end of that season are so short and woody as to be, to a great extent, useless. If three crops of good stem are to be taken, they must be taken during the hot weather and rains, and I think it will be found that, in any part of India at any rate, it is only on good well-cultivated land, that not more than two cuttings of really good stem can be counted on.

3. *Paper materials.*—A report has been received on the suitability of paper fibres of certain coarse grasses from the Orissa coast sent by England for report more than a year ago. These grasses were got by the Collector of Orissa, but having been sent to me as bundles of leaves and stems from which the flowering heads had been removed, I was unable to identify the species botanically, and was obliged to send the samples to England under their vernacular names. The samples, having been prepared in the usual way, were submitted to the following process, of which I quote my correspondent's account together with his tabular statement of result: "After being boiled the ley was poured off and the mass thrown on a wire sieve and water run through it. The fibre was then dried and weighed on a steam plate as fast as possible, and the column marked *percentage after boiling* is the result. The fibre was then exposed to the atmosphere until it had absorbed as much moisture as it could and was reweighed, giving column No. 2 (of course the increase varied considerably according to the moisture in the air, a very variable factor in our climate). It was then taken and washed and broken in or reduced to powder in a miniature engine of the usual type for the purpose, collected on a sieve, carefully dried on a hot plate as before, and weighed, giving column No. 3 marked *percentage after washing*. It was then exposed to the air as before, the result being given in column No. 4. In the two lower columns I have given the highest and lowest yield of about 25 trials of different kinds of Esparto for comparison with the Orissa grasses:

	Percentage after boiling.	On exposure to air.	Percentage after washing.	On exposure to air.
No. 4, Bena grass...	48.9	52.8	40.2	43.9
" 15, Sargana	48.7	46.7	36.2	39.0
" 14, Eanikharia	48.6	52.9	42.3	46.1
" 5, Sara	52.5	57.5	.....	47.4
" 18, Hens-ati	42.4	45.9	33.6	37.1
" 11, Tiansi	49.6	55	35.9	39.0
Esparto	55.5	59.1	43.9	47.2
	45.6	49.1	36.3	39.5

"Numbers 11 and 14 are the best of these grasses, and if they can be had in large quantities and at the price of esparto, they might be worth trying on a large scale."

I have asked the Commissioner of Orissa to supply me at the end of the rainy season with a few hundredweights of the two grasses most favourably reported on, and I propose to send these larger samples to England for further trial.

I regret that, owing to my own rather lengthened absence at Java, and the absence of Mr. Biermann on furlough during the greater part of the year under review, it was impossible for me either to go myself or to send Mr. Scott to the banks of the Adjai and Damoodah rivers to examine the long grasses growing there, and to which my attention was directed in my resolution on my last annual report. During the year I was unable either to go myself or to send one of my

Economic plants—A few seedling trees of the carob (*Ceratonia siliqua*) raised from seed, sent by the Government of India in 1877, continue to thrive but poorly. I have, as stated in former reports, no hope that this species will ever answer in a climate so utterly unsuited to it as that of Lower Bengal. The tree fruits in the Punjab and grows fairly well in the Seharunpore Botanical Garden. Further trials of it should, in my opinion, therefore be confined to the drier parts of the Upper Provinces.

The trees of the Baobab plantation continue to grow steadily. I intend, when the plants become a little larger, to carry out Sir J. Hooker's suggestions of coppicing them so as to find out whether in Bengal reproduction by coppice can be depended on with this species.

The whole of the eight species of *Eucalyptus* marginally noted, of which *Eucalyptus hemi-Macra* Government of India sent seed in 1877, have failed from the same cause, namely, damping-off of the seedlings during the rainy season. It appears to me a pure waste of time to go on trying to coax *Eucalyptus* to grow in a locality so manifestly unsuited to it in every way as the Gangetic delta.

Of the three India rubber yielding species of which seeds were collected in North America at the instance of the Secretary of State for India, living plants of only two, viz. the Para and Ceara rubbers, were ever received in this part of India. The Para rubber (*Hevea Braziliensis*) has proved quite unsuited to this part of India, and is not likely to be accommodated with a suitable place so far from the equator as Calcutta. The Ceara rubber tree (*Manihot Glaziovii*) has, on the other hand, proved very hardy in Calcutta. Our first-received plants looked, for some time after their arrival, weak and lanky, and I was for some time not very hopeful about them. Further experience showed that these appearances had been the result of coddling, and that, when freely exposed to sun and rain, this *Manihot* is a wonderfully hardy plant, capable of standing the roughest treatment, easily grown, and readily propagated. If its rubber turns out really good, the cultivation of this species will, no doubt, be taken up by tea-planters whose plantations are on a large scale, and by indigo-planters as adjuncts to their other cultivation. In expectation of large demands for young plants and seeds, I have made a Ceara plantation on a suitable piece of ground on the outskirts of the garden.

There are some plants of *Prosopis pubescens*, a plant of which wood is a good tanning material. These were raised from seed sent by the Government of India four years ago: they continue to grow slowly, and the wood is now fit for use. Many years ago the cultivation of the tree yielding the divi-divi tan (*Caesalpinia coriaria*) was undertaken in this garden. There are now many large divi-divi trees here. They yield pods freely every year, and the seeds are regularly distributed gratis to all applicants.

The demand for seed and seedlings of the guango or rain-tree (*Pithecolobium*) is still very great. As yet seed is yielded to a very small extent, and the number of trees of this species that exist near Calcutta, and I have been careful to increase in the Government of Jamaica for supplies. This wonderful tree grows faster than any hitherto introduced into Bengal with the exception of the *Casuarina*. It gives a beautiful shade and yields a pod with a sweet pulp which is greedily eaten by cattle. For avenues, cantonments, and other situations where dense shade is wanted no tree is more suitable than this.

The demand for mahogany still continues, and I am able to meet it, as usual, by supplies of seed now received through Kew from the West Indies. The cultivation of vanilla appears again to be attracting some attention, and a considerable number of young plants have been supplied to the planters.

So the order plant under the name of *Symphytum asperrimum* (formerly called by Sir Joseph Hooker as *S. peregrinum*) was largely advertised as the best deer suitable for the plains of India, and interesting account of the Venetian (ibid.) of the well-fed mutton and fat beef, and the milk and butter, that were to follow the introduction

of this interesting species. *Symphytum* being a genus inhabiting temperate climates, and the home of this particular species being given as the mountains of the Caucasus, it seemed from the first not a little doubtful whether the plant would thrive on the hot plains of India, and the full realization of the pleasant anticipations always seemed a little hopeless. Roots of the plant were sent to me for trial here and for distribution to correspondents, and I have now to report that, wherever tried on the plains, *Symphytum* has been a failure, and that its success has been but small even at the Himalayan stations where it has been planted.

5. *Interchange of seeds and living plants.*—During the year, 59 cases of plants have been sent to different parts of the world, and 46 have been received. This is a larger number than has ever before been reached in any year, and affords evidence that, in the distribution of delicate and valuable exotic plants, the usefulness of the garden is being increased. Besides plants in Wardian cases, a large number were received and sent out in open pots, the actual figures being, of plants received 6,055, and of plants given out 19,447.

Interchange of seeds has been particularly active during the year, 2,448 packets having been received and 6,457 having been distributed. Amongst the chief donors of plants and seeds were the Directors of the Botanic Garden of Kew, St. Petersburg, Buitenzorg (in Java), Antibes (in France), and the Botanic Gardens in the British Colonies. Intercourse has also been kept up with all the public gardens in India.

To Mr. Bull of Chelsea, Messrs. Haage and Schmidt of Erfurt, M. de Argenteuil, M. L. VanHoutte of Ghent, and to several other European nurserymen, the garden is indebted for seeds and plants. Many valuable parcels of seeds were also received from officers of the Indian Forest Department. During my recent tour in Java I was able to collect a considerable quantity of both plants and seeds, most of which have done well.

6. *Herbarium.*—Considerable additions have been made to the collection of dried plants. Amongst the chief donors have been Mr. Brandis, Inspector-General of Forests, from whom some interesting specimens from Kajputana and Assam were received; Mr. J. Sykes Gamble, Conservator of Forests for Bengal, who has supplemented his contributions of previous years by a large number of species collected by himself near Simla and Sikkim. Mr. Gamble has also given some interesting Chittagong plants. From Mr. Duthie, Superintendent of the Botanical Garden at Seharanpore, have been received a quantity of plants collected by him in the North-Western Himalaya, chiefly in the valleys of the Tonse and Jumna. To Mr. Fisher of the Assam Forest Department I am indebted for plants collected during his tours of duty in the Eastern Duars. Mr. Ford, Hong-Kong Botanical Garden, presented a very nice set of plants, collected in that island. From Major Collett were received a few plants from the Kurrum Valley; from Mr. Godefroy LeBeuf a large collection of plants from Portugal; from Archdeacon Hose specimens of Malayan plants; and from Mr. H. O. Forbes some 250 species collected in the Bantam district in Western Java. My own collections made during my recent visit to the Straits and Java were also added to the herbarium, as also those made in the interior of Sikkim by native collectors sent from the cinchona plantations.

7. The year has been one of misfortune as regards the European staff of the garden. Mr. A. Biermann, the curator of the garden, who had to leave to Europe during 1879 on account of injuries received from a snake, returned to duty in January last. A little more than a month, however, after his return he was seized with cholera and died after only eighteen hours' illness. During Mr. Biermann's fifteen years' residence in India, he had acquired a large and varied experience of Indian gardening; he was in every way an excellent officer, and his loss is a serious blow to the efficiency of the garden. Mr. John Scott, who has been connected with the garden for seventeen years, and who since Mr. Kurz's death has had charge of the herbarium, was compelled on account of malarious fever of a very bad form, to proceed to England on sick furlough towards the end of the year, and for some time I was left without any European assistant. To fill Mr. Biermann's place, Mr. Pantling has, since the year ended, been brought down from the cinchona plantations, and a

assistant gardener, selected by Sir Joseph Hooker from the Kew staff, is on his way out. Mr. Scott's place remains unfilled, and as a man of sufficient botanical acquirements to take charge even of the routine duties of a large nerbariuna is not likely to be had in India for a limited period and for the salary that is available (the half of Mr. Scott's pay), the appointment of curator of herbarium must remain unfilled until Mr. Scott's return.

The budget allotment for the year (including a special grant of Rs. 5,200 for garden improvements) was Rs. 68,850, the whole of which was expended. The receipts for sale of plants amounted to Rs. 1,137-14-3, and were paid into the treasury as Government revenue.

9. *Lloyd Botanical Garden.*—Much progress has been made in the formation of the branch botanic garden at Darjeeling. The land, which (as reported last year) was so generously given by Mr. Lloyd, has been cleared

of the low undergrowth by which it was covered and has been deeply dug; a stone fence has been erected where necessary along the boundary; bridges

have been thrown across the two streams which run along the southern and northern limits of the garden; many trees have been planted; plots of the herbaceous plants have been put out, and the spaces between

them have been grassed. A considerable number of propagating frames had been erected towards the end of the previous year. These were added

during the past year, and a commodious double-span propagating house

has been built. This accommodation was utilized by the curator as fast as it was available, and by the end of the year he had raised many thousands

of seedlings and cuttings of useful and interesting plants. A large conservatory is now in course of erection, and before another year elapses I hope this

building will be in full working order. During the year under report 687 plants were received and 2,134 were

distributed. 1,111 packets of seeds were received and sown, and 139 packets were sent. Arrangements have, since the termination of the year, been

made for the disposal of the surplus stock, as it is believed that this is the arrangement by which the surplus can be most usefully made most useful to the local public.

Mr. T. Jaffrey has been in charge of this garden since its commencement, and his rapid progress and tasteful appearance do him, in my opinion, great credit.

In addition to the care of the Lloyd garden, Mr. Jaffrey has had charge of the municipal vegetable garden. He has also done much good work in laying out walks on Observatory hill, and in planting and improving

the grounds round the Town Hall. The usual tabular returns of receipts and distribution of seeds and plants are appended.

APPENDIX I.

Statement showing Plants received from 1st April 1879 to 31st March 1880.

From whom received.	Wardian cases.	Boxes.	Number of plants.
Eoyal Botanic Garden, Kew, London ...	1	3	114
" " " Ceylon... ..	1	.....	38
Botanic Garden, Brisbane ...	1	.....	28
" " Singapore ...	5	8	229
" " Java ...	8	3	251
Colonel Hawkes, Public Garden, Rangoon ...	2	5	235
Victoria Garden, Bombay ...	1	.....	25
Public " Bangalore ...	2	4	235
Government Garden, Ootacamund ...	3	.....	340
Eden Garden, Calcutta ...	.....	.....	17
Agri-horticultural Society, Calcutta ... *	.....	.....	33
" " " Madras ...	2	.....	79
" " " Eangoon ...	.....	.....	1
" " " Lucknow ...	.....	2	21
Acclimatization Society, Queensland, Australia ...	8	.....	169
Chief Commissioner, Andaman Islands ...	1	1	70
Forest Department, Chittagong * ...	.....	1	10
H. E. Cooke, Esq., Calcutta ...	.....	.....	24
J. Gammie, Esq., Government Cinchona Plantation, Darjeeling ...	1	2	207
J. L. Lister, Esq., " " " " ...	4	5	265
D. L. Barr, Esq., Calcutta ...	.....	.....	8
E. H. Man, Esq., Nicobars ...	3	7	474
J. Barton Groves, Esq., Julpigoree ...	.....	.....	4
Dr. T. Beaumont, Indore ...	.....	1	11
G. Bartlett, Esq., Calcutta ...	.....	.....	50
A. O. Hume, Esq., c.B., Calcutta ...	.....	.....	1
L. D. Cruickshank, Esq., " ...	.....	.....	88
Eev. J. Miles, Bingham Eectory ...	A collection of bulbs.		1
Major Mant, K.E., Bombay ...	.....	2	420
H. G. Gilbert, Esq., Eangoon ...	1	1	847
Major Herschell, E.E. ...	.....	1	35
W. G. Head, Esq., Crystal Palace, London ...	1	1	94
J. N. Hardinge, Esq., Eangoon ...	1	.....	19
A. Linberry, Esq., Kurseong ...	.....	.....	1
J. Owen, Esq., Calcutta ...	.....	4	72
P. M. Lowther, Esq., Howrah V ...	.....	.....	51
D. Low, Esq., Garden Each ...	.....	.....	38
M. Louis Van Houtte, Ghent, Belgium ...	1	1	53
Wills' Nursery, London ...	1	.....	35
J. N. T. Wood, Esq., Calcutta... ..	.....	.....	1
G. D. Oswell, Esq., Bishop's College, Calcutta ...	.....	.....	2
Pr. Payne, Calcutta ...	.....	.....	1
" Purves, Darjeeling ...	.....	1	150
" Walsh, Sydney... ..	1	.....	105
" Eowell, Singapore ...	1	.....	29
The Ven'ble Archdeacon Hose, Singapore ...	.....	.....	4
T. Thomson, Esq., Calcutta ...	.....	.....	207
W. Wendland, Esq., Hanover ...	.....	1	64
J. Scott, Esq., Singapore ...	1	3	178
Babu S. P. Chatterjea, Calcutta ...	.....	.....	18
" B. M. Mookerjea, " ...	.....	.....	7
Hurry Malli, a native nurseryman, Calcutta ...	.....	.....	570
Sreenath Malli, " " " " ...	.....	.....	27
Total ...	46	53	6,055

APPENDIX II.

Statement showing Plants sent out from 1st April 1879 to 31st March 1880.

To whom sent.	Wardian cases.	Boxes.	Number of plants.
Government-house Garden, Calcutta			51
Belvedere Garden, Calcutta			890
Chief Commissioner, Andaman Islands	2		80
Royal Botanic Garden, Kew, London	5		142
			A collection of bulbs.
Government Garden, Ceylon	1		110
Imperial Botanic Garden, Vienna	1		43
Botanic Garden, George Town, Demerara	3		92
" " Singapore	2		92
" " Sydney	1		38
" " Java	7		347
" " Brisbane	1		35
" " Reunion	1		40
" " Natal	1		33
Government Garden, Bangalore	1		41
Eden Botanic Garden, Darjeeling	2	3	50
			A collection of bulbs.
Victoria Garden, Calcutta	2	1	78
Public " Kangoon	3	2	176
Eden " Bangalore	2		88
Eden " Calcutta			651
Economic Garden, Sularu Scinde			1,428
Government Park, Barrackpore	1		19
Acclimatization Plantation, Darjeeling	1	2	21
Agricultural Society, Queensland, Australia	1		98
Agricultural Society, Madras	1		63
" " Calcutta	1		61
" " Calcutta	2	1	560
Director of Agriculture, London			J89
Director of Agriculture and Commerce, North-Western Provinces			Rheea stems, 64 mds.
C. R. S. Co., Allahabad			24
Commissioner of Chittagong		2	56
Forest Department, Chittagong		51	2,610
Medical College, Calcutta			220
Goveton " "			200
Saxier's " "			270
L. Martinière School " "			100
Normal " "			71
Reformatory " Allapore			200
Cathedral Male " Manag, Calcutta			162
St. Joseph's Sch " "			62
Free School, Calcutta			70
Meteorological Observatory, Calcutta			190
Superintendent of Jail, Bara			12
" " Manbhoom		3	80
" " Patna		9	200
" " Midnapore			200
" " Benares Central Prison		16	305
Presidency Jail, Calcutta			312
East India Railway, Patna		36	720
" " Howrah			200
Northern Bengal State Railway, Sara		60	1,200
Eastern Bengal Railway, Sealdah		50	1,000
Cantonment Magistrate, Dinapore		1	40
Official Magistrate, Dinapore		4	41
The ex-King of Agha, Garden Keach			100
Executive Engineer of Bhagulpore		2	50
" " of Jeypore		2	44
" " of Clinsurah			77
District Engineer, Mozufferpore		9	200
Sub-district Officer, Purnea		4	300
Official Magistrate, Monghyr		5	20
Perin, r] ^ Olr ^ Monghyr			100
Spital, Cuttack			28
" " "			150
H. B. V. Howrah			68
Hardinge, Esq., Howrah			13

APPENDIX II—continued.

To whom sent.	Wardian cases.	Boxes.	Number of plants.
Government cattle-shed, Hastings			30
Superintendent of Small Arms Ammunition Factory, Pum-Dum			200
A. Linberry, Esq., Kurseong		1	2
Major R. F. Angelo, Chunar		6	126
Captain Lawrence, Damookdea Station		3	61
W. J. Ainsworth, Esq., Calcutta			24
A. Apar, Esq., Calcutta			13
S. T. Apar, Esq., Garden Reach			3
H. Beverley, Esq., Alipore			36
T. Barr, Esq., Garden Reach			20
Dr. T. Beaumont, Indore		3	39
Major W. F. Badgeley, Shillong		2	56
T. Bromley, Esq., Bombay		1	27
Lady Garth, Calcutta			1
Capt. J. Adamson of the ship <i>Roman Empire</i>	1		36
Miss Adams, Calcutta			J00
G. Bartlett, Esq., Calcutta			5
H. R. Cooke, Esq., "			63
General Cadell, C.B., Madras	1		27
T. B. Curtis, Esq., Darjeeling		1	46
J. B. DuBois, Esq., Calcutta			29
R. Dawson, Esq., Rangoon			2
B. Duburn, Esq., Calcutta			250
Misses Finden, Calcutta			50
F. Green way, Esq., Calcutta			3
J. H. Gilbert, Esq., Rangoon	1	2	74
Messrs. Gladstone, Wyllie & Co., Calcutta	1		23
Dr. Griffith, Dinapore		2	53
Surgeon of the S. S. <i>Mongolia</i>		1	32
Chief Officer of the "		1	32
J. W. Hemlow, Esq., Dum-Dum			4
Dr. J. T. Rowell, Singapore	1		26
J. Krol, Esq., Sumatra		1	48
D. Low, Esq., Garden Reach			32
P. M. Lowther, Esq., Sulkeah	3		74
H. G. Lothead, Esq., Howrah			2
J. L. Lister, Esq., Government Cinchona Plantation, Mongpoo		1	19
F. Laurie, Esq., Colombo	1		Cinchona pla }
Miss Goulding, Cork		1	61
E. H. Man, Esq., Nicobars	2		30
W. Markby, Esq., Oxford	1		46
Major Mant, B.E., Bombay	2		80
Wesleyan Mission, Barrackpore			2*
J. Mackenzie, Esq., Calcutta			97
Captain Murray, S. S. <i>Nepal</i>			50
Wesleyan Chapel, Calcutta,			7
G. P. Martin, Esq., Seebore			37
Messrs. Mackinnon, Mackenzie & Co., Calcutta			100
Dr. W. M. Muirhead, Assam		5	48
P. Michen, Esq., Rungpore		3	30
Messrs. MacNeill & Co., Calcutta			6
McClelland, Esq., S. S. <i>Commilla</i>			17
J. Owen, Esq., Calcutta			10
Dr. A. J. Payne, "			
L. Powell, Esq., Seharunpore			42
Captain Robertson, S. S. <i>Agra</i>	1		6
A. E. W. Sharpe, Esq., Calcutta			20
Dr. Shircore, Calcutta			41
L. Schwendler, Esq., Garden Reach			30
A. Simson, Esq.		3	53
R. S. Stanton, Esq., Calcutta		5	5
H. H. Stokes, Esq., Jamalpore			24
Messrs. Barry & Co., Calcutta			3
A. M. Gow-Smith, Esq., "			300
E. C. Schrottky, Esq., "			359
Suburban Municipality, Alipore			41
J. A. Stokes, Esq., Jamalpore		2	18
Mrs. Thomson, Calcutta			49
The Venerable Archdeacon Hose, Singapore	2		34
Commandant, 18th Regiment, N. I., Buxa, Bhutan		1	

APPENDIX II—concluded.

To whom sent.	Wardian cases.	Boxes.	Number of plants.
J ^r M. Souttar, Esq., Calcutta	100
T ^t T. H. Wilkinson Esq., Garden Reach	1
Major Waterhouse, Asiatic Society, Calcutta	50
M ^r W. A. Ardrey, Lady Selbourne	...	1	40
Miss Walker, Calcutta	4
M ^s W. A. O. Esq., Allahabad	...	1	8
S ^r J. Wheeler, Cawnpore	...	1	11
Miss W. Uson, Calcutta	8
W. C. Arrington, Esq., Calcutta	21
G. Harvey, Alipore	18
W. L. Joakim, Esq., Calcutta	14
W. A. Pitts Esq., Calcutta	26
Babu P. Mookerjee, Kadihatty	8
" A. C. Ghosh, Nantashory, Seebpore	2
" ? - Das, Calcutta	6
" S. Datta, Seebpore	...	2	54
" G. N. Tagore, Calcutta	10
" G. C. 500 ker, ea, "	78
" A. P. 500 ker, ea, "	12
" P. Mookerjee, Goberdanga	30
" G. N. Gupta, Majehaut	18
" P. T. V. Chowdhary, Calcutta	5
" G. L. Mullick, Calcutta	2
" Sreehurry Chuckerbutty, Seebpore	8
Rajah K. P. R. ... Calcutta	14
Babu K. T. G. uzendro - Midnapore	12
" " " " "	22
" N. S. R. T. Calcutta	6
" " " " "	2
" " " " "	4
" J. C. Dutt, "	24
" " " " "	21
" N. N. Mitter, Bally	26
" P. N. S. ... Santipore	21
" F. ... Sein, Seebpore	21
" T. ... fen, Calcutta	...	5	29
" F. ... Sen,	...	2	17
" F. G. Banerjee, "	1
" L. vyiiatterjee, a native nurseryman, Calcutta	87
" F. ... Bhuttacharji, Satragachi	20
" ... Mookerjee, Calcutta	20
" ... Mookerjee, Calcutta	14
Prince N. ... Calcutta	26
Shaik R. ... Russapugla	2
Hurry ... Seebpore	48
Esshan Han, ... Calcutta	13
A visitor	72
Total	59	321	19,447

APPENDIX III.

Statement of Seeds received from 1st April 1879 to 81st March 1880.

From whom.	Number of parcels or packages.
Sir J. D. Hooker, K.C.S.I., C.B., F.B.S., Boyal Garden, Kew, London	17
Dr. Regel, Imperial Garden, St. Petersburg, Kussia	291
M. Naudin, Botanical Garden, Autibes, France	117
Botanical Garden, Palermo, Italy	29
" " Peradeniya, Ceylon	4
" " " " " " " " " " "	12
Dr. VanNooten, Java	86
Dr. Scheffer, Botanical Garden, Java	2
Botanical Garden, Jamaica	25
" " Natal	40
" " Mauritius	28
" " Brisbane, Australia...	18
" " Singapore	275
" " Darjeeling	29
Director, Botanic Garden, Melbourne, Australia	139
J. F. Duthie, Esq., Botanical Garden, Seharunpore	285
Baron VonMuller, F.E.S., University, Melbourne, Australia	4
Colonel Hawkes, Superintendent of Government Garden, Rangoon	16
J. Cameron, Esq., Superintendent, Lal Bagh, Bangalore	41
Conservator of Forests, Punjab	1
Assistant Conservator of Forests, Punjab	1
Conservator of Forests, Central Provinces	1
Deputy Conservator of Forests, Akola	2
Assistant Conservator of Forests, Chittagong	78
Messrs. Haage and Schmidt, Erfurt, Prussia	1
Superintendent of Agriculture and Horticulture Society's Garden, Lucknow	1
Agricultural and Horticultural Society, Madras	34
Secretary to the Queensland Acclimatization Society, Brisbane, Australia	302
William Bull, Esq., Chelsea, London	3
M. le Chevalier Gallian, Consul-General for Italy, Calcutta	1
Hon'ble J. Thurston, Secretary to the Government of Fiji Islands	6
Dr. Kirk, Zanzibar	4
Prince Rama Varma, First Prince of Travancore	9
G. Kneebone, Esq., Darjeeling Terai Tea Company	2
Dr. Beaumont, Indore	4
Deputy Commissioner, Jubbulpore	1
Messrs. Begg, Dunlop & Company, Calcutta	18
Robert Ellis, Esq., Waziabad	20
J. Monro, Esq., Pashok Tea Company, Darjeeling	1
From a gentleman	2
Jr. Anderson, Imperial Museum	2
J. N. Wood, Esq., Camac Street	1
William Bell, Esq., Dehra Doon	80
Messrs. Stanley, Price & Company, Ballygunge	285
E. H. Man, Esq., Andaman and Nicobar Islands...	55
Collected by the Superintendent	11
James Gammie, Esq., Cinchona Plantation, Mungpoo	87
J. L. Lister, Esq., " " " "	27
Pungboo, Lepcha, Darjeeling	2,448
Total	2,448

APPENDIX IV.

Statement showing Seeds despatched from 1st April 1879 to 31st March 1880.

To whom supplied.	Number of parcels or packages.
India Office, London	1
Sir J. D. Hooker > K.c.s.l., C.B., P.B.S., Director, Eoyal Garden, Kew, London	90
Sir P. Impeharden, St. Petersburg, Eussia	165
Gg. Todaro, Botanical Garden, Palermo, Italy	133
F. Aheffer > Sector, Botanical Garden, Java	100
Prnta f nwaiesicM_G-> F-R-S., Botanical Garden, Peradeniya, Ceylon	22
Dlemfor Balfour, Director, Botanical Garden, Edinburgh	8
SunPifT 18A 2* Director > Botanical Garden, Jamaica	21
Supintendent, Botanical Garden, Durban, Natal	196
J.F.H.S. Director, Botanical Garden, Reunion	180
A.T. J. R. J. Superintendent, Botanical Garden, Seharunpore	77
A. J. Curator, Lloyd Botanical Garden, Darjeeling	680
W. Hmp 11, Botanical Garden, Ootacamund	14
J. g~ orij ^Jk., Director, Botanical Garden, Brisbane, Queensland, Australia.	23
C. Mo J. T. J. Superintendent, Botanical Garden, Mauritius	76
j'.f. m. re. Asc'l- Director, Botanical Garden, Sydney, Australia	18
J. H. * uuc. J. Anm an, Esq., Botanical Garden, George Town, Demarara	204
Dr. si. T. ueller, Botanical Garden, Singapore	577
Baron V * T g. l. Director, Botanical Garden, Adelaide, Australia	11
Victoria G. arden * * * * * Universit A Melbourne, Australia	33
Colonial	6
A. P. eron, Esq., Superintendent, Government Garden, Bangalore	2
Colo mwkes, Government Garden, Rangoon	17
B. H. pfi. T e> Ins Pector-General of Forests, Madras	230
J. SykoVn ti oWell Escl- Conservator of Forests, Punjab	1
The C ol ^ h i o e ? Sq, J Conservator of Forests, Bengal	1
conservator of Forests, Pegu Circle, Rangoon	26
" " >> Tenessarim, Moulmein	4
Assistant " " >> Central Provinces	3
" Conservator of Forests, Assam	4
The Secretar ? " " Chittagong	6
AM. T. ides 7 o th e Queensland Acclimatization Society, Queensland, Australia	265
M- A. cllre J Lebeuf, et Soeur, Ghent, Belgium	9
Messrs. Ha ag j and e h i j t, Erfurt, Prussia	35
M. A. Von zeert et Fils, Ghent, Belgium	23
M. Lou Van Houtt % Ghent, Belgium	14
Colin McEacheron, Esq., Liverpool	59
Willi Bull, Esq., Chelsea, London	135
J. enson, Esq., Secretary to Agri-horticultural Society, Madras	18
W. Kidley, F. q, i, Superintendent, " Lucknow	4
J. Coles H. rain(C) Esq>> Sec r etary to Agricultural and Horticultural Society, Rangoon	15
C- R- LinT. rain(C) Esq>> Sec r etary to Agricultural and Horticultural Society, Rangoon	5
J. Cameron, J. Lahore	75
A-H-BlecYh. E Sq< AallbaA' Bangalore	7
Dr. Calcutta	7
E. C.	22
Dr. Beaumit ASq> J c s> director of Agriculture, North-Western Provinces	2
" Bon > Indore	11
J. S. Pa V zabad	1
M. Page. V	12
T. Weston p. Ga. lian > Consul-General for Italy, Calcutta	17
A. S. Griolton E. eoc r etary to the Government, Fiji Island	69
A. Fergusson, Esq., Colombo, Ceylon	212
George Taked, E. k > Interi or Department, Yeddo, Japan	1
A. Te uscher, E. k > Interi or Department, Yeddo, Japan	1
A. win Arnllif SA n Ba Tldon g, Java	67
V. H. Lawrence, ? ? ? ? ? Daily Te legraph Office, London	1
J. * A ckey P. th A. ? ? ? ? ? United Service Institution, London	4
D. . Sanders, EBCL - J. over i n e > Green Hertg	10
Sir George Macleay, St. Helens, Jersey	2
M. de Farges, Cons. of eneral POT France, Calcutta	35
Mrs. Bladen Neil, B y d e y > New South Wales	479
Madame Moulard, B y d e y > New South Wales	5
M. bott, Poli. j a l Superintendent, Jalrapatan	43
J. N. Wood, Esq., ? o S t t C l t t	12
A. Cooper, Esq., Civil Medical Officer, Garo Hills	46
George H. ...	28
Messrs. n i m r a e > Chingleput, Madras	2
Messrs. P-nlay, Muir & Co, Calcutta	2

APPENDIX IV—concluded.

To whom supplied.	Number of parcels or packages.
Messrs. Colvin, Cowie & Co., Calcutta	1
„ John Barry & Co., „	^
„ Stanley, Price & Co., Bally gunge	Q3
„ Begg, Dunlop & Co., Calcutta	^
C. H. Pillans, Esq., Phoolbari Tea Estate, Siliguri	^
J. Kennedy, Esq., Darjeeling	2
W. Strachan, Esq., Salaroo, Scind	^Q
Major Badgely, Shillong	^
Political Agent, Kolapur, Deccan	2
J. P. Devine, Esq., Northern Bengal State Railway	^
Major W. S. Brookes, Deputy Commissioner, Bilaspur, Central Provinces	g^
Chester Macnaughton,*Esq., Rajkumar College, Rajkote	r.^
Atkinson, Esq., Executive Engineer, Lower Ganges Canal Estate	2
H. W. Stevens, Esq., District Engineer, Mozufferpore	j
Engineer of Tributary States, Orissa	^
Major J. Miller, Malwa Bheel Corps, Sirdarpore	55
H. Battary, Esq., Kissengunge	^
C. A. Cress well, Esq., Allamungo, British Burmah	5
Lieutenant-Colonel W. Winson, Bura, Bhutan	^
General James Devine, Commander, His Highness the Guickwar's Troops, Baroda	^Q
Captain Thomas McGirn, 62nd Regiment, Gwalior	ig
Lieutenant Walter Langooll, F Company, 73rd Regiment, Lucknow	^5
James Gammie, Esq., Government Chinchoua Plantations	j
J. L. Lister, Esq., „ „ „	^
A. Bierman, Esq., „ „ „	^
G. H. Jameson, Esq., Sakessar Hill, Sahpore District, Punjab	^Q
A. L. Simson, Calcutta	2
W. F. Meres, Esq., Comillah, Tipperah	2
C. W. Edwards, Esq., Motihari, Chumparun	^Q
Lieutenant-Colonel H. R. Whintle, Futegarh	^
W. S. Crowdy, Esq., Bhogowanpore, Mokama	^
D. N. Reid, Esq., Sadowah, Sewan, Sarun	^
C. F. Amery, Esq., Mussoorie	sg
K. Wooley, Esq., Coonopr, Nilgiri Hills	g
The Hon'ble Sir Alexander Arbuthnot, K.c.s.l.	g
Messrs. Money Devisholah, Ootacamund	g
E. S. Trafford, Esq., London	g
Captain Wilkinson, P. and O. Company's Office	g
E. Wardroper, Esq., ship <i>Lady Selbourne</i> , Calcutta	4
W. Strachan, Esq., Hyderabad, Sinda...	g
Dr. Wooley, Coonoor, Nilgiri Hills	1
E. Claxton, Esq., Allahabad	Ofi
P. M. Lowther, Esq., Sulkeah	^
James Mitchell, Esq., Shalimar	^
Lieutenant-Colonel Ram Chunder Rao, Balwunt, Comdt., H. H. Scindia's Artillery, Gwalior	34
Vice-Chairman, Municipality, Saki	2
H. H. Rama Varma, First Prince of Travancore	inw
Thakore Saheb of Rajkote, Kattywar...	^
Babu Sooroj Deb Narain Singh, Roonii, Sydpur, Tirhoot	13
„ Sibprossonno Chatterjee, Dalhousie Institute	+
„ Purtap Chundra Ghose, Calcutta	o
„ Prossonno Coomar Sein, Seebpore	f
„ Nuffer Chunder Pal Chowdhary, Natadah	^
„ Ram Chundra Tewary, Pakur, Rajbatty	^
„ Charoo Churn Mullick, Calcutta	^
„ Soshi Sikhore Banerjee, Manager, Deogan Estate, Palamow <i>via</i> Nagpore	1
„ Dwarknath Chatterjee, Pleader, Soori, Beerbhoom	t
„ Mohendro Nath Sein, Jeypore	i-
„ Nursing Persad Dutta, Calcutta	f
„ Netro Lai Dey, Registrar of Deeds, Howrah	1
„ Lalah Kasheeram, Sreenagur, Ghurwal	Q
Total	6,457

FINANCIAL DEPARTMENT.

AGRICULTURE.

CALCUTTA, THE 11th AUGUST 1881.

RESOLUTION.

READ—

The Annual Report of the Koyal Botanical Garden, Calcutta, for 1880-81.

CONSIDERABLE progress was made during the year in the work of laying out the grounds, especially in the eastern part of the garden. An important improvement was also carried out by the excavation of a drainage channel along the northern boundary of the garden, which benefits not only the garden itself, but also the villages and fields outside and has been adopted by the Public Works Department as part of a scheme for draining the grounds at the Sibpore Engineering College. The soil obtained in excavating for the purpose was raised to the level of a large portion of the garden. Along part of the western boundary a similar drain, on a smaller scale, has been dug which requires to be extended, both for the protection of the garden and in order to furnish material for raising the grounds where they are still swampy. Rightly. As it is very desirable that the improvements in the garden which have been in progress for some years past, should be completed as quickly as possible, the Superintendent has, since the close of the year, been avowed a Elementary grant to push on the work in the western part of the garden, much remains to be done.

2. Other improvements have been made during the year, such as the planting of new groups of trees, the laying of roads, and the erection of a shed for propagating-house, and an additional plant-shed. Dr. King further proposes to erect a steam-pump, similar to that in the Zoological Gardens in order to keep the water in the garden tanks at a high level all the year round. To effect this the pump fully, it will be necessary to connect the tank by underground Pipes, and the Public Works Department are now preparing an estimate of the connections and of a suitable engine. The garden was in parts ill-defined, Dr. King has, in communication with the Magistrate of Howrah, caused a number of substantial stone pillars to be set up round the land boundary.

As noticed in previous reports, Dr. King does not think that the cultivation of *Rheedia* is likely to prove a commercial success in Bengal. The prizes offered for an efficient machine for cleaning the fibre have not attracted much interest in the subject, and it is unlikely that

Undertake the cultivation of the plant until there is a cheap and effective means of bringing it into a marketable condition.

During the year under review, Dr. King, in compliance with the wishes of Government, deputed the Curator of the garden to visit the banks of the Adjai and Damooda, as well as the prevailing grasses vernacular as *kashee*, *sara*, and *khuree*. Each of these grasses has a stout stem, which is quite unsuitable for paper-making, and the cost of collection and freight of the leaves and the leaf sheaths, which are the only parts which appear, be so high as to prevent their being raised. The result is not hopeful. Dr. King recommends that attention should be directed to the cultivation of *Zachra capita*, a grass from the coast, as well as with the *Baobab* and *Zachra capita*.

given to the utilization of the plantain, which, so far as the manufacture of paper is concerned, promises to be the best of the fibre-producing plants in India. The Lieutenant-Governor has already expressed his readiness to assist any mercantile firm or private persons wishing to try experiments with plantain in the Chittagong Hill Tracts or elsewhere in Bengal, by supplying them with wild plantain stems free of cost at the outset of the expenses and afterwards at reasonable rates.

5. Of the economic plants, the *Qeara* rubber continues to grow vigorously and to give promise of success. The *Para* rubber and the Madagascar rubber have entirely failed. The other exotic rubbers are very large trees or dinosaurs and though, as Dr. King states, the collection of rubber from them in native forests when they have grown to maturity may be profitable, the cost of planting and protection for several years, until they come to maturity, prevents their cultivation in this country from becoming a success. Of the other economic plants, the mahogany and *guango* or rain-tree appear to be the only ones in demand.

6. Very valuable contributions were received in the herbarium during the year from the Royal Garden at Kew, and from officers and gentlemen in India. The chief contributors were Dr. Aitona, Mr. L. B. Clarke, of the Educational Service, Dr. Brandis, Inspector-General of Forests, Bengal; Dr. Wood, Superintendent of Vaccinations, Darjeeling; Mr. Peppe of the Opium Department of the Government in the Public Works Department of the Madras Forest department; Mr. Fisher, Professor of Botany at the University of Calcutta; Mr. Lebeuf, a French Botanist, who is much too small for the collection, but in other respects unsuited for the purpose. A new herbarium on the plan of the Kew herbarium will be necessary in order to adapt it to the Indian climate.

7. Forty boxes of plants and seeds went on during the year. These were contained in 280 boxes, containing altogether 8,805 plants. Sixty-five Warden cards were issued, 1,727 plants potted and packed in other boxes. Two hundred and fifty plants distributed being 17,270. One thousand six hundred and thirty-two seeds were received from the Royal Garden, Kew, and Sir J. D. Trim, Director of the Botanic Garden, Calcutta; Dr. Treub, Director of the Botanic Garden, Saharanpore; Dr. A. C. Gardner, Superintendent of the Botanic Garden, Melbourne; the Directors of the Botanic Gardens of the Agricultural Department, Demerara, and Mauritius; the Secretaries of the Horticultural Societies of Calcutta and Madras; the Superintendent of the Botanic Garden, Calcutta; Colonel Cadell, v.c., and Mr. E. H. Man, of the Andaman Islands.

8. The death of Mr. J. S. King, of the Herbarium, has been referred to the Government for consideration, and a considerable sum was found in the Budget to succeed Mr. King. Mr. Braoe was appointed to the vacant position, and Mr. J. S. King took leave of his duties at the beginning of the year.

9. The chief contributions of the year were from the Royal Garden at Kew, and from the Botanic Garden, Calcutta; the Botanic Garden, Saharanpore; the Botanic Garden, Melbourne; the Botanic Gardens of the Agricultural Department, Demerara, and Mauritius; the Secretaries of the Horticultural Societies of Calcutta and Madras; the Superintendent of the Botanic Garden, Calcutta; Colonel Cadell, v.c., and Mr. E. H. Man, of the Andaman Islands.

10. The thanks of the Government are due to Dr. King and his staff for their efficient management of the Herbarium.

(3)

ORDER.—² rdered that a COpy of the Report and of the Resolution be submitted to the Government of India in the Revenue and Agricultural Department for information.
^ 6 ? ! ? furth er that a copy of the Resolution be forwarded to the Superintendent of the Botanical Garden for information.

By order of the Lieutenant-Governor of Bengal,

H. M. KISCH,

Offg. Secretary to the Government of Bengal.

Non 165b,

Copy f
orwarded to the Superintendent, Botanical Garden, for information.

By order of the Lieutenant-Governor of Bengal,

RAJENDRA NATH MITRA,

Asst. Secretary to the Government of Bengal.

CALCUTTA,
the 17th August 1881.

ANNUAL REPORT OF THE ROYAL BOTANICAL GARDEN, CALCUTTA
FOR THE YEAR 1880-81.

No. 23G, dated Howrah, the 13th July 1881.

From the Secretary to the Government of Bengal, Financial Department,
J. O. The Secretary to the Government of Bengal, Financial Department.

the honor herewith to submit the ninety-fourth annual report of
the Royal Botanical Garden.

ANNUAL REPORT OF THE ROYAL BOTANICAL GARDEN,
CALCUTTA, FOR THE YEAR 1880-81.

time of the work of digging out the garden, which has been in progress for some
confirmed considerably advanced during the year. Operations were mostly
at the eastern end of the garden, and consisted of the excavation of
the rain-water channel, which, running along the northern boundary of that part of
the garden, discharges under the Howrah road into a natural channel which
senarises from the grounds of the Seebpore Engineering College,
At the junction of this channel with the river, the college authorities last year
built a sluice: the drainage along it is therefore quite under command.) The
soil of the garden is therefore quite under command.) The
throwing of the excavating this canal was utilized in raising the level of, and in
connecting into undulations, a large area of the garden in its neighbourhood. In
the ornamental lake in this end of the garden was
reformed in shape. This part of the grounds may now be
the garden. The canal thus formed will be of benefit not only to
outlet for the water which used previously to accumulate during the rainy
season a small part of the western boundary of the garden a similar canal on
now been dug. This canal I propose to extend during the year
entirely upon. These canals form excellent barriers against stray
and the village. A good many new groups of trees have
been planted in parts of the garden of which the earthwork was
completed during the previous year. The main road leading from the
road has been raised. The
widened from the flower-garden to the great banyan-tree has been
The road is six feet, and in some parts has been relaid with new materials.
Weeks together during the rains, I have had it taken up; and as soon as the
weather is suitable for earthwork, it will be raised in level and repaved.
The number of accommodation has been extended and improved by the erection,
under the direction of Mr. Pantling (the Curator of the garden), of a glazed
thatched roof, which promises to be a great success, and of an additional
shed. The boundary of the garden being in many places
a set of 5 communication with the Magistrate of Howrah,
numbered substantial stone pillars, bearing the initials of the garden and
deal consecutively, erected right round the land boundary. A good
order of things to be done to bring the western part of the garden into
to Government. On this subject I have already addressed a separate communication
to the Government. I have also brought to notice the advantage which would be
in the establishment of a steam pump to keep the ornamental water
in the garden at a high level.

ment of the large patch of ground is still, by desire of the Govern-
ment of India, kept under rhea for the purpose of supplying roots to persons
who may wish to undertake the cultivation of this fibre. The prices which
have hitherto been offered for machines to clean rhea fibre have
been very low, and the native zemindars are for the most part disinclined
to meddle with the new and unfamiliar cultivation. For reasons stated in my
last report, I am not however sanguine as to the possibility of rhea cultivation

becoming a commercial success in Benal 5 ad I not sure that the caution of commercial men and zemindars in this matter is altogether to be repro-

I had hit so before in compliance with an order of Government during the month of May I deputed the Curator of the District of West Bengal that grow on the banks of the river Hooghly the view of testing the soil of the banks of these rivers. Mr. Pantling was absent on this duty. The view of the banks of the Hooghly is a continuation of many miles of the banks of the Brahmaputra between Chittagong and Goalundo. Mr. Pantling found the prevailing soil to consist of the following species of Saccharum known as S. spontaneum and S. furcatum which are respectively of high, and having forms a stout reed from 5 to 10 feet high, and having a hard stem. This stout hard stem is unsuitable for the purpose of paper-making. The leaves and the leaf-sheath are very gentle. I was able to show these to the gentlemen who came to see the largest firms of paper-makers. Finding out the best weather for the express of the cargo from India the Commissioner of the Division of Bengal being taken into account, this was good enough to be further supported by the Commissioner of the Division of Bengal. The Commissioner of the Division of Bengal has been asked to make a list of all these, namely, that the most practicable sources of paper-making should be included in the list. Something has been done in Bengal in the way of carrying out Mr. J. J. Kout edge's proposals for the utilization of the results have been used of paper fibre; but as yet no very large quantities of paper are made. As far as the Commissioner of the Division of Bengal is concerned, the necessary substitute for them is daily being made. Plantain is the most promising of Indian fibre plants. It is well spent on it. It promises best; and I think some attention should be given to its growth, and Malacca has been proved to be a good substitute for it. It has been recently suggested.

Jointly with the Government (M. M. M. M.) of them are now beginning to yield considerable quantities of the seed of these species of rubber trees, which are the only ones that produce recently imported rubber-yielding trees. The Paria rubber (Hevea) and the Madras rubber (Ficus) have utterly failed in India. I have not been able to get more than two or three specimens of the Paria rubber from the East African Coast. The kind exertions of Dr. K. have been of great service in this matter. But I do not think it is an unmanageable crop. With regard to all these rubbers, it must be remembered that they are very large trees or clumps where they have to be collected in their natural state. It is not a matter without importance to the collector, and the planting and protection have to be paid for. The locust bean or carob tree was pressed on the Government of Bengal, and has been found to be a very valuable tree. It is a tree which grows in Bengal, and for which the

Arran^ 1 men* S Wer_e^ here fore made some time ago for regular annual impor-
no^ ns from Jamaica of seeds of each. Last year, however, all the mahogany
seed received from this source was quite bad.

D. Herbarium.—Large additions to the dried collections of plants were
made dur^ m S 1880_81. No year has passed since I was appointed to this
garden during which I have not had to acknowledge contributions from the
oyai Garden at Kew; and during the past year these contributions have been
i more than ordinary value. Amongst them are a fine set of Dr. Aitchison's
Euram^ ley plants, covering about 1,100 sheets, and a valuable set of named
«icuan plants collected by Mr. C. B. Clarke, of the Bengal Educational Service,
who is now on special duty at Kew assisting Sir J. D. Hooker in the prepara-
tion of the Flora Indica. These collections of Mr. Clarke's have not
yet been all mounted, but they will probably cover 2,000 sheets. The
Kew C^ contributions delude a quantity of plants from Ceylon and the Malay
lot *P- ac^ a number of named grasses, besides various interesting smaller
of s too numerous to mention in detail. To Dr. Brandis, Inspector-General
tilm Orests, the Herbarium is indebted for an interesting collection of Burmese
Sun^ ts; whil G Ar, Jt S* gamble, Conservator of Forests for Bengal, has
jj PP^ nanted his large contributions of former years by collections made by
coll- f. m ^e ^hittagong, Orissa, and Chota Nagpore forests, and by further
for th^ ons from Sikkim and the Western Douars. Mr. Gamble's contributions
plants^ year amount to about 2,000 specimens. A fine set of Chota Nagpore
Vaccin^ jointly collected some years ago by Dr. J. J. Wood, Superintendent of
add^ tion and Mr. Peppe", of the Opium Department, has this year been
Sec^ ^ the Herbarium; it amounts to about 1,500 sheets. Mr. Levinge,
a Vei^ ay to Government in the Public Works Department, has presented
donje^ n Set o^ Sikkim ferns, covering nearly 500 sheets. To Colonel Bed-
colle^ t. o. lue ^ adras Forest Department, the Herbarium is indebted for several
count^ 10DS^ o^ m os^ t interesting plants from Southern India, a part of the
collec^ ry of which the flora is still but poorly represented in the Calcutta
the S^ ion; Mr. Fisher, lately of the Assam forests, but now a Professor in
inte^ re^ o^ Forestry at Dehra Dhoon, was good enough to present an
and p^ in^ collection made during his tours of duty in the Eastern Douars
jj^ m ro. Hills. To M. G. Lebeuf, a French botanist, my T^ est acknowledg-
Collet^ are ^UG^ or a ^ne col^ ecti^ ou of Portuguese plants; as also to Colonel
frou^ ^ c^ ? of the 32nd Pioneers, for an interesting collection of North-West
the r^ P^ ants. In addition to these, the collection has been enriched by
Malayan^ t of many specimens collected by Messrs. Forbes and Kunstler in the
7. Peninsula and islands.

cases^ it^ Interflan^ e of seeds and plants.—This has gone on actively. Wardian
4^ ceiv^ o^ the num^ ber o^ ^ and open boxes to the number of 134 have been
plant^ ec^ rom various collectors and contributors, the aggregate number of
cases^ CO^ ntained in these being 8,305. On the other hand, 65 Wardian
Plant^ anc^ l^ boxes of plants have been given out. Besides these, many
durin^ ^ ? Ve been i^ Stued in P^ ots and in post parcels, the aggregate distributed
1,25eV^ e year amounting to 17,270. Packets of seeds to the number of
to wh^ adv^ e been received, while 3,224 have been issued. The contributors
F.R.S^ o^ t^ the S^ rden is chiefly indebted are Sir J. D. Hooker, C.B., K.C.S.I.,
Court^ Q^ tue Koyal Garden, Kew; Sir George McLeay, F.E.S., of Pendell
Java^ T^ ? Ul7e9; Dr^ > Treub^ Director of the Botanic Garden, Buitenzorg,
Simp^ ^ J^ rmen, Director of the Botanic Garden in Ceylon; Mr. Duthie,
Wf^ ? i^ dent of the Botanic Garden, Saharunpore; Dr. Regel, of the
Melb^ our^ n^ ^ arden J St. Petersburg; the Directors of the Botanic Gardens of
Ao^ nW^ n^ ^ George Town, Demerara; and Mauritius; the Secretaries of the
the J^ ^ o^ t^ cult^ ural Societies of Calcutta and Madras; the Superintendents of
ColSSh^ 108^ 11118 at Rjl^ f^ >>>>, Tkiyalorc, and of the Eden Garden, Calcutta;
V^ en^ > VICI; and Mr_ E_ IL ManJ Andaman Islands.

servi^ ces o^ p^ cial change^.—Early in the year the garden was deprived of the
*ith^ e^ Mr. Joan Scott. Mr. Scott had been for seventeen years connected
sino^ M^ e^ tablis^ hment—first in the capacity of Curator of the garden, and,
iUn^ April, Kur^ zis death^ as Curator of the Herbarium. He went home very
was in^ an^ i died^ witiin a few days of his arrival in Scotland. Mr. Scott
many respects a remarkable man. He had an original and thoughtfdl

mind; he was an acute and accurate observer of Nature, and singularly modest and amiable. While still a lad employed in the Garden at Edinburgh, he published the results of some experiments on cross-fertilization, which attracted the notice of Mr. Darwin; and it was in the help of Mr. Darwin and Sir Joseph Hooker that he was appointed to the Botanic Garden here. Mr. Scott continued to the end to observe and report, and at his death he left a number of papers in manuscript; but the most part too imperfect for publication. Mr. Scott was altogether fitted to have filled a far higher position than he ever attained to; and if the Government lost a valuable and devoted servant. Soon after Mr. Scott's death Mr. Pantling, formerly of the cinchona plantation, was appointed Curator of the garden, Mr. Craig being Assistant Curator. Messrs. Pantling and Craig have worked with much energy and heartiness during the year, and the best acknowledgments are due to them both. Up to the end of the year the ship of the Herbarium remained unfilled, Mr. Brace, the gentleman selected for the post by Sir J. D. Hooker, not having arrived.

9. The budget allotment for the year (including a special grant of Rs. 3,000 for garden improvements) was Rs. 64,000, the whole of which was expended. The receipts from sale of seeds and plants amounted to Rs. 1,35-13-6, and were paid into the treasury as Government revenue.

10. *Lloyd Botanical Garden.*—The chief work carried through by Lloyd Botanic Garden at Darjeeling during the year was the erection by the Public Works Department of a handsome conservatory. The frame of this building is entirely of iron; it is fitted with very strong glass, which it is hoped will be proof against the hail-storms which commonly visit the district every spring. The conservatory is a fine spacious building, and should, when the staging has been erected, afford accommodation for the growth of many plants hitherto unseen in cultivation in the Eastern Himalaya-garden throughout the year has been in charge of Mr. Jaffrey, who has with much energy and skill continued the rather heavy work of laying it out. Besides the conservatory, there are in the garden a large propagating-house and a number of propagating-frames. The nurseries are well stocked with plants, a considerable number of which have been distributed to the Forest Department and to the public. Plants are now obtainable by purchase, and some sales have been effected. A house for the exhibition of plants for sale is about to be erected, and this will, it is believed, stimulate the sale business. At the suggestion of Sir Ashley Eden, a fine collection of seed potatoes of the best sorts was obtained from England and Australia. These were planted in a piece of municipal land near the garden, and the attention is to distribute the produce to potato-growers in the district with the view of improving the quality of Darjeeling potatoes, which has within recent years sadly degenerated. The Municipality have at last taken steps to confine within a masonry channel part at least of the bazaar drainage which passes along the southern boundary of the garden. It is to be hoped that they may soon take measures to remove the unsightly manure heaps which take the ground to the east of the garden. In addition to the charge of Lloyd Botanic Garden, Mr. Jaffrey has taken care of the municipal vegetable garden. He has discharged his duties well, and his efforts deserve the best acknowledgments.

11. The budget allotment of the Lloyd Botanic Garden for the year (including a special grant of Rs. 4,064 for conservatory and a grant for purchase of seed potatoes of Rs. 2,000) was Rs. 15,094, the whole of which was expended. The sum of Rs. 182-12-6 received for the sale of plants was paid into the Darjeeling Treasury by Mr. Jaffrey.

12. The usual returns of seed and plant distribution are appended to this report.

APPENDIX I.

Statement showing plants received from 1st April 1880 to 31st March 1881.

From whom received.	Wardian cases.	Boxes.	Number of plants.
Bslvedere Garden, Calcutta	4	5	8
royal Garden, Kew, London	3	1	296
>> Botanical Garden, Ceylon	1	1	128
botanical Garden, Glasgow	1	1	12
>> Melbourne	1	1	55
>> George Town, Demerara	2	1	42
>> Buitenzorg, Java	5	3	237
T> vJ ^ >> Saharunpore	2	1	205
public Garden, Rangoon	2	1	41
Wen Garden, Calcutta	4	11	28
Lloyd Botanic Garden, Darjeeling	1	1	774
Eng-Horticultural Society, Madras	1	1	102
Colonel Cadell, v.c, Chief Commissioner, Andamans	1	1	40
Superintendent, Public Garden, Bangalore	1	1	59
Diitto, Government Park, Barrackpore	1	1	4
Forest Officer, Chittagong	1	1	330
Mr. K. Cooke, Esq., Calcutta	1	2	29
Mr. Li. Lister, Esq., Government Cinchona Plantation	3	56	1,594
Messrs. Haage and Schmidt, Erfurt, Prussia	1	1	100
Sir Geo. McLeay, London	1	1	56
W. Bull, Esq., "	2	1	140
Surgeon-Major Sanderson, Jubbulpore	1	2	90
A. Simpson, Esq., Chittagong	1	8	1,151
F. T. T. T. Esq., Chittagong	1	7	454
H. Man, Esq., Nicobars	1	1	4
A. Gantzer, Esq., Howrah	1	1	1
J. A. J. Esq., "	1	2	50
Teel, Esq., Rio de Janeiro	1	1	25
W. Grey, Esq., Java	1	1	10
Milner, Esq., Singapore	1	5	272
Major Berkeley, Andamans	2	7	142
Dr. J. J. Esq., Sarawak, Borneo	1	1	4
T. J. Esq., Calcutta	1	1	34
>> J. G. P. J. Howrah	1	1	20
>> Bayne, Calcutta	1	1	12
Baylis, C./E.	1	1	31
F. A. L. Esq., Calcutta	1	1	5
D. J. Esq., Calcutta	1	1	10
A. J. Esq., Garden Reach	1	1	2
A. J. Esq., Calcutta	1	1	1
A. J. Esq., "	1	1	1
S. A. Esq., Garden Reach	1	1	22
W. T. Esq., Calcutta	1	1	2
C. O.	1	1	11
F. J. Esq., Knasi Hills	1	1	20
R. W. Esq., Garden Reach	1	1	1
A. W. Esq., Calcutta	1	1	4
C. W. Esq., Garden Reach	1	2	367
C. W. Esq., Calcutta	1	1	63
C. W. Esq., Calcutta	1	1	11
C. W. Esq., Calcutta	1	1	22
G. W. Esq., "	1	1	16
C. W. Esq., "	1	1	16
acted by Superintendent in Darjeeling	6	6	396
>> Herr Kunstler, Perak	4	2	311
>> Manting, Esq., Garo Hills	4	4	107
J. Scott, Esq., in Penang	1	1	17
Messrs. W. in- q-> in Penang	2	2	12
Baboo S. M. Calcutta	1	1	20
A Native Nurseryman, "	1	1	264
By purchase ...	1	1	41
Total	40	134	8,305

APPENDIX II.

Statement showing plants sent out from 1st April 1880 to 31st March 1881.

To whom sent.	Wardian cases.	Boxes.	Number of plants-
Government House, Simla		15	137
Belvedere Garden, Alipore			23
His Grace the Archbishop of Calcutta			119
Chief Commissioner, Nagpore			2
" " Mysore			40
Royal Botanic Garden, Ceylon	1		160
" Garden, Kew, London	3	1	114
Botanic Garden, Berlin, Germany	3	1	42
" " George Town, Demerara	1		106
" " Singapore	4		89
" " Java	2	1	267
" " Saharunpore	6	3	715
" " Punjab		23	55
Lloyd Botanical Garden, Darjeeling		1	151
Directeur de Jardin Colonial de Réunion		4	96
Public Garden, Rangoon	2		47
Zoological Garden, Calcutta	1	1	225
Cathedral Garden,			600
Eden Garden,			
Agri-Horticultural Society, "			581
" " Madras			36
Veitch's Royal Exotic Nursery, London	1		330
Will's Nursery, "		1	33
M. LeBeuf, Paris			35
Acclimatisation Society, Queensland	1	1	13
The Municipality, Howrah		1	125
Presidency Jail, Calcutta			250
Superintendent of Central Prison, Benares			245
" " Hazaribagh		2	rhoeo roots-
" " Dacca			200
Government Park, Barrackpore		4	706
Superintendent, Campbell Medical School, Calcutta			100
La Martiniere School,			9
Cathedral Male Orphanage,			180
Canning College, Lucknow			H
Reformatory School, Alipore			C1
Raffle's Institute, Singapore			30
M. Louis Van Houtte, Ghent, Belgium	1		25
J. Linden, Esq., Ghent, Belgium		1	&
Brazilian Consul, Singapore		1	42
Cantonment Magistrate, Berhampore	1	1	200
Magistrate, Patna			450
" Howrah			20
Hon'ble Justice A. Wilson, Calcutta			(52
Chairman, District Road Cess Committee, Chittagong			1.5
Chairman, Road Cess Committee, Chumparun		5	310
Divisional Officer, Barrh		8	50
" Ferozepore		2	23
Road Overseer, Bucktearpore		7	250
Executive Engineer, Cuttack		10	100
Conservator of Forests, Darjeeling		2	17
New Terai Association, Silligori		1	150
Secretary to the Maharajah of Johore		0	30
Superintendent, General Hospital, Calcutta	1		18
" " Cuttack			130
Dr. J. G. Pilcher, " Howrah Hospital		3	47
W. H. Hardinge, Esq., "			40
H. Wendland, Esq., Hanover			35
J. Gammie, Esq., Govt. Cinchona Plantation, Darjeeling		1	44
J. L. Lister, Esq., "		1	4
Superintendent of Gardens, Durbhunga Raj		3	20
A. Linberry, Esq., Darjeeling		6	
" "		1	

APPENDIX II—continued.

To whom sent.	Wardian cases.	Boxes.	Number of plants.
P. H. O'Hanlan, Esq., Silligori	4	53
P. A. Holler, Esq., "	5	68
W. K. Darley, Esq., Julpaiguri	2	30
Dr. F. E. Charles, Cannes, France	1	41
D. Carson, Esq., Melbourne	1	42
D. Berigny, Esq., Purneah	1 ½ maund rhea roots.	
A. Simson, Esq., Calcutta	12	238
Messrs. Turner & Co., "	12
G. Thomson, Esq., S.S. <i>Pnrulia</i>	12
Col. Owen "Williams, C.B., London	4	152
E. H. Palmer, Esq., Cuttack	1	110
Milton Steuart, Esq., London	3	110
Miss Tytler, Calcutta	1	13
Superintendent, Wingfield Park, Lucknow	3	85
Hon'ble H. J. Reynolds, Calcutta	57
C. Rostan, Esq., "	20
Dr. Raye, "	9
damson Quartermaster, Fort William	371
Captain J. Derring, Chunar	6	109
G. H. Walkerdine, Esq., Calcutta	2
Mrs. "Wilson, "	12	120
B. B. West, Esq., "	8
Uptain Wilkinson, "	11
J. N. T. Wood, Esq., "	22
Miss Faithful, Howrah	13
G. D. Oswell, Esq., Calcutta	65
L. Owen, Esq., "	9
W. Jacks, Esq., Cossipore	8
Superioress, Eutally Convent, Calcutta	100
W. F. Mitchell, Esq., Seebpore	4	14
Dr. Gordon, Calcutta	76
H. A. Gantzer, Esq., Howrah	3
Miss Lyall, Calcutta	3
S. F. Lake, Esq., Cossipore	1
L. Villa, Esq., Rangoon	3	22
V en'ble Archdeacon Hose, Singapore	3
J. G. Vaucher, Esq., Calcutta	103
Col. T. Nicholls, R.A., Cossipore	4
John Ninet, Esq., Alexandria	1	4
H. G. Heins, Esq., Calcutta	14
E. N. Grace, Esq., Assensole	3	70
Alex. Grey, Esq., Sourabaya, Java	82
•D. Low, Esq., Garden Reach	2	51
F. A. Lazarus, Esq., Calcutta	10
F. Lucas, Esq., Burrisal	23
W. G. Head, Esq., Superintendent, Crystal Palace Garden, London	1	89
J. Hunt, Esq., Calcutta	30
Captain J. H. Hamilton, Ship <i>Carisbrooke Castle</i>	1	36
The ex-King of Oudh, Garden Reach	48
• S. Kilby, Esq., Calcutta	1	38
E. H. Man, Esq., Nicobars	5	90
O. Moller, Esq., Silligori	48
Sir George McLeay, London	3	126
A. Mears, Esq., Jamalpore	1	34
Messrs. Bullock Brothers & Co., Bassein	6
William Bull, Esq., London	1	60
Bev. M. H. Buckland, "	1	37
H. H. Rajah Brooke, Borneo	1	27
Dr. T. Beaumont, Residency Surgeon, Indore	4	71
H. W. I. Barr, Esq., Garden Reach	4
J. Benson, Esq., Seebpore	65
"W. H. Bennet, Esq., Sydney	1	6
Messrs. Barry & Co., Calcutta	50
Major Berkley, Andamans	2	146
Meteorological Observatory, Calcutta	1	10

APPENDIX III.

Statement of seeds received from 1st April 1880 to 31st March 1881.

From whom received.	Number of parcels or packets.
Sir J. D. Hooker, K.C.S.I., C.B., F.R.S., Royal Garden, Kew, London	46
Dr. Regel, Imperial Garden, St. Petersburg, Russia	264
Botanic Garden, Brisbane, Australia ...	96
Ditto, King's Town, S. Africa ...	1
Ditto, Mauritius ...	11
Ditto, Java ...	26
Ditto, Jamaica ...	5
Ditto, Natal ...	2
Ditto, Sydney, Australia ...	30
Ditto, Ceylon ...	3
Ditto, Guneshkhand, Poona ...	2
Ditto, Saharunpore ...	51
Ditto, Darjeeling ...	196
Colonel Hawkes, Government Garden, Rangoon ...	1
Sir Ferdinand Von Muller, University, Melbourne, Australia ...	67
Queensland Acclimatization Society, Brisbane, Australia ...	33
W. Bull, Esq., Chelsea, London ...	2
John Ninet, Esq., Alexandria ...	5
John S. Page, Esq., Appoka, Florida, United States of America ...	8
John Kirk, Esq., M.D., C.M.G., H. B. M.'s Consul-General, Zanzibar	1
Duncan Carson, Esq., Sydney, Australia ...	28
J. Inglis, Esq., Sydney, Australia ...	42
G. F. Creswell, Esq., Melbourne ...	2
Messrs. James Veitch and Sons, Chelsea, London ...	1
J. S. Gamble, Esq., Conservator of Forests, Bengal ...	8
Conservator of Forests, North-Western Provinces ...	1
Superintendent, Lai Bagh, Bangalore ...	26
Agri-Horticultural Society, Lucknow ...	44
Ditto ditto, Madras ...	3
E. H. Man, Esq., Nicobar Islands ...	141
A. Parsons, Esq., Ajmere ...	H
Dr. Beaumont, Indore ...	6
Surgeon-Major J. J. Durant, Benares Opium Agency ...	I
Ditto, T. W. Sheppard, Behar Opium Agency ...	1
Messrs. Stanley Price & Co., Calcutta ...	34
Dr. Pilcher, Howrah ...	1
S. E. Peal, Esq., Sibsagar, Assam ...	1
J. A. Cassels, Esq., Bombay ...	7
H. F. Blanford, Esq., Calcutta ...	1
Major J. Clementi, Allahabad ...	2
Dr. M. T. Slym, Moulmein ...	1
Major-General Cadell, C.B., Madras ...	1
Dr. Bidie, Government Central Museum, Madras ...	1
R. Hardie, Esq., Calcutta ...	1
Major Abbot, Political Superintendent, Jhallawar ...	2
James Gammie, Esq., Government Cinchona Plantation	7
J. L. Lister, Esq., ditto ditto ...	29
Baboo Bishumbhur Ghose, Seebpore ...	3
Total	1,256

APPENDIX IT.

Statement showing seeds distributed from the Royal Botanical Garden during the year 1880-81.

To whom supplied.	"	Number of parcels or packages,
Sir J. D. Hooker, Royal Garden, Kew, London	...	86
Dr. Regel, Imperial Garden, St. Petersburg, Russia	...	1
M. le Directeur de Jardin des Plantes, Réunion	...	206
Signor Todaro, Botanical Garden, Palermo, Italy	...	11
Dr. Dickson, Regius-keeper, Botanical Garden, Ldmburng	...	£[
G. S. Jenman, Esq., Botanical Garden, George Town, Demerara	...	W
Dr. Schomburgh, r.K.s., Director, Botanical Garden, Adelaide, Australia	...	6
J. Home, Esq., Botanical Garden, Mauritius	...	*
D. Morris, Esq., Director, Botanical Garden, Golden Spring, Jamaica	...	58
Dr. Treub, Director, Botanical Garden, Java	...	^
James N. C. Gibbon, Esq., Superintendent, Botanical Garden, Cape Town	...	1
W. R. Guilefoyle, Esq., Botanical Garden, Melbourne	...	...
J. M. Murton, Esq., Botanical Garden, Singapore	...	x
C Moore, Esq., Director, Botanical Garden, bydney	...	20
W. Hill, Esq., Botanical Garden, Brisbane	...	...
J. C Nelson, Esq., Curator, Botanical Garden, King William s Town, South Africa	...	67
Henry Trimen, Esq., Botanical Garden, Ceylon	...	3
A. Jameson, Esq., Botanical Garden, Ootacamund	...	...
J. Marshal Woodrow, Esq., Botanical Garden, Guneshkhand,	...	^
J. F^Duthie, Esq., Superintendent, Botanical Garden, Saharunpore	...	^I
Curator, Lloyd Botanical Garden, Darjeelmg	...	4
Colonel Hawkes, Government Garden, Rangoon	...	2
Sir Ferdinand Von Muller, F.R.S., University, Melbourne	...	9
James Cameron, Esq., Superintendent, Lai Bagh, Bangalore	...	...
John S. Pye, Esq., Florida, United States of America	...	g
M. Nandin, Yilla Thuret, Antibes, France.	...	n
M. Godfrey Lebeuf, Argenteuil. France	n -'^ono	Australia 69
Secretary, Queensland Acclimatization Society, Brisbane, Australia	...	^
M. Linden, Ghent, Belgium	...	130
Messrs. Haage and Schmidt, Erfurt, Prussia	...	9
W. G. Head, Esq., Crystal Palace, London	...	46
William Bull, Esq., Chelsea, London	...	!
Inspector-General of Forests, Madras	"iT-cw^a "	...
G- A. Richardson, Esq., Assistant Conservator ol forests, Bhootan	...	x
Conservator of Forests, Poona, Bombay	...	1
G. W. Strettell, Esq., Deputy Conservator of Forests, Bengal,	Calcutta	1
Conservator of Forests, North-Western Provinces	...	1
Ditto ditto, Nagpore	...	1
Assistant Conservator, Nandidrug Forest Division, Mysore Buxar	...	9
H. C. Hill, Esq., Conservator of Forests, Toungoo	...	...
Conservator of Forests, Baroda State	...	...
A. J. Mein, Esq., Assistant Conservator of F ^ f ^ f	...	...
<*. A. Richardson, Esq., Assistant Conservator of Forests, Narain BaUaoke, Esq., Forest Officer, Kolapur, Bombay	...	2
Sir C. McLay, F.R.S., England	...	...
Honorary Secretary, Assista Horticultural Society of the P...	...	12
Secretary to Government of Bombay	...	9
M. Ridley, Esq., Superintendent, Horticultural Garden, Lu	...	...
The Hon'ble Colonial Secretary, Jamaica	...	88
Secretary, Agri-Horticultural Society, Madras	...	98
Secretary, Horticultural Society of India, C ^ H ^ Pnnjab	...	...
Secretary, Horticultural Society of India, C ^ H ^ Pnnjab	...	...
TT D ^ A ^ Vincent, Esq., Assistant Conservator of the Forests, Punjab	...	2
Conservator of Forests, Bengal	...	3
Ditto ditto, Pegu circle	...	3
Ditto ditto, Tenasserim, Moulmem	...	7
Fuel Superintendent, H. H. Nizam's State	B_enBOl.	...
H. L. Levinge, Esq., Secretary to Government of Bengal, Public Works Department	...	43
J. Robinson, Esq., District Engineer, Bhagulpore	...	...

APPENDIX IY—continued.

To whom supplied.	Number of parcels or Packages.
Executive Engineer, Military Works, Fort William, Calcutta ...	1
Ditto ditto, Barrackpore ...	1
Ditto ditto, Darjeeling ...	1
Ditto ditto, Allahabad ...	1
Ditto, Jhansi ...	1
Ditto, Military Works, Lucknow ...	1
Ditto, ditto, Saugor ...	1
Ditto, Eastern Soane Division, Dinapore ...	5
District Engineer, Rungpore ...	13
Executive Engineer, Buxar ...	H
Major H. B. Abbott, Political Superintendent, Jhalrapatan #	282
C. Maries, Esq., Superintendent of Gardens, Durbhunga Raj ...	yj
A. Parsons, Esq., Ajmere, Rajputana ...	44
Dr. S. Beaumont, Indore ...	3
John Ninet, Esq., Alexandria, Egypt ...	\$
M. Theodore, Algiers ...	56
James Inglis, Esq., Sydney, Australia ...	1
J. E. Edwards, Esq., Bushire ...	4
T. S. Pearse, Esq., Sydney ...	1
M. L. E. Chevalier, Rome ...	"
J. J. M. Fleury, Esq., Assistant to Consul for the Netherlands, Penang ...	4
G. A. Whitten, Esq., Fiji ...	3g
Messrs. James Yeitch and Sons, Chelsea, London ...	5
P. Brown, Esq., Coconada ...	|
A. M. Ross, Esq., Nellore, Madras ...	|
Superintendent, Government Farms, Madras ...	|
Dr. Bidie, Central Museum, Madras ...	3
J. L. O. Hullaren, Esq., North Wynaad, Madras ...	3
Messrs. Stanley Price & Co., Calcutta ...	19
Colonel F. S. Staunton, " ...	g2
H. A. Cockerell, Esq., c.s 1., " ...	g
Messrs. Octavius Steel & Co., " ...	3
J. Monro, Esq., Darjeeling ...	jj
Augustus P. Webb, Esq., Meerut ...	2
W. Kneebone, Esq., Silligori ...	j
Dr. R. Laws, Nyassa, Zanzibar ...	j
Dr. C. J. Peters, " ...	2
R. W. Murray, Esq., Katherine River, Port Darwin ...	^
His Highness Maharajah Rama Yarma, Travancore ...	j
C. Grant, Esq., Judicial Commi&isioner, Scinde ...	%
Rev. W. S. Howland, Madura ...	^
E. Welldon, Esq., Trincomalee ...	g
Captain Bailey, Galle ...	g
W. Bontein, Esq., Lahore ...	g
H. F. Blanford, Esq., Meteorological Reporter with the Government of India ...	^ ^
Surgeon-Major W. D. Stewart, Cuttack ...	*
Collector of Cuttack ...	<
E. E. Dessa, Esq., Cuttack ...	{
Political Agent, Kolhapoor estate ...	T
W. Peppe, Esq., Arrah ...	tt
T. F. Peppe, Esq., Shahabad ...	J
A. W. Cosserat, Esq., Nya Doomka ...	•,
D. Lamb, Esq., Hazareebagh ...	%,
J. C. Veasey, Esq., Backergunge ...	*'
J. O'Brien, Esq., Shillong ...	'!
Dr. G. Henderson, Rawal Pindi ...	...
A. W. B. Power, Esq., Lohardugga ...	...
District Superintendent of Police, Jhansi ...	...
His Highness Maharaj ah of Benares ...	...
A. A. Shircore, Esq., Jalandar ...	...
Baboo Bejoy Madhub Banerjee, Sopal ...	...
R. Pant-ling, Esq., Botanical Garden, Calcutta ...	*'!
Baboo Gayendra Kumar Rai, Takee ...	...
Baboo Brojo Lall Ghose, Lahore ...	...
J. Gammie, Esq., Darjeeling ...	m
R. Mosl�y, Esq., Berhampore ...	...
W. Biss. Esq., Allahabad... ...	...

APPENDIX IV—concluded.

To whom supplied.	Number of parcels or packages.
C H. Moore, Esq., Allahabad	1
Major A. J. C. Birch, commanding 35th N. I., Allahabad	1
Colonel Clay, Deoli, Rajputana	1
H. Gr. French, Esq., Dinagepore	3
Baboo Girish Chunder Mookerjee, Calcutta	5
Major J. L. Mackenzie, Deputy Commissioner, EUichpur	1
Colonel C. B. Lucie Smith, Commissioner, Chattisgarh, C. P.	1
Colonel Haughton	63
Messrs. Colvin, Cowie & Co., Calcutta...	1
Baboo A. S. Mitra,	2
Messrs. Jardine, Skinner & Co., "	1
H. W. Newton, Esq., "	1
Colonel Hawkes, "	49
Messrs. Ede and Hobeon, "	7
?, Andrew Yule & Co., "	1
M Stanley Price & Co., "	22
Baboo Bonomally Kundu, Burdwan	1
Prince Nooroodeen Khan, Eussapugla	2
Baboo Bissumbhur Ghose, Seebpore	2
P. J. Barr, Esq.	100
J. Hill, Esq., Yeotmal, C. P.	1
C. Mundy, Esq., Seebpore College	99
V. Teuscher, Esq., Java	1
L. Elworthy, Esq., Assam	2
Captain R. O. Lloyd, R.E., Thayet Myo	1
Total	3,224

- mum)....

) YACHT "RHOTAS," THE 19TH AUGUST 1882.

RESOLUTION.

RZAD—

The Annual Report on the Royal Botanical Gardens, Calcutta, for the year 1881-82. The improvements in the Gardens, which have been made in the last few years ago, made considerable progress during the past year. A swampy tract of some size has been raised and prepared for the purpose of a botanical garden. The western boundary canal is in course of construction, and a new conservatory for palms and tree-ferns is being erected. The foundations have been laid of a commodious building for a library and herbarium. The Garden is now, in the words of Mr. King, "a beautiful and shady park, traversed by numerous driving paths, and containing many beautiful and instructive specimens of tropical plants." Mr. King proposes that the river-bank between Howrah and Sahnew along the river-bank between Howrah and Sahnew in front of the Engineering Workshops and College be provided with a botanical garden. By this means a new and valuable addition would be made to the accessibility of the Gardens greatly increased. His proposal is considered in the General Department of this government.

2. The experimental cultivation of rubber-yielding plants. The Ceara rubber plant has yielded a number of seedlings for *Landolphia*, which was forwarded by Sir John Kirk, Hebrides. On the other hand, the Para rubber plant (*Hevea*) has been successfully introduced, but its cultivation has been a complete failure, and its cultivation has been abandoned.

3. Much attention has been bestowed on the and other vegetable fibres for purposes of paper-making. Dr. King considers that what is required is some cheap method of removing the useless cellular tissue in order that the fibre may be transported without danger of fermentation. If this difficulty can be overcome, there is every prospect of the extensive use for this purpose of the introduction of the paper mulberry of China and Japan (*Broussonetia*) obtained from the leaves of a plant which was found in Chota Nagpore, or the "bbabur" grass common in the North-Western Provinces. The fibre of "bbabur" grass is well adapted for paper-making, and is nearly equal for this purpose to *Esparto* grass.

4. Considerable additions were made during the year to the collection of dried plants in the herbarium, the chief contributors being Sir J. J. Hooker, the Directors of the Botanic Gardens at Buitenzorg in Java, Mr. Gamble, Dr. Schlich, Colonel Beddome, the General of Forests in Madras, Mr. Fisher, Colonel Collett, C.B., Dr. G. Watt, and Revd. Mr. Heyde of the Gorman Mission at Ladak. Much activity was shown in the interchange of plants and seeds. During the year 23,939 living plants and 3,303 packets of seeds were distributed, the recipients being for the most part the Station Committees, Cantonment Magistrates, and Superintendents of Prisons. On the other hand, 9,706 plants and 883 packets of seeds were deposited in the herbarium, which had been vacant, was filled up early in the year by the appointment of Mr. L. J. K. Brace, and since the close of the year is now

a successor to Mr J. Craig in the post of Assistant Curator of the Garden
 has been appointed by the Secretary of State. The new incumbent, however,
 has not yet begun his duties. The Botanical Gardens at Darjeeling suffered during
 the year from the operations necessary for the construction of the
 European Hospital in that station. The loosening of the surface soil,
 was occasioned in the course of cutting away the top of the hill
 brought about a succession of slips, and much damage was done to the
 by stones and other débris. In addition to this, the grubs of a species of
 cock-chaffer made their appearance and committed extensive damage to
 the young plants. The Conservatory has been completed and
 flowers, and now presents a handsome appearance. It is hoped that
 stone-drains to catch the water from the hill above the garden will
 be completed by the Municipality during the current year.

6. The Lieutenant-Governor desires to acknowledge the excellent work done by Dr. King and his subordinates during the past year.

ORDER.—Ordered that a copy of the report and of the resolution submitted to the Government of India, in the Revenue and Agricultural Department, for information.

Ordered also that a copy of the Resolution be forwarded to the Superintendent of the Botanical Gardens, for information.

Ordered also that paragraph 2 of the Report, with extract from the Resolution, be forwarded to the General Department of Agriculture for consideration and orders.

By order of the Lieutenant-Governor of Bengal,

COLMAN MACAULAY,

Secretary to the Government of Bengal

No. 31 RT-F.

COPY forwarded to the Superintendent, Botanical Gardens, for information.

By order of the Lieutenant-Governor of Bengal,

COLMAN MACAULAY

Secretary to the Government of Bengal

YACHT "RHOTAS"
 The 11th August 1882.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE YEAR 1881-82.

No. 26G, dated Seebpore, the 14th July 1882.

From-GEORGE KING, ESQ., M.B., Superintendent, Royal Botanic Garden, Calcutta,
To-The Secretary to the Government of Bengal, Financial Department.

I HAVE the honour herewith to submit the ninety-fifth annual report of the Royal Botanic Garden.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE YEAR 1881-82.

DURING the year considerable progress was made towards completing the changes and improvements in the garden that have been in progress in the past few years. A large piece of ground to the south of the avenue leading to the great banyan-tree was laid out. From a lake cut out in the middle of this ground sufficient earth was got to raise the level of the ground and to form in part of it a series of gentle undulations. The drainage in this piece of ground are now very good. At the SPP^te.end of the garden finishing touchel were put on some work of a similar sort wW remained uncompleted at the end^of the previous year 'Similar ^ ^ J ^ T'; were also effected in various parts of the grounds. The formation of a boundary canal along the western limit of the garden has been pushed on; a good deal, however, Sill remains to be dug before this useful work ^complete. Vanou^ garden r^oads were remetalled and others were repaired, thepricks neee<uy for road-making having been all burnt withm the garden. In ^e construction of new building there has also been some activity. Some time ago ^overn-ment sanctioned the cost of a new conservatory for palms, tree-ferns, and other tall-growing equatorial plants, for which the temperature of our cold season is in the older low- ng been received

towards the end of the year, a beginning was made in pu... them together. The new conservatory promises to be a useful and handsome building, but some

2sr srsfyrJSsn a ^ ^ ^ nts. Proper accom- been a desideratum, l, inconvenient, and

the building in which they are at present located being; smal s ecial de igned leaky. The foundations of a new and commodious building e p y ^onths for nerbarium work were laid towards the end of the year and a few, m should see its completion. A new propagating-house has been erected and the tool-shed and carpenter's sho^ both of which were much damaged by a storm early in the year, have been put into thorough repair. ^ ^ ^ have been provided for connecting by undergTMund hannels the various ornamental lakes in the garden, so that the water m them j a y :be *j f' ank. uniform and high level by a steam-pump to be located o n J ^ N W D' as Keeping these lakes full of water will undoubtedly be a great improvement

regards both the beauty and the healthiness of the grounds. the ^ few y rs u 2. The grants of money made by Government during the ^ few yea It is having been on a liberal scale, the garden has practically L by ^ X d and lft

now a beautiful and shady park, traversed by numerous drivi ^ ^ ^ i n d i a n Paths, and containing many beautiful and " " ^ J I ^ ^ ^ S S ' r f C a l o u t t a and of ex otic plants. In it there is now provided ^ J ^ J K ^ a p i t y that an admirable means of instruction and recreation. It ^ * ^ S : d P, Loss the garden remains so inaccessible from Calcutta The n w w < x f n t but, the railway at Howrah has no doubt shortened the distance utb some e ^ ^ ^ after crossing the bridge, the route to the g a ^ r ^ ^ b f i n g constructed and narrow bazars of Howrah and Seebpore. The road J Q W u n n y r - ag (t does by the Port Commissioners from Howrah to Shalimar Pointter form ver^ ^ ^ close by the river for the most of its course, V : * T M S G S ^ ^ at Sha f i m a r, drive. But as at present designed, this road ends in ^ a ~ ~ this r o a d, i n g t e a d J, and is of no use as an approach to the garden. vvei<

ending at Shalimar, to be continued in front of the engineering workshops and college to the garden gate, the route from Calcutta would be vastly shortened and improved. This extension of the river-bank road would be a great public improvement, and I trust it may soon receive the attention of Government.

3. *India rubier*.—Ceard rubber continues to grow well here. Our trees are now beginning to seed, and from their produce I was able to distribute during the year a good many seedlings to tea-planters in Assam, Chittagong, and elsewhere. A species of *Landolphia*, which is one of the sources of the

have been raised, and these at present look very healthy. The plant yielding Pará rubber (*Hevea Brasiliensis*) has been abandoned, as Bengal climate proves quite unsuitable for it. Of *Castilleja* another South American rubber-yielding tree we have as many but it is being propagated as fast as possible.

The subject of the utilisation of plantain fibre has long been a matter of interest. It was first introduced during the war, when sliced stems were used for the manufacture of paper. The process is now being improved, and the fibre is being prepared for the paper-maker. It is a very strong fibre, and is being used for the manufacture of paper. The cultivation of this plantain fibre is being encouraged in some parts of the province, and it is being tried in Europe.

practical trials have been made in the North-West Provinces, and the result is very promising. The plant known in the North-West Provinces as *Eriophorum comosum*, was formerly used for the manufacture of paper, but the cost of its cultivation is so high that it is not profitable. The idea of its ever being cultivated in the North-West Provinces is precluded by the fact that it is a very hardy plant, which grows abundantly in the dry forests of the North-West Provinces. Mr. Ganibli, Conservator of Forests, Nagpore, has been supplied with seeds of this plant, and they have been sent to the Bally Paper Works for trial, and the result is very promising. The leaves of the plant, which are collected during the winter season, are used for the manufacture of paper. The process is now being improved, and the fibre is being prepared for the paper-maker. The cultivation of this plantain fibre is being encouraged in some parts of the province, and it is being tried in Europe.

and rain-tree still continue in demand, and during the year, seeds of *Divi Divi* still continue in demand.

tan, were distributed so far as the produce of our trees allowed. But from the slow growth of the tree in Bengal, I doubt whether its cultivation is likely to prove profitable in this province.

6. *Herbarium*.—The collection of dried plants has been considerably extended during the year. From Collectors in the Malayan Peninsula and Archipelago large and important Contributions have been received. The Director of the Botanic Garden at Buitenzorg in Java contributed some plants, as also did the Superintendent of the Botanic Garden at Hong-Kong. To Mr. Gamble, Conservator of Forests, I am indebted for collections from Bikkim, Chota Nagpore, Orissa, and the Sunderbuns; and to Dr. Schlich, Inspector-General of Forests, for some plants from the North-Western Himalaya. Mr. Fisher, of the Forest Department in Assam, sent collections from that province, while Colonel R. H. Beddome, late Inspector-General of Forests in Madras, made some interesting contributions of plants collected in the little-explored hill-ranges of the south of that presidency. Colonel Collett, C.B., of the 11th Pioneers, sent some most interesting plants collected near Kohima in the Naga Hills, and also communicated a small collection made near Quetta by Dr. Hamilton, of the Army Medical Department. To Sir J. D. Hooker, F.E.S., Director of the Royal Garden Kew, the herbarium is indebted for sets of the plants collected during the recent Afghan Expeditions by Dr J. Aitchinson, who was attached to General Roberts' force as botanist. Dr. Watt, of the Educational Department, sent a set of plants collected by him at high levels in Western Sikkim; and to the Reverend Mr. Heyde, of the German Mission at Ladak, I am indebted for a most interesting set of plants from that region. Mr. Ellis, of the Forest Department, also contributed many plants from Pangl.

7. *Interchange of plants and seeds*.—The issues of living plants for the year exceed considerably those of the previous years, 23,939 plants having been distributed. These were for the most part given to station committees, cantonment magistrates, superintendents of hospitals and jails. On the other hand, plants to the number of 9,796 were received from various contributors. In the Seed Department the issues were 3,303 packets, and the receipts 886 Packets. The contributors to whom the gardens are chiefly indebted are Sir J. D. Hooker, C.B., K.C.S.I., F.R.S., Director of the Royal Garden, Kew; the Directors of the Botanic Gardens of Buitenzorg (in Java), Ceylon, Hong-Kong, Melbourne, Demerara, and Jamaica; the Superintendents of the Government Gardens at Saharanpore and Ootacamund; Mr. J. L. Lister, the government Cinchona Plantation, and Mr. A. Simson, Calcutta Messrs. Veitch and Sons, London; William Bull, London; and Major Berkeley, Andaman; Mr. Phillips, of the Assam Tea Company; Babus C. Sein, Seebpore, and S. P. Chatterjee. To Messrs. Apcar & Co. my best acknowledgments are due for their generosity in giving free freight by their steamers to a large number of plants from the Malayan Archipelago.

8. *Official changes*.—Early in the year the long-vacant appointment of the (Worship of the Herbarium was filled by the arrival of Mr. L. J. K. Brace, a gentleman selected by Sir Joseph Hooker. Mr. Brace is devoting himself to his duties with much assiduity and enthusiasm, and he has already made considerable progress in reducing the arrears that had necessarily accumulated since Mr. Kurz's death, three and a half years ago. Mr. B. J. G. Curator of the Garden, having fallen into indifferent health, it was ordered to transfer him to the cinchona plantation. His place as Assistant Curator was taken by Mr. J. Craig, Assistant Curator. Mr. Craig has worked with worthy energy, but the duties are too heavy for a single man, and the new Assistant Curator engaged in England by the Secretary of

9. The budget for the year (including special grant for garden improvements) was Rs. 75,200, and the whole of that sum was spent. The receipts from the sales of plants and seeds amounted to Rs. 16,64, and were paid into the treasury as Government revenue.

10. *Lloyd Botanic Garden, Darjeeling*.—The year was a disastrous one for the Darjeeling garden. The erection of the new hospital on the top of the hill above the garden necessitated the cutting of a large quantity of old rock, and during the rainy season large quantities of this debris repeatedly

slipped down into the garden, overwhelming flower-beds, grass-plots, and roads, and uprooting trees. By one of these accidents the main vegetable garden was completely submerged, and for half the time no vegetables were available for the supply of the residents in the station. In addition to these misfortunes, the grubs of a cockchafer appeared in the soil in hundreds of thousands, eating up the roots of plants. Only the largest trees and the plants in the conservatory were saved. About three millions of them were collected and killed. The conservatory, which was under construction, was completed during the year, and presents really a fine appearance.

promised to make, are still unmade. Until the drainage system has been built, the garden will continue to be liable to occasional invasions of fluid mud, carried out in connection with the drainage. The most useful work of the year was the acclimatisation of a large quantity of English potatoes. This work was not all done by Mr. Jaffrey at the cinchona plantation. Messrs. Jaffrey and Jaffrey were very successful in raising potatoes from the improved varieties, and these acclimatised potatoes were distributed gratis both to the cultivators and to native cultivators in all parts of the district. The quality of the potatoes already become apparent during the current season. The sale in the Botanic Garden amounted to Rs. 12,208, and was all included in a special sum granted on account of the water-works. These were paid into the treasury.

11. The usual statements of the plant distribution are appended-

APPENDIX I.

Statement showing plants received from 1st April 1881 to 31st March 188a.

From whom received.	Wardian cases.	Boxes.	Number of plants.
Royal Garden Kew, London ...	7	1	254
- » Botanical Garden, Ceylon ...	2	...	54
• Botanical Garden, George Town, Demerara ...	3	...	428
» „ Jamaica ...	1	...	50
» „ Buitenzorgj Java ...	3	1	151
» „ Natal ...	1	...	47
5> „ Hong-Kong ...	1	...	18
a » „ Saharunpore ...	...	...	2
government Garden, Ootacamund ...	...	1	4
public Garden, Rangoon ...	...	1	8
Agri-Horticultural Society, Calcutta ...	...	...	3
Chief Commissioner, Central Provinces ...	...	1	7
Waffle Institute, Singapore ...	2	...	55
* S. Lister, Esq., Government Cinchona Plantation ...	...	30	1,005
-JJ > Edinburgh ...	...	...	15
«- B. Cooke, Esq., Calcutta ...	1	...	22
general R. Cadell, C.B., Madras ...	...	1	5
Major Wimberly, Andamans ...	1	...	14
Leutenant-Colonel H. Collet? C.B., Naga Hills ...	...	2	37
JJ- J. Linden, Ghent, Belgium ...	1	...	31
Messrs. Veitch and Sons, London ...	...	1	4
Jy-Bull, Esq., London ...	1	2	157
W George McLeay, London ...	1	...	43
^r- T. Beaumont, Hyderabad ...	...	1	5
L Bromeley, Esq., Burmah ...	...	1	60
^fex. Grey, Esq., Sourabaya, Java ...	1	...	31
Major Berkeley, Andamans ...	1	3	284
£ H. Bartlett, Esq., Calcutta ...	...	...	25
* H. Gilbert, Esq., Eangoon ...	...	2	92
*£- G. Griffith, Dinapore ...	...	2	42
W. Marshall Woodrow, Esq., Poona ...	...	1	12
^ B. West, Esq., Calcutta ...	...	...	21
gr. G. Watt, Manipur ...	...	...	2
* O. Forbes, Esq., Sumatra ...	...	1	15
* L A. Firth, Esq., Garden Each ...	...	...	16
* A. Donnithorne, Esq., Howrah ...	...	...	1
y Maries, Esq., Durbhunga Raj Gardens ...	...	3	483
^/H. Morris, Esq., as.. Pachmari, Central Provinces ...	...	1	5
J^ A. Campbell, Esq., Chittagong ...	...	3	301
*? Simson, Esq., Chittagong ...	...	24	336
^ M. Lowther, Esq., Howrah ...	...	...	1
^r- L. S. Sanders, Chittagong ...	...	2	53
«* Apcar, Esq., Garden Reach ...	...	...	3
* A. Apcar, Esq., Calcutta ...	...	...	1
^r- J. Anderson, Burmah ...	...	1	48
•^ PaUett, Esq., Howrah ...	...	...	1
A. parsons, Esq., Ajmere ...	...	2	88
J. Phillips, Esq., Assam ...	...	12	119
J. Ridley, Esq., Lucknow ...	...	1	60
E. Rimen, Esq., Andamans ...	...	...	27
W Wood, Esq., Calcutta ...	...	...	4
Elected by Superintendent in Darjeeling ...	...	32	1,552
> „ HerTKuns^ler^mJfg^a^^ ...	79	10	3,254
vr T" 55 R. tantling in Sikkim ...	...	3	145
* UBoeuf, Argenteuil, Paris ...	...	3	81
•^boo Okhoy Coomar Dutt, Bally ...	...	...	1
» P. C. Sen, Seebpore ...	...	...	156
p v 8. P. Chatterjee, Calcutta, ...	...	1	46
^nce Nooruddeen Khan, Eussapa^la ...	...	...	12
Total ...	106	150	9,796

APPENDIX II.

Statement showing plants sent out from 1st April 1881 to 31st March 1882.

To whom sent.	Wardian cases.	Boxes.	Number of plants.
H. R. H. The Prince of Wales, London		3	138
Her Excellency the Marchioness of Ripon		1	19
Belvedere Garden, Alipore			13
Commissioner and Conservator of Forests, Aimeré		5	344
Chief Commissioner, Burmah		8	50
Commissioner of Burdwan			42
Additional Commissioner, Lahore		3	50
Extra Assistant Commissioner, Nowgoing		2	39
Assistant " JQ^		2	18
Deputy " Sandoway		2	24
T> "i T. i . r, " Chyebassa		1	83
Royal Botanic Garden, Ceylon	1	1	125
" ^ Garden, Kew, London	4		121
Botanical Garden, Jamaica		2	77
Botanic Garden, Natal	2		107
" " Hong-Kong	1	1	68
" " Singapore		2	128
" " Saharunpore		2	28
Lloyd Botanical Garden, Darjeeling		1	155
Government Garden, Ootacamund		3	100
Eden Garden, Calcutta			381
Zoological Garden "			93
Agri-Horticultural Society, Calcutta"			80
Horticultural Garden, Lucknow		4	238
M. LeBoeuf, Paris		4	46
M. Louis Van Houtte, Ghent, Belgium		1	158
W. Dull, Esq., Nurseryman, Chelsea, London		5	45
Messrs. Haage and Schmidt, Erfurt, Prussia	1		48
Colonial Secretar Government of Mauritius		2	400
Consul-General f and Norway, Calcutta	13		52
Consul-General for Italy, Jakutta			55
" " S Am Calcutta			40
Officiating Colleo'to^BaWe^A Calcutta			17
Cantonment Magistrate, Dinapore	1		253
" " n^um		10	200
Magistrate and Ch^ainnan^ISunicipality, Calcutta			20
Lower Circular Road Cemetery, Calcutta		1	200
Mission House, Barrackpore			50
" " Calcutta			150
Moorgheehatta Cathedral "			1
Fort William,			50
			5
Sub-DiTisional Officer, Giridi"			1,009
Settlement Officer, Cúttack		3	417
Forest Officer, Khorda, Orissa			12
	1		100
tion, Rangoon		4	23
ent, Settlement Department, Rangoon	1		200
			600
ntendent, Small Arms Ammunition Factory, Dum-Dum			50
General Hospital, Calcutta			39
G. Pilcher, Howrah			4
			20
New Terai Association, Silliguri			60
Pattajhora Tea Estate, Juluri		6	97
Khetri B T A) S e Rai Ay		8	196
East Indian Railway Station Nalhati		4	1,000
South-Eastern State^aj way		4	2,000
State Railway, Tirhoot		9	1,050
United Service Club, Calcutta		1	4
Sup. m << e, to^als n, Benares			125
" T.-i^TMJail> Bu xar		5	500
" "		3	14
Jail, Furreedpore		1	

APPENDIX II—continued.

To whom sent.	Wardian cases.	Boxes.	Number of plants.
Municipal Corporation, Calcutta	65
Commissioners, Howrah	383
Magistracy, Howrah	191
Agent, Chartered Bank of India	4	67
Pursewah Factory, Jounporo	1	17
Civil Surgeon, Benares	12	160
Cluttagong	3	50
Executive Engineer, Midnaporo	2,000
For the Maidan, Calcutta	616
Government Jinchooa Plantation, Darjeeling	3	113
Superintendent, Durbhunga Raj Gardens	17	2,396
S. P. Apurva, Esq., Calcutta	56
J. B. Archer, Esq., Bhagulpore	4	80
Lieutenant-Colonel R. F. Angelo, Commandant, Chunar	4	48
A. Apar, Esq., Garden Reach	59
J. G. Bromley, Esq., Calcutta	24
Major E. Berkeley, Port Blair, Andamans	1	42
S. Bird, Esq., Calcutta	5
C. T. Buokland, Esq., London	2	64
G. Bartlett, Esq., Calcutta	71
T. Beaumont, Esq., M.D., Secundrabad	1	56
Sir E. Brady, BnrL, Dublin	36
»• Connor, Esq., C.E., Bhagulpore	1	80
•Dr. D. I). Cunningham, Calcutta	4	78
Commander of the Ship Mmtnl Scltiart	12
Hon'blo H. Crocker, Sarawak	2	73
W\ Cantwell, Esq., Calcutta	100
Hon'blo H. S. Cunningham	21
•• Calvert, Esq., Garden Reach	2	34
Captain of the S. 8. Banhoara	15
H- R. Cooko, Esq., Calcutta	16
M. C. Conrpte Gilbert desToiEins.Marseillee	1	31
H. Doran, Esq., Howroh	53
*• C. J. Dumaine, ChandernagoTS	2	276
Dbunfee Ohoy Edulphii, Calcutta	82
Miss Fendall, Calcutta	37
TM" A. Faciolle, Chaudemagore	2
H. Wilson, Esq., Sourabaya, Java	1	33
Colonel E. C. Impey, c.i.u., London	45
G. Griffith, Esq., Dinaporo	1	100
T. Greenhill, Ksq, Calcutta	3
•• II. Groves, Esq., Julpaiguri	12
~ Gilmore, Esq., Seebpore	12
A. Gunn, Esq., Singapore'	1	105
*• H. Hollway, Esq, Madeira	3	69
W. Hart, Esq., Calcutta	21
•• G. Heins, Esq., Calcutta	5
A. O. Hume, Esq., c.u., Simla	3	74
~ Heriot, Esq., Calcutta	13
*oshnastor-General, Bengal	25
•• M. Jackson, Esq., Str. Undaunted	24
^rs. Johnson, Hazaribagh	2	230
*• Jordan, Esq., Calcutta	10
J- Jordan, Esq., Howrah	64
•• B. West, Esq., Calcutta	137
^aptain "Warden,	36
A. Whyte, Esq., Raneegunge	1	10
*• Wood, Esq., Calcutta	6
*ajow Wimmerley, Port Blair	1	35
^s - Walker, Caloutta	10
%• J- "Wilson, Esq., Calcutta	12
l- "Wharton, Esq., Allahabad	1	6
•• Whitten, Esq., Fiji	1	30
ff- 9- Watt, Mampur	5	104
* •• Watkiu, Allahabad	1	10
Messrs. Williamson, Magor and Co., Calcutta	2	24

APPENDIX II—continued.

To whom sent.	WaTidian cases.	Bores.	If timber of plants.
Sandford Kilby, Esq., Calcutta	• ...		174
G. W. Kraal, Esq., Calcutta	...		10
G. Keit, Esq., Natal	...		24
A. Linberry, Esq., Kurseong	...		21
T. Nickels, Esq., Calcutta	...	1	6
—Enmis, Esq., "	...		11
A. Thomson, Esq., "	...		200
J. Morrison, Esq., London	...	1	37
G. H. S. Mayer, Esq., Seebpore	...		20
G. P. Martin, Esq., Seebpore	...		2
H. J. Murton, Esq., Singapore	...	1	62
F. A. Moller, Esq., Titalyah	...	4	66
R. B. McPhun, Esq., Calcutta	...		130
W. A. McLeod, Esq., S.S. City of Edinburgh	...		3
J. Marsden, Esq., Calcutta	...		3
Sir George McLeay, London	...	1	64
Miss Mulvany, Calcutta	...	2	36
Edward Mansfield, Esq., Singapore	...	1	40
A. B. Michell, Esq., Rangoon	...	1	12
A. Mears, Esq., Jamalpore	...	2	59
G. D. Oswell, Esq., Calcutta	...		200
W. Pigott, Esq., "	...		1
Mrs. Plowden, "	...		4
J. T. Paterson, Esq., London	...		m
Dr. Payne, Calcutta	...		m
M. H. DePerry, Pondichery	...		12
John Phillips, Esq., Nazira, Assam	...		2
Hon'ble W. C. Plowden	...	5	135
H. Peppe, Esq., Arrah	...	1	23
Dr. H. B. Purves, Dacca	...	3	31
Captain Reeves, Barque <i>Umvoti</i>	...	4	146
—Robertson, Esq., Chandernagore	...	2	70
Dr. Raye, Calcutta	...		100
Hon'ble Sir H. Ramsay, C.B., K.C.B.	...		62
G. A. Robertson, Esq., Calcutta	...	1	2
J. Schomburgh, Esq., "	...		2
Steward of S S. <i>Nepal</i>	...		27
A. Simson, Esq., Calcutta	...		8
Colonel Stanton, B.E., London	...		375
Dr. Shaw, Fiji	...	1	41
A. E. W. Sharpe, Esq., Calcutta	...	2	43
R. Souttar, Esq., "	...		13
D. M. Seit, Esq., "	...		100
R. Stack, Esq., Rangoon	...		12
C. Smith, Esq., Barque <i>Monk's Queen</i>	...		10
Messrs Stanley Price & Co., Calcutta	...		2
J. E. Tuson, Esq., M.D.	...		5
E. S. Vardon, Esq., "	...		12
Emigration Agent, Garden Reach	...		4
Government Workshops, Seebpore	...		20
Inspector-General of Railway Mail Service of India	...		52
Baboo A. Chatterjee, Seebpore	...		150
" B. C. Dass, Batra	...		1
" B. M. Kundoo, Burdwan	...	1	16
" B. B. Ghose, Taki,	...		1
" C. P. Bidyaratna, Hooghly	...	8	1
" D. N. Basu, Calcutta	...		1
" D. N. Sircar, "	...		3
" G. Kundoo, Mohiarhi	...		8
" G. L. Mulliok, Calcutta	...		32
" G. C. Mookerjee, "	...		19
" G. Mookerjee, "	...		1
" G. C. Singha, Dum-Dum	...		5
" G. P. Mookerjee, Goburdangah	...		21

APPENDIX II—concluded.

To whom sent.	Wardian cases.	Boxes.	Number of plants.
Baboo H. C. Gangooly, Seebpore	7
„ J. Kundoo, Motihari	2
„ K. S. Sahoy, Calcutta	3	24
„ K. N. Sein, Noparrah	3	25
„ K. D. Chokrobotty, Bhowanipore	1
„ G. G. Law, Calcutta	7
„ N. M. Bhattacharjya, Seebpore	20
„ M. C. Dass, Kidderpore	4
„ O. K. Dutt, Bally	29
„ P. C. Mookerjee, Calcutta	4
„ P. C. Sein, Seebpore	10
„ P. C. Eoy Chowdhari, Seebporo	13
» R. Sohoy, Baghee	1	15
» E. Malliah, Howrah	28
Rajah R. N. Roy Bahadoor, Calcutta	27
Baboo R. D. Sein, Calcutta	8
„ E. M. Gangooly, Seebpore	2
„ E. B. Eoy, Seerampore	7
„ S. C. Chatterjee, Batra	3
„ S. D. Narain, Calcutta	33
„ S. C. Eoy, Bally	8
» S. P. Chatterjee, Calcutta	21
» L. M. Sing, Chuckdigeo	12
Ex-King of Oudh, Garden Reach	7
Moulvie Allud Hossein, Jeypore	5	96
Messrs. P. Eamanjooloo Naidoo and Sons, Madras	1	.....	40
P- Eamangooloo Pershad, Calcutta	4
B. Khan, Nazirgunge	11
Shadho C. Samunto, Seebpore	8
U-uree, a native nurseryman, Calcutta	8,
Total	46	239	23,939

APPENDIX III.

Statement of seeds received from 1st April 1881 u 31st Marei .882.

From whom received.	Number of parcels or packets.
Sir J. D. Hooker, K.C.S.I., C.B., F.R.S., Royal Garden, Kew, London	12
Dr. Regel, Imperial Garden, St. Petersburg, Russia	110
Botanic Garden, Melbourne, Australia	9
Ditto, Ditto Hongkong, China	14
Ditto, Ditto Buitenzorg, Java	53
Ditto, Ditto Ceylon	3
Ditto, Ditto Jamaica	10
Ditto, Ditto Natal	3
Ditto, Ditto British Guiana	2
Ditto, Ditto Ootacamund...	6
Ditto, Ditto Saharunpore	31
Curator of Lloyd Botanic Garden, Darjeeling	10
Sir Ferdinand Von Muller, University, Melbourne, Australia	46
Agri-Horticultural Society, Punjab, Lahore	21
Ditto ditto, India, Calcutta	1
Ditto ditto, Lucknow	61
Director, Department Agriculture and Commerce, North-Western Provinces and Oudh, Cawnpore	3
W. Bull, Esq., Chelsea, London	2
Her Britannic Majesty's Consul-General, Zanzibar, Africa	4
Conservator of Forests, Bengal	8
Ditto ditto, Tenasserim Circle > BritishBurmah	10
Messrs. G. Brunning and Son, Nurserymen, St. Kilda Nurseries, Melbourne	2
Messrs. Woolson & Co., Passaic, United States of America	68
Messrs. Haage and Schmidt, Erfurt, Prussia	3
Messrs. Stanley Price & Co., Calcutta	44
Mr. Roberts, Nurseryman, Melbourne	102
Secretary to the Government of Bengal, Calcutta	1
Mr. Hodgson, London	1
J. Ninet, Esq., Alexandria, Egypt	1
Herr Kunstler, Plant Collector, Malayan Peninsula	1
H. O. Porbe, Esq., Plant Collector, Sumatra	53
Messrs. Inglis - Nixon and Co., Sydney, Australia	3
J. Cas s, Esq., Bombay	1
Messrs. W. liamson, Magor & Co., Calcutta	2
M. Sagot, Esq., Andamans	2
E. H. Man, Esq., Andamans	2
G. Barton Groves, Esq., Dacca	2
A. Parsons, Esq., Agricultural and Garden Superintendent, Ajmere	1
F. Wilcox, Esq., District Superintendent of Police, Hazaribagh	5
James Gammie, Esq., Government Cinchona Plantation, Darjeeling	2
Baboo Hari Bilash Agurwala, Tezapore, Assam	18
J. L. Lister, Esq., Government Cinchona Plantation, Darjeeling...	2
	150
Total	883

	Number of parcels or packets.
Sir J. D. Hooker, F.R.S., Eoyal Garden, Kew, London	70
Sir Ferdinand Von Muller, F.R.S., University, Melbourne	4
Herr Max Leichten, Baden, Germany	75
Captain Lawrence-Archer, Umberslade, Ealing Dean, Middlesex...	8
G. Arthur Whitten, Esq., Fiji Islands	1
Herr C. A. B. Moens, Bandong, Java	8
Bevd. R. Swani, Nassan, N. P. Bahamas	20
Hon'ble W. Kirkwood, M.D., Nassan, N. P. Bahamas	142
H. A. Brook, Esq., Nassan, N.P. Bahamas	14
Herr Dr. Treub, Director, Botanic Garden, Buitenzorg, Java	10
Director, Botanic Garden, Honkong	13
Ditto ditto, Mauritius	22
Ditto Botanic Eeserve, Bowen, Port Denison, Queensland	58
Ditto Botanic Garden, Ceylon	17
Ditto ditto, Ootacamund	15
Ditto ditto, Saharunpore	71
Curator, Lloyd Botanic Garden, Darjeeling	242
Superintendent, Model Farm, Nagpore, Central Provinces	1
Secretary, Queensland Acclimatisation Society, Brisbane, Australia	1
Secretary, Agri-Horticultural Society, Madras	2
M. J. Linden, Ghent, Belgium	3
Secretary, Agri-Horticultural Society, Punjab, Lahore	76
Ditto Ditto, Lucknow	17
Ditto Ditto of India, Calcutta	23
William Bull, Esq., F.L.S., Chelsea, London	1
Messrs. James Veitch and Sons, Chelsea, London	5
„ G. Brunning & Son, St. Kilda Nursery, Melbourne	16
„ Haage & Schmidt, Erfurt, Prussia	1
„ Woolson & Co., Passaica, United States, America	5
„ G. H. Buchanan & Co., Bowen, Queensland, Australia	5
„ Thomson & Mylne, Beheea	118
Deputy Conservator of Forests, Ban goon	4
Conservator of Forests, Bengal	2
Ditto, Poona	43
Commissioner and Conservator of Forests, Ajmere, Mherwar	30
Naryan Ballah Oke, Forest Officer, Kolapur, Bombay	4
J. Ninet, Esq., Alexandria, Egypt	193
Messrs. Grindlay & Co., Calcutta	20
„ Octavious SteeFfe Co., Calcutta	6
„ Stanley Price & Co., Calcutta	86
„ Inglis, Nixon & Co., Sydney	2
Hon'ble A. B. Inglis, Calcutta	55
A. Simson, Esq., Calcutta	2
Surgeon-Major Cowie, M.D., Calcutta	5
Dr. S. C. Mackenzie, Calcutta	103
„ C. J. Hancock, Hilika, Debrugarh	1
„ D. O' C. Baye, Calcutta	77
Surgeon-Major W. D. Stewart, Cuttack	1
Dr. J. G. Pilcher, Howrah	5
Bajah Ram Narain Doss Bahadoor, Assistant Surgeon, Calcutta	1
M. L. Voisson, Vice-Consul de Franoe, Khartoum, Egypt	61
M. le Chevalier Gallian, Italian Consul-General, Calcutta	13
S. E. Voiff, Esq., Consul for Sweden and Norway, Calcutta	12
John Kirk, Esq., M.D., Her British Majesty's Consul, Zanzibar, Africa	167
M. Hermann Soyaux, Gaboon, West Coast of Airica	29
Hon'ble J. B. Thurston, Secretary to the Government, Fiji Islands	240
The Hon'ble the Colonial Secretary to the Government of Mauri- tius	6
Chief Secretary to the Government of Cyprus	8
H. C. Levinge, Esq., Secretary to the Government of Bengal, r. w. Department, Calcutta	8
Robert H. Borland, Esq., Assistant Secretary to the Government of Punjab, Lahore	12
G. Arthur Whitten, Esq., Fiji Islands	4
His Honor E. B. A. Taylor, Nassau, A.P., Bahamas	20

APPENDIX IV—continued.

To whom sent.	Number of parcels or packets.
lieutenant-Colonel F. P. Luard, Garrison Quartermaster, Fort William	1
Lieutenant-Colonel A. J. Colvin Birch, Peshawar	1
Major A. Teind, Deputy Assistant Commissary. General	6
Dr. George Watt, Kishnagur College	133
General Manager, Court of Wards' Estate, Dinapore"	2
A. O. Hume, Esq, C.B., Rothney, Simla	17
J. W. Tyler, Esq., Superintendent, Central Prison, Arrah	4
Civil Surgeon JBurrisal, Eastern Bengal	50
W. M. Souttar, Esq.	31
B. L. Fizoni, Esq., Hazaribagh	1
Rev. Charles Kirk, Rajkote, Katty war	10
Secretary to the Municipality, Howrah	14
T. F. Peppe, Esq., Arrah	116
A. Mackie, Esq., Road Cess Committee, Lohardugga "	1
Dr. R. J. Qumhell, Superintendent of Jail Giridih, Bihar	6
Sub-Divisional Officer, Giridi, Ranwala, Punjab	37
James H. G. Hill, Esq., Chumparun	1
Major G. B. Abbott, Political Superintendent, Jhallawar, Rajpootana	32
Colonel Sladen, Commissioner of Arakan"	5
Major S. W. E. Esq., North Arakaa	11
Major G. B. Abbott, Esq., Barout, Meer	3
M. R. Weld, Esq., South Arcot, Madras	4
J. Ware Edgar, Esq., Motihari	1
W. H. Esq., Superintendent of Police, Cachar	45
A. Parsons, Esq., Ajmere	5
H. D. Vansittart, Esq., Mussoorie	10
Station Master, Kundwa, G.	1
Sub-Inspector of Bhootya School, Darjeeling	13
Baboo Ratab Narain Singh, Deputy Magistrate, Bankoora	46
„ Anomally Kundoo, Burdwan	1
Dhunjinshey Eduljee, Calcutta	2
Captain Reeves, Barque Umvoti, Calcutta	40
Henry M. Knight, Esq., Arundel Estate	2
C. J. Puddicombe, Esq., Manantoddy, Madras	4
Chas. J. Hancock, Esq., Hilika Tea Estate, Upper Assam	1
John S. Sealy, Esq., Pined Hills, Travancore	1
E. T. Seally, Esq., District Engineer, Motiharee, Chumparun	1
District Engineer, Runche	20
Ditto, Bhagulpore	5
P. H. Brown, Esq., Fund Engineer, Coconada	12
Lieutenant-Colonel Money, Durbhunga	53
Superintendent of Gardens, Durbhunga	42
Colonel C. B. I. Smith, Commissioner, Chattishgarh	13
Goa Plantation, Mungpoo, Darjeeling	1
B. a	20
Rev. K. Winter, Esq., Chaplain, Delhi	1
J. J. King, Esq., Calcutta	5
Secretary to the Cantonment Committee/beesa	181
	8
Total	3,303

FINA3XCIJUL, DEPARTMENT.

AGRICULTURE.

DARJEELING, THE 11TH SEPTEMBER 1883.

RESOLUTION.

READ—

The Annual Report on the Royal Botanic Gardens, Calcutta, for the year 1882-83.

Dr. King has prefixed to his report a sketch of the scheme of improvements in the garden grounds, which was submitted by him for the approval of Government in 1874, and which was finally completed in the past year. He writes:—

"The whole extent of the grounds has been raised in level, the necessary soil having been obtained from large sheets of ornamental water which have been cut out, these artificial lakes have been connected with each other by underground pipes, and a steam Pump has been supplied, by which the water in the whole system can be kept at a moderate level by means of water pumped up from the river. Numerous wide roads have been made all through the garden-so that carriages may now be driven through every part of it. This is an improvement which is much appreciated, as the old restriction to driving acted to a great extent as a deterrent to visitors. Numerous foot-paths have also been made. The bamboo and mat erections, which used to do duty as conservatories, have been replaced by three large, handsome, and efficient structures of iron, on which a thin thatch of grass is spread, and under shelter of which tropical plants thrive admirably. The valuable collection of dried plants has been suitably housed in a handsome building designed by Mr. E. J. Martin, the Government Architect, the internal arrangements of which are to a considerable extent adapted from those of the new Herbarium building at Kew. New propagating houses, tool, and potting-sheds have been erected, and good dwellings have been built for the members of the garden establishment, both European and native. A boundary wall and ditch have been partly built round the garden, and the landscape effects have been made in the gardens, and the collection have been increased by considerable accessions of plants, both indigenous and exotic.

The change in the whole aspect of the gardens since the scheme undertaken is scarcely to be understood except by those who are familiar with both conditions. The public of Calcutta, no less than the Government, are indebted to Dr. King for the exertions to which these great improvements are due.

2. Considerable attention was given to the cultivation of various economic plants. The Ceara rubber tree, which thrives well, and has a rapid growth, was propagated to a considerable extent, and the Zanzibar lubbock (*Landolphia*) has, it is said, found a congenial home in Lower Bengal. There has also been a steady demand for mahogany seedlings. Dr. King has been trying to obtain from Europe in large quantity the seed of the Per mulberry (*Broussonetia papyrifera*), which grows so abundantly in Japan of the food-plant known as the "Soybean" for export to the East. In this country, although he entertains some doubts of the success of the trial. A few plants of *Cinnamon*, which yields a valuable commerce, were received from Hong-Kong, but they do not promise well.

3. The subject of the utilization of various fibrous plants engaged the attention of the Superintendent in the past year. Mr. A. Berthet, of Rouen, with the consent of the Superintendent, sent of *Hebea* and other fibres, to erect in the garden his patent machine for spinning fibre. It was driven by the garden-engine and tried on various

words, « beautifully ample" J l a f r The " ^ ine is, m Dr. & n f e
 to give his mind to the Sect W W l " 16 doubt that if the inventor ., Se
 and cheap machines adanted t 1 ... O l u ? . We no difficulty in contriving simp
 for paper, cloth, or 3. Shu i J ^ T M fibre suitablo as a ra W ^ t &
 it cannot fail to pro * / o f th j u t S U < ? * T d l i n Q be successfully constructed,
 abounds with fibrous l m t s T h h T \ V a i n e a i n a n e p a n t h c w h i c h , H k e ^
 any further information on the T M V 7 * ? ^ M M T M i o * ^ be S l a d t o * * S f
 In his present reporter K i n 7 / n ^ f W h i c h D r . K i n g s m a y be able t o p r o c e e d
 r o p e m a k i n g i s L l & p p o d a o f f i i v ^ K t h e t h e ^ ^ u s e d b ? ? f e s ^
 supposed, but is derived f i n T M A i - e p h o r u m e m o s u m , a s h e h a d t o a b o u n d
 m the hill parts of S a r a n d ^ f ^ o ^ * * * > a g r a s s s a i d t
 .. - One of the S t a i P o r e , w h e r e i t i s k n o T M a s " b a i .
 through the kindness S t h p T T ; M ^ o / * * s t o c k e d ^ " C h i n e s e f i s h o b t a i n e d
 ^ . K i n g ' s p r o p o X o m i L u T , o r ? S u T h o m a s > o f t h e M a d r a s C i v i l S e r v i c e .
 as breeding ground for the f i ^ - K - I - 6 - T l o u s o r n a m e n t a l l a k e s i n t h e g a r d e n
 P a t s o f t W c o u n t r y ^ ? J S . r o ^ A i > h t ^ e r w a r d s b e d i s t r i b u t e d t o a l l
 Governor. r y , c o m m e n d s i t s e l f t o t h e a p p r o v a l o f t h e L i e u t e n a n t -

5. The S ^ A ^ g r the T b ? M U m , w h i c h w a s c o m p l e t e d d u r i n g t h e
 year under report, is w e l t a d a n ^ T
 have been considerable add i o n s £ 1 m T ^ W a ^ f o r i t - p u r p o a e . T J g
 contributors being H e r r K w i t * £ C o " e c t i ^ o f d r i e d p l a n t s , t h e c h ^
 Mr. W. A. T o l k e n t , M r . M a r s h a l l x r ^ a * 6 w a t e , i v i r . < > . * * and
 Dr. Anderson. A considerable nu J T o o d ? W i D r i * * * & * * > D r i , T r 6 U b , * r a s
 t i ; o b ^ e d t h r o u g h a a t i ^ f i 8 r o f s p e c i m e n s o f d r i e d p l a n t * J t o
 the higher f i l d m H i m a l a y a . f f i n S . . . c i . W h o m D r , K i n g h a d d e s p a t c h e d
 actively during the year / t h e i s s u e s b e i n f f i v * s e e d s a ^ d p l a n t s w e n t o J
 seeds, against 23,931 T a n d 3,303 r e s n e c S 2 ? , 4 8 3 o f H T M g p l a n t a a n d 5,32 * g
 and seeds were chiefly issued to S i s S ^ f P r e v i o u s y e a r . T h e p M g
 ^ ^ ^ J t o ^ P ^ t e n d e n t a o f & S ^ P a t i n g i n s t a t i o n s a n d a l o n s ,
 and to Municipalities. The receipts nu S o s P l t a l 8 5 a n e d u c a t i o n a l i n r t i n ^ 8 3
 packets of seed against 9,766 and 883 ? n T s s T A 9 5 , 7 9 6 l i v i o g p l a n t s a n i . 8 3
 Sir J. D. Hooker, the Directors of the B o f f ^ e l P r i n c i p a l c o n t r i b u t o r s b e i n g
 Jamaica, Hong-Kong, Natal, a n d S b S S l i n o ? , a r d e n s ^ C e y l o n , D e m e r a r a ,
 The whole of the budget allotment of R f ? ^ ^ r . K u n s t l e r a n d M r . M a n
 from the sale of surplus plants amounted t o g ? 6 ? * * * s p e n t , w h i l e t h e r e c e i p t

6. The Lloyd Botanical Garden, D a l l u ^ * ^ ^ - 1 0 - G .
 the depredations of cockchaffer grubs. « f f - C o n t i n u e d t o s u f f e r s e v e r e l y & > f
 on the fine rootlets by which plants absorb t h e ? g f U b , " D r - K i n g ^ r i t e S r " / e d
 only such plants escape as send their r o o U e t J d S n o H r i s , n i m e n t f r o m t h e s o i l , a n d
 penetrate. The whole of the grass in the I 1 7 e r i n t o t h e s o i l t h a n i t c a r e s t o
 rapidly succu ^ D e d t o i t s r a v a g e s , a s d i d ^ a i ^ a n d a l l h e r b a c e o u s V & &
 the deeper rooting shrubs and trees being £ S , o f t h e f l o w e r i n g s h r u b s , o n l y
 conservatories did not altogether escape; ^ u . * E v e n t h e p l a n t s i n t h e
 considerable numbers into the soil of the p o t s H \ . o f t h e i n s e c t h a v i n g g o t < > >
 district. It is often found m soil near t h e r i t e V ^ ? ^ U b i s n o t n e w t o S < < 0
 forest, and it not unfrequently does damage to n l v e o l d g ^ i n g s t a t i o n s i n t b
 hood of these. The cockchaffer, of which it k f t - e C r o p s i n t h e n e i g h b o u r -
 manure." By vigorous efforts Mr. J a f f r e y t h ^ g r u b . A p p e a r s t h u s t o a f f e c t
 in collecting and destroying some six millions of h i t o © g a r d e n , s u c c e e d e d
 since shown signs of disappearing. T h e - t h e g r u b s , a n d t h e p l a g u e b ^
 alterations on the top of the hill which w e r e n S < < " s u f f e r e d o w i n g t o
 the site for the Eden Sanitarium. H e a p s o f f ^ a f o r t K S p a S t i o S . < > i
 side of the hill from the hospital side b u ? s t l t l T ^ * k w e S t o v e r t h e
 further slips. Dr. King gives Mr. J a f f r e y w e l l / - - L e i n g t a k e n t o p r e v e n t
 and determination which he has displayed u n d e r ? - e ? V e d c r e d i t f o r t h e e n e r g y
 It is believed that the quality of potatoes i n t h e J e a r t e n i n g c i r c u m s t a n c e s -
 some extent by the distribution of a c c l i m a t i ^ g d i s t i c t h ? s i m p r o v e d t o
 the garden. The whole of the budget allotm ^ S ? h * p o t a t o e s p r o d u c e d i n
 the receipts amounted to Rs. J55-4-3. u t o t l x s # 8 } 8 3 0 ^ ^ v s p e n ^ w h i l e

7. The thanks of the Lieutenant-Governor are again due to Dr. King and his subordinates for the excellent work done during the year.

ORDER—Ordered that a copy of the Report and of the Resolution be submitted to the Government of India, in the Revenue and Agricultural Department, for information.

Ordered also that a copy of the Resolution be forwarded to the Superintendent of the Botanical Gardens for information.

By order of the Lieutenant-Governor of Bengal,

COLMAN MACAULAY,

Secretary to the Government of Bengal

No. 2035T—F.

COPY forwarded to the Superintendent of the Botanical Gardens for information.

By order of the Lieutenant-Governor of Bengal,

j L *W. L.*

Ofg. Undersecretary to the Govt. of Bengal

DARJEELING,
The 10th September 1883.

18.9.83
W. L.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA,
FOR THE YEAR 1882-83.

No. 32G., dated Seebpore, near Calcutta, the 6th July 1883.

From—GEORGE KING, ESQ., M.B., Superintendent, Royal Botanic Garden, Calcutta,
To—The Secretary to the Government of Bengal, Financial Department.

I HAVE the honour herewith to submit the Ninty-Sixth Annual Report of
the Royal Botanic Garden.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA
FOR THE YEAR 1882-83.

THE past year has seen the completion of most of the improvements in
the garden grounds which were sketched out by me for the approval and
sanction of Government in the year 1874. It may therefore not be out of
place to give here a short *resume* of what has been done, for during the nine
years that have elapsed since these proposals were submitted, the garden
has been practically re-made. The whole extent of the grounds has been
raised in level, the necessary soil having been obtained from large sheets of
ornamental water which have been cut out. These artificial lakes have been
connected with each other by underground pipes, and a steam pump has been
supplied, by which the water in the whole system can be kept at a high level
by means of water pumped up from the river. Numerous wide roads have
been made—all through the garden—so that carriages may now be driven
through every part of it. This is an improvement which is much appreciated,
as the old restriction to driving acted to a great extent as a deterrent to
visitors. Numerous foot-paths have also been made. The bamboo and mat
erections, which used to do duty as conservatories, have been replaced by
three large, handsome, and efficient structures of iron, on which a thin thatch
of grass is spread, and under shelter of which tropical plants thrive admirably.
The valuable collection of dried plants has been suitably housed in a hand-
some building designed by Mr. E. J. Martin, the Government Architect,
the *int* *SSS* *Sent*. of which are to a considerable *e x t e n t*, ^ ^
those of the new Herbarium building at Kew. *N T / J X n f h o f s e s* have
tool, and potting-sheds have been erected, and good *d w ^ g j j o w < . h a w*
been built for the members of the garden establishment, both *twopeaa*
and native. A boundary wall and ditch have been partly fault round the
garden; and, finally, attempts at landscape effects have ^ " ^ V ^ . *TM*
garden^ and the colleotion/have been increased by: < ^ d < < < " ^ ^
of plants, both indigenous and exotic. The collections still, however, require
strengthening in many important respects, and certain minor improvements
still remain to be carried out before the garden is in the condition I should

I k t e i t.

1 G 2. "The garden still remains comparatively inaccessible to **epub*^ and
there can be no doubt the number of visitors would be *be . , 1 a r ^ t g £ ^ £*
were it connected with the new road recently made by the Port' Oommw
sioners along the river bank between the bridge at Howrah and Shahmar.
At present this new road ends at Shalimar, and the *f* ^ V t h a t e v e n*
connected with the old road to the garden, through Seebpore, so that tor, a
visitor to this garden or to the Engineering College the new road is not only
useless, but misleading.

3. *Veonomic PUMts.*-Attention has been given during the year *o TM u s*
economic plants. The Ceara rubber tree has been propagated and *d i s t r i b u t e d*
to a considerable extent. This species grows quickly, *^ n ^ w e ' U l . d u r i n ^*
however, rather easily blown down or broken by the wnd, especiaiy *f o g*
**et* weather. The seedlings of the Zanzibar rubber P ** ^ < f ^ f ^ i n g*
the introduction of which we are indebted to Sir J *0 ^ ^ ^ ^ w ?*
rapidly, and this species appears to have *^ J ^ ^ T ^ p a p e r*
Bengal. Mahogany seedlings continue *i n s t e a y* *r r*
KuLry(Broussonetiapapyri/era) grows wonderfully well, and I am trying

to obtain the large quantity from Europe so as to be able to spread
 its cultivation in India. A few plants of the species of *Oinnamon*
 the Cassia bark of commerce were sent during the year from Mr. Ford,
 of the Botanic Garden, Singapore, to thrive very well here. Every of these do not promise
 food-plant known as the Soy bean, but being taken of them. The
 and its cultivation has been seen a good deal written about lately,
 obedience to the loudness of this people in this country. More
 I have arranged for a sum of £5000 to be given from a belief in its soundness,
 distribute these pretty extensively.

4. *Fibrous Plants* — Durian the native.

plants has received my attention. A few of the Nation of various fibrous
 plants has been given to Mr. A. B. Leitch, of Sir Walter De Souza,
 patent machine for cleaning sugar cane, and a Union of Rouen to erect in the garden his
 available were tried in it.

5. *Agave* — *Agave* leaf.

Several iterations it might be that fibre it is less suitable
 suitable, a stem of an urban plant, which is also not quite
 Sot'n' is beautifully simple, and I have little doubt its utility
 culturing simple and cheap machines adapted to a native use
 which may prove suitable as a raw material for paper, or for cloth, or
 The experience of the past year confirms the belief that plantain
 will one day come largely into use in India as a raw material for paper;
 and as plantain stems and leaves are not absolutely waste, the utilization
 would be a gain to the country. The leaves known as the yer/acula" S, have referred to
 the comosum. I have now Bat Med mv "If SL produce of natives for rope-making
 from *Andropogon involutus*. This grass, I find from enquiry locally made,
 Sabai. From these regions it can be obtained in quite considerable quantity
 quantity to make its utilization as a paper material a feasible project. A
 the people who act upon it, it is sufficient reason for its manufacture.
 or for shipping cuttings sufficient to employ, when necessary, as of p
 are pit S S W I T > ddlem" CtTi
 remain in abeyance. This is only in accord with the common experience
 in the mofussil, that competition in trade is not sufficiently keen to have much
 effect in keeping down prices, but that, on the contrary, traders still form guilds
 banded together to enhance prices, even at the risk of choking off demand.

5. *Introduction of Gourami Fish.*

Through the kindness of the Hon'ble
 H. S. Thomas of the Madras Civil Service, one of the garden tanks has been
 stocked with fry of this excellent Chinese fish. Should this species be found
 to thrive in Bengal, I propose, with the sanction of Government, to make use
 of the various ornamental lakes in the garden as breeding grounds, so that fry
 may be raised for distribution to all parts of the country.

My last report the new building for the Herbarium
 has been completed and made over to me by the Public Works Department.
 This structure, being built on open flue arches 7 feet high, is well raised above
 the ground, and ought to be perfectly dry. Internally it contains a single
 room, 115 feet long by 44 feet broad. Round the sides and ends of this room
 there runs, at 11 feet from the ground, a continuous gallery 15 feet wide.
 The gallery is connected with the floor of the other at the ends by a bridge, which
 is so it are connected with each other at the ends by a bridge, which
 Xrdsl of o W r d by the ends Except the fireproof The
 whchaf T wood, the building composed of and wind
 fact the fireproof The
 rary have been removed to

this building, and the short experience I have had of it leads me to believe that it is well adapted in every way for its purpose. The old building in which the collections were previously accommodated (in addition to its other faults) was hopelessly small, and in it the collections were so crowded that it was difficult to consult them. Moreover, a considerable proportion of the collections, which it was absolutely impossible to find room for within it, had to be accommodated in my own house. In the new building there is ample space, and *uf* the purchase of 24 new cabinets it has been easy to arrange the whole collections, so that they may be consulted with facility and comfort. The additions to the collections themselves during the year have been considerable. From the Malay[^]jr[^]Eaninsula, Herr Kunstler has sent a number of valuable and excellently prepared specimens; ffromTDiC[^]feorge[^]Watt, lately on special duty in Manipore, I have received a set of specimens illustrating the Flora of that most interesting frontier country. Mr. J. S. Gamble has contributed a number of dried plants from the northern parts of the Madras Presidency, and Mr. W. A. Talbot, of the Forest Department, has sent a number of fine plants from North Canara. Mr. J. Marshall Woodrow, of the Botanic Garden at Poona, has sent some interesting specimens of Deccan plants. Dr. Schlich, Inspector-General of Forests, and Mr. Hope, late of Dehra Dhoon, have sent interesting contributions from Northern India. To Dr. Treub, Director of the Botanic Garden of the Dutch Government in Java, I am indebted for some specimens of rare oaks, laurels, and figs ; and I have to thank Dr. J. Anderson, F.R.S., Superintendent of the Indian Museum, for an interesting collection of Mergui plants gathered during a visit made by him to that province. A considerable number of specimens were also brought together by native collectors whom I despatched to the higher Sikkim Himalaya.

7. *Interchange of Plants and Seeds.*—The issues of living plants were 29,483, as against 23,939 last year. Packets of seeds to the number of 5,224 Were also despatched, as against 3,303 last year. These plants and seeds were tor the most part given to Magistrates for planting in stations and along roads ; to Superintendents of hospitals, jails, and educational institutions, and to Municipalities. On the other hand, there were received, from various contributors in this and other countries, 9,796 living plants and 883 packets of seeds. Chief among the contributors have been Sir J. D. Hooker, K.C.S.L, C B., F-R.s., &c., of the Royal Garden, Kew; the Directors of the Botanic Gardens in Ceylon, Demerara, Jamaica, Hong-Kong, Natal and Singapore. Beautiful collections of Malayan plants have been sent from the Malayan Peninsula by Mr. Kunstler, and of Andaman plants from Mr. E. H. Man of the Andaman Commission. The garden has been, during the past as in former years, indebted to the kindness of Messrs. Apcar and Company for free freight on many packages of plants and seeds received from the Malayan Archipelago and from China,

8. The Herbarium has throughout the year been in charge of Mr. L. J. K. Brace, who has worked with much energy and enthusiasm. The removal of the collections from th[^]old to the new building was carried through by him ^m "without damage to a single specimen. During the year Mr. J. Craig filled the office of Curator of the garden ; but since the close of the year he has been dismissed for misconduct. The Assistant Curator, Mr. G. Urquhart, conducted his duties throughout the year to my satisfaction; as also did the native,, overseer Babu Prosunno Coomar Sein, and the head mallees in the several departments.

9. The budget allotment for the year was Rs. 70,350, and the whole of & was spent. The receipts from sale of surplus plants w^gve Rs. 1,494-10-6, [^]hich sum was paid into the treasury.

10. *Lloyd Botanic Garden, Darjeeling.* — **In my last report I stated that** this garden was being preyed upon by myriads of cockchaffer grubs. During the Tear now under review these creatures continued their depredations until they ^{kl}Ued pretty nearly every plant the garden contained. This grub feeds on the ^{fi}Qe rootlets by which plants absorb their nourishment from the soil, and only such plants escape as sendHheir rootlets deeper into the soil than it cares to penetrate. The whole of the grass in the garden and all herbaceous plants rapidly succumbed to its ravages, as did many of the flowering shrubs, only the deeper ^{sub}ing shrubs and trees being spared. Even the plants in the conservatories ^{did} not altogether escape; eggs of the insect having got in considerable numbers

into the soil of the pots. This grub is not new to the district. It is often found in soil near the sites of old grazing stations in the forest, and it not unfrequently does damage to native crops in the neighbourhood of these. The cockchafer, of which it is the grub, appears thus to affect manure. And there is little doubt that the abundance of the grub in the Darjeeling garden is due to the fact that the sweepings and filth of the station, which the municipality continued, in spite of many protests, to bury there for long after the garden was formed. The alterations on the top of the hill, necessary for the Eden Sanitarium, were also a fruitful cause of injury to the garden. Heaps of loose debris were shot over the side of the hill, and during the past two years quantities of this material were naturally rish in the garden. A portion of the municipal Mr. Jaffrey, the superintendent of the garden, made vigorous efforts to conquer the grub, and about six millions were collected and destroyed by the garden labourers under his supervision. This plague now shows signs of disappearing; and as suitable means are at last being taken to prevent further slips from the hospital hill, the prospects of the garden for the year now entered upon are therefore decidedly brighter. The acclimatized English potatoes produced in the garden last year were largely distributed in the district for seed, and it is believed that the quality of potatoes in the district generally has, by these means, been to some extent improved. The budget allotment of this garden for the year was Rs. 8,830, the whole of which was received, Rs. 355-4-3, were

yeL agf looked so pretty, and grassy slopes which
 11. appended. Ma* statements of seed and plant distribution are

APPENDIX I.

Statement showing Plants received from 1st April 1882 to 31st March 1883.

From whom received.	Wardian cases.	Boxes.	Number of plants.
"	2	.....	72
Royal Garden, Kew, London	1	.....	35
Bo. Botanical Garden, Ceylon #.	2	.....	130
Botanical Garden, George Town, Demerara	1	1	159
Ditto, Jamaica	3	1	51
Ditto, Natal	1	.....	92
Ditto, Hong-Kong	1	.....	15
Ditto, Singapore ... ..	.....	29	341
Lloyd Botanic Garden, Darjeeling ... ..	.....	.....	12
Zoological Garden, Calcutta ... ..	.....	.....	26
Agri-Horticultural Society, Calcutta	1	.....	42
Compagnie Continentale de Horticulture, Ghent	1	3	400
J. Gammie, Esq., Government Cinchona Plantation, Mungpoo	.....	.....	450
Government Park, Barrackpore ... ..	.....	1	50
Forest Officer, Darjeeling ... ..	.....	.....	20
H. R. Cooke, Esq., Calcutta	4	7	433
E. H. Man, Esq., Andamans ... ..	.....	2	100
Lieutenant-Colonel H. Collet, C.B., Naga Hills	1	.....	28
Messrs. Veitch and Sons, London	1	.....	26
A. Wilson, Esq., Surabaya, Java ... ..	.....	.....	19
G. H. Bartlett, Esq., Calcutta ... ..	.....	2	43
G. H. Gilbert, Esq., Rangoon ... ..	.....	1	3
"W. Marshall Woodrow, Esq., Poona ... ..	.....	.....	140
R. B. West, Esq., Calcutta ... ..	.....	1	54
Dr. G. Watt, Manipore ... ..	.....	1	4
M T. Beaumont, Hyderabad ... ..	.....	2	210
C. Maries, Esq., Durbhunga Eaj Garden ... ..	.....	1	40
A. Simson, Esq., Calcutta ... ..	.....	.....	12
Mr. S. T. Apar, Garden Beach ... ..	.....	.....	33
H. Pellet, Esq., Howrah ... ..	.....	16	215
J. Phillips, Esq., Allahabad ... ..	.....	4	26
J. Barton-Groyes, Esq., Dacca	1	.....	13
Mr. Eales, Fiji Islands	1	.....	56
C. Mansfield, Esq., Singapore ... ..	.....	1	12
Kohira Tea Estate, Assam ... ..	.....	3	90
R- H. Pilcher, Esq., Thyetmayo ... ..	.....	2	48
W. T. Kemp, Esq., Nilghiri Hills ... ..	.....	1	29
W. T. Carapiet, Esq., Singapore ... ..	.....	.....	2
J. Fosterman, Esq., Naga Hills	1	.....	34
T- J. Rowell, Esq., Singapore	1	1	15
A. de Roepstorff, Esq., Nicobar Islands, Australia ... ..	.....	.....	708
Collected by the Superintendent in Sikkim	32	23	2,142
Ditto by Herr Kunstler in Malayan Peninsula ... ..	.....	1	21
Ditto by E. Pantling, Esq., in Sikkim ... ..	.....	.....	105
Ditto by J. Craig, Esq., Curator ... ..	.....	2	2
*k. Leslie, Esq., Assam ... ..	.....	3	128
Colonel Langton, Rangoon ... ..	.....	.....	1
H. E. M. James, Esq., Calcutta ... ..	.....	.....	12
W. Pigott, Esq., Calcutta ... ..	.....	.....	75
J. Schaumburgk, Esq., Calputta ... ..	.....	.....	6
Messrs. Mackenzie, Lyall & Co., Calcutta ... ..	.....	.....	228
purchased from Messrs. Mackinnon, Mackenzie & Co., Calcutta	.....	.....	193
Messrs. Schcene, Kilburn & Co., Calcutta ... ..	.....	.....	1
W. Blanford, Esq., Calcutta ... ..	.....	.....	37
*Baboo S. p. Chatterjee, Calcutta ... ..	.....	.....	26
A nurseryman, Calcutta ... ..	.....	.....	62
MUlected by Bissoa, Dhangur cooly, in Chota Nagpore	.....	.....	49
fought from villagers ... ..	.....	.....	12
*deceived from unknown donor ... ..	.....	.....
Total	55	109	7,394

To whom sent.	Wardian cases.	Boxes.	Number of plants.
Tirhoot State Railway	40	1,029
Eastern Bengal Railway...	36	1,018
Superintendent, Central Prison	3	150
" " Jail, Buxar	20	740
" " " Furreedpore	4	200
" " " Gya	4	200
" " " Ranchee	3	50
" " " Fatehgarh	12	205
" * Telegraph Stores and Workshops, Calcutta	30
" Government Park, Allahabad	11	244
" Gunpowder Factory, Ishapore	74
Collector of Maldah	1	2
9) Purneah	1	2
99 Monghyr	1	2
99 Bhagulpore	1	2
99 Chittagong	1	10
99 Nuddea	1	5
5> Jessore	1	0
5, Midnapore	1	2
99 Hooghly	1	2
99 Shahabad	1	2
95. Beerbhoom	1	2
99 Bankoorah	1	2
59 Mymensingh	1	2
5> Burdwan	1	2
59 Furreedpore	1	2
» Backergunge	1	2
Lieutenant-Colonel R. E. Money, Durbhunga	1	5
Y* H- Harding, Esq., Howrah Hospital	134
A- A. Apar, Esq., Calcutta	62
A- A. B. Anderson, Esq., Kondoli	3	36
lieutenant-Colonel R. F. Angelo, Chunar	11	205
§. T. Apar, Esq., Calcutta	17*
«• Anderson, Esq., Assam	1	112
**• B. Anderson, Esq., Ketella, Assam	40
y- F. Avetoon, Esq., Calcutta	300
L-Atkinson, Esq., Akyab	3	45
W- V. Browning, Esq., Calcutta	12
*• Biden, Esq., Calcutta	100
£• -Bartlett, Esq., Calcutta	42
Captain Buller, Mergui	75
p 5> Bid well, Ship <i>Merwanjee Framjee</i>	5
*> K. Buchanan, Esq., Kalagool	50
4^T T. Beaumont, Hyderabad	2	24
Monel E. R. (j. Bradford, c.s.i., Ajmere	2	43
^Benson, Esq., Seebpore	35
Wiss Berhend, Calcutta	4
i- i) Bar^5 Esq., Garden Reach	46
P- h^r^J Es(1- Calcutta	6
T^ V;^> Campbell, Esq., Howrah	28
*• Maclean, Esq. *	13
Reverend J. J. Cocken, Howrah	100
^- Clark, Esq., Calcutta	1
I Cook, Esq., "	46
Major Court,	5
E. J. R. (M...) Esq., Chandbally...	1	20
y- ^nadburn, Esq., Chitpore	25
fi A. Cassels, Esq., Bombay	1	10
^s s.r.s. Cautwell & Co., Calcutta	200
p. ^aambers, Esq., Howrah	48
S- C. Chick, Esq., Howrah	50
Gonera^1 R. Cadell, C.B., H.A., Edinburgh	1	28
J. D... Idson, Esq., Allahabad	1	4
W- Whs, Esq., Howrah	17
T- A... Esq., Sydney, Australia	6	750

To whom sent.	Wardian cases.	Boxes.	Number of plants.
J. Eyre, Esq., Assam			50
C. Fouracres, Esq., Seebpore			108
F. Fouracres, Esq.			24
M. Fosterman, Esq., Naga Hills			55
W. S. Grieve, Esq., Bally	1		50
B. Groves' Esq., Post-Master General, Dacca		3	104
fr S S X ' K i & Co., Calcutta		1	570
M. Gutteling, Esq., Calcutta			7
E. George, Esq., "			3
J. Coles Harding, Esq., Rangoon			18
W. G. Head, Esq., London	1		25
2- 5; A riot, Esq., Howrah	1		21
Hon Jle W-W-Hunter, Calcutta			235
W. M. Henot, Esq., Howrah			30
Oaptam Holmes, Ship Oreila			105
Haughton, Madras			4
J. H. Ha			25
H. E. M. Carisbrook Castle		1	156
W. A. Kraal, Esq., utta			1
S Kilbey, Esq., "			4
E. Kemp, Esq., "			3
Mr. Kohheng		1	20
A. Langham, Esq., Goosery			2
D. Low, Esq., Calcutta			48
T. Lidbe niputa, Assam			80
S 5 Aeslie, Esq-> Bishnath		2	50
H-Man, Esq., Andamans		2	54
Mullane, Esq., Dhubri, Assam	4		40
rs, ttsq., Jamalpore j Gardens		3	126
H Aey, rs, Esq, Seebpore		16	14
RMansBeld, Esq., Singapore		6	771
J. Moir, Esq., Calcutta	1		117
A. H' Masson, Esq., Seebpore			24
j. D. Maxwell, Esq., Calcutta			24
Miss Mulvanee, Calcutta			36
S. McD o, Id> Es<, Shi P Dyall			10
T. Masfadyen, Esq., Calcutta			300
C. M. Carl o A Esq Seb		3	200
A. M. C. o, Es q-> Tirhoot			12
P. Nor do, p, rd s> Esq., Calcutta		1	4«
Colonel Nicholls, Calcutta			30
Miss Pigott, Calcutta			855
K. H. Pilcher, Esq., Thyetmayo			1
E. A ? . P S A r » Es < 1' Chandba Uy		3	32
A. Powell, Esq., Calcutta		7	22
Messrs. Parry and Co > udd ras			30
B. Pantling, Esq., Mungpoo	1		63
A. g Par A r' Esq., Calcutta		1	134
A H, Peffe, Esq, Aarah			13
Hon ble Sir H. Ramsay, K.C.B., C.B.		4	100
A. Robinson, Esq., Calcutta		1	26
Mr J. Kowen, Es sin e			55
A. E. W. Shar, f C w r a h	1		4,560
J. Schaumburgk, Esq., Calcutta			2
Dr. E. Sanders, Chittagong			34
T. Simson, Esq., Howrah			34
Messrs. Schoene, Kilburn and Co, Calcutta		3	23
Colonel S. Stanton, R.E., Calcutta			33
H. G. Scott, Esq., Calcutta		20	60
W. Hs wsa nE Es q, "			42
D. M. bmeaton, Esq., Bangoon			95
		8	12
			51
			2
			8 packages, seed potatoes.

APPENDIX II -concluded.

To whom sent.	Wardian cases.	Boxes.	Number of plants.
C. Toynbee, Esq., Kornafriili	8	150
R. Turnbull, Esq., Calcutta		30
Hoabltf J. S. Thomas, Madras	2	30
J- E. Tuson, Esq., M.D., Calcutta		3
Y. Tee, Esq.,		4
E. S.-Vardon. Esq.,		2
R. B. West, Esq.,		210
A. Wilson, Esq., Sourabaya, Java	3	80
Dr. G. Watt, Manipore	1	12
J. Wormald, Esq., Dewsberry, England	1	3
J.T., Wilcox, Esq., Calcutta		4
Babu A. Pershad,		2
» B. N. Ghose, Kishnagar		25
» B. B. Mookerjee, Calcutta		2
» B. Ghose, Seebpore		16
» C P. Banerjee, Calcutta		* 1
» D. N. Eoy, Seebpore		8
» D. Dass, Kidderpore		2
» P. B. Mookerjea, Calcutta		a
> Gr. (J. Dutta, Seebpore	1	40
» W. C. Mookerjee,		1L
» Gr. C. Mookerjee, Calcutta		1
» Gr. D. Koondoo,		8
'> H. M. Chatterjee, Seebpore		4
» H. C. Ghose, Akra		2
» J- N. Mookerjee, Barasat		200
» J. N. Mitra, Calcutta		24
» J- N. Tewary,		75
» J. N. Mullick, Andool		27
» J- N. Groopta, Hooghly		2
» K. K. Bose, Kidderpore		11
» K. B. Mullick, Calcutta		107
» K- K. Mondol, Talligunge		15
» L. M. (Jhatterjee, Seebpore		11
» M. S. Dass, Benares	1	2
» N. M. Bhattacharya, Seebpore		24
» N. N. Mookerjee, Calcutta		4
» A. K. Dutta, Bally		16
» P. C. Mitra, Calcutta		14
» P. N. Banerjee, Subernagram		6
» Kamessur Malliah, Howrah		74
» R- N. Eoy, Calcutta		37
» E. C. Mookerjee, Howrah		2
» o. P. Chatterjee, Calcutta		106
» T. C. Roy, Seebpore		1
Essa M ally, nurseryman, Manicktolla		3
Sopal » ditto, ditto		3
aree » ditto, ditto		49
eenat » ditto? ditto		42
Meeah Khoda Bux, Sonai		17
Total	44	442	29,483

APPENDIX III.

Statement of *Seeds received from 1st April 1882 to 31st March 1883.*

From whonyreceived.		Number of seeds or packets.
Sir J. D. Hooker, K.C.S.I., Director.	Royal G. r. f. n., Ke_w> London	43
Dr. Regel, Imperial Garden, St. Pe	Botanic Garden, Trinidad, West In	207
Ditto	iNatal	20
Ditto	George Town, Demerara	8
Ditto	Harward University, U. S. A.	2
Ditto	Singapore	1
Ditto	Hobart Town, Tasmania	24
Ditto	Jamaica	43
Ditto	Buitenzorg, Java	4
Ditto	Hong-Kong, China	1
Ditto	Peradeniya, Ceylon	10
Ditto	Saharanpore	1
Ditto	Darjeeling	118
Sir Ferdinand Von Muller, F.R.S., Melbourne, Australia	Secretary, Agri-Horticultural Garden, Lucknow	437
Ditto	ditto of India, Calcutta	8
Messrs. G. Brunning and Son, St. Kilda Nurseries, Melbourne	Her Majesty's Consul-General, Zanzibar	52
Conservator of Forests, Pegu Circle	Ditto ditto, Northern Division, Bombay	33
Ditto	Deputy Conservator of Forests, Kurseocg Division, Bengal	1
W. Scott, Esq., Assistant Director of Forests and Gardens, Mauritius	Deputy Commissioner of Forests, Nilghiri Hills	1
His Excellency General Lord Napier of Magdala, G.C.B., &C.	Chas. S. Bayley, Esq., Officiating Under-Secretary to the Govern- ments Bengal	4
Director, Department of Agriculture and (Commerce, North-Western Provinces and Oudh	Dr. Beaumont, Eesidency Surgeon, Hyderabad	2
Sir George Macleay, P. endal Court, Surrey, England	Count Gilbert des Voisms, France	1
E. H. Man, Esq., Andamans...	A. Parsons, Esq., AjmeA	17
W. J. Talbot, Esq., Yellapur, North Canara, Bombay	T. C. Anderson, Esq., Annfield, Ceylon	99
Colonel Collett, C.B., Mean Meer, Punjab	Dr. Sanders, Chittagong	15
Colonel Angelo, Chunar	M. -Ernest Michel, Avocat, Paris	1
*A. Sirason, Esq., Calcutta	Messrs. Williamson, Magor and Co., Calcutta.	1
Dr. George Watt, Manipore...	Herr H. Kunstler, Penang	5
J. Gammie, Esq., Government Cinchona Plantation, Darjeeling	R. Pantling, Esq., Mungpoo, Darjeeling	11
J. L. Lister, Esq., Nimbong, Darjeeling...	Collected from jungles, &c.	6
		315
		46
		21
	Total	1,623

APPENDIX IV.

Statement showing Seeds distributed from the Royal Botanic Garden during the year 1882-83.

To whom sent.	Number of parcels and packets.
Sir J. D. Hooker, K.C.S.T., F.R.S., &c, Kew, London ...	295
Dr. Begel, Imperial Garden, St. Petersburg, Russia ...	128
Sir Ferdinand Von Muller, University, Melbourne ...	5
Dr. Treubj Buitgnzorg, Java ...	78
C. Ford, Esq., Botanic Garden, Hong-Kong ...	21
Botanic Garden, Mauritius ...	14
Ditto Golden Spring, Jamaica ...	5
Ditto Peradeniya, Ceylon ...	2
Ditto Turin, Italy * ...	153
Ditto Durban, Natal ...	207
Ditto Trinidad, West Indies ...	104
Ditto Guneshkhind, Poona ...	1
Ditto Singapore ...	25
Ditto Saharanpore ...	234
Ditto Darjeeling ...	494
Curator, Botanic Eeserve, Bowen, Queensland, Australia ...	37
Captain Lawrence, Archer, Ealing Dean, Middlesex ...	1
Secretary to the Queensland Acclimatization Society, Queensland ...	30
Ditto Agri-Horticultural Society, Madras ...	2
Ditto ditto, Punjab, Lahore ...	41
Ditto ditto, Central Provinces ...	2
Superintendent^ Horticultural Gforden, Lucknow ...	2
Secretary to the Agri-Horticultural Society of India, Calcutta ...	20
M. A. Godefroy Lebeuf, Argejitenil, France ...	1
W. G. Head, Es*q., Horticultural Department, Crystal Palace, London ...	8
"W. Bull, Esq, Chelsea, London ...	3
Messrs. James Veitch and Son, Eoyal Exotic Nursery, Chelsea, London ...	170
Messrs. Haage, Schmidt and Co., Erfurt, Prussia ...	83
Superintendent, Government Farm, Khandesh, Bombay ...	1
Conservator of Forests, Pegu Circle, Eangoon ...	28
Ditto ditto, Moulmein ...	1
Ditto ditto, Kurseong Division *	1
Ditto ditto, Eangamati, Chittagong ...	1
Deputy Conservator of Forests, Buxa, Bhootan ...	16
Assistant ditto ditto, Beluchistan ...	6
Conservator of Forests, Baroda ...	1
Deputy Conservator of Forests, Dehra Dun ...	1
Conservator, H. H. the Nizam's Railway Forests, Hyderabad ...	1
Dr. Bidie, Superintendent, Central Museum, Madras ...	1
The Commissioner and Conservator of Forests, Ajmere, Baj- putana ...	34*
Chairman, District Eoad Cess Committee, Chumparun ...	6
A. W. Mackie, Esq., Eanchi Municipality ...	49
Vice-Chairman, Municipality, Eampore Beaulah ...	1
Ditto ditto, Noakhally ...	1
Hon'ble H. L. Dampier, Calcutta ...	101
Major G. F. E. S. Neill, P. W. Department, Calcutta ...	1
Colonel Stanton, R.E., Calcutta ...	1
M. J. Gallian, Consul-General for Italy, Calcutta ...	90
% Colonel Mattson, Consul-General, U. S. A., ..	3
>> E. B. Sladen, Commissioner of Arakan ...	6
A. H. Hildebrand, Esq., Deputy Commissioner, Arakan ...	12
j M. E. Weld, Esq., S. Arcot, Madras Presidency ...	>> 8
Captain Parrott, JBritish Burmah ...	10
La Marchesa Estherdella, Valb de casa, Italy *	14
Sir George Macleay, Pendell Court, Surrey, England ...	150
Eight Hon'ble the Earl of Ilchester ...	42
Messrs. Stanley, Price & Co., Calcutta ...	2
A. J. Niool, Esq., London ...	62
Messrs. Woolson & Co., Passaic, N. X, U. S.'A. ...	61
J. H. Mangles, Esq., Velewood, Hazlemere, Surrey ...	22
John T. D. Llewelyn, Esq., Swansea, England ...	5G
S. T. Apcar, Esq., Calcutta ...	1
Mr. Edward, ..	50
Surgeon-Major W. D. Steward, Cuttack ...	1
Captain Barlow, Calcutta ...	1
J. G. Apcar, Esq., ..	1
S. T. Apcar, Esq., ..	1
TT... ..	111

APPENDIX IV.—concluded.

To whom sent.	Number of J** ¹ and packets.
C. Maries, Esq., Baj DurbMnga	80
Lieutenant-Colonel R. P. Money, Durbhunga	32
E. H. Man, Esq., Endamans	2
J. D. Davis, Esq., Assistant Commissioner, Tenasserim	2
Lieutenant-Colonel W. Tweedie, Political Resident, Turkish Arabia	1
" " C. Smith, Resident, Udaipur	10
" " Angelo, Chunar	12
J. G. Gamble, Esq., Wynberg Hill, Cape Town	195
Shirmant Gan gadhur Yashvant, Myral, B aroda	160
James Inglis, Esq., Sydney, Australia	197
Major H. B. Abbott, Political Superintendent, Jhalarapatan	5
A. Parsons, Esq., A j mere	23
J. Gammie, Esq., Government Cinchona Plantation, Darjeeling	4
R. Pantling, Esq., ditto ditto ditto	2
J. Kennedy, Esq., Darjeeling #	2
Superintendent of Works, P. W. Depi, Cooch Behar State	1
General Manager, Court of Wards' Estate, Dinagepore	1
Robert Harland, Esq., Asst. Secy, to the Govt. of Punjab	10
Major A. T. Laughton, Rangoon	2
D. P. Skipton, Esq., Damoh... ..	36
The Local Fund Engineer, Coconada	32
District Engineer, Rungpore	2
Executive Engineer, Buxar	1
G. W. Jameson, Esq., Sakesar Hill, Shahpore, Punjab	5
Superintendent of Jail, Berhampore ...# ... *	1
Dr. T. S. Thomson, Colachel, Travancore ...*	4
Thomas C. Wilson, Esq., Socrabaya, Java	1
Thomas Barnard, Esq., Buxar	7
Lieutenant-Colonel Gwyune, Manchester Regiment"	3
J. H. Lawrence, Esq., Ealing Dean, Middlesex	1
A. MeD. Clark, Esq., Calcutta	1
A. P. Webb, Esq., Barout, Meerut	3
W. Parry Crake, Esq., Madras	1
The General Manager, Court of Wards' Estates, Dinagepore	2
Colonel C. B.JLucie Smith, Raipur	1
Captain W. E. Cahusac, Poona	3
Major H. M. Burgess, Quetta	1
Captain J. Y. Worthington, Algier Mustapha, Algiers	1
J. Peter, Esq., Chandpore, Cachar	1
Percival Bury, Esq., Ranchi	1
J. G. Horsfall, Esq., Masaulipatan	1
Reverend P. J. Wlkinson, M.D., Kumaon #	171
J. F. Maclaren, Esq., M.D., Jullunder	119
J. F. Bourdillon, Esq., Trevandrum, Trevancore	1
C. E. Welldon, Esq., Ceylon	2
T. H. Stephens, Esq., "	2
Collector of Balasore	1
Reverend J. Woodside, Fatehgarh	203
G. H. Pewor, Esq., Chunar ... *	1
Mrs. Annee Gimbet, Sala Bwaie, Assam	1
The frincip&l, Ravenshaw College, Cuttack	04
Captain Reeves, Barque <i>Umvoti</i>	207
A. W. B. Power, Esq., c.s., Deputy Commissioner, Lohardugga	2
W. W. Johnston, Esq., Dhadka, Manbhoom	1
Señor Don Thomas Heradio Malago, Gibraltar	135
Howard Bendall, Esq., M.B., Steam-ship <i>India</i>	61
F. C. Anderson, Esq., Dickoya, Ceylon	1
District Superintendent' # Police, Jhansi	L
Sir H. T. Macpherson, K.C.B., C.B., Allahabad	136
Magistrate of Patna	1
Kour Jainarain Singh, Didwary, Dasna	1
Babu Bonomally Kundoo, Burdwan	2
" Surujdeb Narayan Singh, zemindar, Belegurh, Tirhoot	1
" Protap Narayan Singh, Bankurah	1
" Devendra Nath Roy, Maldah	1
" Mohendi; a Nath Sein, Nyohatia	75
" Hurry Mohun Mookerjee,	

FINANCIAL DEPARTMENT.

AGRICULTURE.

DARJEELING, THE 9TH MAY 1884.

RESOLUTION.

READ—

Report on the Koyal Botanic Gardens, Calcutta, for the year 1883-84.

Completion of the general scheme for improvements last year left little to be done in the way of original work. The planting out of the palm-plantation of which had been completed during the previous year, noticeable work carried out in the Garden during 1883-84. Some plants that had outgrown the limits of the former low-roofed house, were transplanted, while the interspaces between the larger plants were filled in by lower-growing species of various kinds—*aroids*, *Linella*, and the like. The palm-house already presents a pleasing appearance and the general effect of it will be greatly enhanced if the plants continue to grow. The steam-pump, which was lately erected at the Garden tank, is in successful operation throughout the year. The distance and inaccessibility of the Garden from Calcutta greatly increases its value as a health and pleasure resort. A service of passenger steamers has been established, which call at several points within the port, the catling places being the Mattiabruj ghat, opposite the Garden, and a landing-stage were erected by Government on the Uowrah side of the river, at some place close to the Garden, the inducement induced to call there, and thereby render it much more attractive to the public. The Lieutenant-Governor would be glad to see if it does not involve a large expenditure. A communication on the subject will be addressed to the Agents of the Steamer Service.

The economic plants which engaged the Superintendent's attention during the year were the *Sabai* grass, the paper mulberry [*Broitssonetiapapyri/era*], the plant yielding the *Cassia* bark of commerce, and the Soy bean. The grass was extensively distributed in various parts of the Province, and its utility as a paper fibre has been established beyond doubt. The paper mulberry, which has an easy and rapid growth, was planted by a paper-manufacturer, and pronounced to be "an admirable article." Dr. King believes that the plant is capable of producing the best paper fibres known—a fibre at once strong and fine, and capable of being bleached. Experience has shown that the plant grows as well in the drier climate of Durbhunja as in the lower parts of Bengal; and with a view of extending the cultivation of the tree, Dr. King is having a plantation prepared for issue and for planting out in vacant spots within the Garden boundary. A further consignment of the *Cinnamon* plant arrived from Hong-Kong during the year. The plants, though healthy, died as they seem to grow slowly, it will be some time before the King had arranged for supply from Japan, was distributed during the year among planters and others for experimental cultivation. The result was a failure.

The experiment of utilizing the ornamental lakes in the Garden as breeding-grounds for Gt. mrami fish has also proved a failure. One of these tanks was locked with a quantity of this fish, which had been supplied by the Madras Civil Service; but on the hike being made, not a single fish could be found. The Superintendent, however, proposes to make a further trial.

The insufficient accommodation afforded by the old herbarium, it is possible to arrange and name a large collection of dried plants received during the past few years; but since the completion of the

... this botanical pamphlet which was made classifying the large number of valuable plants received in the year from the Royal Garden at Kew and the ... contains. Very valuable both in ...

Mr. Ford, Dr. Cooke, Mr. Hallett, Mr. Duthie, Dr. Trimen, Mr. Levinge, Mr. Hildebrand and Dr. Hay. The interchange of seeds and plants went on actively during the year. Twenty-three thousand eight hundred and nine living plants and ... seeds were distributed, the principal recipients being ... Cantonment Magistrates, ... also sent to the International ... Calcutta. On the other ... various contributors ... Presented to the Government ... to Rs. 1,345. ... Resale of surplus plants amount ... was spent.

6. The ... Botanical Garden ... London for identification and ... have been sent to a specialist ... King's proposal to suspend ... of living plants from the ... Governor. A similar ... to coffee planted in ... destructive in ...

W ? - f i R 2 ^ ? % ^ ... done by Dr. King ... to knowledge the excellent ... Ordered that a copy of the ... Report and of the Resolution be forwarded to the Government of ... Revenue and Agricultural ...

tenden ... hat a copy of the Resolution be forwarded to the Superintendent of the Botanical Gardens for information.

By order of the Lieutenant-Governor of Bengal,

E. N. BAKER,

Of a secretory to the Government of Bengal.

COPY forwarded to the Superintendent of the Botanical Gardens, Calcutta, for information.

Resolution, for ... Dr. ... and of paragraph 2 of the ... King's suggestion, enquiry ... as to the site of the landing-place, and an estimate prepared

By order of the Lieutenant-Governor of Bengal,

E. N. BAKER,

Secretary to the Government of Bengal.

DAJEEL, N^o,
9th May 1884.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA,
FOR THE YEAR 1883-84.

No. 21G, dated Seebpore, the 19th April 1884.

From—GEORGE KING, ESQ., M.H., Superintendent, Royal Botanic Garden, Calcutta,
to—The Secretary to the Government of Bengal, Financial Department.

I HAVE the honour herewith to submit the ninety-seventh annual report of the Royal Botanical Garden.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA,
FOR THE YEAR 1883-84.

This is my last annual report I announced the completion of the scheme of garden improvements which I originally submitted to Government in 1874, in which I there stated that little more remained to be done in the way of original work in order to put the garden into an efficient condition. I have therefore no extensive improvements to give an account of as having been effected during the year that has just ended. Some minor changes that have taken place themselves have I went made, and new works carried out (during the past few years have had finishing touches put to them, which, although apparent enough to the eye, are not easily described in writing. In addition to the new palm-house, the erection of which had been completed within the previous year, was last year planted out. For this purpose plants which had been raised within the limits of the former low-roofed conservatories "were carefully transplanted during the rains. This work was successfully carried out by the Superintendent, and the percentage of deaths was very small. The spaces between the larger plants were filled up by lower growing species of various kinds—*avoids*, *antarantas*, *selagiaella*, and the like—which had been in partition in the nurseries for months in advance. The result has been satisfactory, and the new palm-house is already much admired by visitors. As the plants continue to grow, the general effect in the interior of the garden will greatly improve. The engine for pumping water from the river was at work during the greater part of the cold season, and I am glad to say it proved a great success. The different pieces of ornamental water in the garden having been connected by underground pipes, it is now possible by means of the pump to keep these all over the garden at a uniform and comfortable temperature. This greatly increases the landscape effects, and cannot but have a beneficial effect on the healthiness of the garden, which, as Government had acquired in by-gone years the reputation of being a very healthy place. For a good many years past the banks of the river within the boundary have been in a very rugged condition, not from scouring of the stream, but from the erosion caused by the wash of steamers passing at a rapid pace. And this erosion had been earned so far that in some places the garden bank parallel to the river had begun to be threatened. During the year I made an attempt, with the sanction and approval of Government, to level the bank, and, selecting some feet of one of the worst pieces, I filled it up with mud dug from the bed of the river at low tide, to put a good slope to it; and to protect it with bricks from Acra. This has been very successfully earned out by Mr. Urquhart, the Curator of the garden, and I hope that by this cheap and simple means the farther encroachment may be prevented. And if this piece of work succeeds, I may be allowed to treat the remaining pieces of eroded bank in a similar manner during the current and succeeding years. The boundary wall along the western side of the garden has been completed during the year, the bricks being burnt in the garden. The northern boundary is the only one that now remains to be protected by a wall, and this may, I hope, be built within the next year or two.

2. The distance and inaccessibility of the garden from Calcutta have long been matters of regret. A means of neutralising these has presented itself during the year by the establishment on the river of a service of passenger steamers which call at several points within the port, something after fashion of the penny steamers on the Thames. One of the calling places of these steamers is Mattiabruj ghat, just opposite the garden; and it appears to me that it would be a convenience for visitors to the garden were these steamers to call at appoint on this side of the river and just outside the garden. Public parks and gardens, such as this, are universally recognized as powerful agencies for and civilising the masses of the people, and as a most powerful means of putting a pure and elevating kind of pleasure within their reach. In this view the erection of a landing stage so that these steamers might be induced to call at or near the garden might not be considered an inappropnate expenditure of a little money on.

3. *Economic plants.*—During the year several economic plants have attracted attention. Consignments of *sabui* grass (*Andropogon meolutas* of *Pollmia eriopoda* of Hance) have been received from various parties in an extensive distribution in quantity in various parts of the province. There is now no doubt of the suitability of this grass as a paper fibre, and it is laid down cheaply enough at a mill. This grass unfortunately grows in a district where water carriage does not exist, and for cheap raw material (such as for paper must necessarily be) any other kind of carriage is apt to be crushing and prohibitive tax. Some months ago I cut some young paper mulberry tree (*rousetia papyrifera*) two years old, and had it removed. The latter was reported on by a paper-maker and pronounced expected, an admirable paper material. Experience in this garden has proved that this tree grows easily and rapidly in Lower Bengal, and is mentioned by Mr. Maries, Superintendent of the Gardens of His Highness the Maharajah of Durbhunga, that it also grows well at Durbhunga—a part of the province. If therefore villagers would take to growing by the borders of their gardens and in the odd corners and scraps of land in which Bengal abounds, there is a reasonable prospect that the province will produce in quantity one of the very best paper fibres known—a fibre strong and fine, and that has the great merit of requiring very little. With the view of extending the cultivation of this tree, I am having a number of young plants prepared and for planting out in blank spots at garden boundary. A further consignment of the plant yielding the cassia of commerce was received from the Botanic Garden, Hong-Kong. These plants are of course quite young. They are, however, quite healthy. The tree seems a slow grower, and some time must elapse before anything gathered from it is likely to be of any value. As stated in my last report, a quantity of seed of the tree was distributed to tea-planters and others likely to interest themselves in its cultivation. This tree had been much written about as a pulse well suited to India, and its cultivation had been pressed on Government. I never had any hope of its success, as I do not consider it a crop well suited for the soil of any part of Bengal, and the reports that have been received from those to whom supplies of seed were sent have been unfavourable. Other quantities of green Khea were supplied to various applicants. Other plants were also supplied to gentlemen interesting themselves in such plants.

4. *Gourami Fisk.*—Through the kindness of the Hon'ble H. & one of the garden tanks was stocked with a quantity of the young cellentfish, and in my first report I expressed a hope that this fish would thrive in the sheets of ornamental water in the garden. I regret to say that the experiment has been a failure, for when the tank into which the young fish had been put was dragged two months ago, not a single Gourami was found. I propose, however, to make another trial.

5. *Urbium.*—When the year began, the collections of dried plants in the library had just been removed into the new building provided for their reception. Owing to the small and utterly insufficient space afforded by the old building, it had been impossible to incorporate in the herbarium the large quantities of new material that had been received during the previous few years. The work of arranging, naming, and incorporating

these is a long and laborious one. But Mr. Brace has worked diligently at it, and good progress has been made. A great deal, however, still remains to be done. The library also has received a good deal of attention, and a beginning has been made in classifying the large number of botanical pamphlets which it contains. The new building proves, on further experience, to be admirably adapted for its purpose. It is light, dry, and well ventilated, and in it there is room to consult the collections with ease and comfort, while at the same time they are well secured against damp, insects, and fire. During the year the ac.-banum has been enriched by large sets of duplicate specimens received from the herbarium of the Royal Garden at Kew. The distinguished director of that great national institution, Sir J. D. Hooker, has always been a warm friend to the Calcutta garden, and the herbarium here owes to a great extent its existence to his thoughtful munificence. His contributions of last year are therefore only a continuation of former favours. Considerable collections made in the Malayan Peninsula by Mr. H. H. Kunstler were also received during the year. Among these are specimens of many plants yielding important economic products, such as gutta-percha, caoutchouc, building timber, and the like. The flora of the Malayan Peninsula closely resembles that of the lower part of Burmah, and these Malayan collections are of much value and interest from the bearing they have on the flora of the still comparatively unexplored regions near T&pyand Mergui. To Mr. J. Sykes Gram We, lately conservator of Forests in Bengal, but now occupying a similar appointment in the Madras Presidency, the herbarium is indebted for a large number of most interesting specimens from the south of India. As the flora of that part of the country was hitherto rather poorly represented in our collection, Mr. Gamble's contribution was peculiarly acceptable. The same remark applies to the less numerous but very interesting collections sent by Mr. W. A. Talbot, Deputy Conservator of Forests in North Canara. Dr. Schlich, Inspector-General of Forests, has also sent some valuable collections made during his recent tours in the Central Provinces and the Himalaya beyond Simla. Mr. J. F. Duthie, Superintendent of the Botanical Garden at Saharanpur (who spent some weeks at the Calcutta herbarium), contributed a very interesting collection (including several novelties) made by him in some side valleys in the upper part of the course of the Ganges which had hitherto never been explored by any one. Dr. Trimen, Director of the Botanical Garden in Ceylon, who also visited the garden during the past year, presented a few critical species of much interest. Prior to leaving India, Mr. H. C. Levinge deposited in the herbarium a series of ferns collected by himself in the south of India. These specimens, named by Mr. Levinge's own hand, have a peculiar interest, as probably no botanist ever possessed more extensive knowledge of Indian ferns than Mr. Levinge. Specimens of some critical plants of Malbleshwar were contributed by Mr. Gooke, Principal of the Science College, Poona. Mr. Ford, Superintendent of the Botanic Garden, Hongkong, Mr. K. W. Hullett, of the Educational Service of the Straits Settlements, and Mr. Maries of Durbhunga have also made valuable contributions; as also have Mr. C. B. Clarke, of the Government Garden at Poona, Mr. Woodrow, of the Government Garden at Poona, Mr. J. J. Brand, Deputy Commissioner of Arakan, and Dr. Hay of Aden, and Mr. V. H. P. H. of Mysore. During the year 23,809 living plants and 1,038 packets of seeds were issued to various public officers for planting near public buildings, along stations and cantonment roads, also pensaries, schools, and so forth. A considerable number of plants were also employed to the International Exhibition recently held in Calcutta, and 58 glass cases, to the number of fifty-eight, were sent to botanic and other gardens in various parts of Europe and the Colonies. On the other hand, living plants to the number of 9,179 and packets of seeds to the number of 1,038 were received from various donors in India and out of it. The chief contributors were the Directors of the Royal Garden, Kew; the Directors of the Botanic Gardens in Ceylon, Demerara, Natal, Hong-Kong, and Java; Mr. P. T. Schmidt, Erfurt, and Messrs. Bull and Veitch, London; Mr. J. H. Andaman Commission; the Agri-Horticultural Societies at Rangoon, Lucknow, Calcutta; Messrs. P. Ifordern and Barton Groves, Rangoon; and Mr. Duthie, Superintendent of the Botanic Garden, Saharanpur; the Superintendents of the

Government gardens at Poona, Bangalore, and Lucknow; Mr Cassels, of Bombay, and various officers of the Indian Forest Department. As usual, Messrs. Apcar & Co. generously carried plants and seeds to and from the Malayan countries free of freight; the Peninsular and Oriental and British India Steam Navigation Companies also carried this garden and those at Kew and Peradeniya continuously cases passing between

The Curator, Mr K. K. Iyer, has been under the charge of the garden in the early part of the year, and was confirmed in his appointment as Mr. Halfdan Bahr, the Tewkesbury, was elected by Sir J. D. Hooker from the Kew staff, joined here. Mr. Bahr is at present making himself familiar with the work of the garden. Mr. Bahr has already taken an active part in the work of the garden.

Rs. 1,34 during the year were for the year amounted to Rs. 1,340. The budget allotment for the year was Rs. 1,340.

9. Lloyd Botanic Garden still suffers, although in a small degree, from the ravages of the cockchafer grub, of which there are many in the garden.

Mr. Jaffrey, the Curator, has been dealing with the weather and rains. It is not yet known whether the weather will be so good as last year. Should it, however, be so, it might be desirable to suspend all distribution of eggs are often concealed in the flower pots. Specimens of Dr. J. Anderson of Tolleshott and St. Andrew, a specialist in London for the identification and report. But as Mr. Jaffrey has been received from OJ similar grub has proved very common to coffee plantations or grass land; but I trust it will be discovered in the garden. The unsatisfactory condition still remains a cause of concern. The garden is an occurrence of which we should be careful to improve the drainage of their land which is bound to be improved. The acclimatization of potatoes, raised from English seeds, the acclimatization of plants, amounting to a high quality, the acclimatization of plants, amounting to a high quality, the acclimatization of plants, amounting to a high quality.

The budget allotment for the year was Rs. 1,340. The budget allotment for the year was Rs. 1,340. The budget allotment for the year was Rs. 1,340.

10. The usual annual expenditure of the garden is Rs. 1,340. The usual annual expenditure of the garden is Rs. 1,340. The usual annual expenditure of the garden is Rs. 1,340.

The usual annual expenditure of the garden is Rs. 1,340. The usual annual expenditure of the garden is Rs. 1,340. The usual annual expenditure of the garden is Rs. 1,340.

APPENDIX I.

Statement showing plants received from 1st April 1883 to 31st March 1884.

From whom received.	Wardian cases.	Boies.	Number of plants.
Royal Garden, Kew, London	2	.....	60
Do. Botanic Garden, Ceylon	2	.....	59
Botanic Garden, George Town, Demerara	2	.....	55
Ditto, Natal	.....	4	215
Ditto, Hong-Kong	2	.....	152
Ditto, Batavia	1	1	67
Ditto, Gunesh-Khind, Poona	.....	2	51
Lloyd Botanic Garden, Darjeeling	.....	5	1,106
Agri-Horticultural Society, Calcutta	.....	.....	24
Ditto ditto, Eangoon	.....	4	314
Campagnie Continentale d' Horticulture, Gand	2	.....	58
Messrs. Haage and Schmidt, Erfurt	.....	1	1,000
J. Gammie, Esq., Government Cinchona Plantation, Mungpoo	.....	1	6
Dr. E. Sanders, Chittagong	.....	1	1
W. Bull, Esq., Nurseryman, London	1	.....	71
H. Hamilton, Esq., Singapore	.....	1	29
G. H. Bartlett, Esq., Calcutta	.....	.....	3
& B. West, Esq., ditto	.....	.....	36
C. Maries, Esq., Durbhunga Raj Garden	.....	.....	107
M. Ridley, Esq., Horticultural Gardens, Lucknow	.....	1	100
J-A. Cassels, Esq., Bombay	1	.....	11
J\Barton Groves, Esq., and P. Hordern, Esq., Rangoon	.....	5	143
Lieutenant-Colonel R. F. Angelo, Nynee Tal	.....	1	3
Colonel T. Cadell, C.B., Andamans	.....	1	68
•E. H. Man, Esq., ditto	1	16	373
Dr. J. Reid, ditto	2	1	105
J» H. J. Schaumberg, Esq., Calcutta	.....	.....	2
Messrs. Schoene, Kilburn and Co., Calcutta	.....	3	202
C. B. Clarke, Esq., Calcutta	.....	1	6
T. Cooke, Esq., Mahableswar	.....	4	15
J- D. Maxwell, Esq., Calcutta	.....	1	7
<£ Morris, Esq., Pachmarhi	.....	1	11
G. Baistnl, Esq., Calcutta	.....	.....	4
&• Walnut, Esq., Mymensingh	.....	1	3
Dr. A. J. Payne, Calcutta	.....	.....	2
» J. G. Filcher, Howrah	.....	.....	15
^aptain Peter, Ship <i>Duchess of Edinburgh</i>	.....	2	224
*•• O. Levhge, Esq., Sikkim	.....	.....	22
^essrs. Turner, Morrison and Co., Calcutta	.....	6	75
o. Kilby, Esq., Calcutta	.....	.....	3
Collected by the Superintendent in Sikkim	.....	.....	100
Ditto by Herr Kunstler, fenang	19	21	1,922
Ditto by Moonshee Abdulla, Plant Collector, Andamans	1	3	1,967
Ditto ditto ditto ^Lssam	.....	1	12
Ditto ditto ditto Khasia Hills	.....	1	37
^abu S. P. Chatterjee, Victoria Nursery, Calcutta	.....	.....	15
Lioree Mally, Nurseryman, Manicktollah, Calcutta	.....	.....	3
fought at auction	.....	.....	16
•ceived from an unknown donor	.....	.....	1
Ditto ditto	.....	2	97
Total	36	92	8,977

APPENDIX II.

Statement showing plants sent out from 1st April 1883 to 31st March 1884.

To whom sent.	Wardian cases.	Boxes.	Number of plants.
Government House Garden, Calcutta		1	141
Royal Garden, Kew, London		2	38
Do. Botanic Garden, Ceylon		1	303
Botanic Garden, George Town, Demerara	5	1	123
Jitto, Natal	3	1	285
Ditto, Hong-Kong-		9	24
Ditto, Vienna		1	30
Ditto, Trieste	1		29
Jardin des Plantes, Saigon	1		56
to, ^{nthal Per} Arrakan Hill Tracts	2		164
Ditto, ^{Daltongan} Daltongan		10	54
Agri-Horticultural Society, Calcu	2	1	204
angoon		8	81
Horticultural Gardens, Lucknow		9	117
Supintendent of Agriculture, Aimere	Z		18
Ditto ditto	1	12	118
Right Hon'ble Earl of NorthbrSL ^{Behar} Behar		1	12
		2	19
		1	58
		1	72
Colonel Frederick Stanton		1	125
Sir George McLeay, England		1	104
J. Sims, Esq., Victoria		1	15
J. Thomson, Esq., Victoria		1	29
H. Hardy, Esq., Sussex	1		114
Magistrate and Chairman, ^{Khulna} District Road Cess Committee,	7		117
Magistrate and Chairman of Motihar'ee		1	12
Cantonment Magistrate, Dum-Dum			366
Ditto ditto, Dinapore		13	150
Commissary of Ordnance, Calcutta	N		50
J. G. Parish, Esq., Hastings		2	2,567
Conductor J. C. Newell*			100
General Wilkinson, Fort William	*		100
The Chaplain, Fort William			30
Executive Engineer, Northern Drains, ^{Embankment} Embankment			12
Division, Calcutta			32
Executive Engineer, Akra		3	280
Dist - ^h Division, Chinsurah			315
Ditto, ^{East Indian Railway, Howrah} East Indian Railway, Howrah		1	13
Secretary to the ^{Munim Committee, Bareilly} Munim Committee, Bareilly		1	300
Cathedral Day School, Calcutta		2	12
Church Mission Society	*		200
Catholic Male Orphanage			101
Public Library, Seebpore			400
Engineering College, ditto			80
Superintendent, Government Workshon			2
Principal, Government Engineering Colln ^{Calcutta Municipality} Calcutta Municipality			U
Edjputana-Malwa Eailway, Mhow	#		50
Calcutta and South-Eastern and Nalhät. ^{State Railways} State Railways		9	250
Bengal Central Railway Company, I ^{amited} amited		46	195
Superintendent, Gunpowder Factory ^{Ishapore} Ishapore			1,500
Ditto, Jails, Pubna			150
Ditto, do., Eanchi			275
Ditto, do., Buxar Circle *		6	150
Ditto, Central Jail, Midnana ^{re} re		4	100
Ditto, ditto, E ^{shahye} shahye		4	110
Traffic Superintendent, Saidpore		7	260
Collector of Kistna		6	248
Ditto Hooghly		5	ISO

APPENDIX II—continued.

To whom sent.	Wardian cases.	Boxes.	Number of plants.
Collector of Purneah .. .. .	.....	4	91
Superintendent, Public Garden, Allahabad .. .. .	.....	5	58
Ditto, Rambagh Garden, Amritsar .. .. .	.....	12	127
Ditto, Durbhunga Eaj Garden .. .. .	.....	21	455
Aetmsr Port Officer, Calcutta .. .. .	.....	3	150
Executive Commissariat Officer, Calcutta .. .. .	.....	.....	100
Aransport Officer, Calcutta .. .. .	.....	.....	200
His Highness the Sultan of Zanzibar	2	.....	87
Lieutenant-Colonel E. F. Angelo, Nynee Tal .. .. .	.....	5	108
A. A. Apear, Esq., Calcutta .. .. .	.....	.....	33
A. T. Apar, Esq., Seebpore .. .. .	.....	.....	50
J. Apar, Esq., Garden Each .. .. .	.....	.....	33
* J. Atkinson, Esq., Calcutta .. .. .	.....	.....	98
* Antony, Esq., ditto .. .. .	.....	.....	2
* E. Anderson, Esq., Calcutta * .. .. .	.....	.....	60
T. T. Beaumont, M.D., Hyderabad .. .. .	.....	1	12
* Bertin, Marseilles	1	.....	31
Blandford, Esq., Calcutta .. .. .	.....	.....	8
Honble J. Bosisto, M.P., Melbourne	1	.....	24
Bryans, Esq., Sylhet .. .. .	.....	4	74
B. B. B. Esq., .. .. .	.....	22	250
K. A. Barker, M.D., Doomka .. .. .	.....	2	24
Bartlett, Esq., Calcutta .. .. .	.....	.....	17
Blechynden, Esq., .. .. .	.....	.....	50
W. B. Blackett, Esq., .. .. .	.....	.....	150
Mrs. D. Bruce, London	1	.....	34
E. Bonavia, M.D., Etawah .. .. .	.....	1	6
* G. Bidie, C.I.E., Madras	1	.....	28
Jewrs. Burn & Co., Howrah .. .. .	.....	.....	20
Cooper, Esq., Dum-Dum .. .. .	.....	.....	40
Clark, The Gardens, Studley-Ripon .. .. .	.....	1	62
A. Cassels, Esq., Bombay	1	1	60
Edubzi, Esq., Calcutta	1	.....	52
JJ Esburgh, Esq. .. .. .	.....	.....	4
Max. H. Ferars, Esq., Andamans	1	.....	27
Lieutenant-Colonel T. Cadell, v.c.	1	.....	24
Messrs. Finlay, Muir & Co., Calcutta... .. .	2	5	153
A. Fairlie, Esq., .. .. .	.....	.....	22
M. Gutteling, Esq.,	2	.....	86
J. H. Gilliland, Esq., Engineering College, Seebpore .. .. .	.....	.....	26
Captain Grew, Ship <i>Celia</i> .. .. .	.....	.....	7
J. Gilbert Esq., Rangoon .. .. .	.....	1	15
W. H. "S." Houghton, Madras .. .. .	.....	.....	24
W. Hutchinson, Esq., Calcutta .. .. .	.....	.....	100
J. Hodding, Esq., .. .. .	.....	7	154
J. Inglis, Esq.,	3	.....	78
Rev. Father Joseph, Calcutta .. .. .	.....	.....	190
J. Johnston, Esq., .. .. .	.....	.....	20
R. Jackson, Esq., .. .. .	.....	.....	1
R. Knight, Esq., .. .. .	.....	.....	8
R. Ken, Esq., .. .. .	.....	.....	6
S. Kilby, Esq., .. .. .	.....	.....	54
H. H. Kunstler, Esq., Penang	1	.....	28
Captain Linken, Ship <i>L. L. "Sturge"</i> .. .. .	.....	.....	4
Dr. A. S. Uthbridge, Calcutta .. .. .	.....	.....	23
J. L. T. Esq., Howrah .. .. .	.....	6	64
J. T. Esq., Howrah .. .. .	.....	.....	8
J. T. Esq., Howrah .. .. .	.....	.....	63
J. T. Esq., Howrah .. .. .	.....	.....	88
J. T. Esq., Howrah	2	.....	29
J. T. Esq., Howrah .. .. .	.....	3	40
J. T. Esq., Howrah .. .. .	.....	4	52
J. T. Esq., Howrah .. .. .	.....	.....	34
J. T. Esq., Howrah	1	.....	34

APPENDIX II—continued.

To whom sent.	Wardian cases.	Boxes.	Number of plants.
G. Mills, Esq., Seebpore	350
E. F. Mondy, Esq., do.	40
Rev. P. Mollick, Calcutta	1
E. N. Minchin, Esq., do.	4
Messrs. Mackinnon, Mackenzie & Co., Calcutta	14
Colonel Nichol, Garden Reach	...	1	17
V. Nepos, Esq., Calcutta	4
Dr. J. G. Pilcher, Howrah	16
Captain R. Peebles, S. S. <i>Tiveedale</i> iV	5
Dr. H. B. Purves, Burdwan	...	3	65
Dr. A. J. Payne, Calcutta	...	1	9
W. C. Plowden, Esq., London	24
E. H. Palmer, Esq., Chandbally	1	3	73
R. Panthng, Esq., Mungpoo	...	2	53
J. Parkes, Esq., ^iliguri	...	2	23
Rev. A. W. R. Quinlan, Dum-Dum	...	3	130
S. A. deRoepstorff, Esq., Nicobar Islands	1	...	30
JJr. J. Reid, Andamans	1	6	105
T. J. Rowell, Esq., M.D., Singapore	1	...	25
Captain Robertson, Ship <i>Lorenzo</i>	1	...	18
T. H. Raui, Esq., Calcutta	12
A. Simson, Esq., do.	58
A. E. W. Sharpe, Esq., Howrah	9
Messrs. Schoene, Kilburn & Co., Calcutta	...	1	12
J. H. J. Schaumberg, Esq., do.	8
Dr. Stewart, 	5
W. Swetenham, Esq., Selangore	4	...	102
W. Swinhoe, Esq., Calcutta	20
Mrs. Sedgfield, do.	5
R. Sterndale, Esq., do.	60
A. Stewart, Esq., do.	5
G. R. Thorn, Esq., do.	200
Hon'ble H. S. Thomas, Madras	...	1	9
Captain Jas. Vincent, Ship <i>Myvamo</i> \	tf4
Dr. G. Watt, for International Exhibition	...	1	4,551
Superintendent of Works for Horticultural Company, Calcutta	2,000
A. E. Penciling, Esq., Pundular	6	...	92
J. Kenyon & (Jo., Calcutta	...	2	153
Revenue and Agricultural Department, Calcutta	4 mounds of Rhea root of stems
Kumar Jainarain Singh, Meerut	17
Seth Luchman Doss, Calcutta	...	1	6
Juggul Kissen, Benares	...	1	8
Sakharam Gopal, Indore	...	1	12
Babu S. P. Chatterjee, Victoria Nursery, Calcutta	2
" b. P. Chowdhury, Krisnagore,	138
" N. C. Mookerjee, Calcutta	3
" B. B. Gangooly, Howrah	12
" B. N. Ghose, Seebpore	U
" B. K. Dey, Ooterparah	4
" B. K. Dey, Calcutta	3
" D. N. Bose, ditto	3
" M. N. Roy, Moorshedabad	2
" D. P. Ghose, Calcutta	...	1	1
" Q. D. Koondu, Maibari	1
" H. P. Bhuttacharjya, Nuddea	2
" K. C. Nag, Seebpore	2
" K. B. Mullick, Andool	2
" E. N. Seth, Calcutta	5
" E. M. Doss, Eungpore	7
" W. J. Kurmoker, Calcutta	14
			6

APPENDIX II—concluded.

To whom sent.	Wardian cases.	Boxes.	Number of plants.
Babu A. K. Dutta, Balee	1
>, Rameshwar Malleah, Howrah	16
Seenath Mally, Nurseryman, ManicktoUah	37
Horee ditto, ditto, ditto,	25
Gopal ditto, ditto, ditto,	2
Issan ditto, ditto, ditto,	14
Total	58	318	23,809

APPENDIX III.

Statement of seeds received from 1st April 1883 to 31st* March 1884.

From whom received.	Number of parcels or packages
Sir J. D. Hooker, K.C.S.I., Director, Royal Garden, Kew, London	151
Dr. Regel, Imperial Garden, St. Petersburg, Uussia	...
Botanic Garden, Trinidad, West Indies...	...
Ditto Hobart Town, Tasmania	...
Ditto Mauritius
Ditto Jamaica
Ditto Buitenzorg, Java
Ditto Hong-Kong, China
Ditto Peradeniya, Ceylon
Ditto Bangalore
Ditto Gunesh-khind, Poona
Ditto Saharanpur
Ditto Darjeeling
**' Sir Ferdinand von Muller, F.K.S., Melbourne, Australia	...
Directeur, Societe Anonyme de la Horticulture, Gand, Belgium	...
Agri-Horticultural Society, Madras
Secretary, Agri-Horticultural Garden, Lucknow
* Ditto ditto of India, Calcutta	...
Hon'ble J. Bosisto, M.P., Melbourne, Australia	...
Messrs. G. Brunning & Son, St. Kilda Nurseries, Melbourne	...
James F. Roberts, Esq., F.H.S., Melbourne	...
Messrs. James Yeitch & Sons, Royal Exotic Nursery, Chelsea, London
Hon'ble J. Thurston, Secretary to the Government, Fiji Islands
Conservator of Forests, Tenasserim Circle, Maulmain	...
Deputy Conservator of Forests, in charge Cinchona Department, Ootacamund
Conservator of Forests, Nagpur
Deputy Conservator of Forests, Gowhati, Assam
E. H. Man, Esq., Port Blair, Andamans
Abdoolah, Plant Collector, Port Blair, Andamans
W. J. Talbot, Esq., Forest Department, Morth Canara	...
J. In-lis, Esq., New South Wales
Messrs. Thomas Christy & Co., 155 Fenchurch St., London	...
Unknown donor
Messrs Haage and Schmidt, Erfurt
James Francis Esq., Cedar Valley, Jamaica
Messrs. E. P. "William and Brothers, Heneratgoda, Ceylon	...
J. Maitland Heriot, Esq., Manila
Messrs. Barr and Sugden, Covent Garden, W. C.
J. Cassels, Esq., Bombay
Curator, Government Central Museum, Madras
Mrs. Morris, Pachmarhi
Dr. George King, Darjeeling
J. Gammie, Esq., Government Cinchona Plantation, Mungpoo
J. M. Cunningham, Esq., M.D., Surgeon-General
Eai Prosunna Coomar Banerjee Bahadoor, Eden Garden, Calcutta	...
Total	1,038

APPENDIX IT.

Statement showing Seeds distributed from the Iloyai Botanical Garden during the year 1883-84.

To whom sent.	If number of parcel* mil partcut.
Sir J. D. Hooker, K.c.a.i., c.u., F.E.E., &c., Royal Garden, KQW, London	96
Dr. Regal, Imperial Garden, St. Petersburg, Russia	44
Botanic Garden, Queensland, Australia	129
Ditto Leiden, Holland	130
Ditto Utrecht, Holland	3
Ditto Buitenzorg, Java	106
Ditto Hong-kong, China	10
Ditto Mawitius	185
Ditto Golden Spring, Jamaica	5
Ditto George Town, Demerara	14
Ditto Peradenia, Ceylon	5
Ditto Singapore	1
Ditto Bangalore	145
Ditto Saharaupur	258
Ditto Darjeeliug	35
Directeur, Societo Anonymo do la Horticulture, Gaud, Belgium	5
Secretary to the Queensland Acclimatization Society, Queensland	3
Ditto Agri-Horticultural Society, Madras	13
Ditto ditto Lahore	19
Superintendent, Horticultural Garden, Luoknow	23
Secretary to the Agri-Horticultural Society of India, Calcutta	4
Secretary to the Government of Cyprus, Cyprus	109
Sir John Kirk, M.D., C.M.G., &C. Her Britannio Majesty's Consul- General, Zanzibar	123
M. Bertin, France	1
M. Kmile ChabTand, Bareelonette, Prance	1
Senores Chatrand and Manuel, Mexico	124
M. Buysman, Esq., Flushing, Hollaud	1
Ifrs. Huteheon, Ijasswade, Scotland	72
Messrs. Thomas Mosley & Co., Gibraltar... ..	5
W. G. Head, Esq., Crystal Palace, London	44
Sir George Macleay, F.B.S., &C. Eeudell Conrt, Bletchingley, Surrey	64
Sir A. J. Arbuthnot, Newton House, Newbury, England	1
Dr. J. Campbell Brown, University, Liverpool	5
Messrs. G; Brunning & Son, St Kilda Nurseries, Melbourne	1
G - I. Sims, Esq., Jinfriof, Bnglton, Victoria, Australia	6
William Bull, Esq., King's Road, Chelsea, London	5
Messrs. James Veitch & Son, King's Road, Chelsea, London	49
Messrs. Haage & Schmidt, Erfurt, Prussia	1
W. S. Swetchnam, Esq., British Resident, Selangore, Straits Settlements... ..	28
0- C. Bancroft, Esq., Vice-Consul General, United States of America, Calcutta	1
Conservator of Forests, Bengal	9
Assistant Conservator of Forests, Ajraere... ..	2
Ditto Coooh Behar Division, Cachar	3
Deputy Conservator of Forests, Kurseong- Ditto Lohardugga, Eanchee	1
Ditto Alipur Duar	2
Dr. Bidie, Superintendent, Oontral Museum, Madras... ..	3
Chairman, District Road-cess Committee, Patna	870
District Traffic Superintendent, Rajputana-Malwa Eailway, Ajmere	24
Thomas Barnard, Esq., Locomotive Department, East Indian Railway, Btixar	12
Superintendent of Cliumpamo Ji;iil, Chumparnn	1
TM^ -; ^'^^ ate, Bnggah, Uhumpauiun	21
ilon bio J. BosUto, M.P., to International Eshilition	44
Hon'blo O. T. Ilbert, SimU	1
Lioatenant-Colonel c. Cowio, Commissarj of Ordnance, Calcutta	16
Ditto ^ (R. Kmijh, l;-sident, Udaiporo... ..	6
A. H. Hildebrand, Esq., Deputy Commissioner, Arokan	10
M. E. Weld, Esq., South Arcot, Madras Preside Qcy	2
Captain Parrott, Settlement Officer, British Burma	

APPENDIX IV-continued.

	From whom received.	Number of P ^{re} is and pa ^{ys} .
Under-Secretary to the C ^o	Department, Calcutta	1
S. Watson Esq., Calcutta	General of Bengal, Public Works De-	1
W. H. Cogswell, Esq., Calcutta	Secretary to the Government of Bengal, Calcutta	7
Messrs. Williamson, Magor & Co., Calcutta		1
Angelo Falciai, Calcutta		2
Colonel Torag. Ditto		J2
Fouracres Esq., Seebpor	Engineering College, Seebpore	1
The Agricultural	Commercial Department, North-	63
C. M. s, P. Raj D	Behar Z.	1
H. Man g j, Port	Anda»»ana	3
James Inglis, Sq., Sydney	Australia	27
Major H B. Abbott, Political	Pe n t e i t, Jhalarapatan	2
Major «A. C. Talbot, Political	«ent, B»kanir	1
Major-General Sir H. T.	«pherson, K.C.B., K.C.B.IV, &c, All	102
habad		
George Takeda, Esq., Japan		40
J. Gammie, Esq., Government	Cinchona Plantation, Mungpoo	2
Manager, Nuxulbarree Tea Association,	Natalbarree, Darjeeling	14
Ditto, Singtom Tea Company Limited,	Darjeeling	2
Ditto, Happy Valley Tea Estate,	Darjeeling	2
Ditto, Chamong Tea Estate, Nagri Spur,	Darjeeling	2
Ditto, Lebong Tea Company, Limited,	Tukvar, Darjeeling	2
Ditto, Mim Tea Company, Limited		2
Ditto, Tukvar Company, Limited		2
Ditto, Dooteriah Tea Estate,		2
Ditto, Darjeeling Tea Co any, Limited,	Ging,	2
Ditto, Lebong and Min Tea Estat	ditto	2
Ditto, Darjeeling Tea and Cinchona Association,	Poomong,	2
Ditto, Land Mortgage Bank of India,	Limited, Hope Town/	2
Ditto, Longview Tea Company, Darjeeling		2
Ditto, Nimbong Plantation, Kalimpong,	Darjeeling	3
Ditto, Puttabong and North Point Tea	Darjeeling	2
Ditto, Soom Tea Company, Limited,	ditto	2
Ditto, Teesta Valley Tea Company, Limited,	ditto	2
Ditto, Steintal Estate,	ditto	2
Ditto, Darjeeling Company, Limited,	ditto	2
Ditto, Ringtong Tea Estate, Sonada,	ditto	2
Ditto, Teendaria Company, Limited, Tendharia,	ditto	2
Ditto, Tumsong Tea Estate,	ditto	2
Ditto, Lingim Tea Estate,	ditto	2
Ditto, Simring Estate, Kurseong	ditto	2
Ditto, James Association, Kurseong		2
Ditto, Kurseong Tea Estate, Kurseong		2
Ditto, Castleton Estate, Kurseong		2
Ditto, Mullootar Tea Estate, ditto		2
Ditto, Selim Tea Association, ditto		2
Ditto, Spring Side Tea Company, ditto		2
Ditto, Ranicherra, Western Docars, Dam-Dim,	Julpaiguri	3
Ditto, Docars Tea Company, Limited, Ramshai Hat,	ditto	2
Ditto, Guzledubah Tea Estate,	ditto	2
Ditto, Phoolbary Tea Estate, Pillans Haut,	ditto	2
Ditto, Kurrnata Tea Estate, Kurranti,	ditto	2
Ditto, Tea Estate, Rupni, Western Docars, Dam-Dim,	ditto	2
Ditto, Tondoo Tea Company, Limited, Ramshai Hat,	ditto	2
Ditto, Pullharjhora Tea Association, Dam-Dim,	ditto	2
Superintendent, Dam-Dim Tea Company, Limited,	ditto	2
Managing Proprietor, Nagrakata Tea Estate, Ramshai Hat,	ditto	2
Manager, Terai Tea Association, Siliguri		2
Ditto, Darjeeling Terai		2
Managing Proprietor, M		2
Nagpore		2

APPENDIX IV—concluded.

From whom received.	Number of parcels and packets.
H. S. Beadon, Esq., 0% . Collector, Balasore	3
D. Mackenzie Smeaton, Esq., M.A., B.C.S., Director of Agriculture, Rangoon,	2
Harold Hall, Esq., Pulliampetta, Vythery, Wynaad, Madras	1
Captain G. M. Bellasis, Executive Engineer, Jhansi	47
J. Eeuther, Esq., Moorshedabad	8
District Engineer, Eungpore	1
B. O. Sanderson, Esq., Tanjore, Mudigeri Taluk, Mysore	1
Agricultural Reporter, Government Farm, Saidapet	1
R. C. Perry, Esq., Magistrate and Collector, Purneah	1
H. E. Gamy, Esq., Silchar	2
A. P. Webb, Esq., Landholder, Barout, Meerut	1
F. R. Swain, Esq., Civil Surgeon, Ranchee	1
Rev. James Wilson, Chaplain, Midnapore	1
G. Toynbes, Esq., Off'g. Collector of Purneah	4
Dr. Purves, Dacca	1
J. Cameron, Esq., Lai Bagh, Bangalore	1
GK W. Jameson, Esq., Sakesar Hill, Salt Range, Shahpore	1
Assistant Distriot Superintendent of Police, Kohima	22
G. S. Silly, Esq., Baragundah	21
M. de Sabran, Bombay	44
W. P. Aastin, Esq., Kistna, Madras	1
Seth Lutchmon Dass, Muttra, N. W. P.	50
Kumar Joinarain Sing, Didwary, Muradnagar	9
Babu Bonomally Koondoo, Burdwan	125
„ Chunder Nath Chowdoory, Vice-Chairman, Bauleah	2
„ Takhoor Dass Banerjee, Overseer, Calcutta	54
„ Gooroodas Koondoo, Andul	9
Total	<u>3,716</u>

MUNICIPAL DEPARTMENT.

MEDICAL.

DAEJEELING, THE 11TH SEPTEMBER 1885.

RESOLUTION.

READ—

THE Annual Report on the Royal Botanic Gardens, Calcutta, for the year 1884-85.

THE unusual mildness of the last cold season exerted a favourable influence on the more delicate plants cultivated in the conservatories, while the show orchids was the most magnificent that has been seen for many years. A large number of the numerous trees planted during the past few years have taken root, and the garden now presents a fine park-like appearance, for which the public of Calcutta, no less than the Government, are indebted to

2. The cultivation of several economic plants engaged the attention of the public during the year. A fresh attempt was made to introduce the plantain (*Musa textilis*), from which Manilla hemp is derived; but, as on previous occasions, the cold weather proved fatal to every plant of this species. The stems and roots were distributed among persons interested in discovering a proper method of extracting the fibre. Another tree which has lately attracted considerable attention, is bow-string hemp, a product of the plant *Sansevieria Zeylanica*. Although not indigenous, the tree grows well in Bengal, and the fibre is said to be admirable, while it is easy to extract from the plant. Dr. King reports as follows on the Japan paper mulberry—

"In several of my recent reports I have referred to the Japan paper mulberry as a source of paper fibre for Bengal. I am happy to say that the trees of this species continue to grow well. Although now only three years old, they are twenty-five feet high and have proportionately thick stems. The fibre contained in the bark is one of the best materials for paper known. It is easily separated, is strong, and requires little labour to separate thoroughly well and coppices freely, I think it quite possible that in a short course of time, natives may be induced to grow it on the odd corners of land which are so common near Bengali villages."

The suitability of which as a raw material for paper has been established beyond doubt, is now largely used in local manufacture. Attention has lately been given to an important alkaloid, called cocaine, which is extracted from the leaves of the cocoa plant; and this plant is now being propagated to a large extent for distribution.

There have been considerable additions to the collection of dried plants, the contributors being Sir J. D. Hooker, Mr. Kunstbr, Mr. Gamble, Mr. Duthie, Mr. Talbot, Mr. Cooke, and several others. The interchange of plants went on actively during the year, the issues amounting to 12,433 plants, and 2,979 packets of seeds; and the receipts to 12,056 plants, and 1,201 packets of seeds. The receipts from sale of surplus plants amounted to Rs. 1,075-11-6.

4. The Lloyd Botanical Gardens, Darjeeling, which had suffered severely from the depredations of cockchaffer grubs, were comparatively free from the pest under review. The grub has gradually disappeared from the garden has once more been stocked with varieties of plants. It is to be hoped that the grub, which is said to be extending its ravages in the Darjeeling district, will display no partiality for tea. Dr. King states that there is some possibility of the site of the old municipal vegetable garden situated between the Eden Sanitarium and the Botanical Gardens, being used either for dhobies' huts or washing tanks. The Lieutenant-Governor

considers that this would be most undesirable, and trusts that Dr. King may be able to make some arrangement with the Municipal Commissioners, to prevent it. A special report on the subject should be submitted.

5. That the Lieutenant-Governor are again, due to Dr. King's excellent work done year. For the first seven months of the year and his duties were carried on by Mr. Brace, the Curator of the Herbarium.

ORDER is ordered that copies of the Report and of the Resolution be submitted to the Government of India in the Revenue and Agricultural Department for information.

It is also that a copy of the Resolution be forwarded to the Superintendent Botanical Gardens for information.

By order of the Lieutenant-Governor of Bengal,

J. WARE EDGAR,

Off. Secy, to the Govt. of Bengal.

COPY for informant No. 1752 of the Superintendent of the Botanical Gardens, Calcutta.

% order of the Lieuteaant-Governor of Bengal,

G. K. LYON,

Off. Under.Secy, to the Govt. of Bengal.

DARJEELING

The 14th September 1885.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA,
FOR THE YEAR 1884-85.

No.29G., dated Calcutta, the 15th July 1885.

From—GEORGE KING, ESQ., M.B., L.L.D., Superintendent, Royal Botanic Garden,
Calcutta,

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

* HAVE the honour herewith to submit the ninety-eighth annual report of
the Royal Botanic Garden.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE
YEAR 1884-85.

THE progress of the garden during the year has, I think, on the whole, been satisfactory. But little damage has been done by storms, and the low temperature of the cold season worked less mischief than usual amongst the more delicate species cultivated in the conservatories. The conservatories continue to be very attractive to visitors, and every attempt is made by the continual replenishment and re-arrangement of their contents to keep them as high a state of efficiency as possible. The show of orchids last season was the best that I recollect to have seen since I took charge of the garden. The majority of the many trees planted in the grounds during the past few years have grown well, and the greater part of the garden now presents a fine park-like appearance. The new works put through during the year were not numerous, there being now but little new work necessary. A continuation was made of the boundary wall along the northern limit of the garden. Walls were also made in the neighbourhood of the nursery, the bricks used ^{the} building being all made within the garden. An old conservatory which used to stand near the orchid house and in which plants never could be got to thrive well, was removed this year, and was re-erected in the nursery, here, as a reserve house for the conservatories, it will be of great service, towards the end of the year Government was pleased to sanction an extra grant of money for the protection of the frontage of the garden to the river. The bank, as mentioned in former reports, had in many places become much eroded by the wash caused by steamers passing at a high rate of speed when the river is high. The year before last I was enabled to protect one of the worst pieces of bank, and the further grant given last year should be nearly sufficient to finish the work. The garden still continues rather inaccessible from Calcutta. But I presume that, until public money is more plentiful, this cannot be remedied by the continuation of the Port Commissioners' road from the Shalimar Point to the garden gate.

2» Various plants of economic interest, and especially fibre-yielding species, have received attention during the year.

^v Economic plants. ^A At the request of the Government of India, a further attempt was made to introduce into the province of Bengal the kind of plantain (*Musa textilis*) from which Manilla hemp is derived. Plants of this species were accordingly distributed to the Magistrates of districts. As I anticipated, this attempt (like its predecessors) was a failure, and from the same cause. The low temperature of the cold weather proved too much for the plants and they all died. A small patch of rhea continues to be kept up in the garden, from which quantities of green stems were made over during the year for persons interested in discovering an efficient cheap method of extracting the fibre. Quantities of roots were also distributed to several applicants. Bow-string hemp is a fibre which of late has attracted considerable attention. It is doubtless an admirable fibre, and is not difficult of extraction from the plant [*Banasevera Zeylanica*] that produces it. The plant is not indigenous to this part of India, but it grows well here; and a good many plants of it have been distributed during the year. In several of my recent reports I have referred to the Japan paper mulberry as a hopeful source of paper fibre for Bengal. I am happy to say that the trees of this species in

the garden continue to grow well. Although now only three years old, they are twenty-five feet high, and have proportionately thick stems. The fibre contained in the bark is one of the best materials for paper known. It is easily treated, is strong, and requires little bleaching. As the tree grows thoroughly well and coppices freely, I think it quite possible that, in the course of time, natives may be induced to grow it on the odd corners of land which are so common near the Benarasi villages. It is gratifying to find that the bark of some native vegetable which I first drew attention to in my annual report for the year 1877-78 has now become a recognized raw material for paper plants yielding 15 to 20% of al manufacture. Mahogany and the various resources of the garden permitted to be propagated and distributed as the coca plant, the leaves of which contain an important alkaloid called cocaine, and efforts were made during the year to propagate quantities of this plant for distribution.

3. The additions to the herbarium during the year were very considerable. A large number of dried specimens, Herbarium, "A. I. e. A large number of dried specimens, Sir J. D. Hooker, the well known European species, was received from Kew. This donation is one of the donations of the Royal Garden which the Calcutta herbarium has received from the same source. From the Malayan Peninsula large numbers of dried plants were received. These were mostly collected in the province of Perak by Mr. H. H. Kunzler. These specimens are in admirable condition, and form a most important addition to our collection. Mr. J. S. Stokes, Conservator of the Forests of the Northern Circle of the Madras Presidency, contributed many interesting specimens collected during his extensive tours. Mr. O. Ambler's collections of former years were also valuable, and strengthened our herbarium in no small degree, and to no Indian contribution more deeply indebted. Mr. J. F. Duthie Superintendent of the Saharanpur Botanic Garden.

penetrated into several remote valleys that have not hitherto been visited by Europeans. I have continued his explorations. Deputy Conservator of Forests in some excellent specimens illustrating the vegetation of the splendid forests of the Western Ghats, a region of which the same good work has been also represented in the connection here. The same good work has been also helped for and in the connection here. The same good work has been also helped to John T. Riville-Cooke of the Science College, Poona, from whom I acknowledge the receipt of admirable sections made at Mahabaleshwar, Dr. T. of the Botanic Garden, Ceylon, Mr. Hullett of the B. A. F. Institute, Singapore; Mr. C. P. Clarke of the W. A. I. Department; and Mr. A. H. Hung have all contributed specimens of interest and value. The herbaria in the world and the X. P. Ser of One of the A. A. R. F. I. good enough to present a fine lot of the admirable Flora Orientalis of Africa. Sir Ferdinand von Muller's plants, chiefly European and Ng of Australia, presented a cur

Das at high levels in the Eastern Himalaya. Mr. H. O. Forbes contributed a considerable number of specimens from the Malayan Archipelago. And finally, the herbarium was enriched by the dried plants brought from the Andamans by a native collector sent from this garden, whose work in the Andamans, Mr. M. H. Ferrars (the Forest Officer of the Settlement) was good enough to supervise. The whole of these contributions have been mounted, poisoned, and stowed away in cabinets.

4. The interchange of plants and seeds went on actively. During the year 23,433 living plants were sent out to public institutions in India; and the extent to which botanical institutions beyond India benefited by this garden may be judged of by the fact that the foreign issues occupied 42 Wardian

cases. Of seeds, 2,979 packets were distributed. On the other hand, living plants to the number of 12,056 and packets of seeds to the number of 1,201 were received from contributors in India and in various foreign countries. The contributors to whom the garden is chiefly indebted are Sir J. D. Hooker of the Royal Garden, Kew; Dr. Trimen of the Koyal Botanic Garden, Ceylon; Mr. Duthie of the Botanic Garden, Saharanpur; the Superintendents of the Botanic Gardens in Demerara, Nafcal, Mauritius, Hong-Kong, Queensland, and Jamaica; M. Linden, Manager of one of the great nurseries at Ghent, the Superintendents of the Government Gardens at Poona, of the Government Museum at Madras, the Secretaries of the Agri-Horticultural Societies of Calcutta, Madras, Lucknow, and Lahore, have also sent valuable contributions, as have several forest officers. With their accustomed liberality, Messrs. Apar and Company have given free passes for all cases passing between this garden and Singapore or China.

5. During the first seven months of the year, I was absent on furlough in England, and my duties were carried on during my absence by Mr. L. J. K. Brace, Curator of the herbarium. Mr. G. Urquhart has been Curator of the garden during the year; and Mr. Bahr, who has worked with much zeal and intelligence, has been Assistant Curator in charge of the conservatories and nurseries.

6. The receipts from sale of surplus plants amounted to Rs. 1,075-11-6, which sum was paid into the treasury as Government revenue. This amount fell short of the estimate by Rs. 324-4-6. The revenue by sale of the plants could be increased; but only by encroaching on the trade of Private nurseries. And that Government has expressed its determination not to do.

7. In former reports I described the havoc committed in this garden by the larvae of a cockchaffer which appeared in the soil of the Botanic Garden, Darjeeling, in myriads and ate up almost every plant that it contained, sparing only the larger trees. During the year under review this pest gradually disappeared, and towards the end of the year Mr. Jaffrey had succeeded in re-stocking the garden with plants of sorts. But many of the rarer kinds, got at considerable expense from Europe and elsewhere, have appeared, and their placement must be a matter of time. The grub is, I hear, extending its ravages in the Darjeeling district. It is to be hoped that it will confine itself to the weeds in tea gardens, and that it will spare the tea bushes. The sides of the sanitarium hill above the garden (by slips from which the garden suffered considerable damage in former years), appear at last to have become consolidated; and it is to be hoped no more damage will occur from that source. The vegetable garden owned by the municipality, but forked by Mr. Jaffrey for the Municipal Commissioners, having been greatly damaged by successive landslips, gradually became a losing concern, and was towards the end of the year resumed by the Commissioners, who threaten to build either bazar huts or washing tanks for dhobies on the site. The interposition between the grounds of the Eden Sanitarium and Botanic Garden of buildings of this sort would be a great blot on the amenity of the neighbourhood; and I trust the Commissioners may reconsider their decision and see their way towards restoring the ground to horticultural purposes. Sales of plants to the extent of Rs. 625 (against an estimated revenue of Rs. 300) were made at the garden during the year. Mr. Jaffrey has worked with much enthusiasm and energy under rather depressing circumstances.

8. The usual returns, four in number, are appended.

APPENDIX I.

Statement showing Plants received/ram 1st April 1884 to 31* March 1885.

FROM WHOM RECEIVED.	Wardian cases.	Boxes.	Number of plants.
Eoyal Garden, Kew, London		1	111
Do. Botanic Garden, Ceylon	5		105
Do. ditto, Mauritius	4		16
Government Botanic Garden, Saharanpur	1		88
Botanic Garden, George Town, Demerara		4	8
Ditto, Natal	1		3
Ditto, Bowen, Queensland	1		68
Ditto, Jamaica	1		73
Ditto, Gunesh Khind, Poona	1		14
Lloyd Botanic Garden, Darjeeling		1	820
Agri-Horticultural Society, Calcutta		9	84
Compagnie Continental ^Horticulture, Gand			84
J. Gammie, Esq., Government Cinchona Plantation, Mungpoo	2		95?
Superintendent, Government Museum, Madras		10	43
Revenue Settlement and Agricultural Department, Madras	1		28
Deputy Post-Master-General, Eangoon	1		126
Ditto ditto, Indore		1	5
Government High School, Eangoon		1	126
Dr. E. Bonavia, M.D., Etawa		1	4
„ T. Beaumont, M.D., Hyderabad			<ti
„ J. Reid, M.D., Calcutta		2	87
H. G. Batten, Esq., Rangoon			62
G. Bartlett, Esq., Calcutta		1	125
E. H. Man, Esq., Andamans			262
C. Maries, Esq., Durbhunga Raj Garden	1	"S3	999
G. Mo.D. Peché, Esq., Moulmein		21	104
A. O. Hume, Esq., C.B., Simla		2	225
A. Simson, Esq., Calcutta		4	36
W. Stalkart, Esq., Howrah		1	4
G. B. Clarke, Esq., Calcutta			26
J. Parkes, Esq., JSikkim		2	489
J. Schaurberg, Esq., Calcutta		7	10
Miss E. Harwood, Calcutta			6
Collected by Curator			41
Ditto ditto, Rajapur			40
Ditto Munshi Abdoolla, Plant Collector			4,934
Baboo P. C. Sein, Seebpore		24	14
„ S. P. Chatterjee, Victoria Nursery, Calcutta			133
Horee Mally, Nurseryman, Manicktolla			1
Australian Commissioners for the Calcutta International Exhibition.			29
Bought at auction			103
Mrs. M. Plowden, Algiers			14
Received from unknown donors	1		H
Total	20	127	12,056

APPENDIX II.

Statement showing Plants sent out from 1st April 1884 to 31st March 1885.

To men BEST.	Wardian cases.	Boxes.	Number of plants.
His Royal Highness the Duke of Connaught	.....	1	73
Government House Garden, Calcutta	.....	.....	803
His Excellency the Commander-in-Chief, Simla	.....	2	30
Royal Garden, Kew, London	1	3	157
Royal Botanic Garden, Ceylon	1	2	307
Botanic Garden, Hong-Kong	2	.....	125
Ditto, Jamaica	1	.....	35
Ditto, Bowen, Queensland...	.....	1	50
Government Botanic, Garden, Saliaranpur	.....	hi	384
Ditto Garden, Rangoon	.....	2	77
Ditto ditto, Laroot, Perak	15	.....	400
Wardian dea Fkntes, Saigon	2	.....	87
Compagnie Continentals d'Horticulture, Gand	.....	2	279
Lloyd Botanic Garden, Durjceliug	.....	2	20
Government Agri-Horticultural Gardens, Lahore..	.....	.....	113
Prince of "Wales" Garden, Mozidierpore	.....	m	2,500
^harkhari State Garden, Fatehpur	.....	9	J40
public Garden, Bhownuggur	.....	3	183
-belvedere Garden, Alipore	.....	.....	12
^oological do., do.	.....	.....	381
Agri-Horticultural Society of India, Calcutta	.....	.....	607
Ditto ditto of Rangoon	1	.....	26
York Exotic Nursery, Kew, Melboirne	.....	1	6«
W. Bull, Esq., New Plant Merchant, London	1	.....	11
Messrs. James Veitch and Sons, Chelsea, London...	1	.....	11
Conservator of Forests, Madras	4	.....	111
r— Burden, Esq., Bagshot Park, London	.....	1	78
Dr. Phillip Robert Rueer, Switzerland	.....	1	6
Uilonel Carrick Buchanan, Scotland	.....	1	76
«• Lumsden, Esq., ditto	.....	1	98
W- Dull Bmce, Esq., Calcutta	1	.....	28
geremia Settlement and Agricultural Department, Madras	1	.....	30
jUagistrate of Ilmpira	.....	1	33
^antonmt Magistrate, Dum-Dum	.....	.....	200
~ommissary of Orduanee, Calcutta	.....	.....	1,835
Executive Engineer, Arrah Division	.....	6	102
Government Engineer, Colombo	1	.....	30
D"ector of Public Instruction, Rangoon	.....	1	43
Government High School, ditto	.....	1	93
Upper Military Orphan School, Kidderpore	.....	.....	50
Catholicirisswn, Assensole	.....	49	1,000
Officiating Priccipal, Calcutta Madra'sa	.....	.....	58
Principal, Government Engineering College, Soabpore	.....	.....	67
Ditto, Ravenshaw College, Cuttack	.....	"2	53
Eden Hospital, oMoutta	.....	.....	1,500
Mil' Station Hospital, ditto	.....	.....	787
^federal College ditto, ditto	.....	.....	3,100
*rig)nom.erial Survey of India	.....	.....	80
Calcutta IW tt Hall	.....	.....	50
^ ditto Bengal Club	.....	.....	6
P...-Ma ster-General, Rangoon	.....	14	244
Deputy Post-Master-Genei-al, Indore	.....	1	1
Machine Experimental Committee, Calcutta	.....	.....	G
			maund
			of rhea
			stems.
Surveyor-General's Office, Calcutta	.....	2	300
Balason Tea Estate, Siliguri	.....	17	47
Sub-Deputy Opium Agent, Shahabad	.....	.....	270
Inspector-General, Railway Mail Service* of India...	.....	.....	100
Secretary to the Agent, East Indian Railway, Calcutta	.....	11	20
Dacca and Mymensingh State Railway	.....	.....	250
Superintendent, Gunpowder Factory, Ichapur	.....	.....	300

APPENDIX II—continued.

To WHOM SENT.	Wardian cases.	Boxes.	Number of plants.
Superintendent, Foundry and Shell Factory, Cossipore	86
Ditto, Jails, Midnapore	...	4	276
Ditto, do., Dinagepore	...	1	5
Ditto, do., Chittagong	...	3	50
Ditto, Native Lunatic Asylum, Bhowanipore	10
General Agent, Court of Wards' Estate at Madhupur	...	1	30
Commissioner of Dacca	...	1	5
Collector of Chittagong	...	1	65
Ditto Shahabada	...	7	5
Ditto Maldah	...	1	5
Ditto Purneah	...	1	5
Ditto Beerbhoom	...	1	5
Ditto Bankoora	...	1	5
Ditto Eungpore	...	1	5
Ditto Nuddea	...	1	5
Ditto Jessore	...	2	10
Ditto Furreedpore	...	1	5
Ditto Backergunge	...	1	5
Ditto My men singh...	...	1	5
Ditto Durbhunga	...	1	3
Sub-Divisional Officer, Sasseram, Shahabad	...	6	122
Sub-Divisional Officer, Sonthal Pergunnahs	...	7	151
Sub-Divisional Officer, Raj Garden	...	12	388
P. J. Atkinson, Esq., ditto	50
A. Apar, Esq., ditto	30
b. T. Apar, Esq., Garden Reach	52
J. Asphar, Esq., Calcutta	50
J. H. Beck, Esq., Sylhet	...	1	7
H. G. Batten, Esq., Eangoon	...	7	130
G. H. Bartlett, Esq., Calcutta	...	1	94
Mrs. Birch, ditto	19
Dr. T. Beaumont, Hyderabad	12
Calcutta	...	1	20
ditto	127
ditto	13
Messrs. L. E. Cantwell & Co.,	300
A. Creagh, Esq., Howrah	3
Death, Esq., Calcutta	50
K. Falconer, Esq., ditto	65
J. Gammie, Esq., Mungpoo	...	1	1
ring College	...	1	9
oon	...	1	26
A. O. Hume, Esq., S.L.*	...	1	100
W. M. Heriot, Esq., Manilla	34
Miss E. Harwood, Calcutta	...	1	41
J. Inglis, Esq., Sydney	...	2	12
E. Irving, Esq., Calcutta	...	1	36
Major Joseph, Chinsurah	8
Colonel Jarrett, Calcutta	2
J. Jackson, Esq., Rangoon	12
8 J. Kilby, Esq., Calcutta	23
W. A. Kraal, Esq., ditto	1
C. Kelly, Esq., Howrah	6
H. H. H. Kunstler, Penang	68
— Lynam, Esq., Kidderpore	...	2	4
Surgeon-Major Morpew*, Cawnpore	24
Marc Meugens, Esq., Calcutta	...	2	6
Mrs. Morrison, ship Frank-N-Shaytr	6
Miss Midole, Calcutta	7
E. H. Man, Esq., Andamans	IV	.....	69
J. Moore, Esq., Serampore	III	2	1,027
		1	maund of rhea
A. H. Mason, Esq., Engineering College			
Messrs. J. Maokillican & Co., Calcutta			
Captain MacMahon, steam-ship Clan Sinclair			
o. Melville, Esq., Seebpore			

(7)
APPENDIX II—concluded.

To whom sent.	Wardian cases.	Bant.	Number of plants.
Re ^t . A. L. Mitohell, Howrah	3
Dr. H. B. Purves, Burdwan	...	2	16
" J. Q. Pikher, Howrah	35
R. Pimtling, Esq., Mungpoo	...	1	72
W. Pigott, Esq., Calcutta	30
Captain Kiohards, ditto	4
Hon ^u ^{bl} ^{HI} J. B. ^{ynolds} , C.S.I., Calcutta	14
H. H. Kempfrey, Esq., ditto	18
(simaon, Esq., ditto	18
I ^m ^{bl} [«] ^m W. Esq., ditto	30
£. T. T. T. I. S.	...	2	20
*. * Toanerre, Esq., Rampore Hat	...	3	65
W. Valentine, Esq., Calcutta	1
«ev. a. Whitney, Barreepore	100
I ⁿ ^ yoltertoa, Esq., Calcutta	6
A. Wilson, Esq., ditto	1
•Messrs. Walsh, Lovett & Co., ditto	1	...	36
Seobpoie Post Office	30
•wo Raja Krisno Dao Soree Sing, Benares	...	4	41
Baboo P.O. Sein, Seebpore	305
» 8. C. Seiu, ditto	3
» B. B. Ghosh, ditto	29
n G. C. Dutta, ditto	25
» D. N. Basu, falcutta	7
» fct. P. Chatterjo O Victoria Nursery, Calcutta	147
» N. C. itookorjeo, Calcutta	8
» K. C. Mullick, Chinsurah	3
» P. N. Basu, Calcutta	21
» T. N. Mullick, ditto	6
" R. C. Singh, ditto	40
» G. O. Cliuokerbutty, Seebpore	6
n J. Gangooly, ditto	5
" G- C. Itoy, Dwarhattn	1
» H. N. Mookerjee, Bally	2
» K. K. (i _{oo} l _{10t} Mymensingh	...	1	12
" 2' ^' ^n S ^d » Bhagulpore	...	1	14
" « R. Kooodoo, (Calcutta	16
» K M. Dutta, Gobardauga	...	4	100
' P. C. Mondol, Noola	9
" §. D. G-hoeh, Howrah	10
" *• P. Ghosh, Calcutta	2
" G. N. ?. Chowdhury, Calcutta	18
» K [^] III>utta, Qobardanga	75
» U. C. Ifozoomdar, Seebpore	3
» H. D. Ghose, ditto	4
» *• Mookerjee, Gobardanga	6
» *• N. Gangooly, Soebpore	2
» C. Biswas, Calcutta	22
»ameshwar Malliah, Howrah	18
» C. Ghosh, Caloutta	3
» S'kSV' ditto	...	5	84
» " i, "^^rjee, Seebpore	...	1	13
» N. K. Dutta, Bally	29
» Til 8. Dutta, Howrah	6
ok Chandra, Caloutta	3
Burmanundo Sircar, Cuttaek	3
Horee Mally, Nurseryman, ManicktoUa	34
Prince Noorooddin Khan- Russapugla	25
Meea Abdool ^{Sovan} ^{Daeca}	9
Sheikh Nohim,	4
Moulvie Komer ^{uu} i". Garden Reaoh	22
Nazamot Ali, Mateabrooj	2
Sayed Fazul Hossein, Jalalpre, Oudh	...	1	4
Meea Khoda Bux, Moorshedubad	14
Total	48	373	23,433

2 maunds of rhee stems.

APPENDIX III.

Statement of Seeds received from 1st April 1884 to 31st March 1885.

From whom received.	Number of packets or packets.
Sir J. D. Hooker, K.C.S.I., C.B., F.R.S., &C, Director, Boyal Garden, Kew, London	321
Botanic Garden, Jamaica	21
Ditto, Natal, Africa	34
Ditto, Hong-Kong, China	7
Ditto, George Town, Demerara	6
Ditto, Ceylon	6
Ditto, Gunesh Khind, Poona... ..	103
Ditto, Saharunpur	112
Ditto, Darjeeling	162
Sir Ferdinand Von Muller, F.R.S., Melbourne, Australia	5
Directeur, Compagnie Continental d'Horticulture, Gand, Belgium	3
Ditto Jardin des Plantes, Saigon	25
Professeur de Culture, Museum de Histoire, Naturelle, Paris	1
Director of Agriculture and Commerce, Rangoon	4
Secretary, Agri-Horticultural Society, Lahore	1
Ditto ditto, Gardon, Lucknow	49
Ditto ditto, Society of India, Calcutta... ..	%
D. Morris, Esq., M.A., F.L.S., &C, Gordon Town, Jamaica	4
James Francis, Esq., Cedar Valley, Jamaica	1
James Inglis, Esq., Sydney, Australia	1
Messrs. C. A. J. Black, Toowoomba, Queensland	75
Assistant Conservator of Forests, Koliabar, Assam	3
Ditto ditto, Kanara, Bombay	1
Forest Officer, Hazaribagh, Bengal	1
E. H. Man, Esq., Port Blair, Andamans	160
Munshi Abdoolla, Plant Collector, Port Blair, Andamans	67
C Maries, Esq., Raj Durbhunga, Behar	1
Dr. R. A. Barker, Civil Surgeon, Dumka, Behar	1
„ G. Bidie, C.I.E., Superintendent, Central Museum, Madras	2
„ George King, London	1
L. J. K. Brace, Esq., Curator of the Herbarium	1
J. Gammie, Esq., Government Cinchona Plantation, Mungpoo	3
J. L. Lister, J.Lsq., Darjeeling	1
Messrs. Williamson^ Magor & Co., Calcutta	1
A. Cheetham, Esq., Calcutta	1
G. W. Bartlett, Esq., Calcutta	11
Unknown donor	1
Baboo Prosunno Coomar Sein, Seebpore... ..	1
Mugdoombux, Durwan	1
Total	1,201

APPENDIX IV,

Statement showing Seeds distributed from the Royal Botanical Garden during the year 1884-85.

To whom sent.	Number of parcels or packets.
Sir J. D. Hooker, K.C.S.L., C.B. F.R.S., &C, Director, Royal - Garden, Kew, London	214
Dr. Eegel, Imperial Garden, St. Petersburg, Russia	1
-Dotanip Garden, Sydney, Australia	1
Ditto, Melbourne, Australia... ..	10
Ditto, Edinburgh	29
Ditto, Glasnevin, Dublin	193
Ditto, Durban, Natal	6
Ditto, Cape Town	1
Ditto, Baden, Germany	1
Ditto, Hobart Town, Tasmania	2
Ditto, Buitenzorg, Java	49
Ditto, Hong-Kong, China	7
Ditto, Mauritius... ..	$\frac{2}{4}$
Ditto, Gordon Town, Jamaica	17
Ditto, George Town Demerara	3
Ditto, Peradeniya, Ceylon	24
Ditto, Gunesh Khind, Poona	3
Ditto, Ootacamund, Madras... ..	6
Ditto, Saharanjiur	36
Ditto, Darjeeling	432
Directeur, Compagnie Continentale d'Horticulture, Gand, Belgium	273
Ditto, Jardin des Plantes. Saigon	1
Secretary to the Acclimatization Society, Brisbane, Queensland	3
Ditto Agri-Horticultural Society, Madras	5
Ditto ditto ditto, Lahore	2
Ditto ditto ditto of India, Calcutta...	8
Superintendent, Agri-Horticultural Garden, Lucknow	17
Member, Madras Agri-Horticultural Society, Devikulan	1
Secretary and Engineer, Akyab Municipal^, Akyab	2
Sir John Kirk, M.D., C.M.G., &C, Her Britannic Majesty's Consul- General, Zanzibar	10
William Bull, Esq., King's Eoad Chelsea, London	33
Messrs. James, Veitch and Sons, King's Eoad Chelsea, London	32
» Haage and Schmidt, Erfurt, Prussia	17
# .. G. Bremming and Son, St. Kilda Nurseries, Melbourne	9
^ir Ferdinand Von Muller, F.R.S., University, Melbourne	3
W. G. Head, Esq., Horticultural Department, Crystal Palace, ^London	1
G. F. Wilson, Esq., Heatherbank, London	25
Major J. N. Laurence Archer, White Hall Park, London	1
Messrs. Brown, Shipley & Co., Liverpool, England	88
Eight Hon'ble the Earl of Ilchester, Dorchester	44
E. J. C. Brace, Esq., Les Vaux, Par Galbris, Loir et Cher, France	3
°. Morris, Esq., M.A., F.L.S., &C, Director, Public Gardens and Plantations, Gor A en Town, Jamaica... ..	6
W. Kirwoorl, Esq., M.D., Bahamas, West Indies	1
Herr Christian Scheving, Caudfiharm, St. Thomas', West Indies	1
His Honor G. B. A. Taylor, Nassau, N. P. Bahamas, ditto	1
Patrick Campbell, Esq., Milton Hill, Queensland, Australia	9
Under-Secretary, Department of Marine, New South Wales, Sydney	1
P. A. Bailey, Esq., General Post Office, Perth, West Australia	91
James Inglis, Esq., 28, Charlotte Place, Sydney, Australia	4
William McCott, Esq., Acting Director, Mauritius	43
C Creagh, Esq., Her Britannic Majesty's Assistant Resident, Laroot, Perak	111
L. Wray, Esq., Laroot, Perak	1
C. E. Welldon, Esq., Upcot, Maskeliya, Ceylon	1
Messrs. E. P. William and Brothers, Heneratgoda, Ceylon	1
Commissioner of Bhagulpore Division	1
Ditto Burdwan ditto	1
Ditto Orissa ditto	1
Ditto Dacca ditto	1
Ditto Chittagong ditto	1
Ditto Chota Nagpore ditto	1
Ditto Bajshahye Divisiou	1

APPENDIX IV—continued.

To whom sent.	Number of parcels or packets.
Deputy Commissioner, Arrakan Hill Tracts	4
Ditto, Hoshiarpur, Punjab	1
Conservator of Forests, Madras	3
Ditto, Baroda Raj, Bombay	1
Ditto, Dehra Dun	1
Ditto, Bankoora	39
Ditto, Moulmein	1
Ditto, Rangoon	1
Ditto, Lahore	1
Ditto, Darjeeling	7
Deputy Conservator of Forests, Chittagong Division, Rangamati	1
Ditto ditto, Dharwar, Bombay...	4
Assistant ditto, Ajmere	16
E. H. Man, Esq., Port Blair, Andamans	71
C Maries, Esq., Superintendent, Raj Durbhunga Garden	54
Lieutenant-Colonel C. Cowie, Commissary of Ordnance, Calcutta	
Ditto Barnard Smith, Assistant Commissary-General, Baloo ghat	1
Ditto A. J. C. Birch, Commandant, 25th Punjab Infantry, Mooltan	1
Lieutenant Leonard C. Peters, 17th Madras Native Infantry, Secunderabad	2
Colonel the Hon'ble S. T. Trevor, n E., Calcutta	3
lieutenant N. X. Gwynnee, Shropshire Light Infantry, Malta...	1
Brigadier-General H. C. Wilkinson, c.i*., Presidency District	2
Dr. Bidie, Central Museum, Madras	6
„ Purves, Burdwan	12
M. R. Weld, Esq., Masulipatam	2
Harold Hall, Esq., Pulliampetta	1
Director of Agriculture, Rangoon	1
Ditto Revenue Settlement and Agriculture, Madras	1
Officiating Director of Agriculture, Nagpore	1
Superintendent of Jail, Balasore	1
Honorary Superintendent, Government Garden, Rangoon	4
J. Coles Hardinge, Esq., Rangoon	3
Dr. M. A. Lawson, Ootacamund	150
Captain Symons, S. S. Pekin	6
Thomas Barnard, Esq., Buxar	2
J. Gammie, Esq., Mungpoo	5
C. H. Pillans: Esq., Phoolbarrie Tea Company, Limited	9
R. F. Martin, Esq., Julpigoree	50
T. F. Peppe, Esq., Arrah	4
Executive Engineer, Arrah Division	12
Ditto, Burdwan Division	2
District Engineer, Rungpore	1
Engineer-in-Chief, Dacca and Mymensingh State Railway	1
Sub-Engineer, Public Works Department, Aska	
Ohief Engineer and Secretary to Government of Bengal, Public Works Department, Calcutta	24
Agency Engineer, Rajkot, Bombay	63
P. W. Brown, Esq., Ellore	1
Mrs. Blake, Chumparun	1
Claude J. Dumraine, Rampore	2
F. H. Jones, Esq., Mozufferpore	1
T. Norman, Esq., ditto	51
Commandant, Chunar	4
E. M. R. Bailard, Esq., Jamalpur	12
Political Agent, Manipur	9
A. Parsons, Esq., Simla	6
G. S. Tilly, Esq., Hazaribagh	22
Cantonment Magistrate, Dinapore	45
C. H. Sevenoaks, Esq., Midnapore	1
W. F. Meres, Esq., ditto	1
W. S. Crowdy, Esq., Harsingpore	1
President, Eurasian and Anglo-Indian Association, Bangalore	1
Major H. B. Abbott, Political Agent, Jhullawar	1
Lieutenant W. C. Plowden, Commandant, Kohima, Naga Hills	6
Collector of Gorakhpore	1
Manager, Land Mortgage Bank of India, Calcutta	16
Ditto, Court of Wards, Awabgurh Estate, Etah	1

APPENDIX IV—concluded.

To whom sent.	Number of parcels or packets.
E. T. Atkinson, Esq., Calcutta	15
Lady Helen Blackwood, Government Place, Calcutta ...	44
George W. Campbell, Esq., Great Eastern Hotel, Calcutta ...	15
A. B. Cobb, Esq., United States Consulate, Calcutta ...	101
Consul-General for France, Calcutta	2
R- W. Mitchell, Esq., British Guiana Emigration Agent ...	1
Messrs. Stanley, Price and Co., Calcutta	1
» Begg, Dunlop and Co., ditto	2
» Carlises, Nephews and Co., ditto	1
R. C. C. Hickson, Esq., M.D., Calcutta Station Hospital ...	1
N. P. Seebbo Reddie, Esq., Nattaput	1
Budun Lushkur	1
Baboo Bissumbhur Ghosh, Seebpore	1
» Chandra Nath Chowdheiy, Beaulah	1
» Devendranath Bose, Calcutta	4
3, Gir ja Bhussun Roy, ditto	1
3, Gurudass Koondoo, Aundul	8
» Haripada Bhattacharjee, Mymensingh	2
39 Kesub Chandra Chatterjee, Seebpore	4
a Kally Prosunno Ghosh, Calcutta	1
99 Khetter Nath Dutta, ditto	1
39 Netto Lall Chatterjee, ditto	2
3, Nobin Chundra Roy, Lahore	2
99 Prosunno Coomer Banerjee, Calcutta	7
93 Prosunno Coomer Sein, Seebpore	2
3j Protap Narayan Singh, Bankoora	1
3} Satis Chandra Chatterjee, Seebpore	10
» Tacoor Dass Banerjee, Calcutta	48
Total	<u>2,979</u>

ANNUAL REPORT ON THE ROYAL BOTANIC GARDEN, FOR THE YEAR 1885-86.

No. 21G, dated Calcutta, the Hth May 1886.

From—**SIR H. G. K. MAJOR GEORGE KINC, M.B., Superintendent, Royal Botanic Garden, Calcutta,**
To—**The Secretary to the Government of Bengal, Pinaeial Department.**

I HAVE the honour herewith to submit the ninety-ninth Annual Report of the Royal Botanic Garden.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN FOR THE YEAR 1885-86.

But little in the way of change has been effected during the year, and the energies of the establishment have been chiefly directed to keeping up as high a standard of cultivation and arrangement as possible amongst the plants in the conservatories and grounds. With the latter object the conservatories were to a large extent replanted, old and worn out plants being removed to make way for new and more vigorous specimens. The results even within the year have been very obvious, for the show of orchids during the last season was the finest we have had since I took charge of the gardens, and the general appearance of the plant-houses is, I think, better than it has ever before been. Many of the borders out of doors have been replanted, and a good deal of work has been effected amongst the trees. The garden house in which the office and seed establishment have been put into serviceable repair towards the end of the year by the Department of Public Works. The river bank, which used to be a source of some anxiety, having, as reported by me last year, been built up by brick rubbish from Akra, is now in comparatively good order, and for a further small expenditure it should, I think, cease to be a source of trouble some time to come. The pump established a year or two ago on the river bank for the purpose of keeping the water in the garden lakes at a high level has worked well. The number of visitors seem to me to be increasing, and we are glad to see the garden entrance to be made a calling point for the passenger train that now ply on the river, the number would no doubt be still further increased.

2 Through the kindness of Sir J. D. Hooker, of Kew, and of Mr. Morris, of the Botanic Department in Jamaica, an unusually large quantity of mahogany seed was sent to the

Economic plants.

Much of the year. Much of this was distributed; and the remainder was sown in the nurseries, germinated so successfully that there are many healthy young seedlings. Besides these many seedling timber trees of useful sorts have been prepared for the Agricultural Department to promote the cultivation of the mulberry which supplies the material from which the *tappa* cloth of Polynesia and the bulk of the paper are manufactured, and I expressed a hope that this tree may be commonly grown in the odd scraps of ground which are so numerous round the villages of Bengal. I am glad to say that a year's experience confirms me in the belief that the tree is perfectly at home in the country, and that there is no reason why this hope should not be ultimately fulfilled. Our oldest trees (now about four years old) are thirty feet high, and send up numerous shoots from their roots, which the latter be cut under ground by the free use of the hoe in the neighbourhood of the tree. The Japanese cultivate the plant in the same way that osiers are grown in England, and for paper manufacture they use only the young shoots. This is a kind of cultivation especially suited for waste nooks and corners in Bengal, and has been pronounced by English paper-makers to be nearly, if not

quite, the best of paper fibres, the cultivation seems to offer encouraging prospects. The bark is of a ve... bleached fibre, and requires... the common... to which I had in former years directed some attention... invention, by a retired... that very... answers as well as it... turning to account... hopelessly wasted... named... As the climate of... tubers were sent to... are now thriving well... to be sacrificed for food... where it is common... acquiring... a wild... attention during the yew...

H w

...ous importeat... Chief... H. Kunstler... From the high... of the rare plants were brought by Mr. Pantling and by... interesting series of specimens... Madras... did ih cir... M. Boisier... Mann... presented his... Hooker... specimens of... many... Mr. Talbot, Deputy... of... OttnaJa forests, and... Hill Tracts, have been the... contributor to this herbarium... who has for ye... donjons... again continued

D, T... cult... £... B T... iJSS

SL... Pediton, hafSt... Dr. Gily3... naturalst... Dr. Treub, Director of the Botanic Garden, Buitenzorg, Java, were received... published a monograph of the family. To Mr. Cur... Institute, Singapore... and Major Sedgew... the herbarium

Interchange of plants and seeds.

This year reached the high figure of 53... distributed in excess of the number... 20,000 plants... chiefly due to the fact that... commercial farms who were... anxious to give... cultivation of this... yelder a trial. The remaining 33,000... plants... giTen, as will bj... by a reference to the appended distr... in this country and abroad. On the other... 9,251 plants... Packets of seeds to the number of 3,292 were distributed... were received. The gentlemen to recipient... same sort; and... garden is chiefly... Mr. Thiselton Dyer, of the Kew Garden; the Directors of the Botanic

of St. Petersburg, Hongkong, Natal, Demerara, Adelaide, and Java; the Superintendents of the Gardens at Saharanpur and Poona; Messrs. Veitch and Bull, Nurserymen, London; Mr. J. S. Gamble and the officers subordinate to him in the Forest Department of the Madras Presidency; Colonel T. Cadell, v.c., and Mr. G. H. Man, Andamans; Mr. Barton Groves and Colonel Berkeley, Hangoon; Colonel Perreau, Calcutta; Mr. Maries, Durbhunga; and Mr. Ridley, Lucknow. I have also to thank the officers of the cinchona establishment—Messrs. Gamble, Pantling and Parks—for many orchids sent down from hikkim. A large number of plants were also received in excellent order from Mr. H. H. Kuustler, Perak.

5. Government having decided to send an expedition to Lhasa, and Mr. Cunningham, of the Bengal Medical Service, having been appointed to accompany it in the capacity of Botanist, Meteorologist, and Naturalist, I have fitted out Mr. Cunningham with collecting materials, and have supplied him with experienced native collectors. As Europeans have hitherto been rigorously prevented from crossing the pass into Eastern Tibet, the botany of the route to Lhasa is but imperfectly known, and Dr. Cunningham's collections cannot fail to be most interesting. A native collector has been employed during the greater part of the year in the Chittagong Hill Tracts, and I intend to retain him there for some time to come.

6. The Lloyd Botanic Garden at Darjeeling is slowly recovering from the ravages of the frost of the winter of 1872-3, which killed almost everything in it except the larger trees. It is to be hoped that this dreadful pest has now finally been got rid of. But, as there are a good many of the same kind of frosts in private gardens in the station, I am by no means confident on the point. The vines in the conservatory yielded a few bunches of grapes during the year. But owing, no doubt, to the absence of sufficiently bright sunlight during the rainy season, the fruit was rather small and sour. I fear the Eastern Himalaya is pretty nearly hopeless as a home for any European fruit except the strawberry, of which I have seen some of even that is not much to boast of. There is now an excellent road leading from near the lower entrance to the convent, along the side of the fanitarium hill, into the garden. The necessity of passing through the bazar in order to reach the garden is now therefore obviated. The slopes of the sanitarium have now become consolidated, and they are beginning to be well covered with grass, and as the trees which have been planted on the hill grow up, the whole hill should become a great ornament to the station. The only thing which appears likely to interfere with this desirable result is the possible erection of a native bazar, or of dhobies' washing tanks, on the eastern plot of ground belonging to the municipality which is wedged in on the eastern slope between the grounds of the sanitarium and the Botanic Garden. This bit of ground used to be worked as a vegetable garden, but, as has been explained in my reports, it was abandoned on account of landslips caused by the building operations connected with the sanitarium. These building operations have long since ceased, and there is no reason now to fear the destruction of the vegetable crop by landslips. I have therefore been in communication with the municipality for the resumption of vegetable growing by the Curator, but hitherto without entire success. The acclimatised potatoes, raised from the garden some years ago, and the benefit of this proceeding is now being realised in the marked improvement of the quality of the potatoes brought to the public market for sale.

7. The budget allotment of the Calcutta garden for the year was Rs. 69,870, which was all expended. The sum of Rs. 1,091-12 realised from the sale of surplus plants, grass, &c., was paid into the treasury as revenue, being less than the estimate by Rs. 308-4. AB has been explained in former reports, the garden is not worked for revenue; only surplus plants being sold and care being taken not to interfere with the operations of private contractors to live by their business. The expenditure on the Lloyd Botanic Garden for the year amounted to Rs. 7,472, being less than the original estimate; while the sales of surplus plants produced the sum of Rs. 1,107, which was paid into the Government treasury. The sales were in excess of the estimated revenue by Rs. 441.

8. Several changes took place in the European staff during the year. Mr. Jaffrey, who had been Curator of the Lloyd Botanic Garden since its beginning, died suddenly of heart disease in November. Mr. Jaffrey was an excellent gardener, and was devoted to his work, while his obliging and courteous disposition had made him a

Mr. Jaffrey's
Planta-
u. rom the
e Curator

Brace, Curator of the Herbarium, highly well-derved promotion. Mr. L. J. K. year, and his place was ^{W. T.} was absent on sick leave during half the the medical service. ^{IT. P. only filled by} Dr. D. Prain, a young officer of together with much excellent knowledge of botany;

9. The usual ^{return} four in numbered are appended.

APPENDIX I.

Statement showing plants received from 1st April 1885 to 31st March 1886.

FROM WHOM RECEIVED.	Wardian cases.	Bozos.	Number of plants.
Royal Garden, Kew, London ...	2	2	167
Government Botanic Garden, Saharanpur ...	1	1	454
Botanic Garden, George Town, Demerara ...	1	1	11
Ditto, Natal ...	1	1	72
Ditto, Jamaica ...	3	3	181
Ditto, Hong-Kong ...	1	1	71
Ditto, Java ...	4	4	67
Ditto, Gunesh Khind, Poona ...	4	4	36
Lloyd Botanic Garden, Darjeeling ...	4	4	918
A gri-Horticultural Society, Calcutta ...	1	1	99
Eden Garden, ditto ...	1	1	18
Zoological Garden, ditto ...	1	1	24
W. Bull, Esq., New Plant Merchant, London ...	1	1	91
Messrs. James Veitch and Sons, Chelsea, London ...	1	1	79
J- Gammie, Esq., Government Cinchona Plantation, Mungpoo ...	16	16	679
S. T. Apcar, Esq., Garden Reach ...	1	1	5
T. C. Anderson, Esq., Ceylon ...	1	1	127
Colonel E. Berkeley, Rangoon ...	1	1	122
Sir E. Bradford, Rajputana ...	1	1	2
H. G. Batten, Esq., Rangoon ...	1	1	79
Q. Bartlett, Esq., Calcutta ...	1	1	2
Dr. D. D. Cunningham, Calcutta ...	1	1	85
C. Curtis, Esq., Penang ...	1	1	20
Colonel T. Cadell, v.c., Andamans ...	5	5	753
J- S. Gamble, Esq., Madras ...	3	2	90
J- Barton Groves, Esq., Rangoon ...	3	3	302
Hordern, Esq., ditto ...	2	2	79
A. O. Hume, Esq., C.B., Simla ...	1	1	163
Miss E. Harwood, Calcutta ...	1	1	225
Colonel Jarrett, ditto ...	1	1	46
W. Kilby, Esq., ditto ...	2	2	34
H. Man, Esq., Andamans ...	1	3	210
C. Maries, Esq., Durbhunga Raj Garden ...	5	5	222
& M. S. Mitchell, Esq., Garden Reach ...	1	1	24
Colonel Perreau, Calcutta ...	1	1	184
W. Pigott, Esq., ditto ...	1	1	7
^ McD. Peche, Esq., Moulmein ...	1	1	208
Dr. J. G. Pilcher, Howrah ...	1	1	13
K. Pantling, Esq., Mungpoo ...	1	1	56
J- Parkes, Esq., Sikkim ...	3	3	526
M. Ridley, Esq., Lucknow ...	4	4	124
A. Simson, Esq., Calcutta ...	1	1	1
Messrs Schoene, Kilburn & Co., Calcutta ...	3	3	169
Colonel Talbot ...	1	1	3
Dr. G. Watt, Calcutta ...	1	1	16
Collected by the Superintendent in Darjeeling ...	2	2	170
Ditto Herr B^un^Ufir^JB B^iang ...	17	10	1,030
Ditto Ba M^an^T Han^Collector, Chittagong ...	1	1	4
Babu P. C. Sein, Seebpore ...	1	1	8
Horticultural Nurseryman, Manicktollah ...	1	1	1,155
Essau ditto, ditto ...	1	1	20
Total ...	38 1	74	9,251

APPENDIX II.

Statement showing plants sent out from 1st April 1885 to 31st* March 1886.

To WHOM SBHT.	Wardian cases.	Boxes-	Number of plants-
Government House Garden, Calcutta	.....	.....	275
His Imperial Majesty the Sultan of Turkey	20	.....	648
Royal Garden, Kew, London	5	.....	301
Do. Botanic Garden, Ceylon	1	1	99
Botanic Garden, Hong-Kong	3	.....	300
Ditto, George Town, Demerara	1	.....	21
Ditto, Durban, Natal	4	.....	98
Ditto, Adelaide	.....	1	27
Ditto, Java	" 1	1	92
Ditto, Jamaica	1	1	299
Ditto, Mauritius	1	.....	350
Ditto, Melbourne	.....	1	171
Ditto, Hull, England	.....	1	88
Government Botanic Garden, Saharanpur	.....	1	2
Compagnie Continentale d'Horticulture, Ghent	1	1	154
Lloyd Botanic Garden, Darjeeling	.....	4	259
Belvedere Garden, Calcutta	.....	.....	20
Eden Garden, ditto	.....	.....	8
Zoological Garden, Calcutta	.....	.....	345
Agri-Horticultural Society's Garden...	.....	2	261
Horticultural Garden, Lucknow	.....	9	93
Government Agri-Horticultural Garden, Lahore...	.....	4	93
Public Garden, Ajmere	.....	13	261
York Exotic Nursery, Kew, Melbourne	.....	1	161
"W. Bull, Esq., Chelsea, London	3	.....	196
M. Louis Yan Houtte, Ghent	.....	1	82
J. P. Norrish, Esq., H. B. M's Consul, Port Said	1	.....	30
Lord Egerton, of Tatton, Cheshire	1	.....	2
M. T. A. Despesiez, Mauritius	1	.....	100
General Hyde, London	.....	1	49
Messrs. Palmer and Son, Queensland	1	.....	55
Deputy Conservator of Forests, Chittagong	.....	14	225
Assistant Superintendent of Forests, Penang	2	.....	144
Director of Agriculture, Assam	.....	" 3	44
Magistrate of Chittagong	.....	8	150
Ditto, Bankipore	.....	7	75
Cantonment Magistrate, Dum-Dum	.....	.....	200
Ditto, Barraokpore	.....	.....	436
Commissary of Ordnance, Calcutta	.....	.....	154
Secretary to the Pegu Municipality	.....	8	54
Ditto and Engineer, Akyab Municipality	.....	6	1000
Suburban Municipality, Alipore	.....	.....	" 49
Executive Engineer, Calcutta Workshop Division	.....	.....	300
Ditto, Pegu	.....	16	49
High School, Dhubri	.....	4	83
Government High School, Rangoon	.....	1	282
Ditto School, Taki	.....	.....	15P
Military Orphanage, Khidderpore	.....	.....	50
Zenana Mission Church, Calcutta	.....	.....	100
Augarparah Orphanage and the Church of England Zenana Mission.	.....	.....	100
C. M. S. Mission House, Krisnaghar	.....	5	700
Barrackpore Cemetery	.....	.....	91
Principal, Ravenshaw College, Cuttack	.....	9	18
General Hospital, Calcutta	.....	.....	173
Medical College Hospital, ditto	.....	.....	30
Mayo Native Hospital, ditto	.....	.....	64
Postmaster-General, ditto	.....	2	42
Manager of Baron's Tea Estate, Jalpaiguri	.....	1	6
Sub-Deputy Opium Agent, Sarun	.....	1	4,207
Engineer-in-Chief, East Indian Railway, Howrah	.....	.....	12
Chief Engineer, East Indian Railway, Calcutta	.....	.....	192
Ditto, Dacca, Mymensing and Chittagong State Railway.	.....	8	

APPENDIX II—continued.

To WHOM SENT.	Wardian cases.	Boxes.	Number of plants.
Chief Engineer, Eastern Bengal State Eailway, Calcutta	2,069
Assistant District Traffic Superintendent, East Indian Eailway, Howrah.	24
Superintendent, Small Arms Ammunition Factory	471
Ditto, Gunpowder Factory, I&hapur	140
Ditto of Jails, Burdwan	1	50
Ditto ditto, Jessore	11	220
Ditto ditto, Buxar Circle	1	36
Ditto Central Jail, Midnapore	6	170
•District Superintendent of Police, Bamporehaut	1	22
Ditto ditto, Eungpore	1	20
superintendent, Burrakar Iron Works	4	90
Vice-Chairman of Port Commissioners, Calcutta	500
Collector of Monghyr	7	110
Ditto of Hooghly	10
Superintendent, Customs Preventive Service, Sulkea	200
Sub-divisional Officer, Perozepur	9	180
Superintendent, Durbhunga Baj Garden	35	4,498
Civil Surgeon, Howrah	100
Deputy Surgeon-General, Nagpur	1	30
Officiating Master of the Mint, Calcutta	30
•E. T. Atkinson, Esq., Calcutta	201
•A. Apcar, Esq., Calcutta	7
•• A. Apcar, Esq., Calcutta	3	53
Mrs. S. T. Apcar, Garden Reach	2	293
J. C. Anderson, Esq., Ceylon ...	2	.....	85
Rev. O. Berg, Eamporehaut	5	89
W. Bartlett, Esq., Calcutta	1	74
* B. Baker, Esq., Siliguri	5	100
* G. Burnell, Esq., Chittagong	5	100
J. Ballin, Esq., Seebpore	4
Colonel E. Berkely, Rangoon	1	33
lady Bradford, Eajputana	2	29
^frs. Boerresen, Eamporehaut	3	78
Colonel T. Cadell,, v.c. Andamans ...	5	.....	284
evd. A. Campbell, Jamtara	4	100
Won'ble H. A. Cockerell, Calcutta	7
• Cleghorn, Esq., Akra	450
A. Dowling, Esq., Chittagong	19	420
*v. i)over, Esq., Balasore	1	25
Y~ H. P. Douglas, Esq., Fenchugunj	5	92
^W. Fletcher, Poona	2	41
» Fraser, Calcutta	1	12
•• A. Gantzer, Esq., Howrah	1
J. H. Silliland, Esq., Government Engineering College, Seebpore.	76
^ R. Grant, Balasore	8	146
aptain Hughes, S. S. Panmure ...	1	.....	42
Revd C. S. Harington, Calcutta	50
J. C. Hooper, Esq.	4
W. H. Hardinge, Esq., Howrah	34
Miss E. Harwood, Calcutta	U8
S. J. ... sq.	4
G. K. ... Assam	8	200
•evd. W. Kitchin, Howrah	4	100
T » T W. Kiefel, Giridi	4	41
i A. Langlois, Esq., Calcutta	2,000
* A. Larmour, Esq., ditto	32
• i'ea, Esq., Dibrugarh	1	20
^ordon Leith, Esq., Calcutta	1
•* A. L. Mitchell, Howrah	2	44
^«-jeon-Major Morphew, Cawnpore..	2	43
*.a. Man, Esq., Andamans ...	1	.....	25
Ironel May, Gorakhpoor	3	60
Revd J. McDonald, Dum-Dum	150

PART II—continued.

To WHOM SENT.	Wardian cases.	Boxes.	Number of plants.
Captain C. M. Muir, H. E. the Viceroy's Body-guard		3	68
Mrs. Morris, England		1	51
G. Norman, Esq., Calcutta			4
A. O. Hume, Esq., C.B., Simla		6	111
J. Owen, Esq.; Ajipore			305
Dr. J. G. Richer, Howrah		13	296
J. C. Pottinger, Esq., Ahmednugger		1	1
R. Pantling, Esq., Mungpoo		1	81
G. McD. Peche, Esq., Moulmein	1	1	45
Colonel Perreau, Calcutta			38
A. Palmer, Esq., ditto			3
Sergeant Peck, Fort William			20
W. Pigott, Esq., Calcutta			10
Eevd. A. Pastor			6
„ A. C. Eodrigues, Calcutta			50
Mrs. John Eose, Calcutta			4
Captain Stiffe, Calcutta			20
J. 8. Slater, Government Engineering College, Seebpore			73
Captain Symons, S. S. Pekin		1	360
A. Simson, Esq., Calcutta			57
T. Steward, Esq., ditto			2
Rev. B. H. Scortiohini, Penang	2		66
W. M. Smith, Esq., Baidyanath		4	93
Mrs. L. Spencer, Hajputana		1	45
Miss Stephen, Calcutta			13
„ M. W. Sugden, Nischindeepur		5	100
J. Thomson, Esq., Melbourne	1	5	220
Colonel A. C. Toker, Alipore			658
C. F. Tonnerre, Esq., Ramporehaut		7	92
H. Wood, Esq., Calcutta			7
C. F. Warner, Esq., Calcutta			1
Colonel D. Ward, Simla		1	104
Miss Wheeler, Calcutta			10
A. Yule, Esq., Metiabrooj			6
H. D. Yule, Esq., Garden Reach		7	24
G. H. Tilly, Esq., Giridi			80
James Sutherland, Esq., Calcutta		5	110
Messrs. Finlay, Muir & Co.			30
„ Gladstone, Wyllie & Co.			maund
„ Gillanders, Arbufchnot & Co. ...			of rhea
„ Birkmyre Brothers, Hastings Mill, Serampore		3	stems.
			5,000
			15,036
			and 4
			maunds
			of rhea
			stems-
Manager of P. C. Mill, Titiagarh			12
Sooruj Deo			106
Sham Lall Lal		0	600
Baboo P. C. Sein, Seebpore		21	11
„ D. N. Bose, Calcutta			3
„ Chutto Lall Misra, Burdwan			1
„ S. P. Chatterji, Re, Calcutta			175
„ A. M. Mookerjee, Calcutta			1
„ B. (xhose, Calcutta			11
„ B. C. Sein, Calcutta			1
„ B. N. Sing, Dum-Dum			200
„ B. B.			8
„ g ^ V ^ tterjee, Calcutta			16
„ v. Malleah, Ilaneegunj			4
„ g. C. Bose, Calcutta		8	178
„ G. M. ^ i e e Calcutta			214
„ M. Dutta, ditto			18
			5

APPENDIX II—concluded.

TO WHOM SENT.	"Wardian cases.	Eoxes.	Number of plants.
Banoo P. C. v. Chatterjee, Ran^orm	8
H. ?-^00k e fi e, Seebpore	2
f. c. Roy, Sbillong *	43
T Z. Bl swas, Calcutta	53
V N. Boy, Burdwan	50
£ Banerjee, Serampore I"	8
£ • £-Sing, Nuddea^	22
|; | • £ Janab, Daro	1
» N" P £ C howdhu ri, Seebpore"	48
» P M a S f e >	100
» P O T ^ / V , & ^ n J	4
3> * ^ K. Koy, Calcutta	5
" S. M. Set ^ S J J ?	3
J > H O P ^ ^ Calcutta	2
" 5. Malcah How S, Seebpore	2
» T. M. Dass. E. m n n	16
" S-C-Shaw Hori ST	11
T. n B an erj ee, Calcutta	3
» dhu S M Baner Jee, ditto	20
Hore Anali ^ Andool	5
Essan, ^ Neryman, Manicktoiab	1
L N -Jtehta, Cafta ^	14
Kaz PA Mi am Mohammed MeHalirni	22
^ M S S S S J J ? Calcutta	23
& • * N T W I T a ^ 08seill, Metiabrooj	8
Native T, n. Burdwan	1
^ ies of the Calcutta Medical College Z	6
----- ^ ^	1
Total	60	399	53,753

Sir J. D. Hooker, K.C.S.I., C.B., F.R.S., 4C, Director, Royal	13
Garden, Kew, London	240
Dr. Regal, Imperial Garden, St. Petersburg, Russia	4
Botanic Garden, Jamaica	23
Ditto, Natal, Africa	4
Ditto, Hong-Kong	1
Ditto, Demerara	23
Ditto, Tasmania	51
Ditto, Adelaide	35
Ditto, Saharanpur	51
Ditto, Darjeeling	8
Sir Ferdinand Von Muller, F.R.S., Melbourne, Australia	1
William Bull, Esq., F.L.S., Chelsea	2
Messrs. Haage and Schmidt, Erfurt	1
Secretary to the Agri-Horticultural Society of India	1
Officiating Secretary to the Chief Commissioner, Rangoon	48
Superintendent, Horticultural Garden, Lucknow ..»	1
Ditto, Government Experimental Farm, Cawnpore	1
Ditto, Public Park, Baroda	14
Deputy Conservator of Forests, Cuddapah, Madras	J
Ditto, Kanara, Bombay	1
Ditto, Rangamati, Chittagong	1
District Forest Officer, Godavary District	2
C. Curtis, Esq., Forest Department, Penang	1
Herr H. H. Kunstler, Perak, Penang	108
E. H. Man, Esq., Port Blair, Andamans	9
J. Gammie, Esq., Mungpoo, Darjeeling	63
R. Pantling, Esq., Mungpoo, ditto	10
J. L. Lister, Esq., Kalimpong, ditto	1
C. Maries, Esq., Superintendent of Gardens, Raj Durbhunga	2
W. M. Smith, Esq., Baidyanath	2
G. J. Nicholls, Esq., c.s., Ghazipore	29
Dr. George King	2
„ D. D. Cunningham, Calcutta	1
Colonel Perreau, ditto	1
A. W. Solomon, Esq., ditto	15
Messrs. Stanley, Price & Co., ditto	2
„ Begg, Dunlop & Company, Calcutta	25
A. Aitkin Higgins, Esq., Calcutta	82
Badal Khan, Plant Collector	33
Babu Bissumbhur Ghosh, Seebpore	1
Rai Prossonno Kumar Bannerjee, Bahadur, Calcutta	...
	<hr/>
	914
	<hr/>
Total	...

X IV.

Princ. Botanic Garden during the year 1885-86.

	Number of parcels or packets.
Sir J. D. Hooker > K.C.S. i., C.B., F.R.S., &c, Director, Royal Garden, Kew, London ...	178
Ur. Regel, Imperial Garden, St. Petersburg, Russia ...	69
botanic Garden, Edinburgh ...	68
Ditto, Cambridge, England ...	44
Ditto, Christiana ...	30
Ditto, Hobart Town, Tasmania ...	6
Ditto, Brisbane, Queensland... ..	2
Ditto, Utrecht, Holland ...	29
Ditto, Leiden, ditto ...	18
Ditto, Buitenzorg, Java ...	4
Ditto, Hong-Kong, China ...	4
Ditto, Gordon Town, Jamaica ...	3
Ditto, Singapore ...	2
Ditto, Peradeniya, Ceylon ...	5
Ditto, Gunesh Khind, Poona ...	301
Ditto, Saharanpur ...	31
Ditto, Darjeeling ...	231
M. D. G. Compagnie Continental d'Horticulture, Ghent ...	17
*. Max Leichtlin, Baden-Baden ...	38
secretary to the Acclimatization Society, Brisbane, Queensland ...	H
Ditto Agri-Horticultural Society, Madras ...	5
< Ditto ditto of India, Calcutta... ..	6
^Perintendent, Horticultural Garden, Lucknow ...	23
William Bull, Esq., F.L.S., Chelsea ...	14
Messrs. James Veitch and Sons, Chelsea ...	9
> Haage and Schmidt, Erfurt ...	%
R* T? G. Brunning and Son, Melbourne ...	1
w Ferdinand Von Muller, F.R.s., University, Melbourne ...	2
W. A. t Arbuthnot, K.c.s.l., Newbury, England ...	79
TM- vr. Head, Esq., Horticultural Department, Crystal Palace, London ...	2
D. ^ Foster, M.D., F.R.S., &c, Cambridge, England ...	12
" Maxwell Masters, M.D., F.R.S., London ...	12
> H. Baumgarten Djocakarta, Java ...	1
George F. Wilson, Esq., Weybridge Heath, London ...	50
^pionel Trevor Clarke, South Kensington, London ...	72
D/lt: B. Ballou, F.R.s., Professor of Botany, Oxford ...	21
C. W. J. Elwes, Cirencester ...	36
" Symons, S. S. Pekin ...	408
Miss Fletcher, St. Thomas' Home ...	80
Rev. A. Seacombe, Breconshire ...	80
\$ Frank Kn, Esq., St. Hilary, Cambridge ...	12
SL^Uam Brockbank, Esq., F.L.S., Manchester ...	9
^eorge Well Campbell, Esq., Lockerbie ...	4
^ Forbes, Esq., Aberdeen ...	10
^ . ^ i e, Esq., ditto ...	13
David Pram, Esq., Fettercairn, Laurencebirk ...	7
* u^ Levinge, Esq., Knock Drin Castle, Ireland ...	25
gonible J. Brossisto, M.P., Melbourne ...	2
T ' A ^# Despeissiez, Mauritius ...	5
deputy Commissioner, Arrakan Hill Tracts ...	3
> Sultampur ...	1
p Ditto, EUichpur ...	14
conservator of Forests, Eangoon ...	2
Ditto, Circle, Madras ...	1
Ditto, Bengal ...	1
^ -yitto, Assam ...	1
deputy Conservator of Forests, Chittagong ...	10
^ t t o ditto, Eanchee ...	1
^ t t o ditto, Buxa ...	1
y t t o ditto, Teesta Division ...	1
Assis^ant Conservator of Forests, Ajmere ...	2
Ditto ditto, Kurseong ...	1
Offi^ating Conservator of Forests, Pegu Circle, Eangoon ...	1
... M^in, Esq., Andamans ...	1

APPENDIX IV—*contd.*

To whom sent.	Number of parcels or packets.
	24
C. Maries, Esq., Durbhunga	12
His Excellency The Eight Hon'ble M. E. Grant Duff, Madras	18
Surgeon-General Bidie, c.s.i., Madras	112
A. O. Hume, Esq., C.B., Simla	29
M. E. "Weld, Esq., Kistna, Madras	1
J. Gammie, Esq., Mungpoo	5
E. Pantling, Esq., ditto	1
A. F. Dowling, Esq., Kurnafuli	1
Manager, Oodaleah Tea Estate, Chittagong	1
Ditto, New Terai Tea Association, Siliguri	1
Ditto, Gangaldai Factory, Bhagalpore	1
Ditto, Soolahera Estate, Mysore	1
Ditto, Harsingpore Indigo Concern, Tirhoot	1
A. M. G. Smith, Esq., Nuddea	1
Edward Hall, Esq., Mysore	1
Executive Engineer, Public "Works Department, Chittagong	2
District Engineer, Rungpore	1
Ditto, Mymensingh	6
Engineer-in-Chief, Dacea-Mymensingh State Eailway, Dacca	92
Assistant Engineer, Public Works Department, Kistna	7
Secretary, Eurasian and Anglo-Indian Association, Madras	2
Ditto and Engineer, Akyab Municipality, Akyab	48
Ditto to the Calcutta Exhibition, Melbourne	1
Honorary Secretary, Moradabad Club	1
Superintendent, Cantonment Garden, Rangoon	1
Sub-divisional Officer, Alipur Duar	6
H. Inglis, Esq., Akyab	1
A. East, Esq., Mercara	4
Colonel Timler, Eussian Army	1
Consul for Portugal in British India, Bombay	20
Dr. T. E. B. Brown, M.D., Medical School, Lahore	45
Thomas Wardle, Esq., Leek, Staffordshire	1
J. Collet, Esq., Srinagar	1
The Commissioner of Bhagulpore	1
Y. B. Lewis, Esq., Puneah	173
J. Jarbo, Esq., Eungpore	1
G. A. Yallenti, Esq., Eanchee	4
Director of Agriculture, Assam	201
E. B. Moybe, Esq., Kohima	1
T. Norman, Esq., Mozufferpore	1
James Anderson, Esq., Berhampore	2
P. H. Brown, Esq., Coconada	22
G. S. Tilly, Esq., Parasnath	1
H. Wylly, Esq., Mourbhanj, Orissa	1
C. Prentis, Esq., M.D., Civil Surgeon, Gorakhpore... ..	1
Thomas Barnard, Esq.; Buxar	1
J. D. Beglar, Esq., Chinsurah	1
Colonel J. Miller, Commanding Bhopal BattalionfSehore	38
" J. Upperton, United Service Club, Calcutta	27
" Talbot, Political Agent, Bikaneer	2
Messrs. Jardine, Skinner and Company, Calcutta	1
" Stanley, Price and Company, Calcutta	98
Messrs. Schoene, Kilburn and Company, Calcutta	1
Bengal Store Company, Calcutta	1
L. P. D. Broughton Esq., ditto	1
Major J. Colquhoun, it. A., Dum-Dum	2
J. A. Crawford, Esq., Calcutta	1
M. Harmand, Consul-General for France, Calcutta	12
M. leChivaliar J. Gallian, Calcutta	12
O. C. Khambatta, Esq., Canning Town	1
P. Playfair, Esq., Calcutta	2
L. A. Smith, Esq., ditto	2
H. D. Yule, Esq., ditto"	1
Halfdan Bahr, Esq., Curator, Eoyal Botanic Garden	61
Pundit Jwala Duttee, Lahore	1
Badun Nuskar, thana Makooah	1
Bazit Kazie, ditto	1
Babu Bissumbhur Ghosh	1
" Brojendra Coomar Sein, Paikpara	1

APPENDIX IV—concluded.

	Number of perals or packets.
Baboo Har Chandra Ghosh, Mutsur, -regii Division ...	12
" Hari Chandra Ghosh, Mutsur, -regii Division ...	1
Hurry, Nurseryraa, Calcutta ...	1
Babu Khettra Mohua Dutta, Calcutta ...	1
R. V. P. Orila Chandra Chowdhury, Mymensing ...	3
Prosonno Kumar Kanerjee, Bahadur, Calcutta ...	12
Prosonno Kumar Sein, Seebpora ...	1
» Protap J. Tarain Sing, Baakoorah ...	1
» Chandra Ghosh, Calcutta ...	1
» Jacooi Dass Banerjee, ditto ...	1
Total ...	3,292

MUNICIPAL DEPARTMENT.

MEDICAL.

DARJEELING, THE 22ND JUNE 1888.

RESOLUTION.

READ—

The Annual Report of the Royal Botanic Garden, Calcutta, for the year 1880-80.

THE establishment were engaged in keeping up as high a standard of cultivation and management as possible amongst the plants in the conservatory and nursery. The knowledge of the plants is excellent, and the general appearance of the garden was very satisfactory. The river frontage, which had suffered from the action, was protected by a facing of broken brick metal. It is now considered fairly secure.

A large quantity of mahogany seed was received during the year from Kew and the quantity of this was distributed, and the remainder has been used in the garden, yielding about 20,000 seedlings. Other timber plants of various sorts were also distributed. Dr. King reports that a gear's trial experiment confirms him in the belief that the paper P/7 and rice supplies the material from which the tappa cloth of L.T. and rice paper of Cilina and Japan are manufactured) is a good one. The bark of a plant considered by S.P.S. It is the best of paper fibres, the utilization of which in the plantain for paper-making has been rendered possible by the mention of a machine patented by a retired officer of the Madras Army.

During the year 1880-81 attached to the garden received material additions from Malaya by Mr. P. V. W. specimens were contributed by Mr. Kunstler from Kumbakonam, from the Eastern Himalayas, by Mr. Duthie from Assam, from the Khasi hills from Madras, and by Messrs. Clarke and Maim from Jitpur. Interesting contributions were also received from the following: Mr. Talbot (Canara Forests), Mr. Ellis of Chittagong, Mr. Sooty of Melbourne, Professor Engler of Breslau, Mr. Giles, the Naturalist with the Gilgit Expedition, Mr. Cartwright of Madras, Mr. Hallett (Singapore), Mr. Campbell (Singapore), and Major Sedgewick.

4. Fifty-three and seven hundred and fifty-two plants were issued during the year; 3,92 packets of seeds were received.

The Garden at Darjeeling is reported to be recovering from the effects of the late heavy rains. The landslips from the Sanitarium and the Botanic Garden, to be resumed by the Municipality for the resumption of the plot of the garden for the benefit of the station.

The expenditure on the Calcutta Botanic Garden amounted to Rs. 1,091 realized from the sale of surplus plants on the Joyd Botanic Garden at Darjeeling amounted to Rs. 741.

ORDER.— and of the Report be referred to the Revenue and Agricultural Department for information.

(2)

Ordered also that a copy of this Resolution be forwarded to the Superintendent of the Botanical Gardens for information.

By order of the Lieutenant-Governor of Bengal,

R. H. WILSON,

Ofg. Secretary to the Government of Bengal.

No. 1094T-M.

COPY forwarded to the Superintendent of the Botanical Gardens, Calcutta, for information.

By order of the Lieutenant-Governor of Bengal,

E. N. BAKER,

Undersecretary to the Government of Bengal.

DARJEELING,

The 11th June 1886.

ANNDAL REPORT OF THE ROYAL BOTANIC GARDEN FOR THE YEAR 1886-87.

No. 15G, dated Calcutta the 21st May 1887.

From—SURGEON-MAJOR G. KING, M.B., L.L.D., & C, Superintendent, Eoyal Botanic Garden, Calcutta,
 To—The Secretary to the Government of Bengal, Financial Department.
 I have the pleasure to submit to you the Hundredth Annual Report of the Royal Botanic Garden.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN FOR THE YEAR 1886-87.

It may not be inappropriate to begin the hundredth annual report of the garden by a brief recapitulation of its history, which is, to a very great extent, the history of Indian Botany.]

The Government of Bengal was first made to the Government of Bengal in June 1786, by Colonel Robert Kyt, then Superintendent of the Company's Dockyard at Kidderpore. The proposal was favourably entertained by the Governor-General, and its adoption was recommended by the Supreme Board in London during the same month, and a large tract of land was given to him during the following year by the selection, as at Alimmar, of a tract immediately below Colonel Kyt's private garden limited, in his Visce of a md, besides the Botanic Garden as it is now Engineerino-pu abou t fift a es which form part of the grounds of the present he had brot Colonel Kyt was himself an ardent horticulturist, and a large collection of plants from the Straits. He was therefore very appropriately appointed the first Superintendent of the Botanic Garden which had been founded at his suggestion. Colonel Kyt continued to perform the duties of Superintendent until his death in 1793. On Colonel Kyt's death, Government decided to put the duty under the charge of a special officer who should have no other duties. I am Roxburgh, the Company's Botanist in Madras, was transferred from that Presidency, and was installed at Seebpore in the month of November. Roxburgh, for many years prior to his transfer, had been engaged in drawing the then little-known Flora of the Northern Circars in the Madras Presidency. He was a most ardent and enthusiastic botanist, and a good gardener. Dr. Roxburgh continued to be Superintendent until 1814, when he was obliged to proceed to the Cape on account of his health. From the day of his departure to Helena, and from thence to England, where he died during the following year. Dr. Roxburgh was the first botanist who attempted to draw a systematic account of the plants of India. During his busy life he prepared a *Flora Indica*, which contained systematic descriptions of all the indigenous plants known to him, as well as of many cultivated plants in the neighbourhood of Calcutta. The manuscript of this work he took with him when he left India, intending to publish it in England. His death prevented the execution of this plan, and the exception of the first volume, which was printed with some alterations and interpolations by Drs. Wallich and Carey in 1820, the book remained unpublished until 1832. In the latter year it was printed, exactly as he left it, by the piety of his sons, Captains James and Bruce Roxburgh, of whom the latter was a botanist. This book is the basis of all subsequent botanical works. It is an admirable production: the description of the plants is graphic, and its authorship justly entitles Roxburgh to his title of Father of Indian Botany. Until the year 1872, when the publication of the "Flora of British India" was begun by the distinguished botanist George Bentham, Roxburgh's was the only single book through which a true knowledge of Indian plants could be acquired. A second edition of this excellent work was issued by Mr. C. B. Clarke in 1874 at a merely

nominal price, Mr. Calarke's desire being to put the book within the reach of the poorest student. Besides the *Flora Indica*, Roxburgh published at the expense of the Honourable Company, in three large folio volumes, his *Plantæ Coromandelianæ*, being descriptions with figures of three hundred of the most striking plants of the **Coromandel** Coast. Dr. Roxburgh was immediately succeeded in the Superintendence of the Garden by Dr. Francis Buchanan (afterwards Hamilton), who at the time was on special duty in connection with an extended enquiry into the agriculture of India and in the collection of materials for a Gazetteer. Dr. Hamilton, who was an accomplished botanist and zoologist, collected a vast mass of material, part of which was published in his own name, but the bulk of which, after many years' suppression, has been published under the title of Montgomery Martin's History, Topography and Statistics of Eastern India. Dr. **Buchanan-Hamilton** held charge of the Garden for only a short time, and he was succeeded in 1817 by Dr. Nathaniel Wallich, lately Surgeon to the Danish Settlement at Seram. Dr. Wallich was an able and most energetic botanist; and, during the earlier part of his office he organised collecting expeditions into the remote and then unknown regions of Kumaou, Nepal, Silhet, Tenasserim, Penang, and Siugap. Dr. Wallich in fact undertook a botanical survey of a large part of the Indian Empire. The materials (in the shape of dried specimens of plants) thus accumulated were taken by Dr. Wallich to London, and, after being named there by himself and by other botanists, they were distributed in numbered collections to the leading botanical institutions in Europe. In his great distribution, Dr. Wallich included the Collections of several European botanists which had been made over to him for the purpose. The facility with which these specimens were given away was no extreme that, the garden report for the year 1843, we find Griffith (who had been appointed to officiate for Dr. Wallich during his absence in England) complaining that the herbarium had been completely denuded of every specimen collected during the first fifty years of the existence of the Garden. Besides distributing these specimens through the munificence of the Honourable Company, to publish the title *Plantæ Asiaticæ Rariores*, three superb volumes illustrated by figures of a high degree of excellence. Dr. Wallich retired in 1843 and died in 1854. During the lengthened absences of Dr. Wallich in Europe, the garden was filled by Dr. W. Griffith, whose premature death deprived the Botanical Science of one of its ablest and most industrious workers. Dr. Griffith's extensive notes and numerous drawings were, after his death, published by Government in nine volumes. Dr. Wallich was succeeded by Dr. Hugh Falconer. Dr. Falconer was a Palaeontologist, well known for his researches on the Sivalik Fossil Mammalia. In 1855 he left the Government account of ill-health, and was succeeded as Superintendent by Dr. John Thomson, a traveller and botanist of much ability, coadjutor of Sir Joseph Hooker in the collection and distribution of the extensive and well-stocked herbarium of East Indian plants, and the joint author of the first volume of the new *Flora Indica*. Dr. Thomson retired in 1870, and was succeeded by Dr. Thomas Anderson, whose untimely death in 1870 was caused by disease contracted during his efforts for the introduction of the Cinchona into the Sikkim Himalaya. In the two years subsequent to Dr. Anderson's departure from India, Mr. Clarke acted as Superintending and during his incumbency he began the series of botanical publications which has earned for him so high a scientific reputation.

2. From the first foundation of the garden, it was understood that it was to be made a source of botanical information for the possessions of the Company and at the same time a centre to which exotic plants of economic interest could be imported for experimental cultivation, and from which, in turn, they could be issued for distribution in the Company's possessions. It was also intended to assist in introducing indigenous Indian products to new markets. It was intended that it should not only be a botanical, but also a horticultural and agricultural garden. The preceding paragraph shows how the first side has by no means been neglected. At first, great hopes were entertained that the spices which rendered the trade of the Company with the Moluccas and other of the Malayan Islands so valuable, might be cultivated in Bengal.

The earliest efforts of Colonel Kyd were therefore directed to the introduction of the trees which yield nutmegs, cloves and cinnamon, and of the pepper vines. It was, however, speedily proved that the climate of Northern India is quite unsuited to these equatorial species. The equatorial fruits, such as mango, langsat, dukko and bread-fruit, were also tried with a similar result; and so were the temperate fruits of Europe. In fact, no small part of the demonstration by practical experiment that certain natural products, many of which are of a most desirable land, cannot be grown in Bengal; much money and labour was thus saved to the country. The introduction of exotic timber trees also received early attention; and in the garden there still remain a few of the original mahogany trees introduced in these early years. The introduction of tea was one of the items put down in Colonel Kyd's original Programme; and in the final establishment of what has now become one of the most important industries in Northern India, the garden bore a most important part. Potato growing was introduced through its agency, and the cultivation of the quinine-yielding Cinchonas of the Andes was introduced and carried to a successful issue under the direction of Superintendents of this garden. The improvement of Indian cotton, and in the introduction both of that and

... to the markets of Europe, the garden - « » » - - - - - success
 ... in hand with the Agri-Horticultural Society of India, with, J^h ^ - - - - -
 ... unnecessary to point out. By the introduction of some of the ^W^s
 ... of sugarcane from the West Indies, and the domination of these to all parts of
 ... the country, a considerable improvement was effected both on the: J ^ TM ?
 ... quantity of the sugar crop of the country.. In this matter also the Agri-
 ... Horticultural Society worked hand in hand with the garden " f l ^ ^ J g
 ... after the establishment of the Society just mentioned, a considerable
 ... of land in the garden was made over to it rent-free, and on this land
 ... the Society conducted the greater part of its operations for: years. In
 ... fact, it was not until the year 1872 that the Society's garden was transferred
 ... to its present site in Alipore. It is unnecessary to discuss in detail the
 ... numerous experiments in the cultivation of economic plants which have been
 ... conducted beginning. A few of the products tried may
 ... simply be hemp, tobacco, henbane,
 ... vanilla, etc. uanha, aloes, sarsaparilla,
 ... As horticulture,
 ... plants now
 ... through
 ... cultivation

SSSSSSsfKfi

... may suffice to say that a large proportion of the
 ... the agency of this garden in India has been improved methods of c
 ... which now obtain were to a great extent introduced here.

3. In 1820 about fifty acres of land belonging to the garden were made over by Government to the Society for the Propagation of Christian Knowledge. And on this land the Society founded the institution so long known as Bishop's College, but since 1880 (owing to its retransfer to Government) as the Government Engineering College. In the year 1864 the garden was devastated by a cyclonic storm of extraordinary violence which either uprooted or broke to pieces the majority of the trees in it, and by blowing down all the plant-houses, hopelessly crushed their reduced number. The few trees which escaped on that occasion were sadly and, at the same time, by a second cyclone which passed over the garden in 1871, the great quantity of almost the only trees dating from before 1800, country almonds, about a smaller tree of the same sort, some peeples, It is almost a pity that the twenty mahogany trees, and some palms, not taken to remove the occasion of its destruction by these cyclones. For, although there is a site on the Calcutta side of the river, so remote from the town, there are certain advantages in the garden being of more easily accessible position. The destruction of the shade, which resulted from the removal of the trees, allowed the inveterate weed *Impatiens cylindrica* to take possession of the whole of the ground not occupied by or flower borders; so that when I took charge of the garden in 1871 it presented rather a sorry appearance, The liberality of the local Government, under whose control is soon there after passed, has made it possible for me to lay out the garden entirely anew.

The whole of its area has since that date been made for landscape effects, sheets of ornamental water having been obtained, undulations have been made, and new roads have been made; a buiwwior 1. S : New roads have been made, the more delicate, kinll« 1 ^' bamim, and three handsome eon»ervatoH»*J fcg* have, Wen put L u T* pknts have *•« en*ted; nursery ^ comfortable houses, the garden Btaftu haTM been furnished

4. Botanically the most important feature in the garden is its Herbaria[^] or collection of dried plants. As has already been explained, all the ^{utillec} tions prior to Dr. ich's visit to England in 1828 were distributed by him. Wiewitifie wstitutio[^]brc d. ^1 e com men cem cut of the present I> collection dates, therefore from 1811 f. n t ^1 in 1832. If, consists of plants > contri- bted by almost c v 1 1 " at K S ^1 in 1832. If, consists of plants > of con- ny in India since that date, «"d ost an

of Asi Mvr 5 5S Surr? *••••• 8th ^-tern Asia, of Japan, of Persia and repw and; but in AfrL ^P^ented. Those of Europe also excelle ntly tively poor. C^n eomL^TM^TM>> P^ts the collection is com para- kept up for the X ^niatlo V, il (interc K^ of specimens have been and to the distinsHedV*"? Wl^ the ^rat national collectimi >| Kew; and l, isson and S s s t SW^1, th;it ^ « on, Sir William t looker for mvalaable contXSns T 7^ the Oilicutta HerUmum W m debted other European Bote^cI^H* J^81^*^*^*^* have also been kept up with Jhseum, of the is S ^i/*T^ u^u as the Herbarium of the B ritish Petersburg, of the I S ^i/*T^ u^u as the Herbarium of the B ritish Petersburg, of the I S ^i/*T^ u^u as the Herbarium of the B ritish Peradeni ar,d Eerlin, the R ^a. Bo^anic Gardeu8 at Buitenzorg ia J*»> f tuti onfc Amount the private ^ ^ t o r a in paat times from whom th; Herbarium has^ree,ile d the ^ ^ t o r a in paat times from whom th; Jicary, Kdgeworth, Griffith, T 17^L Uable collections must bo menti Kurz, Miquel, and Gaingay, W t e Simons, Law, Gibson, Stocks, Dulzell, during recent years have been du/ men ^1 import t t contributions received

5- The year which ended on 31st March last R u t t e l t h e o f n v e l t 7. ^o new works were undertaken in the garden, and e me o the f d S J occupied in the ordinary routine of cultivatio The show of orchid ^usually fillc, and the general condition of the plants, both in the conserva tones ad out of doors, was satisfactory.

6. The collection of dried plants received several valuable additions during year. Chief amongst these was a set of the plants collected by Dr. Aitchison during the Afrif Boundary Commission. Dr. Aitchison's direct to Kew, whence, after having been

recmcd a named set of plants collect J T to Calcutta. From Kew ^ete also Pedition; and a quantity of Inti^ue if ^ Dr" Gilea during the Gik it Ex- vlnlc he was on dutyw^ ^ V o t e c t e d s o n) e years a^ b/ D r ^ U ^*^* between Munipur * 3 5 £ ^ £ % ^*^* ^pointed to lett k the boundary intermm. Bpec m S J? K c ^ ^-re also received a M ^ in

indebted to the good offices fu ' T ^ ^ contributions from Kew *? ** Director. Dr. Regel, of the ZL^ ^ elton Dyer, its present distinguished f e S L u m b e r o f u f n i t l ^ K m L U a r u a n > ^ P e e t s S u g g p r e s e n t e d a Central Asia. Three * 3 £ S f 3 j 3 f * % ^ i * » • the Kussian ^ s e s s i o n ^ ^ by Jr. Medley Ayood of ^ J ^ ? * f l e c t i o n s from Natal. M e p r e s e n t e d Mr. Prin, c s, n t f o u r , , ^ / j ^ ^ ^ Garden, Durban. F r a m M e x i c o , H. O. Forbes forwarded a h r J T ^ T C I C S , m d * * * T M >> Mr. to received from witU ft? C ^ * S ^ W J ^ d r i e d p l a n t s . O f C o l u r i b u - Sikkim a quantity of plants frC ^ the T m i r # ^ ^ , I have to acknowledge ^ from by a Jihoteu employed by Mr. v i J ^ m i e , » also a collection mad e Khaeia Hills many fine thirty i ^ h n >> in ^ e Lachen valley; from the the Naga Hills a fine collection g m a t e d y £ * * * W ^ GurtavMaim;

D Pra.n, llow Curator of ^ »ade dunnff, his short residence there by Dr. H. C interesting plants, sent Mr. JF St- I M I J t h e North-Western Himalaya and ollett m, e >> , u a m o d e a A i l u t h i e o f S t r a m i o r c j E J I ^ Colonel Conservator of Forests. made by Reverend J. Campbell, plants from Mr. J. S. Gamble,

7. During the month of November last the Herbarium was visited, for the purpose of study, by the Reverend Father Scortechini, the Government Botanist of the Province of the United Provinces, who had been deputed by Sir H. Low, the British Administrator of the Province, to proceed to Calcutta in order to name and arrange his collections for herbarial plants. It was Father Scortechini's intention to have remained here for three or four months; but unfortunately he died shortly after his arrival of Typhoid fever. The Government was issued from the press the first part of a monograph on the Indo-Malayan species of *Ficus*, in which I have been engaged for some time. I have to acknowledge, with thanks, the assistance freely afforded me by the Indian Assistant in the Kew Herbarium, Mr. W. Botting Hemsley. Mr. Hemsley, with the permission of the Director, Mr. Thesleton Reid, is ready to settle any knotty point in nomenclature, or to check any doubtful identification—a kind of work that can only be done with accuracy in a perfectly equipped Herbarium like that of Kew.

8. The interchange and distribution of plants and seeds has gone on actively during the year. Of plants, 8,064 were received against 46,104 given of 11,903 packets were received and 2,534 distributed. The names of donors and recipients will be found in the appendices to this report, and the Botanic Garden at Darjeeling has during the year been under the charge of Mr. W. Kennedy. And the Municipality having agreed to continue the vegetable garden which lies wedged in between the Botanic Garden and the grounds of the Sanitarium, that garden also has been under Mr. Kennedy's care. At one time the Municipality threatened to convert the vegetable garden into bazar; at another they resolved to turn it into a washing-mat for the dhobies of the station. Its maintenance as a sightly spot is a matter which concerns not only the Municipality, but the visitors who frequent the Sanitarium and the patients in the Sanitarium. It is well, therefore, that both proposals have, for a time at least, been shelved. I regret to have to have to report that the accultivated English potatoes turned out badly, the produce in the season was tasteless and waxy. This was also the experience of private growers.

11. The budget allotments of both the Calcutta and Darjeeling gardens were spent in full. At Calcutta Rs. 1,373 were realised by the sale of surplus plants, and at Darjeeling, from the sale of garden produce of sorts, Rs. 1,180 were collected as against Rs. 741 last year.

12. In the service of the Government, and Surgeon D. Prain, of the Indian Medical Service, was appointed in his stead. Owing, however, to the exigencies of military service, Dr. Prain was not able to join his appointment until the 1st of October; and during the interval the Herbarium work devolved upon myself. Dr. Prain had on a previous occasion officiated for Mr. Brace, and had shown himself to be a highly competent man. Mr. W. McHardy, from the Royal Botanic Garden, Kew, having been appointed to the post of Assistant Curator, vacated by the promotion of Mr. H. Bahr, joined on 15th June 1836. He has worked in Messrs. Bahr and Kennedy have also conducted their respective duties in a satisfactory manner.

The usual returns, four in number, are appended.

APPENDIX I.

Statement showing plants received from 1st April 1888 to 31st March 1887.

FROM WHOM RECEIVED.	Wardian cases.	Boxes.	Number of plants.
Royal Garden, Kew, London	2	.....	60
Botanic Garden, Durban, Natal	1	.....1	28
Ditto, Hong-Kong	3	.....	46
Lloyd Botanic Garden, Darjeeling	.....	.....^	246
Government Agri-Horticultural Garden, Lahore	.....	.....4	77
Agri-Horticultural Society, Calcutta	.....	.....	158
Horticultural Garden, Lucknow	.....	.....1	1
Botanical Garden, Calcutta	.....	.....	36
Ditto	.....	.....	24
Ditto	.....	.....	71
W. Bull, Esq., London	.....2	.....	66
W. G. Head, Esq., Crystal Palace, London	.....1	.....	43
Messrs. James Veitch and Sons, Chelsea	.....1	.....	417
J. Gammie, Esq., Mungpo	.....	.....1	1
Botanical Examiner, Calcutta	.....	.....	144
C. Anderson, Esq., Ceylon	.....1	.....	3
A. Apcar, Esq., Garden Reach	.....	.....	2
T. Atkinson, Esq., Calcutta	.....	.....	429
W. Bartlett, Esq., ditto	.....	.....	105
G. Batten, Esq., Sandoway, Burmah	.....	.....	1
J. K. Brace, Esq.	.....	.....	52
B. Clarke, Esq.	.....	.....	44
Reverend J. Campbell, Pokhuria	.....	.....	130
A. Creagh, Esq., Assistant Resident, Lachoo	.....6	.....1	20
Director of Agriculture, Assam	.....	.....1	19
Deputy Conservator of Forests, Chittagong	.....	.....4	244
J. H. Gilbert, Esq., Eangoon	.....	.....	34
J. S. Gamble, Esq., Madras	.....	.....	24
A. O. Hume, Esq., C.B., Simla	.....	.....	6
Miss E. Harwood, Calcutta	.....	.....	4
J. Y. Kilby, Esq., Rungpore	.....	.....3	38
J. Kilby, Esq., Calcutta	.....	.....1	1,48
H. S. Sillong	.....2	.....4	259
W. S. Mitchell, Esq., Garden Reach	.....	.....1	229
Col. J. Perreau, Calcutta	.....2	.....3	338
McD. Peche, Esq., Moulmein	.....	.....12	396
J. Parkes, Esq., Mikim	.....	.....	4
G. Pilcher, Howrah	.....	.....	1
T. J. Rowell, Singapore	.....	.....	133
W. Stalkart, Esq., Ghosserly	.....	.....2	4
Captain Sanders, S. S. Rajputana	.....	.....	3
Collected by the Superintendent in Darjeeling	.....	.....1	11
Ditto Dr. Prain, Kohima	.....	.....1	618
Ditto Herr H. H. Kunstler, Penang	.....	.....7	436
Ditto Badul Khan, Plant Collector, Chittagong	.....	.....	67
Babu P. C. Sein, Seebore	.....	.....	922
S. P. Chatterjee, Calcutta	.....	.....	2
Haree Malee, Nurseryman, Manicktollah	.....	.....	92
Naik Jomeeruddy Malee, Thanamakua	.....	.....	12
W. A. Kennedy, Esq., Darjeeling	.....	.....1	51
Unknown donor	.....	.....2	
Ditto ditto	.....	.....
Total	35	64	8,064

APPENDIX II.

Statement showing plants sent out from 1st April 1886 to 51st March 1887.

TO WHOM SENT.	Wardian cases.	Boxes.	Number of plants
			12
Her Excellency Lady Dufferin, Calcutta	108
Government House Garden, Calcutta	563
Eoyal Garden, Kew, London	5	2	278
Botanio Garden, Hong-Kong	3	1	208
Ditto, George Town, Demerara	5	.....	280
Ditto, Singapore	4	.....	58
Ditto, Ootacamund	4	228
Ditto, Saharanpore	3	84
Ditto, Darjeeling	32
Jardin des Plantes, Paris	1	.....	18
Horticultural Garden, Nagpur	58
Government Garden, Laroot	2	.....	38
Eden Garden, Calcutta	159
Zoological Garden, Calcutta	1	12
Public Garden, Pachmarhi	30	595
Government Agri-Horticultural Garden, Lahore	1	65
Agri-Horticultural Society's Garden, Calcutta	29
Indian Museum, Calcutta	24
William Bull, Esq., F.L.S., Chelsea, London	1	.....	69
Sir Charles Elliot, K.C.S.I.	1	81
Lord Crewe of Crewe	1	42
Lady Eosebery	1	.....	44
W. G. Head, Esq., Crystal Palace, London	1	.....	101
Conservator of Forests, Assam	2	20
Deputy Conservator of Forests, Assam	1	
Ditto, Orissa Division	9	
Assistant Superintendent of Forests, Penang	1	.....	300
Commissioner of Patna	12	240
Deputy Commissioner, Dhubri	12	18
Ditto, Gurdaspur	2	824
Port Commissioners, Calcutta	1?
Collector of Cuttack	1	135
Cantonment Magistrate, Baraset	120
Officiating Ditto, Dum-Dum	3	150
Chairman, District Road Committee, Sarun	100
Ditto, Serampore Municipality	2,0%
Suburban Municipality, Alipore	28	
Secretary and Engineer, Akyab Municipality	4	
Chief Engineer, East Indian Eailway, Howrah	2	1
Executive Engineer, Arrah Division	18	6
Ditto, 2nd Calcutta Division	150
Ditto, Calcutta	2,000
District ditto, Motihari, Tirhoot	32	1550
Do. ditto, East Indian Eailway, Howrah	50
Do. ditto, Pubna	2	200
Do. ditto, Shahabad	3	500
Do. ditto, Behar	6	500
Do. ditto, Futwa	7	1,000
Do. ditto, Behta, Dinagepur	11	1,000
Sub-Overseer, Mokameh and Barrh	10	100
Sub-Divisional Officer, Alipore, Western Duars	a	200
Superintendent, Gunpowder Factory, Cossipore	620
Ditto, ditto, Ishapur	150
Ditto, Brick Factory, Akra	200
Ditto, Amwary Factory, Kajra	3	170
Ditto, Kanti Factory, Tirhoot	3	100
Ditto, Jail, Midnapore	50
Ditto, do., Burrisal	2	155
Ditto, do., Alipore	641
Ditto, Presidency Jail, Calcutta	7	1,308
Ditto, Durbhunga Eaj Garden	10
Ditto, Public Works Department, Tonk Estate	5	1,356
Officiating Master of the Mint, Calcutta	

APPENDIX II—continued.

TO WHOM SENT.	Wardian cases.	Boxes.	Number of plants.
Transport Officer, Calcutta	500
Post Officer, Calcutta	84
Inspector, Eastern Bengal State Railway	205
Municipal Examiner, Medical College, Calcutta	300
Managing Agent, Alipore Coal Company, Limited	3	50
Managing Agent, Jeypur Haut	1	20
ditto, Khasmahals	7	130
ditto, Baron's Tea Estate, Julpigoree	5	111
ditto, Bengal Silk Company Limited, Azimgunge	4	42
ditto, His Highness the Maharajah of Burdwan's garden	13	285
ditto, Bhootan Estate Association, Siliguri	1	20
Assistant Manager, Hutwa Eaj	4	89
government High School, Eangoon	1	18
Martiniere School, Calcutta	22
Stram Institute, Dum-Dum	600
Vincent's Home, Kidderpore	55
Benapa Mission, Calcutta	249
Baptist Mission, ditto	550
Church of England Mission, Calcutta	104
The Portuguese Mission in Bengal	122
General Hospital, Calcutta	118
ditto, Howrah	1	12
Eden Hospital, Calcutta	1,050
Commissionary of Ordnance, Calcutta	652
Suez Canal Stations, Egypt	10	300
Hon. Sir C. Petheram, Calcutta	10
» H. Beverley, Calcutta	57
» H. A. Cockerell, ditto	8
» C. B. Garrett, ditto	66
» W. S. Whiteside, Madras	1	69
Mr. Atkms, Esq.	4
Mr. H. Esq., Assensole	29
Mr. Esq., Calcutta (for Cathedral)	406
Mr. Anderson, Esq., Assam	4	58
Mr. Alexander, Esq., Seebpore	34
Mr. Esq., Garden Reach	60
Mr. Allen, Ballygunge	2
Reverend A. Bruske, Eanchee	3	50
» O. Berg, EamporeHaut	4	85
» T. Bunckholdt, ditto	3	46
» H. P. Boerresen, ditto	9	147
» P. T. Cole, Eajmahal	3	48
» Kiefel, Giridi	9	157
» Mr. Molet, Eanchee	15	246
» W. Smith, Calcutta	91
H. G. W. Batten, Esq., Sandoway	2	56
G. W. Bartlett, Esq., Calcutta	33
E. D. Bolst, Esq., do.	9
R. Bollety, Esq., Ballvonnoc	7
H. Beador, Esq., Dmagepur	11	213
T. B. Curtis, Esq., Darjeeling	7	84
J. G. Charles, Esq., Alipore	8
Mr. Cunningham	12
Mr. Counsel, Esq., Calcutta	4
Mr. Dyer, Pachamba	3	54
Mr. Esq., Chittagong	57
Mr. Esq., Calcutta	J3
Mr. Esq., do.	8
(W. Ksher, Ship Albyn	25
Mr. Officer, S. S. C. o. r. <	8
Mr. Foster, Cambridge	1	e0
Mr. Ward Gray, Esq., AsJm	1	113
Mr. Esq., Mungpoo	1	14
Mrs. Grant, Balasore	5	107
Capt. J. Henderson, S. S. Goorkha	25

APPENDIX II—continued.

TO WHOM SENT.	Wardian cases.	Boxes.	Number of plants.
Miss. E. Harwood, Calcutta		3	51
Colonel Jarrett, ditto			14
J. Flower Jackson, Esq., London		1	85
Henry J. Kowalsky, San Francisco		1	150
S. J. Kilby, Esq., Calcutta, for Salt Gola compound			811
W. Kilby, Esq., Rungpore			29
W. Kelly, Esq., Howrah			14
A. F. Kielland, Esq.			36
Dr. Kirkman, Hastings			4
Mrs. Lampen, Dinapore		2	50
Mrs. Lyall, Calcutta			95
J. Mackay, Esq., Calcutta		2	35
J. Macfayden, Esq., ditto		1	219
J. McPherson, Esq., ditto			42
E. H. M ⁿ , Esq., Andamans			332
E. C. S. Mackenzie, Esq., Howrah	2		22
H. Martindell, Esq., Government Engineering College, Seebpore.			40
E. F. Mondy, Esq., Government Engineering College, Seebpore.			71
Mr. Milne, Calcutta			13
Mrs. Nash, Darjeeling		1	6
J. C. Parker, Esq., Calcutta			4
Colonel Perreau, ditto			9*
Dr. J. G. Pilcher, Howrah Hospital			1105
G. McD. Peche, Esq., Moulmein	1	1	37
T. J. Eowell, Esq., M.D., Singapore	1		61
J. Ecco, Esq., Calcutta			36
W. Stalkart, Esq., Ghosery			150
J. S. Slater, Esq., Government Engineering College			81
Colonel Stanton, Simla		1	216
A. Simson, Esq., Calcutta			3
Colonel C. Stansmore, ditto			31
Captain Sanders, S. S. Rajputana	1		44
Dr. E. Sanders, Mozufferpore		4	20
W. Tennon, Esq., Raneegunge			1
R. Turnbull, Esq., Calcutta			60
F. W. Tytler, Esq., Saharanpur		2	18
G. Urquhart, Esq., Jalpaiguri			67
Sir Alexander Wilson, Calcutta		3	1,600
Colonel H. Ward, Bhopal		1	146
A. White, Esq., Kaneegunge			12
Major Wace, Ordnance Department, Cossipore			20
D. Yule, Esq., Garden Reach			100
Messrs. Burn and Company, Howrah		3	10,000
„ Bird and Company, Calcutta		4	12
„ Gillanders, Arbutnot and Company, Calcutta			4
„ Stanley Price and Company, Calcutta			30
H. H. the Ex-King of Oudh			13
H. H. the Khedive of Egypt	1		10
Sooruj Deo Narayan Sing, Balegurh			4
Baldeo Shao, Calcutta			24
Hoy Raghubsen, Calcutta			12
Rajah Madhub Chundra Giri, Tarkeshwar			41
„ Nohor Sin g, Durmahatta			82
roomar Nil Krishno Roy Bahadoor, Calcutta			48
M Ghose, Esq., Calcutta			38
Baboo G. C. Dutta, Seebpore			21
„ P. C. Sein, Shibpore			a
„ B. B. Ghose, Taki			4
„ D. N. Bose, Calcutta			1
„ P. K. Bose, „			12
„ J. N. C howdhury, Seebpore		1	56
„ K. P. Chatterjee, Durbhunga			13
„ 8. P. Chatterjee, Calcutta			
„ B. K. Mullick, ditto			

APPEMDIX II—concluded.

TO WHOM SENT.	Wardian cases	Boxes.	Number of plants.
Babu B. G. Mullick, Calcutta	8
" B. N. Dutta, Howrah	3
" B. R. Roy, Serampore	3
" B. O. Banerjee, Ballaghur	3
" K. C. Pundit, Thana Makooah	
" G. C. Doss, Gurdaspur	...	2	16
" M. Mookerjee, Seebpore	72
" H. N. Raul, Garden Reach	2
" H. M. Moduck, Seebpore	4
" N. Roy, Horipal	30
" K. D. Ghose, Augurparah	1
" N. Mookerjee, Shyakhala	3
" R. Chowdhury, Seebpore	2
" K. L. Burmon, Khantra	1
" N. C. Paramanick, Seebpore	2
" N. C. Sein, Berhampore	2
" K. Gfosswany, Tarkeshwar	...	1	11
" C. Ghosh, Calcutta	1
" R. Malleah, Howrah	1
" R. L. Sircar, Calcutta	1
" K. C. Dass, ditto	1
" R. L. Dass, Shingoor	2
" S. C. Some, Chinsurah	50
" K. ft. Chowdhury, Seebpore	3
" S. P. Sircar, ditto	2
" C. Mookerjee, ditto	11
" C. Mookerjee, ditto	5
" M. Chanderagore	12
" M. Mookerjee, Calcutta	16
Horree J Wee, Nurseryman, ManicktoUah	16
Essan Malee, ditto ditto	27
Dhurmo Malee, Calcutta	8
Kc lash Chunder Bhoorang, Seebpore	3
M. Calcutta	10
Shaik S. T. Wee	2
Shaik Abdo d. Thana Makooah	1
Syed Im d. Seebpore	...	1	6
Shaik M. Iman, Iapore	...	1	18
Shaik M. obimuddin Mally, Metiabrooj	
Total	31	405	46,104

APPENDIX III.

Statement of seeds received from 1st April 1886 to 31st March 1887.

		From whom received.	Number of packets or packets.
W. T. TV U	U	Director, E o ^	41
Garden	K^uSk	Peterburg, Russia	"2
Ditto			
Ditto		gong, Africa	18
Ditto		Deme	7
Ditto		Tasmania	25
Ditto		Singapore enangr	18
Ditto		Buitenzorg	1
Ditto		Sydney	12
Ditto		Peradeniya	2
Ditto		Baharapur	1
		Sir Ferdinand Von Muller, F.R.S., Melbourne, Australia	95
		Messrs. Haage and Schmidt, Erfurt, Prussia	180
		Jardin des Plantes, Paris	1
		Secretary to the Acclimatisation Society, Brisbane, Queensland	7
		P. W. Reasoner, Esq., Manatee, Florida, United States, America	80
		Hon'ble J. B. Thurston, C.M.G., Governor of Fiji	3
		Superintendent, Horticultural Garden, Lucknow	49
		Conservator of Forests, Madras	11
		Deputy Conservator of Forests, Cuddapah	2
		Captain Sanders	
		Herr H	
		F. H. Man, Esq., Port Blair	10
		A. F. Dowling, Esq., Chittagong	2
		Colonel M. Clementi, Simla	1
		Collector of Ganjam	1
		Secretary to the Agri-Horticultural Society's Garden, Madras	8
		A. Jamieson, Esq., Ootacamund	1
		Colonel R. S. Jago, Deputy Commissioner of Forests, Ootacamund	1
		J. Gammie	19
		J. L. Lister, Esq., Kalimpong	5
		Reverend G. M. Wilson, Rungyoon	5
		Secretary, Agri-Horticultural Society of India	*
		C. Maries, Esq., Durbhanga	*
		C. B. Clarke, Esq., Shillong	*
		Reverend A. Campbell, Pokhuria, Manbhoom	^
		Messrs. Stanley Price and Company, Calcutta	8
		Colonel H. S. Jarrett, Calcutta	2
		Badul Khan, Plant Collector Chittagong	
		Babu Bishumbhur ehose, Taki	14
		Total	~<03

APPENDIX IV.

Statement showing seeds distributed from the Royal Botanic Garden during the year 1886-87.

To whom sent.	Number of parcels or packets.
W. T. Thiselton Dyer, Esq., F.R.S., C.M.G., Director, Eoyal Garden, Kew, London	90
Dr. Eegel, Imperial Garden, St. Petersburg, Eussia	2
Botanic Garden, Edinburgh	6
Ditto, Cambridge	2
Ditto, Hobart Town, Tasmania	2
Ditto, Brisbane ...	2
Ditto, Melbourne	2
Ditto, Adelaide ...	2
Ditto, Utrecht —	2
Ditto, Leiden ...	32
Ditto, Buitenzorg, Java . . .	3
Ditto, Hong-Kong	3
Ditto, Gordon Town, Jamaica	6
Ditto, Singapore...	10
Ditto, Peradeniya, Ceylon	1
Ditto, Ootacamund, Madras	1
Ditto, Gunesh Khind, Poona	24
Ditto, Saharanpur	277
Ditto, Darjeeing	10
Director, Compagnie Continental d'Horticulture, Ghent	10
M. Louis Van Houtte, Eoyal Nursery, — ditto	2
Mons. Le Directeur, Jardin des Plantes, Pans	1
Secretary to the Municipality, Akyab	7
Ditto, Agri-Horticultural Society, Madras	9
Ditto to the Agri-Horticultural Society of India, Calcutta	14
Superintendent, Horticultural Garden, Lucknow	64
Ditto, ditto, Lahore	3
Ditto, Lahore Municipal Garden, ditto	65
William Bull, Esq., F. L. S., Chelsea	348
P. W. Eeasoner, Esq., Manatee, Fla., United States, America	4
Messrs. James Veitch and Sons, Chelsea	1
„ Haage and Schmidt, Erfurt	6
„ C.P. Williams and Brothers, Ceylon	5
„ D. Cannon and E. Brace, Salbns, France»	17
Sir Ferdinand Von Muller, F. K. IS., Umversity, MelihōwmBa	65
Son Excellence Madame Von Schubert, Wesembery, KUSSI	115
E. F. Mondy, Esq., Ayr, Scotland	4
James Inglis, Esq., Sydney	17
W. G. Head, Esq., Crystal Palace, London	1
K. Derry, Esq., Assistant Conservator of Forests, Malacca	5
Deputy Commissioner, Mandalay	2
Ditto, Dhubri, Assam ...	2
Ditto, Gauhati, ditto	1
Ditto, Sultanpur, Oudh	16
Assistant Commissioner, Lalitpur, ^ — na	1
Conservator of Ordnance, E. E. E. Circle, Burma	1
Commissary of Forests, Rangbon, ditto	7
Dit r of Forests, Northern Circle, Ootacamund	1
Dit Nagpur	1
Deputy Conservator^ ngamati	1
S SSafpur Divison, Ranchee	1
Offg. Ditto, Nagpuf n^i-ūlu-	4
Assistant Conservator of Forests, Gorakhpur	3
E. H. Man, Esq., Andamans	3
C. Maries, Esq., Durbhunga	12
Surgeon-General G. Bidie, c.s.i., Madras	14
M. fe. Weld, Esq., Kistna, Madras	7
J. Ghunmie, Esq., Mungpoo	1
A. F. Dowling, Esq., Obittagong	1
Manager, Joy pur Estate; Joypur Hat ...	13
Ditto, MourbhunjEa]	
Honorary Secretary, Outram Institute, w	

APPENDIX IV—continued.

To whom sent.	Number of parcels or packets.
Executive Engineer, Mandalay	2
Ditto, Arrah	1
Assistant Executive Engineer, Kistna ...	1
Ditto ditto, Sasseram, Shahabad	1
Distriot Engineer, Bhagulpore	1
Local Fund District Engineer, Coconada	1
Superintendent, Lall Bagh, Ban galore ...	1
Chairman, Municipal Garden, Karachi...	1
Surgeon-General C. D. Madden, Simla ...	2
Surgeon-Major W. M. Courtney, Rangoon	1
Major O. F. Massy, Punjab	2
" C. H. Scott, R.A., Iehapur	9
" Band, R.E., Calcutta	16
Lieutenant-Colonel M itchell, Peshawar	2
Lieutenant Leonard O. Peters, Secunderabad	2
" M. Shanahan, Mount Abu	1
Colonel J. Upperton, C.B., Meerut	1
" Kincaid, Sehore	2
" Perreau, Calcutta	2
T. Cooke, Esq., LLD., &c., Poona	11
Thomas Harris, Esq., A j mere	12
Reverend Father Dumont, Calcutta	2
G. H. Mayer, Esq., Allahabad	1
Messrs. Carlises Nephews and Company, Calcutta ..	1
" Fox and Aitchison, Ghazipur ...	1
" Gillanders, Arbuthnot and Company, Calcutta	3
" J. S. Rusling Brothers, Malipur	6
" Schoene, Kilburn and Company, Calcutta ..	j:4
" Stanley Price and Company	1
Rajah of Moorsan, Moorsan Fort	2
Officer in charge, Cantonment Garden, Rangoon	1
Vice-Chairman, MozufEerpore Municipality	2
Goods Superintendent, East Indian Railway, Howrah	51
Political Agent, Deoli	2
Thomas Barnard, Esq., Buxar	1
J. D. Beglar, Esq., Chogdah	1
James H. Burke, Esq., Sirhind	41
Cannon, Esq., Calcutta	1
W. C. Costley, Esq., Sahebgunge	1
D. D. Cruz, Esq., Malabar	5
Ed. Van Cutsem, Esq., Calcutta	%
R. Ellis, Esq, Bahawalpur	j
Signor Gallian, Calcutta	2
W. Grindal, Esq., Chenab	4
J. M. Henry, Esq., Baruda	j:1g
M. Lawrent, Calcutta	j
J. M. Macphial Esq., Bangalore	37
T. J. L. Mayer, Esq, Bannu	^
R. W. S. Mitchell, Esq., Garden Reach	0
Babu H. D. Mittra, Calcutta	1
W. J. Prince, Esq., Banda	1
E. D. Puckle, Esq., Calcutta	1
Mrs. Rickitts, Hoshangabad	-1
" H. H. Risley, Darjeeling	15
R. Robertson, Esq., Mysore	-
J. Robson, Esq., Dalhousie	1
Dr. Theodor Schuchardt. Germany	1
E. J. Selvaistre, Esq., Bijnor	1
Mrs. Sladen, Bareilly	1
C. P. Smith, Esq., Etawah "	J
F. J. Smith, Esq., Diamond Harbour...	2
R. D. Spedding, Esq., Moradabad	Q9A
Captain Symons, S. S. Pckm	6Z
George Thomas, Esq., Monghyr	1
Dr. W. "Wilberforce Dunkley, S. S. Wooroonga "	X
J. M. Zifio, Esq., Calcutta...	^
Babu Atul Krishna Bose, Belgoriah	f
" Aubhoy Churn Dey, Thanamakooah	1
" Bama fJhurn Paramanik, Nazirgunge	1

APPENDIX *TV-concluded.*

To whom sent.			Number of parcels or packets,
Babu Bishumbhur Ghosh, Taki	***	***	14
„ Bhupendra Kumar Roy, Narail	...	***	1
„ D. N. Bose, Calcutta	...	***	21
„ Durga Das Misra, Sitarampur	...	***	4
„ Jadub Chandra Biswas, Calcutta...	...	***	1
„ Jogindra Nath Chowdhooey, Seebpore	...	***	5
„ K. P. Chatterjee, Durbhunga	...	***	1
„ Nora Sinha Dutta, Howrah	...	***	20
>, E. Maliah, Howrah	...	***	1
„ P. Ghosh, Calcutta	...	***	1
„ Protap Narayan Singh, Bankoora	...	***	1
„ S. P. Chatterjee, Calcutta	...	***	40
„ Taccoor Dass Banerjee, Calcutta	...	***	61
Kumar Gozendra Narayan, Cooch Behar	...	***	1
Raja Upendra Chundra, Narail	...	***	1
Assistant Surgeon N. C. Bose, Silchar	...	***	5
Lala Brij Nath Holkar	...	***	16
		Total	*** <u>2,534</u>

liberality with which these specimens was given away was so extreme that, in the year 1843, we find Dr. Griffith (who had been appointed to officiate during his absence in England) complaining that the herbarium had been comprised of every specimen collected during the first; fifty years of the existence of the garden. Besides distributing these enormous collections, Dr. Wallich was enabled, by the assistance of the Hon'ble Company, to publish, under the title *Planta Asiaticae*, three superb volumes illustrated by coloured figures of a high degree of excellence. Dr. Wallich retired in 1846 and died in 1854. During the lengthened absences of Dr. Wallich his place at the garden was filled by Dr. W. Griffith, whose premature death deprived the Botanical Science of one of its ablest and most industrious votaries. Dr. Griffith's notes and numerous drawings were, after his death, published by Government. Dr. Wallich was succeeded by Dr. Hugh Falconer. Dr. Falconer was a man known by his researches on the Sivalik Fossil Mammalia. In 1855 he left the garden and account of ill-health, and was succeeded as Superintendent by Dr. Thomas Thomson, a traveller and botanist of much ability, the coadjutor of Sir Joseph Hooker in the distribution of an extensive and well-known herbarium of East Indian plants, and author of the first volume of a new *Flora Indica*. Dr. Thomson retired in 1861, and was succeeded by Dr. Thomas Anderson, whose untimely death in 1870 was caused by the contracted during his efforts for the introduction of the quinine-yielding Sikkim Himalaya. For the two years subsequent to Dr. Anderson's departure Mr. C. B. Clarke acted as Superintendent, and during his incumbency he began a series of botanical publications which has earned for him so high a scientific reputation.

2. From the first foundation of the garden, it was understood that it was to be a source of botanical information for the possessions of the Company, and at the same time a centre to which exotic plants of economic interest could be imported for experiment, and from which, in turn, they could be issued for distribution in the various parts of the country. It was also intended to assist in introducing indigenous Indian products into the agricultural markets. It was intended that it should not only be a botanical, but also a horticultural garden. The preceding paragraph shows how the botanical work laid down in the garden has been accomplished. But the economic side has by no means been neglected. The first great hopes were entertained that the spices which rendered the trade with the Moluccas and other of the Malayan Islands so valuable, might be cultivated in Bengal. The earliest efforts of Colonel Kyd were therefore directed to the cultivation of the trees, which yield nutmegs, cloves and cinnamon, and of the pepper vine, but these, however, speedily proved that the climate of Northern India is quite unsuitable for these equatorial species. The equatorial fruits, such as mangosteen, langsat, dukko and breadfruit, were also tried with a similar result; and so were the temperate fruits of Europe. In fact, the part of the benefits conferred on the country by the garden in its early days was most strikingly demonstrated by practical experiment that certain natural products, many of which were desirable kind, cannot be grown in Bengal; much money and bootless labour were thus saved to the country. The introduction of exotic timber trees also received attention; and in the garden there still remain a few of the original mahogany trees introduced in the early years. The introduction of tea was one of the items put down in the programme; and in the final establishment of what has now become one of the most important industries in Northern India, the garden bore a most important part. The introduction of Cinchona was initiated and carried to a successful issue under the direction of Superintendent of this garden. In the improvement of Indian cotton, and in the introduction of jute to the markets of Europe, the garden authorities worked cordially in conjunction with the Agri-Horticultural Society of India, with what success it is unnecessary to point out. The introduction of some of the best kinds of sugarcane from the West Indies, and the semination of these to all parts of the country, a considerable improvement was effected on the quality and quantity of the sugar crop of the country. In this matter also the Horticultural Society worked hand in hand with the garden authorities. Very soon after the establishment of the Society just mentioned, a considerable piece of land in the neighbourhood of Alipore was made over to it rent-free, and on this land the Society conducted the greater part of its operations for forty years. In fact, it was not until the year 1872 that the Society was transferred to its present site in Alipore. (It is unnecessary to discuss in detail the numerous experiments in the cultivation of economic plants which have been conducted in the garden since its beginning. A few of the products tried may simply be mentioned among these are flax, hemp, tobacco, henbane, vanilla, coffee (Arabian and American), ipecacuanha, aloes, sarsaparilla, jalap, india-rubber, cardamoms, tapioca, and coca. In horticulture, it may suffice to say that a large proportion of the kinds of exotic plants found in private gardens in India has been introduced to the country through the garden, and that the improved methods of cultivation which now obtain were first initiated here.)

3. In 1820 about fifty acres of land belonging to the garden were made over to the Society for the Propagation of Christian Knowledge, and on this land was founded the institution so long known as Bishop's College, but since 1880 (owing to its being devastated by a cyclonic storm of extraordinary violence, which either uprooted or crushed to pieces the majority of the trees in it, and, by blowing down all the plantlessly crushed their contents. The few trees which escaped on that occasion

5. The Lloyd Botanic Garden at Darjeeling was under the charge of Mr. Kennedy. A lease has been obtained of the plot of land between Botanic Garden and the Eden Sanitarium. This land is being used as a vegetable garden, and is under the charge of the Superintendent of the Garden. The acclimatised English potatoes have proved a failure, and an experiment made by private growers has also been unsuccessful.

6. A sum of Us. 1,373 was realized by the sale of surplus produce of the Calcutta garden, and Rs. 1,180 by the sale of produce of the Darjeeling garden.

Ordered that a copy of this Resolution and of the Report submitted to the Government of India, in the Revenue and Agriculture Department, for information.

Ordered also that a copy of this Resolution be forwarded to the Superintendent of the Botanical Gardens for information.

By order of the Lieutenant-Governor of Bengal,

COLMAN MACAULAY,

Secretary to the Government of Bengal,

No. 3484.

COPT forwarded to the Superintendent of the Botanical Gardens, Calcutta, for information.

By order of the Lieutenant-Governor of Bengal,

L. P. SHIRRES,

Offy. Undersecretary to the Govt. of Bengal,

CALCUTTA,

• The 6th August 1887.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN FOR THE
YEAR 1887-88.

No. 21G, dated Calcutta, the 15th May 1888.

From—DAVID PRAIN, ESQ., M.A., M.B., Acting Superintendent, Royal Botanic
Garden, Calcutta,

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

I have the honour to submit herewith the One Hundred and First Annual
Report of the Royal Botanic Garden.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN FOR THE YEAR 1887-88.

No great change occurred in the garden during the year. Some minor
improvements were effected. One more entrance gate was provided with a
tree-entrance. Nurwan's lodge. A new road was made from the picnic banyan to the
nursery. This supplies a felt want, and forms the first instalment of a
the system which will open up the part of the garden occupied till 1872 by
condemned shrubs and trees where the shrubs and trees are now in a
condition worthy of being exhibited. This system will provide an alternative
entrance to the garden from the Anandul Road. A considerable portion of one
(Victoria) nursery houses was replanted. Plants of the giant water lily
visiting (Victoria) were sown in several of the garden lakes. They attracted
see the result, and though, as is usual, nearly all perished in the cold weather,
being the nurseries for the ensuing year. The season
formed a valuable vegetation, and the number of plants exceeding that of
at least a year or so. Five separate attempts
yearly on the boundary of the garden have been made during the
occurrence of these were successfully repelled, but the frequency of the
series of attacks, which has taken place in spite of the existence of a well-defined
for the boundary pillars, has rendered it necessary to address Government
instructions as to the best means for preventing such disputes.

* Notwithstanding the failure of parties interested to devise a satisfac-

Economic plants—The cleaning *Rheea* fibre, this plant
and has been in greater request than ever. The
tree-plant of the rain-tree (*Pithecolobium Saman*) was very
narrated. This tree, a native of America, the history of whose introduction is
Bengal. Reports from 1878—81, is already well known in
and is not valuable, but it grows rapidly, gives excellent shade,
and is a useful nurse if planted with slower growing trees, to be cut down
and replaced by the latter are sufficiently established. The reason for the sudden
soil was the statement that the rain-tree will grow on *Vsar*
and that such soil can thus be reclaimed. *Usar* soil is barren; what
remains is that the tree will grow on soil impregnated with
treatments, so as not to be necessary, though without special
pretreatment it may not afford crops during the rains. The effects of the
salt-encrustations may easily explain the absence of efflorescence of the
surprisingly, which improvement in the nature of the soil, nor would it be
the result of finding that after a series of years of rain-tree cultivation analysis of
Hind soil showed little change. But the cultivation of the tree is simple, and
promotes the amenity of such districts; while its profuse crop of sweet
surfaces, which cattle greedily eat, ripening as it does in April and May,
and of a valuable fodder when usually fodder is most scarce. Mahogany
full of economic trees and plants were propagated and distributed to the
of the extent of which the garden is capable. A quantity of a special kind
of wheat which grows in Mexico at an elevation of 11,000 feet was sent by the
Secretary of State for India for experimental cultivation in Bengal. This was
Oot Sikkim &— It was received in March 1887, and had to be kept till
of the proper season for sowing. When it was sown unfortunately none
of the seed germinated. In April 1887 a consignment of *Eragrostis Abyssinica*,
or Teff, was also sent by the Secretary of State for India for experimental
sowing. This grain is a native of Abyssinia at an elevation of 6,000 feet.

It was sown both in Chota Nagpore and in the South Pergannahs, but has not been successful in either locality.

3. The Herbarium was considerably enriched during the year. A set of plants of the large natural order Euphorbiaceae, which had been placed at the disposal of Sir J. D. Hooker

Herbarium. willio aescrinifr that family for t-u- Ffora -/ Jirfish India, has been retllnie d by the author. Each sheet is named by the author's own hand, its v^Aie^AijiseitD specimen being thus rendered priceless. From Kew the Director, alt- Dr. jjegeel Dyer, C.M.G., has sent many valuable specimens; from St. Petersburg and Mr. Maximowicz sent some valuable specimens which had been pa^AA asked for; Dr. Garcke of Berlin showed the same courtesy regarding types which do not exist elsewhere; a beautiful set of Austro-Hungari^on 1^go was presented by Dr. Kerner of Vienna; these, with a named Sr: Von Mr.-Medley-WoDd of Natal and some critical specimens from \$- T.Ji{in Muiler of Melbourne, complete the extra-Asian contributions. Amon^AA additions the chief place is due to the large and beautiful collection O. ^eTO from Burma and the Shan Hills sent by General H. Collett, c.B. ^e by were also received a fine collection from the Sikkim-Nepal frontier a-ar^eU a Bhotea employed by Mr. Pantling, and an equally fine ono made by se^b t^ collector in the Chittagong Hill Tracts, Many rare tilings were a^o anpitr Mr. G. Mann frou, Assam, Khasia, and Sylhet; Mr. J. F. Dutbie of Sack*^ contributed a large number of named North-West Himalayan pla^n Major Sedgwick, R.E., a few interesting specimens from Kashmir.

4. Perhaps the most notable event of the year has been tie^ans^1, ence of the correspondence of Dr. Wallich, Superintendent here^bet^e6u 1817-46, from tho Library of the Royal Gardens at Kew to tins. U^ It constitutes 33 large volumes, and extends from 1794-1849. >^o^, ^ valuable, but stilt highly interesting, botanical papers relating to Beng^ai^, ^ Assam accompanied the Wallichian correspondence. For the whole^ve^AA indebted to the good will and liberality of the distinguished Director o Mr. Thiselton Dyer, C.M.G., F.B.S.

5. The interchange and distribution department was particularly acti^ve, More plants were distributed than in any former year. This was i^nc(J measure due to the impetus given to roadside planting by the_en^1^ Of action of the Government of Bengal in the Department of Agri^nt^e t\$ plants 11,966 were received, against 67,854 given out. Of seeds I**P &Q& were received, against 2,714 given out. The names of all donor recipients appear in the appendices to the report,

6. The Lloyd Botanic Garden at Darjeeling was under the r^rc of Mr. W. Kennedy, The ravages of potato-disease in Sikkini and the ^j^AA Hills have given a shock to tho introduction of English tubers recommi^e& in former reports. The improvement of quality noticed in 1885-So^a^ continued. In 1886-87 it was found that English seed generally h^A^rne j out waxy and tasteless. The deterioration in quality, in all probability h^A^fae to altered climatic conditions, has been accompanied by impaired^re^st^an power, and they have fallen a prey to disease. Without raising any 4^e^s^i^s^u as to the source of the disease, which those interested io introducing^u^7^e^i^s^t seed not unnaturally declare to have previously existed in India, or at^ deny having introduced with English seed, the fact remains that^"K^e^d tubers are particularly liable to be attacked. It seenis desirable tjja^1^1^9S from Malta, Australia, or elsewhere, where the conditions of growth difl^er^g widely from those in the Indian hills, be imported rather than English o^&*^.

7. The budget allotments of both Calcutta and Darjeeing gardens were spent in full. At Calcutta Rs. 784-11-6 were realised from tho sale of surp^lus plants, or Rs. 615-4-6 below tho amount estimated, and at Darjeeling S^arden^ produce brought in a revenue of Rs. 961-12—an excess of Rs. 661-12^over the amount estimated.

8. Dr. King was absent on privilege leave from 27th Juno to 20th September 1887, and his duties during the interval were undertaken by me in addition to my own as Curator of the Herbarium. Mr. H. Ba^h^r^was Curator of the garden during the year; Mr. W. Kennedy, as already^ata^16d, held charge of the Darjeeling garden; and Mr. William Mcllardy was Assist-^ant Curator at Calcutta.

9. The usual appendices, four in number, are attached.

APPENDIX I.

Statement showing plants received from 1st April 1887 to 31st March 1888.

FROM WHOM RECEIVED.	Wardian cases.	Boxes.	Number of plants.
H ^s Honour the Lieutenant-Governor	.....	.....	1
government House Garden, Calcutta	.....	.....	10
royal Garden, Kew, London	..... 1	..... 2	179
botanic Garden, Durban, Natal	.....	..... 1	19
Ditto, Hong-Kong	..... 3	.....	35
Ditto, Singapore	..... 1	..... 2	443
Ditto, George Town, Demerara	..... 2	.....	96
Ditto, Mauritius	.....	.....	1
Ditto; Ootacamund	.....	..... 1	122
Ditto, Saharanpur	.....	..... 9	12
Ditto DarjeeUng	.....	.....	185
^ Horticultural Society, Calcutta	.....	..... 1	298
Ditto, Rangoon...	.....	.....	97
Zoological Garden, Calcutta	.....	.....	176
Eden Garden, ditto	.....	..... 7	21
Public Garden, Allahabad	.....	.....	129
Victoria Garden, Bombay	..... 3	.....	89
W. M Esq., London	..... 1	.....	68
Earl of Annesley, Ireland	..... 2	.....	24
Mrs. H. ft % * A poar, Garden Reach	.....	.....	269
W. fi ^ atten, Esq., Calcutta	.....	.....	131
J. D. Beclar, % •, Chogda	.....	.....	72
J. Cornelius, ^ ., Calcutta	.....	.....	36
Major Cooke Rangoon	.....	.....	4
C. Creagh, ^ 1, Assistant Resident, Laroot	..... 4	.....	3
Lieut. F. C. Colomb, Shillong	.....	.....	150
Brigadier-General H. Collett, Upper Burma	.....	.....	15
Dr. A. Eteson, M.D., Khasia Hills	.....	.....	2
G. Barton Gr Esq., Rangoon	.....	..... 4	6
J. H. Gilbert, Esq., ditto	.....	.....	254
A. ^ 5 • Hume, Esq., Simla	..... 5	..... 1	345
S. J. ir-?u Esq., Singapore	.....	.....	21
L. Lister, Esq., Kalimpong	.....	..... 2	189
Dr. a p ^ efel Hazaribagh	.....	..... 1	33
G. Mam, ^ ackenz, ie, M.D., Calcutta	.....	..... 13	46
A. j * \$ * > Esq., ShiUong	.....	.....	3
E. g ^ m, Esq., ditto	..... 3	..... 1	156
C. v l T ^ n t Esq., Andamians	.....	..... 4	3
C. S S I ^ S q ^ D ^ W a M Garden	.....	..... 1	156
J. Orr, Esq.	.....	.....	3
Colonel M. C. perreau, Calcutta	.....	.....	156
P. Playf ^ E A I sq., ipore	.....	..... 7	3
R. Panthng, Esq., MuBgpoo	.....	..... 2	156
G. McD. Peche, Esq., Moulmein	.....	..... 13	156
J. Parks, Esq., Kalimpong	.....	..... 1	156
COLT J anders, S-S. Bajputana	.....	.....	156
the Superintendent in Darjeelng and Bombay	..... 7 T > n T h a v	..... 3	156
Ditto Assistant Curator in Mungpoo	.....	..... 11	156
Ditto Mr. J. C. Prazer, Plant Collector, Burma	.....	.....	156
Ditto Badul Khan, plant Collector, Attag	.....	.....	156
Babu S o grosonno Coomar Banerjee, Roy Bahadoor, Calcutta	.....	.....	156
J. C. Sein, Seebpore	.....	.....	156
q- P. Chatterjee, Calcutta	.....	.....	156
Hál .-o- B » waB, ditto	.....	.....	156
Bo T t + Nurseryman, Manicktollab.	.....	.....	156
Tr: s at auction	.....	.....	156
own donor	.....	.....	156
Total	25	93	11,966

APPENDIX IL

Statement showing plants Bent out for Att April 1887 to 31st March 1888.

To WHOM SENT.	Wardian cases.	Number of plants.
His Honour the Lieutenant-Governor		39
Government House Garden, Calcutta...		283
Royal Garden, Kew, London		380
„ Botanic Garden, Peradeniya, Ceylon	3	130
Botanic Garden, Hong-Kong		21
Ditto, George Town, Demerara	1	60
Ditto, Singapore	2	154
Ditto, Edinburgh	1	67
Ditto, Cambridge		49
Ditto, Saharanpur		411
Lloyd Botanic Garden, Darjeeling		99
Government Garden, Ootacamund	2	54
Ditto of Mauritius	1	141
Compagnie Continental d'Horticulture, Gand, Belgium	4	114
Eden Garden, Calcutta		80
Zoological Garden, Alipore		189
Horticultural Garden, Lucknow		44
f Agri-Horticultural Garden, Lahore		281
Ditto Society's Garden, Calcutta		12
Ditto ditto, Rangoon		144
Ditto ditto, Madras		164
Public Garden, Bhagulpore		1
Ditto, Allahabad		15
Victoria Garden, Bombay	4	100
Rambagh Garden, Amritsar	2	61
t William Bull, Esq., F.R.S., Chelsea, London	2	72
Earl of Annesley, Ireland		1
General R. Cadell, London		24
H. S. Tadmán, Esq., Hull		61
Thomson, Esq., London		101
		133
		49
		40
R. M. Redhead, Esq.	J I	40
Lady Bradford		75
Mrs. Cochrane	1	3
Assistant Conservator of Forests, Assam		26
Ditto Superintendent of Forests, Ponang		94
Director of Land Records and Agriculture, Cawaporei, North-Western Province a.	5	50
Commissioner of Ajmere	2	495
Deputy Commissioner, Dhubri	18	28
Ditto, Ludhiana	6	75
Officiating Deputy Commissioner, Dumfca	5	j25
Subdivisional Officer, Feni	1	25
Ditto ditto, Tajpur	18	277
Ditto Canal Officer, Koath		100
Collector of Bhagulpore		ifl 00
Magistrate and Collector, Chittagong	23	50
Magistrate, 24-Pergunnahs, Alipore	2	175
Officiating Magistrate, Noakbally	7	U
Cantonment Magistrate, Barraekpore	1	200
Chairman, District Board, Monghyr	10	21
Ditto, ditto ditto, Bogra		j 60
Ditto, ditto ditto, Pooree		e
Ditto, Local ditto, Purneah	2	35
Ditto, ditto ditto, Befear		14
Ditto, Branch Road Committee, Tangail		130
Ditto, Bogra Municipality	9	195
Vice-Chairman, Dinageporo Municipality	S	175
Secretary, Howrah Municipality	10	250
Ditto, Municipal Commissioners, Calcutta		400
Eevolunge Municipality		
Chupra ditto		
Secretary, District Board, Samn		
Ditto, ditto, Midnapore		

APPENDIX II—continued.

TO WHOM SENT.	Wardian cases.	Boxes.	Number of plants.
District Engineer, Bhagulpore District Board, Sultangunge	3	62
Ditto, ditto, Ghogha	5	100
Ditto, # ditto, Bhagulpore	6	125
Ditto, * Khoolna	8	140
Ditto, Noakhally	14
Ditto, Bhagulpore	3	74
Ditto, Hazaribagh	7	150
Ditto, Dacca	21	400
Ditto, Road Cess Committee, Myinensmg	15	400
Ditto, ditto, Lohardugga	10	260
Ditto, Chupra	1	14
Ditto, Chupra	5	105
Executive Engineer, Dacca Division	2	100
Sub-Overseer, Serai gunge	5	250
Ditto, Pubia	4	200
Ditto, Sara	9	300
Sewan Local Board	11	235
Chupra ditto	572
Superintendent, Gunpowder Factory, Ishapur	1	26
Ditto, Gun Carriage Co., Madras	392
Ditto, Foundry and Shell Factory, Cossipore	2	50
Ditto, Assam Company, Limited	3	1,956
Ditto, Presidency Jail, Calcutta	463
Ditto, Jail, Alipore	3	55
Ditto, do., Mymensing	520
Ditto, do., Hooghly.	9	179
Ditto, do., Nuddea	350
Ditto, do., Midnapore	200
Ditto, do., Burdwan	2	50
Ditto, Central Jail, Dacca	6	72
Ditto, ditto, Buxar	3	75
Ditto, Burrakar Iron Works	10	225
Ditto, Water-Works, Singapore	2	50
Manager, Baron's Tea Estate, Julpigoree Limited,	12
Ditto, Planters' Stores and Agency Company, Calcutta.	11	235
Manager, Jeypur Government Khasmahals, Jeypur Hat	1	10
Ditto, Government Estates, Jeypur	2	14
Assistant Manager, Hutwa Raj	6	64
Reformatory School, Hazaribagh	1	24
Zila School, Bogra	24
Jf Martiniere School, Calcutta	376
£ ^M S. Boys' Boarding School, Calcutta	100
«att School, Calcutta	21
Campbell Medical School, Calcutta	100
European Orphanage	222
London Mission, Bhowanipore	272
Church of England Zenana Mission, Calcutta	5	116
Ditto Mission House, Bhagulpore	864
Ditto do. Society, Calcutta	103
Principal, Hooghly College	18
Ditto, Government Engineering College, Seebpore	200
£ Xavier's College, Calcutta	16
Residency ditto, " ditto	260
Howrah Hospital	5	755
Ration ditto, Barrackpore	2,021
Medical College, Calcutta	2,000
Residency Hospital	500
Soldiers' Garden, Fort William, Calcutta	1,350
* ^{ab} Indian Railway	5	3,300
Eastern Bengal State Railway	96
District Traffic Superintendent, Tundla	9
Howrah Police Station	36
^ Dockyard, Kidderpore	24
Bazar of the Little Sisters of the Poor	3
Hon'ble C. P. L. Macaulay, Calcutta.

APPENDIX II—continued.

TO WHOM SBNT.	Wardian cases.	Boxes.	Number of plants.
Hon'ble Justice Norris, Calcutta	40
„ C. B. Grarrett, ditto	399
„ W. S. Whiteside, Madras	17
Bishop Parker, East Africa	30
Rev. Dr. Medlycott, Ferozepore	..... 1	..... 2	48
„ Fr. J. Dumont, S.J., Eanchee 1	8
„ H. P. Boerresen, Rampore Haut 19	3,052
„ T. Bunckholdt, ditto 2	48
E. T. Atkinson, Esq., Calcutta	100
A. A. Apcar, Esq.	9
A. G. Apcar, Esq.	600
J. Ballin, Esq., Seebpore	3
G. W. Bartlett, Esq., Calcutta	85
H. G. Batten, Esq., Sandoway 2	32
J. D. Beglar Esq., Chogda 6	187
C. E. Buckland, Esq., Bally gunge	400
J. Cornelius, Esq., Calcutta	3
Mrs. Van Cutsem, Garden Reach	312
„ Day, Calcutta	134
N. Denison Esq., Perak	..... 1	.....	35
James Duffus, Esq.	16
J. W. Edgar, Esq., Calcutta	10
J. Macfadyen, Esq., ditto	6
M. B. Frizone, Esq., Hazaribagh 1	240
J. Gammie, Esq., Mungpoo 1	3
G. Gellatty, Esq., Calcutta	100
G. Barton Groves, Esq., Rangoon 2	22
D. Hare, Esq., Calcutta	35
Miss E. Harwood, ditto 6	98
F. C. Hoff, Esq.	25
S. J. Kilby, Esq.	729
			and $\frac{1}{2}$ maund of Rhea root.
A. E. Linton, Esq., Seebpore	2
Major T. H. Lloyd, R.A., Poona 6	64
Mrs. R. Lyall, Calcutta	2,223
J. Mackay, Esq.	24
J. Mackenzie, Esq., Calcutta	29
P. McMahon, Esq., Assam 2	45
E. H. Man, Esq., Nicobar Islands 3	91
Captain Mann, S.S. <i>Reica</i>	6
E. F. Mondy, Esq., Dacca 1	327
T. N. O'Connell, Esq., Simla 1	27
R. Pantling, Esq., Mungpoo. 4	71
J. C. Parker, Esq., Calcutta	42
Captain Parrott, Burma	5
G. McD. Peche, Esq., Moulmein 1	2
Colonel M. C. Perreau, s.c., Calcutta	24
J. Peter, Esq., South Sylhet 2	1,675.
Dr. J. G. Pilcher, F.R.C.S., Howrah 1	74
P. Playfair, Esq., Alipore	52
T. A. Pope, Esq., Calcutta	4
Mrs. Ray, ditto	4
H. M. Read, Esq. 1	24
Dr. E. Sanders, Azimungunge 3	63
Dr. Scully, Calcutta	80
A. E. W. Sharpe, Esq., Howrah	8
C. J. Sharpe, Esq., Alipore	35
A. Simson, Esq., Calcutta	172
J. S. Slater, Esq., Government Engineering College, Seebpore	30
Dr. L. D. Spencer, Mount Abu, Rajputaua 1	12
Captain Symons, S.S. <i>Pekin</i>	322
A. R. Warwick Esq., Bhopal	28
Mrs. E. Westmacott, Calcutta	6
R. E. Wright, Esq., Mhow, L.P. 1	30

APPENDIX II—concluded.

TO WHOM SENT.	*Wardian cases.	Boxes.	Number of plants,
Messrs. Jardine, Skinner and Co., Calcutta	17,500
5> Ernsthause and Co., ditto	3½ maunds of Rhee stems.
» Ewing and Co., Calcutta	2,640
5> Birkmyre Brothers, ditto	1 maund of Rhee stalks.
Nawab Ashanullah Khan Bahadoor of Dacca	...	59	1,405
tajah Bhogobutty Prossonno Roy, Calcutta	..*	4
fabu Prossonno Coomar Banerjeo, Eai Bahadoor, Calcutta	22
3) G. C. Datta, Seebpore	31
» P. C. Sein, ditto	..*	1,061 and two maunds of Bhee roots.
" B. B. Ghose, Taki	...	3	467
" S. P. Chatterjee, Calcutta	706
" A. P. Joshi, Howrah	6
" A. Chatterjee, Kidderpore	2
" A. L. Paul, Seebpore	12
" B. C; Banerjee, Bollaghar	6
" B. P. Bose, Government Engineering College, Seebpore	8
" C C. Ghosh, Calcutta	2
" C. M. Bose, Howrah	27
" D. N. Misra, Chunnunpur	15
" D. D. Mondul, Calcutta	a
" G. C. Roy, Goneshpur	6
" G. C Dey, Government Engineering College, Seebpore	2
" H. N. Banerjee, Calcutta	2
" H. D. Ghosh, Oola	1
" J. C. Biswas, Calcutta	28
" J- N. Dass, Tangaii	2
" K. C. Chatterjee, Tarakeshwar	45
" M. N. Bose, Cossipore	50
" M. Chuckerbttty, Jehanabad	2
" N. L. Halder, Calcutta	5
" N.C. Mitra, ditto	2
" N.L. Chatterjee, ditto	250
" N. M. Bhattacharjee, Seebpore	1
" O. O. Chatterjee, Chand Bhaug	34
" P- C. Ghosh, Calcutta	...	10	55
" P- O. Pakrasee, Pubna	200
" K. Roy, Goneshpur	34
" T. Ghosh, Bajey Seebpore	16
" Maleah, Howrah	28
" R. Halder, Ranchi	14
" S. N. Roy, Calcutta	6
" T. N. Banerjee, ditto	12
" T. D. Banerjee, ditto	11
" W. C. Sen, Kamkristopore	5
" Sooru j Deo Narayan Sing, Balegurh	10
" Ram Bharose, Hoshangabad	1
" Suk j eo Prosad, ditto	1
" Tarinee Prosad, Bhagulpore	6
" H. S. Mahomed Quain Ali, Khetta Sarai	125
" onshee S. A. Ali, Hazaribagh	2
" Gollam Kaioom, Borehat	50
" Mallee, Nurseryman, Manicktollah	15
" Harree	3
"	8
Total	39	529	67,854

APPENDIX m.

Statement of seeds received from 1st April 1887 to 31st March 1888.

From whom received.	Number of parcels or packets.
W. T. Thiselton Dyer, Esq., F.R.S., C.M.G., Director, Eoyal Garden, Kew, London ...	12
Dr. Eegel, Imperial Garden, St. Petersburg, Russia ...	136
Botanic Garden, Jamaica...	14
Ditto, Demerara ...	10
Ditto, Hong-Kong ...	1
Ditto, Singapore ...	2
Ditto, Trinidad ...	10
Ditto, Saharanpur ...	31
Sir Ferdinand Von Miiller, F.R.S., Melbourne, Australia ...	11
Director, Botanic and Domain Gardens, Melbourne ...	81
M. le Directeur du Museum d'Historie Naturelle, Paris, France ...	2
Messrs. Reasoner Brothers, Manatee, Florida, U.S.A. ...	119
G. Wilson, Esq., Heatherbank, Weybridge Heath, near London ...	7
Max Leichtlin, Esq., Baden-Baden, Russia ...	17
Sig. O. Beccari, R. Museo via Romana, Florence, Italy ...	1
N. Cantlay Esq., Forest Department, Straits Settlements ...	1
William Scott, Esq., Royal Gardens, Mauritius ...	8
Superintendent, Agri-Horticultural Society's Garden, Madras ...	2
Superintendent, Horticultural Gardens, Lucknow, Oudh ...	45
Ditto, ditto, Lahore ...	1H
Captain Cooke, S.S. <i>Nowshera</i> ...	1
Brigadier-General H. Collet, C.B., Meiktila, Burma ...	7
Rev. A. Campbell, Jamtara ...	1
Walter Campbell, Esq., Hazaribagh ...	1
J. Gammie, Esq., Mungpoo ...	11
J. L. Lister, Esq., Kalimpong ...	6
R. Pantling, Esq., Mungpoo ...	43
W. A. Kennedy, Esq., Darjeeling ...	128
Dr. D. D. Cunningham, Calcutta ...	1
Secretary, Agri-Horticultural Society of India, Calcutta ...	1
Captain A. W. Stiffe, Indian Marine, Port Officer, Calcutta ...	1
H. J. Batten, Esq. ...	39
Badul Khan, Plant Collector ...	1
Babu P. K. Banerjee, Rai Bahadur, Calcutta ...	1
„ Bishumbhur Ghosh, Taki ...	1
„ Ram Ch. Roy Chowdhury, Seebpore ...	1
Unknown party ...	1
Total ...	773

APPENDIX IV.

Statement showing seeds distributed from the Royal Botanic Garden during the year 1887-88.

To whom sent.	Number of parcels or packets.
W. T. Thiselton Dyer, Esq., F.R.S., C.M.G., Director, Royal Garden, Kew, London	199
Sir J. A. B. K-C.S.I., C.B., F.R.S., etc., Sunningdale via Mott, near London	12
Mr. Morris, Esq., Royal Garden, Kew, London	274
Dr. Kegel, Imperial Garden, St. Petersburg, Russia	16
Botanic Garden, Edinburgh	3
•Ditto, Cambridge	4
Ditto, Hobart Town, Tasmania	1
Ditto, Brisbane, Queensland	3
Ditto, Buitenzorg, Java	10
Ditto, Hong-Kong	5
Ditto, Singapore	6
Ditto, Peradeniya, Ceylon	13
Ditto, Saharanpur	42
M. Ditto, Darjeeling	170
Vianden, 1 ^o Directeur, Compagnie d'Horticulture, Gand, Belgium	8
Max Leichtlin, Botanique Horticole, Baden-Baden, Germany	95
Secretary to the Acclimatization Society, Brisbane, Queensland	3
Agri-Horticultural Society of Burma, Rangoon	1
Ditto, ditto ditto, Madras	11
Ditto, ditto ditto, India, Calcutta	16
Ditto, ditto ditto, India, Calcutta	14
Ditto, Rangoon Municipality, Rangoon	2
Met Secretary, Rangoon	1
Colonial Secretary, Mauritius	1
Superintendent, Horticultural Garden, Lucknow, Oudh	79
Ditto, Agri-Horticultural Garden, Lahore	27
Ditto, Cantonment Garden, Rangoon	1
Ditto, of Jail, Jessore, Bengal	4
Ditto, Burrakur Iron Works, Burrakur	7
William Bull, Esq., F.L.S., Chelsea	12
Messrs. James Veitch and Sons, Chelsea	1
>> Haage and Schmidt, Erfurt	3
>> Clephane, Brigend House, Scotland	14
>> Brown Shipley and Co., Liverpool	1
>> Dammann and Co., San Giovanni Teduccia, Italia	17
Stanley Prieo and Co., Sudder Street, Calcutta	1
Dr. F. A. and Von Miiller, P.R.S., University, Melbourne	6
Sir Alexander Axbuthnot, K.C.S.L, London	17
Mr. V. Bowman	28
Major-General H. Tottenham, Tasmania	13
Mr. H. Head, Esq., Horticultural Department, Crystal Palace, London	3
Dr. G. Foster, F.R.S., etc., Shelford, Cambridge, England	40
Mr. Wilson, Esq., Heatherbank, Weybridge Heath, London	59
Inlander Forbes, Esq., Aberdeen	18
Thomson, Esq., ditto	16
Surgeon-General C. D. Madden, Sommerset Buildings, Calcutta	1
Deputy Surgeon-General N. Catell, Cork, Ireland	12
Right Hon'ble the Earl of Annesley, Castlewellan, Ireland	31
Dr. Sprenger, Esq., Executive Engineer, Switzerland	3
Mr. Campbell Brown, Liverpool	1
Mr. J. G. Esling, Sydney, Australia	26
Dr. J. Herr Dr. Burck, Sland's Plantentuin, Buitenzorg, Java	12
Mr. D. Hoyt, Esq., Proprietor, Bay View Nurseries, Wanda, U.S.A.	226
Mr. Masoner, Esq., Royal Palm Nurseries, Manatee, U.S., America	54
Deputy Commissioner, Chindwin	1
Ditto, Muzaffargarh	1
Ditto, in charge of Estates, Sultanpur	1

via

APPENDIX IV—continued.

To whom sent.	Number of parcels in packets.
Conservator of Forests, Sandwich Islands ...	2
Ditto, Northern Circle, Ootacamund ...	^
Deputy Conservator of Forests, Saugor ...	j
Ditto, Chota Nagpore Division, Ranchi ...	^
Ditto, Orissa Division, Cuttack ...	^
Ditto, Akola ...	g
Ditto, Julpigoree Division, Baksa Duar ...	^
Officiating Deputy Conservator of Forests, Chittagong Division, Rangamati ...	^
Acting Conservator of Forests, Northern Circle, Triplicane ...	3
Assistant Superintendent of Forests, Malacca ...	1
Conservator of Forests, Ajmere, Merwara ...	27
District Forest Officer, Nilambar, Malabar district ...	1
Director of Settlements to Rev. Records PL, Lahore ...	1
Acting Director of Agriculture, Bombay ...	2
C. C. Bush, Esq., Nazira ...	40
G. Marshall Woodrow, Esq., College of Science, Poona ...	1
Mrs Hogg, Simla ...	34
George Watt, Esq., M.B., C.I.E., on special duty with Government of India, Department of Revenue and Agriculture, Simla, Punjab ...	^7
T. Curtis, Esq., Manager, Colgong Indigo Concern, Colgong, Bhagulpore ...	%
W. C. de Morgans, Esq., Executive Engineer, Public Works Department, Chettipett, vid Niddavole, W. Godavari ...	^
Mrs. Shaw, Kanti, Mozufferpore, Tirhoot State Railway ...	1
The Dial Proprietor, Dayal Bagh, Huzrut Gunge, Lucknow ...	f
Colonel Robertson, 44 G.L.S., Manipur, vid Cachar, Assam ...	07
E. Learight, Esq., Subdivisional Canal Officer, Koath, vid Dumraon, Shahabad ...	9
H. W. Apperley, Esq., Dhokraba, Rajghat, Chumparun, Tirhoot State Railway ...	* 1g
R. A. Townsend, Esq., Sibi, Beluchistan ...	Ag
E. B. Brown, Esq., Principal, Medical College, Lahore, Punjab ...	g
C. Maries, Esq., Morar, Gwalior, C.I. ...	1g
W. E. Bright, Esq., Offg. Collector of Chumparun, Motiharee, Behar ...	2
J. Cameron, Esq., Lall Bagh, Bangalore, Madras ...	f
M. E. Weld, Esq., Dents Gardens, Madras ...	0A
George Thomas, Esq., Monghyr, Behar ...	%
The District Engineer, Bhagulpore ...	t
W. A. Inglis, Esq., C.E., Executive Engineer, Arrah, Behar ...	f
The Collector of Monghyr, Behar ...	1g
William Campbell, Esq., Kurhurie Factory, vid Batalia (Mozufferpore), Tirhoot... ..	2
The Dewan of Cutch, Bhuj, Bombay ...	1
Ditto of Sahib Joonoj udh State, Kathiawar... ..	f
E. S. Bnmton, Esq., Municipal Office, Bombay ...	*
G. Carstensea, Esq., Superintendent, Victoria Garden, Bombay ...	1
F. S. P. Lily, Esq., Administrator, Porbander State, Kathiawar, wd Bombay ...	<
W. Leonard, Esq., Superintendent of Jail, Bhagulpore, Behar ...	23
The Medical Officer in charge, Station Hospital, Dinagepore, Shahabad ...	70
The Officer in medical charge, Allahabad Station Hospital, Allahabad... ..	78
M. H. S. Mahomed Quain Ali, Eais and Yakil, High Court, N.W.P., Khetri, Sorai, O. & E. Railway Station ...	AAb
The Executive Engineer, Aligarh Division, Ganges Canal, Aligarh ...	4
Eev. H. E. Boerresen, Ebenezer Mission Station, vid Rampore Hat, Beerbhoom ...	i
W. B. Lo^nrie, Esq., Officiating Superintendent, Kurnafuli Association Ld., Hulda Valley, Chittagong ...	1
E. H. Reilly, Esq., 9, Canning Eoad, Allahabad ...	t
C. A. White, Esq., Assistant Engineer, Nasriganj, Sasseram ...	f

APPENDIX IV—concluded.

To whom sent.	Number of parcels or packets.
W. Kilby, Esq., N.B.S. Railway, Bungpore ...	J
•p T? S. Pollier Bsa, Chairman, District Board, Bungore ...	g
! : ?amni e E?i, Sesident Manager, Government Cinchona Plantation, Mungpoo ...	3
J. L. Lister, Esq., Kalimpong, Darjeehng ...	^
E. P. Martin, Esq., Manager, Lakhibana Tea Estate, Dhupgun, ...	g
C. J. P. Smith, Esq., SHkohabad, Mainpuri, Lower Ganges	
I	
J	
India, Saharanpur ...	195
H. N. Bead, Esq., Bengal Club, Calcutta ...	90
Lady Helen Blackwood, Government House, Calcutta ...	^
The Ordnance Officer, in charge of Arsenal, Fort Calcutta ...	3
S. J. Kilby, Esq., Calcutta ...	5
Colonel M. Perreau, ditto ...	47
H. Bahr, Esq., Curator, Royal Botanic Garden ...	Mari-
M. Em. Labussiere, Agent, Compagne des. Messagenes ...	107
Balu G'os Chander Mookerjee, Nazirgunge ...	1
„ Bama Chunder Peramanik, Assistant Engineer, ruD Works Department, Nazirgunge ...	^
„	g()
„ Gardens, Calcutta ...	1
„ AHnash Chander Sen, Seebpore ...	20
„ Devendranath Bosu, Calcutta ...	14
„ Jadu ...	10
„ Nett ...	1
„ h, Esq., Calcutta ...	2
„ Narain Singh, Deputy Magistrate and Deputy Collector, Bankoora ...	1
„ Protab Ch ... y, Calcutta ...	2
„ P. C. Se ... eer, Royal Botanic Garden, Seebpore ...	1
„ S. ... tta ...	1
„ T ... ee, Superintendent, Government House Garden, Calcutta ...	1
Total ...	2,714

FINANCIAL DEPARTMENT .

MISCELLANEOUS.

DARJEELING, THE 25TH JUNE 1888.

RESOLUTION.

READ—

The Annual Report of the Royal Botanic Garden, Calcutta, for the year 1887-88.

THE Report, which is one of considerable interest, shows that steady progress was made during the year. Among the plants cultivated in the Garden* the most demands were made for the *rhea* and the rain-tree (*Pithecolobium Saman*). Mahogany trees were also propagated and distributed to a great extent. Many valuable contributions from well-known botanists were made to the Herbarium during the year. Among these, the set of plants of the large natural order *Zuphorbiaceae*, which were placed at the disposal of Sir Joseph Hooker, are of special value, as they have been returned by him bearing his own handwriting the names given to them in his *Flora of British India*. The Library of the Botanic Garden also received a valuable acquisition in the transfer to it from the Royal Gardens at Kew, through the courtesy of the Director, Mr. Thiselton Dyer, of the correspondence of Dr. Wallich, extending of the year 1849. The remarks made by the Superintendent in paragraph 6 of his Report, on the subject of the potato blight in Sikkim and the Khasia Hills, will be communicated to the Agricultural Department for consideration.

2. The thanks of Government are due to Dr. George King, F.K.S., for his admirable management of the Garden during the year.

By order of the Lieutenant-Governor of Bengal,

COLMAN MACAULAY,

Secretary to the Government of Bengal.

No. 113T-F.

COPY forwarded to the Superintendent of the Royal Botanic Garden, Calcutta, for information.

No. 114T-F.

to the Director of Land Records and Agriculture, Bengal, for consideration.

By order of the Lieutenant-Governor of Bengal, >

COLMAN MACAULAY,

Secretary to the Government of Bengal

DARJEELING,

25th June 1888,

quantity of miscellaneous flowering and cryptogamic plants. From the Perak Museum, there were received six boxes of specimens from a rich botanical country. Mr. Curtis, of the Forest Department of the Settlements, contributed a set of the Dipterocarps of Penang; while to Duthie, of the Saharanpur Botanic Garden, we are indebted for some interesting specimens from the North-Western Himalaya. But the operations in the Herbarium were not confined to receiving, for during the year considerable numbers of named specimens were issued to the Herbaria at Kew, the British Museum, Cambridge, St. Petersburg, Paris, Berlin, Leiden, Florence, Saharanpur, Madras, Buitenzorg (Java), Singapore, Perak, Penang, and to the collections of Candolle of Geneva and Mr. J. Sykes Gamble of the Madras Forest Department.

4. *Library.*—The library is indebted to Sir Joseph Hooker, late of Kew, for several volumes, and for many pamphlets presented from his collection; and from his successor at Kew, Mr. W. T. Thiselton Dyer, have to acknowledge many valuable books which were in duplicate in the library at Kew. During the year the second part of the *Annals of the Botanical Garden of Oakes* was issued. This contains the completion of the Superintendent's monograph of the genus *Ficus*. A fresh part, treating of the Indo-Malayan species and Chestnuts, is far advanced and will be published in a few months.

5. As the attached distribution lists will show, there was considerable activity in the nursery and seed departments, no fewer than 31,183 plants, 2,075 packets of seeds having been issued to municipalities, road managers of station gardens, and private persons. These figures, those of 1887-88, the returns of which were swelled by the issue of an unprecedented number of the plant producing the well-known Rhea, making these issues great care is taken to avoid anything like interference with private nursery enterprise.

6. For the first half of the year under review the Lloyd Botanic Garden at Darjeeling was under the charge of Mr. H. Bahr. In November Mr. Bahr resigned the service of Government, and Mr. W. A. Kennedy was put in charge. In addition to his duties as Curator of the garden, Mr. Kennedy has been very energetic in planting trees in suitable spots in various parts of the station. This is a work of some importance, for Darjeeling is at present one of the barest of the Himalayan stations, and, viewed from a distance, it offers a sharp contrast to its superb surroundings, there being little to be seen within its limits, except corrugated iron sheeting and scrub jungle.

7. Both at Calcutta and Darjeeling the budget allotments for the year were spent nearly in full. The joint revenue estimated from the two stations was Rs. 1,700, the whole of which, I regret to say, was not realised, there being a deficit of Rs. 182.

The writer was absent on furlough from April to November, and during his absence the duties of Superintendent were most efficiently discharged by Dr. D. Prām, Curator of the Herbarium. Mr. McHardy filled the office of Curator during the whole year, and he has earned, both with Dr. Prām myself, the character of an energetic and enthusiastic officer. Babu Chandra Datta, the head of the office establishment, and Babu Coomār Seīn have both conducted their duties most satisfactorily.

y. The usual appendices, four in number, are attached.

APPENDIX I.

Statement showing plants received from 1st April 1888 to 31st March 1889.

FROM WHOM RECEIVED.	Wardian cases.	Boxes.	Number of plants.
Royal Garden, Kew, London	3	1	162
Botanic Garden, Peradeniya, Ceylon	1	.....	46
Botanic Garden, Hong Kong	1	.....	18
Ditto, Saharanpur	.....	7	168
Ditto, Darjeeling	.....	3	164
Agri-Horticultural Society, Calcutta	.....	.....	41
Horticultural Garden, Lucknow	.....	10	772
Victoria Garden, Bombay	2	.....	96
Conservator of Forests, Madras	2	.....	53
Superintendent of Forests, Penang	2	2	130
Director of Forest School, Dehra-Dun, North-Western Provinces	.....	2	48
Deputy Postmaster-General, Lucknow	.....	2	692
Reverend Archbishop Goethals	.....	.....	2
W. Bartlett, Esq., Calcutta	.....	.....	164
W. Jarron	.....	1	16
Lieutenant F. C. Colomb, ShiUong	.....	1	36
Major-General H. Collett, C.B., Upper Burma	.....	.....	15
D. V. Esq. Ranikhet	.....	.....	96
A. T. Dinningham, F.R.S., Calcutta	.....	.....	467
M. Currie, Esq., Howrah	2	13	19
A. M. G. Esq., Mungpo	.....	4	227
Barton Groves, Esq.	.....	2	350
G. Hume, Esq., C.B., Simla	3	.....	48
J. Johnston, Esq., Singapore	.....	2	189
G. T. Esq. - Kalimpong	.....	4	152
P. W. Esq. - Allahabad	2	.....	18
W. Esq. - Andamans	.....	1	180
L. Mann, Esq., Shillong	.....	.....	74
G. Parkers, Esq.	.....	9	19
G. McD. Esq., Kalimpong	.....	6	712
Colonel M. Peche, Esq., Moulmein	.....	.....	412
P. T. Esq. - Calcutta	1	.....	201
J. I. Rowell, Singapore	.....	.....	42
W. Esq., Calcutta	.....	1	7
T. Esq. - Gnoossery	.....	5	327
(V. H. Warden)	.....	.....	1
S. J. K. Esq. - Collector, Burma	.....	.....	1,524
A. P. Esq. - Bahadoor, Calcutta	.....	.....	74
M. T. Esq. - Calcutta	.....	.....	1,324
M. Esq. - ditto	.....	.....	80
H. Esq.	.....	.....	289
A. Nathan, Esq.	.....	.....	250
M. Malee, Nurseryman, Manicktollah	.....	.....	.....
Total	19	77	9,705

APPENDIX II.

Statement showing plants sent out from 1st April 1888 to 31st March 1889.

TO WHOM SENT.	Wardian cases.	Boxes.	Number of plants.
Government House Garden, Calcutta	11
Belvedere Garden, Alipore	86
His Highness the Maharajah of Cooh Behar	32
Boyal Garden, Kew, London	435
Do. Botanic Garden, Peradeniya, Ceylon	1	15	47
Botanic Garden, GeeloDg, Yictoria	2	.....	157
Ditto, Saharanpur	1	.....	375
Lloyd Botanic Garden, Darjeeling	11	278
M. Le Directeur, Jardin Botanique, Montpellier	7	91
Zoological Garden, Alipore	1	457
Horticultural Garden, Nagpur	3	39
Ditto, Lucknow	35	562
Agri-Horticultural Garden, Lahore	13	323
Ditto ditto, Calcutta	1	23
Sir George Macleay, Surrey	18
„ W. Bowman, Do.	12
Alexander Forbes, Esq., Morkew	200
Marchioness of Londonderry	1	308
Political Agent, Bhopal	16	68
Ditto, Kotah	4	4
Conservator of Forests, Assam	1	421
Superintendent of Forests, Penang	11	1	128
Deputy Commissioner, Dhubri	6	76
Sub-divisional Officer, Feni	2	182
Sub-divisional Officer, Baraset	200
Ditto ditto, Nowgong, Rajshahye	8	20
Magistrate and Collector, Chittagong	3	285
Officiating Magistrate, Noakholly	16	140
Cantonment Magistrate, Dum-Dum	65
Ditto ditto, Barrackpore	50
Honorary ditto, Hooghly	2	300
Chairman, District Board, Furreedpore	14	70
Ditto ^ ditto, Maldah	3	100
Vice-Chairman, Dinagepore Municipality	5	1,000
District Engineer, Dinagepore	46	150
Ditto, Ghogha	8	50
Ditto, Sultangunge	3	239
Ditto, Bhagalpur	12	77
Assistant Engineer, P. W. D., Cuttack	4	300
Executive Engineer, Calcutta Workshop Division	200
Ditto, Jessore Division	10	2
Ditto, Nazirgunge	162
Superintendent, Gunpowder Factory, Ishapur	400
Ditto, Akra Brick Factory	500
Ditto, Presidency Jail, Calcutta	190
Ditto, Central Jail, Dacca	1	300
Ditto, Jail, Chittagong	12	474
Ditto, do., Hooghly	74
Ditto, do., Monghyr	3	48
Ditto, do., Burdwan	2	76
Ditto, Water-Works, Singapore	3	8
Ditto, Khusru-Bagh, Allahabad	29
Ditto, Dispensaries, Cawnpore	1	24
Ditto, P. & O. S. N. Co., Calcutta	216
Manager, Jugcherra Tea Estate, Sylhet	13	24
Ditto, Jute Mills, Seebpore	30
Ditto, Jungpanna Tea Estate, Mahanuddy, Darjeeling	1	200
Ditto, Star Tea Estate, Sylhet	1	500
Manager, Lullecherra Tea Estate, Sylhet	1	200
„ Jorehat State Railway, Assam	10	200
Deputy Postmaster-General, Lucknow	7	251
Librarian, Forest School, Dehra-Dun	1	372
C. M. S. Boys' Boarding School, Calcutta	

APPENDIX II—continued.

TO WHOM SENT.	Wardian cases.	Boxes.	Number of plants.
Zenana Mission, Calcutta	183
Murch Committee, Maimensing	4	80
» Mission House, Bhagalpur	5	105
General Assembly's Institution, Calcutta	4
Principal, Kishnagar College	6	88
» Government Engineering College, Seebpore	2
Assistant Registrar, Calcutta University	12
Soldiers' Garden, Fort William, Calcutta	34	2,283
East Indian Eailway	2,905
Eastern Bengal State Eailway	1	1,558
district Traffic Superintendent, Tundla	12
Barrackpore Park	21
Sulkea Salt G-olah	1,859
Bazar of the Little Sisters of the Poor	13
His Grace the Most Eeverend Archbishop Goethals	6	11
Reverend Father C. Cesary, Jamaipur	1	80
» P. T. Wilson, Budaon, North-Western Provinces	10
» F. Eolfe, Howrah	2	100
» H. P. Boerresen, Rampur Hat	30
Hon'ble C. B. Garrett, Alipore	96
C. A. B. Anderson, Esq., Calcutta	64
Mrs. Andrew	6
g. W. Bartlett, Esq., Calcutta	1	21
H. G. Batten, Esq., St. Albans	10
* S. Beatson, Esq., Calcutta	4
* Blechynden, Esq., ditto	4	6
Ald. E. Bower, Esq., Agra Cantonment	2	80
V. O. Camphore, Esq., Chandernagore	2	45
W. H. Crowe, Esq., Poona	22
* £. D. D. Cunningham, F.B.S., Calcutta	118
W. Currie, Esq., Calcutta	3	62
A. B. Curtis, Esq., Tukvar, Darjeeling	46
Miss Calder	4
Y* S. Donnithorne, Esq., Howrah	69
t ^, are Ed gar> Esq., c.B.I., Calcutta	1	93
^ Eitzgibbon, Government Engineering CoUege, Seebpore	1	4
V S. Fleming, Darjeeling	6
* U D. Fox, Esq., Calcutta	1
Mrs^ Fleming, Calcutta	3	7
J* Gellatly, Esq., Calcutta	50
y. Barton Groves, Esq.	160
J. H a W' Esq., Seebpore	31
^ Kelly, Esq., Howrah	1	2
* j*. Irvmg Eowell, Singapore	36
^rs. Larmour, Calcutta...	48
*»- Lyall, ditto	1	176
^ AOW, Esq., Brindisi	100
^ Eittle, Esq., Calcutta...	1	10
*L ^ Lister, Esq., Kalimpong	1	26
^rbert Lister, Esq., England	15
g. W. Mann, Esq., Commander, S.S. Rewa	3	20
o 5# ^ all, Es(1^ Nicobar Islands	100
^ Maries, Esq., Gwalior	77
JF-R. Mathew, Howrah	1	4,372
^ M Ghose, Esq., Calcutta	2	138
^ * .Mondy, Esq., Dacca	21
§ . Millett, Esq., Calcutta	429
*? . Munro ditto	50
J^lonel G. NeiU, ditto	2	36
^ Nickels, Esq., Jaunpur	4	2
i- N. O'Connell, Esq., Simla	2	9
^ Mc.D. Peche, Esq., Moulmein	3	262
{? . Mantling, Esq., Mungpoo	14
Colonel M. C. Perreau, s.c, Calcutta	292
			185

APPENDIX II—continued.

To WHOM SENT.	Wardian cases.	Boxes.	Number of plants.
P. Playfair, Esq., Alipore	...	3	61
J. Pratt, Esq., Midnapore	...	2	* 1
J. Eainnie, Esq., Assam	...	1	35
Dr. Eegel, Imperial Garden, St. Petersburg	...	10	90
H. E. Eeilly, Esq., Burdwan	...	1	220
P. Eichards, Esq., Calcutta	...	1	130
J. Eobinson, Esq., Bhagulpore	...	1	25
E. S. Eomaine, Esq., Calcutta	...	1	8
Mrs. Eoss, Seebpore	...	1	15
J. S. Slater, Esq., Seebpore	...	1	44
W. P. Smith, Esq., Bhagulpore	...	9	220
Colonel Skene, Upper Burma	...	1	22
W. Stalkartt, Esq., Ghoossery	...	1	179
J. A. Tomlin, Esq., Calcutta	...	1	80
Mrs. Templeton, ditto	...	1	6
„ Thomson, ditto	...	1	25
„ E. E. Twidale, ditto	...	1	15
E. L. Upton, Esq., ditto	...	1	1
A. J. Wilson, Esq., ditto	...	1	8
Charles Young, Esq., London	...	1	35
Messrs. Octavius, Steel & Co.	...	4	42
Babu Eai Prosonno Coomar Banerjee, Bahadoor, Calcutta	...	1	4
„ G. C. Datta, Seebpore	...	1	10
„ P. C. Sein, ditto	...	1	73
„ D. N. Basu, Calcutta	...	1	26
„ S. P. Chatterjee	...	1	267
„ A. C. Datta	...	1	4
„ A. C. Sein, Seebpore	...	1	1
„ B. B. Gangooly, Eanaghat	...	1	152
„ B. L. Mookerjee, Seebpore	...	1	7
„ B. L. Sein Gupta, Calcutta	...	1	206
„ B. B. Ghose, Taki	...	2	10
„ B. C. Banerjee, Ballaghar	...	2	1
„ B. L. Chowdhury, Calcutta	...	1	7
„ D. N. Sein Gupta, Umbica Culna	...	1	13
„ D. C. Haider, Seebpore	...	5	120
„ D. D. A. Chowdhury, Muktagacha	...	5	1
„ G. C. Dey, Government Engineering College, Seebpore	...	1	13
„ G. N. S. Gupta Eoy, Krishnaghur	...	1	3
„ H. C. Eoy, Calcutta	...	2	40
„ H. K. Gupta, Habigunge	...	1	16
„ J. P. Gupta, Nashipore	...	1	2
„ J. N. Mookerjee, Krisnaghur	...	1	6
„ J. N. Gangooly, Ariadaha	...	1	28
„ J. N. Eoy, Burdwan	...	1	30
„ K. P. E. Chowdhury, Seebpore	...	1	10
„ K. C. Palit, Calcutta	...	6	77
„ K. C. Chatterjee, Tarkeshwar.	...	1	4
„ IJ. C. Dey, Maimensing	...	1	2
„ M. S. S. Gupta, Seebpore	...	1	2
„ N. L. Mookerjee, Calcutta	...	1	4
„ N. C. Shaw, Chandernagore	...	1	2
„ N. M. Bhattacharjee, Seebpore	...	1	1
„ N. N. Samonta, Burdwan	...	1	50
„ O. C. Banerjee, Jannai	...	1	16
„ O. C. Datta, Eamkristopore	...	1	20
„ P. Dey, Calcutta	...	2	23
„ P. C. Banerjee, Narainpore	...	1	8
„ P. Ghosh, Calcutta	...	1	10
„ E. K. Hoy, Ganeshpore	...	1	4
„ B. B. Chowdhury, Calcutta	...	1	15
„ R. N. Mahata, ditto	...	1	14
„ E. Maleah, Howrah	...	1	8
„ S. C. Mookerjee, Mihirpore	...	1	8

APPENDIX II—concluded.

TO WHOM SENT.	Wardian cases.	Boxes.	Number of plants.
Balm S. K Roy, Garia	7
» S. C. Chatterjee, Seebpore	13
,, W. N. 8. Gupta, Ramkristopore	3
> Mohurr Sing, Dehra-Dun	2
Head Clerk, Ghoossery Mill	2
Mahamnaed Shah, Garden Reach	9
Moonshee Etrut Hossein, Burdwan	9
M. M. Wime, Calcutta	1
Phallaram Maity, Nazirgunge	3
Issan Chundra i)ass, Nurseryman, Manicktollah	35
Total	24	539	31,183

APPENDIX III.

Statement of seeds received from 1st April 1888 to 31st March 1889

FROM WHOM RECEIVED.	Number of parcels or packets.
W. T. Thiselton Dyer, Esq., F.R.S., C.M.G., Director, Boyal Garden, Kew, London	325
Dr. Eegel, Imperial Garden, St. Petersburg, "Russia	105
Botanic Garden, Jamaica	2
Ditto, Trinidad	9
Ditto, Demerara	3
Ditto, Adelaide	56
Ditto, Melbourne	1
Ditto, Cambridge	1
Ditto, Hong-Kong	8
Ditto, Buitenzorg, Java	2
Ditto, Peradeniya, Ceylon	14
Ditto, Saharanpur	50
Ditto, Darjeeling	55
Ditto, Bangalore	12
Victoria Garden, Bombay	1
Baron Ferdinand Von Muller, F.R.S., Melbourne, Australia	28
Messrs. Beasoner Brothers, Boyal Palm Nurseries, Manatee, Florida	22
B. D. Hoyt, Esq., Proprietor, Bay View Nurseries, Bay View, Florida	24
Dr. E. Haeckel, Director du Jardin Botanique de Marseilles	1
Messrs. Dammann & Co., San Giovanni, Italy	95
Dr. James Irving, San Bemo, Italy	1
Right Hon'ble the Earl of Annesley, Ireland	1
B. L. Cumberland, Esq., Durban, Natal	1
Sir W. Bowman, F.H.S., London	5
C. Curtis, Esq., Forest Department, Penang	3
Secretary to the Agri-Horticultural Society of India, Calcutta	3
Secretary to the Agri-Horticultural Society of India, Madras	2
Superintendent, Horticultural Garden, Lucknow	1
Conservator of Forests, Ootacamund	1
Deputy Conservator of Forests, Chittagong Division	2
Commissioner of Kumaon	1
J. Gammie, Esq., Mungpoo	6
B. Pantling, Esq., ditto	1
J. L. Lister, Esq., Kalimpong	3
T. C. Anderson, Esq., Ceylon	1
Brigadier-General H. Collett, C.B., Upper Burma	1
A. F. Dowling, Esq., Hulda Valley, Chittagong	1
S. J. Kilby, Esq., Calcutta	1
G. Marshall Woodrow, Esq., Poona, Bombay	1
B. Bose, Esq., Lucknow	10
Messrs. Stanley Price & Co., Calcutta	58
T. H. Storey, Esq., Oodeypore, Bajputana	1
Babu B. Ghosh, Taki	2
Badul Khan, Plant Collector	21
Unknown parties	2
Total	942

APPENDIX IV.

Statement showing seeds distributed from the Royal Botanic Garden during the **year 1888-89.**

TO WHOM SENT.	Number of parcels or packets.
W. T. Thiselton Dyer, Esq., F.R.S., CM.G., Director, Royal Garden, Kew, London	108
Botanic Garden, Jamaica	21
Ditto, Cambridge	1
Ditto, Brisbane, Queensland	3
Ditto, Buitenzorg, Java	24
Ditto, Hong-Kong	1
Ditto, Singapore	1
Ditto, Peradeniya, Ceylon	10
Ditto, Saharanpore	9
Ditto,	440
M. Linden's Socié Anonyme de Horticulture Internationale, Ghent	1
M. Chassin, Directeur du Jardin Botanique de l'Etat, Bruxelles Herr Max Leichtlin, Botanique Horticole, Baden-Baden	1
Secretary to the Acclimatization Society, Brisbane, Queens- land	3
Ditto, Royal Botanic Society, Eggen's Park, London	1
Ditto, Royal Botanic Society, Eggen's Park, London	1
Ditto, Agri-Horticultural Society of Burma, Rangoon	3
Ditto, " ditto ditto, Madras	4
Ditto, ditto ditto, India, Calcutta	6
Ditto, Municipal and Sanitary Committee, Abu, Raj- putana	1
Superintendent, Horticultural Garden, Lucknow	34
Ditto, Agri-Horticultural Garden, Lahore	14
Ditto, Empress Botanic Garden, Gharpuri, Poona	1
Ditto, Government Garden, Bangalore	3
Ditto, Victoria Garden, Bombay	1
Ditto, of Gardens, Annandale, Simla	3
Ditto, Gwalior State Garden, Morar, Gwalior	17
Ditto, Foundry and Shell Factory, Cossipore	1
Ditto, of Jail, Eajahmundry, Madras	8
Ditto, Kurnafuli Tea Association, Hulda Valley, Chittagong	5
Ditto, Kulsapore Estate, Koppa, Bangalore	1
Assistant Superintendent of Forests, Koppa, Bangalore	13
Sir Alexander Arbuthnot, K.C.S.I., India Office, London	1
and	1
ns, Queensland	1
Professor Balfour, F.R.S., Edinburgh, Scotland	111
„ Bower, University, Glasgow	1
William Bull, Esq., F.L.S., Chelsea	95
Dr. Charles, Maison Eobbi, Sils Maria, Switzerland	3
B. L. Cumberland, Esq., Durban, Natal, Mauritius	1
Francisco, California	1
W. G. Head, Esq., Crystal Palace, London	12
R. D. Hoyt, Esq., Proprietor, Bay View Nurseries, Bay View Florida	114
J. Inglis, Esq., Sydney, Australia	1
Dr. Jlm's Irving, Villa Luigi, Marsaghu, San Remo	84
„ Geo. King, London	41
D. Low, Esq., Brindisi	4
Baron Ferdinand Von Muller, University, Melbourne	3
David Prain, Esq., Fettercairn	18
W. A. DeSilva, Esq., Minwangoda, Ceylon	1
E. D. Sturtevant, Esq., New Jersey	13
Alexander Thomson, Esq., Aberdeen #	1
Major-General H. Tottenham, Tasmania	6
Thos. C. Wilson, Esq., Socrubaya, Java . . , Bombay	10
Messrs. Cooper, Madon and Company, Limited, Bombay	1
„ Dammann and Company, San Giovanni, Italy	1
„ Finlay, Muir and Company, Calcutta	1
„ Haage and Schmidt, Erfurt	1
„ Hugh Low and Company, London	1
„ Octavius, Steel and Company, Calcutta	1

APPENDIX IV—*continued.*

TO WHOM SEHT.	Number of parcels or packets.
Messrs. Easoner Brothers, Royal Palm Nurseries, Manatee, Florida	4
Messrs. Stanley, Price and Company, Calcutta	26
Deputy Commissioner, Ludhiana	2
Ditto, Peshawar	2
Conservator of Forests, Pegu Circle, Eangoon	13
Ditto, Northern Circle, Madras... ..	1
Ditto, Bengal, Darjeeling	1
Ditto, Shillong	8
Assistant Conservator of Forests, Ajmere	3
Ditto, ditto, Kurseong	1
Ditto, ditto, Nimar Division	1
Deputy Conservator of Forests, Buksa Duar, Jalpaiguri	1
Ditto ditto, Rangamati	1
Ditto ditto, Orissa	7
Executive Engineer, Dehree Workshop Division, Dehree	1
Ditto, Dehree Irrigation Hospital, ditto	1
Ditto, Bhoginpur Division, Ganges Canal	4
District Engineer, Rungpur	2
Collector of Shahabad	2
Ditto of Bankipur	2
Ditto of Durbhunga	2
Ditto of Mozufferpore	2
Officiating Collector of Sarun	1
Acting Sub-Collector, Rajamundry	23
Ordnance Officer in charge of Arsenal, Fort William	4
District Forest Officer, Nilambur, Madras	1
Ditto ditto, Kistna	1
Officer in charge, Public Works Department, Garo Hills	27
Commandant, Military Police, Temethin, Burma	1
Chairman, Local Board, Taj pur	3
Sub-divisional Officer and Chairman of the Local Board, Ranaghat	1
Assistant Director of Agriculture, Madras	1
Political Agent, West Malwa, Augor	3
Ditto, Bhopal, Sehore	3
Principal, Government College, Ajmere	47
Professor, Government Engineering College, Seebpore	38
Miss Kilby, Darjeeling... ..	12
„ Johnson, Darjeeling	20
„ Violet Marder, England	2
Mrs. A. Donnithorne, Howrah	80
H. T. Bottinger, Esq., Calcutta	138
Cav. F. Bozzoni, Consul-General for Italy, Bombay	1
Reverend John Cain, Dumagudiem, Godavari	1
G. Collins, Esq., Jhillong, Assam	1
Brigade Surgeon Condor, Cawnpur	18
C. J. Courteny, Esq., Alipore	19
C. Curtis, Esq., Forest Department, Penang	3
Picton Davis, Esq., Plaisance, Quetta	11
J. Gammie, Esq., Mungpoo	18
H. Gerlich, Esq., Calcutta	2
W. T. Hall, Esq., Rangoon	2
Lieutenant H. Hodges, Monywa, Upper Burma... ..	1
Reverend W. Kief el, Hazaribagh	4
George H. T. Mayer, Esq., Khusru Bagh, Allahabad	6
Colonel Ralph Ousley, Dhukrani, Rambagh	2
J. Peter, Esq., Mertinga... ..	3
R. Pantling, Esq., Mungpoo	1
Winter R. Le Quesne, Esq., Calcutta	2
D. P. Basy Beddy, Esq., Yadiki, Anantapur	44
Mr. Roberts, Howrah	6
L. J. E. Scott, Esq., Rajahmundry, Madras	1
C. P. Smith, Esq., Betwa	2
Thomas Ward, Esq., Madampalle, Cuddapah	1
G. E. Ward, Esq., Jhansi	22
M. R. Weld, Esq., Ganjam District, Berhampur	1
Baboo A. C. Sein, Seebpore	1
„ A. C. Dey, Thana Makooah	1

APPENDIX IV—concluded.

TO WHOM SBNT.		Number of parcel or packets.
Baboo	B. K. Mookerjee, Seebpore	1
	B. B. Ghosh, Taki	25
"	D. N. Bose, Calcutta	22
"	G. C. Mookerjee, Nazirgaitj	1
"	G. C. Datta, Seebpore	20
"	J. C. Biswas, Calcutta	6
"	L. G. Goswamy, Sonapore	34
"	N. G. Chatterjee, Calcutta	8
"	O. C. Singh, lihagalpur	2
"	P. C. Ghosh, Calcutta	5
"	P. C. Sein, Seebpore	1
"	P. N. Singh, Bankura	2
"	R. Prosad, Janakganj	1
"	E. N. Pandy, South Arcot	2
"	S. P. Chatterjee, Calcutta	1
"	XL C. Datta, Midnapore	1
	Total	<u>2,075</u>

FINANCIAL DEPARTMENT.

MISCELLANEOUS.

CALCUTTA, THE 5TH AUGUST 1889.

RESOLUTION.

READ—

The Annual Report of the Royal Botanic Garden for the year 1888-89. During the year under report the Palm-nou meo li i d and the con- tinuation of the riverside road from Shalunar Fomatw ihe Gar a en commenced,

2. Some valuable additions have ^n m ^ o the Hills presented by *hich may be mentioned the collections from In> Mr. Pea /, and from the general H. Collett, C.B, from *% ^^f_rk TM S o 2 ibutions were also received Eastern Frontier districts by Mr. C. B Clarke; Conjtatents ^ s ^ aranpore, from the Kew and Perak Museums, the Sta>>> J j * ^ museums in Europe, and specimens were sent to most of the leading TM, £ ^ TM

3. Dr. King completed, during ^ J J S t o a S d S ? ^ which deals with the x important work "Annals of the Royal BotamcUarae a new part Indo- Ficus, and is now engaged on the P^re rat ^ o i e s, as they are completed, Malayan species of oaks and chestnuts. These tre ^ an ^ C a l gardens in Europe have - be J o i r o u k t e d t o a U i i h e d u e f m u ^ a ^ ^ ^ ^ value and and elsewhere, and are highly appreciated for their ; ^ C T V e thanks of the Lieutenant^overnor^ are again due to Dr. King Dr. Prain, the Curator of the ugh, from April

to ^ - Ordered that a copy : <<< >> B ^ J j ^ J ^ Agricultural submitted to the Government of India, in the Revenue a ~&— submitted to the Government of India, in department, for information. b forwarded to the Superintendent

Ordered also that a copy of this Resolution be dent of the Botanic Garden for information.

By order of the Lieutenant-Governor of Bengal,

H. J. S. COTTON,

Offg. Secretary to tU Government of Bengal.

No. M²^B-2.

j * nf the Royal Botanic Garden, n COPT forwarded to the Superintendent of the y Calcutta, for information.

By order of the Lieute^t-Qoveruor of Benga.,

F. J. MONAHAN,

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

CALCUTTA,
The Uth August 1889.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE
YEAR 1889-90.

No. 170, dated Seebpore, the 14th May 1890.

From—BRIGADE-SURGEON GEORGE KING, M.B., LL.D., F.R.S., C.I.E., Superintendent,
Royal Botanic Garden, Calcutta,

to—The Secretary to the Government of Bengal, Financial Department.
I have the honour to submit herewith the one hundred and third Annual
Report of the Royal Botanic Garden.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE YEAR
1889-90.

No work of much importance was carried out in the garden during
the year and the attention of the staff was chiefly devoted to the maintenance,
as far as possible, of the various departments of the garden. The display of orchids was by far the finest that has been seen in the
park. I took charge of it nineteen years ago. This improvement is due
to the great recent extension of correspondence and interchange with
our visitors, in India and outside its borders, and partly to improvements in
our laboratories and in our methods of cultivation. The number of tropical
specimens collected is steadily increasing; and our
herbarium has been obtained for the most part by exchange for indigenous
plants and material have been expended on the roads within
the garden. It is a matter of great regret that the new road leading
of the garden along the river bank remains still incomplete by the Department
of Public Works. The completion of this road would greatly increase the
number of visitors; for there is no doubt that the crowded condition of the pre-
sented route through the narrow bazars of Howrah, Ranikristopore and Seebpore
is a deterrent to many. The last of the disputes as to boundaries of the
garden having, by the advice of the Legal Remembrancer, been settled by com-
mission only now remains to prevent the recurrence of any encroachments
are the erection of a proper boundary fence. Estimates for this work
are understood to be in preparation by the Executive Engineer in charge of
the Workshop Division.

Economic plants.—A considerable correspondence regarding plants of
various sorts forms part of the regular work of the Superin-
tendent. During the past year there has been no diminution of this. And
many economic plants themselves to Government officers and to others have
been considerable. The cheap and efficient extraction of rhea fibre still
remains an unsolved problem; and I am informed by Colonel Cadell, v.c., Chief
Commissioner of the Andamans, that the working of the French machine so gene-
rally presented to the Settlement there by Sir Walter deSouza has not hitherto
been very successful. A process involving the use of very simple machinery
understood to be under trial by private enterprise in Bengal; but, with what
praise, I have not yet heard. The cultivation of the species of plantain
which produces the fibre known as *Manilla Hemp* is receiving a patient and
attended trial under Colonel Cadell's fostering care in the Andamans; and I
trust the result may prove favourable. The use of *Babai*, *Bhabur* or *Babuignss*,
which was first suggested as a good raw material for paper-making in the
annual reports of this garden, has now become fairly established; and large
quantities are regularly purchased by the various paper mills in Northern India.
As yet, however, this fibre does not appear to form an article of export.

Berlarium.—From a scientific view the collection of dried and named
plants is the most important feature in a Botanic Garden. But it is the feature
which has the least amount of interest for the general public. Very few of
the most regular visitors to this garden have ever been inside the building
in which the Calcutta Herbarium is housed, and they know little of the extent

and importance of the collection. It may not be out of place therefore to give a brief account of its recent progress. Up to the year 1882, the late gir Ashley Eden's tenure of office as Lieutenant-Governor, an late gir was structure, modelled to some extent on the new Herbarium building at X±em oved erected in the garden. At the time when the mounted collection was. Ar ets ^ Jt from the old into this new building it was accommodated in 93. cabl in ^ ^ now fills 186 cabinets, uniform in size with the former 93 ; and t h e ^ d there specimens is estimated at considerably more than half a million. & ^ s elves is, over and above, a very large number of specimens in boxes and of sp ecimens which have not yet been examined or named. Fresh consignments of sp ecimens are continually arriving; and, in view of the recent orders of the Government of India for the botanical exploration of Burma and Assam, for the Government operations (on the recommendation of the authorities at Kew) of Indian Bot. operations in the Calcutta garden, and for the appointment of its Supexi ase ^ rate as Director of the Botanical Survey of India, accessions at a still mere titl © are inevitable. The treatment of the material thus received i n v o l J e s i ^ h n o f f mechanical labour, and an amount of critical botanical work of w ^ a c c u but an expert can form any just idea. Specimens, on arrival, have to ^ p j a t rately ticketed and to be laid out on sheets of paper for being mount ed ^ g k i l e d is mechanical work, and is to a large extent done by comparatively n t e d a n d labour, under supervision of course, i i u t , after having been mou n t e d a n d poisoned, the specimens have to be arranged according to natura l ^ l i e s , and finally referred to their genera and species. This is botanical w o r k ^ ^ it can be done only by a skilled b o t a n i s t . Moreover, it can be done q u a c q u i r e accurately only by a botanist of experience. It takes many years ^ h a s * w such experience when a Flora so varied and extensive as that of ^ v e r h a s * w be dealt with, comprising as it does more than 14,000 species o f ^ o w e r i n g plants, to say nothing of the still more numerous flowerless species. S e v e r a l specimens of each species are usually received in e v e r y g a t h e r i n g , and these are disposed of in the following way. One or more is incorporated in the Herbaria, general Herbarium, while the duplicates are distributed to other Herbaria, either in India or in Europe. The distribution of named specimens of Indian plants to the great Herbaria located at the centres of botanical ^ j e n ^ j p Europe is much appreciated by European botanists. The w o r : i n i ; } i e p a s t on any considerable scale has, however, been possible only f o r ^ e r c ^ three years, during which time I have had the advantage of the s e r v i c e as Curator of the Herbarium, of Dr. D. Prain, who is at once an a c c o u n t a b l e botanist and an energetic man. But, even with Dr. Prain's help, t h e w o r k j e t t e r g e t t i n g v e r y h e a v y , and it may be necessary before long to ^ v p l y f o r t h e services of yet another botanist. \ During the year under review t h e f o l l o w i n g titled specimens have been issued :—

Herbarium, Royal Gardens, Kew (<i>new and critical species only</i>)	...	459
Herbarium, Royal Botanic Garden, Edinburgh	...	405
Herbarium, Royal Botanic Garden, Peradeniya	...	Wn
Herbarium, Saharanpur	...	103
Government Central Museum, Madras	...	361
Herbarium, Botanic Garden, Singapore	...	286
Government Museum, Perak	...	50
College of Science, Poona	...	123
C. Curtis, Esq., Forest Department, Penang	...	...
3. S. Gamble, Esq., Conservator of Forest, Madras	...	^ f
W. A. Talbot, Esq., Deputy Conservator of Forests, North Canara	...	^
R. H. Hullett, Esq., Principal, Raffles Institute, Singapore	...	J £
G. Mann, Esq., Conservator of Forests, Assam	...	ψ
Dr. G. Watt, C.I.E., Simla	...	25
British Museum, London	...	507
Herbarium, Imperial Gardens, St. Petersburg	...	739
Do. do. ^ {specially asked for}	...	^
Smithsonian Institution, Washington, XI. S. A.	...	707
Royal Botanical Museum, Berlin	...	500
Herbarium, Jardin des Plantes, Paris	...	432
Eoyal Botanical Museum, Florence	...	90
Royal Herbarium, Leiden	...	539
Imperial Herbarium, Vienna	...	328

	Brought forward	... 6,806
		272
Herbarium of the University of Cambridge	...	254
Herbarium of the University of Edinburgh	...	220
Herbarium of the University of Upsala	...	180
Herbarium of the University of Aberdeen	...	123
Herbarium of the University of Utrecht	...	634
Herbarium of M. A. de Uondolle, Geneva	...	491
Herbarium of Signor O. Beccari, Florence	...	246
Herbarium, Botanic Garden, Buitenzorg	...	...
		9,226

On the other hand, 6,060 specimens have been received from various contributors, amongst whom the chief are the Director of Kew, the Director of the Botanic Garden, Singapore, the Curator of the Museum at Penang Mr. Curtis, of the Penang Forest Department, Messrs. J. Sykes Gamble, Gustav Mann and W. A. Talbot, of the Indian Forest Department. Dr. Prain has also, in connection with the botanical survey, collected 808 plants. The determination and description of hitherto undescribed species is a very important part of herbarium work, eliciting, as it does, whatever botanical acumen and sagacity a man may possess. A considerable number of new species have been described during the year. As regards Palms, a monograph by the Superintendent, of the Jack-fruits, Oaks and Chestnuts of the Indo-Malayan region has been issued during the year. This forms the second volume of the Garden Annals, and is illustrated by 104 quarto figures drawn by the garden artists, and lithographed mostly at the Government School of Art. The third and concluding part of the Superintendent's monograph on *Ficus* has also been issued; and to this is appended a most important memoir by Dr. G. D. Cunningham, F.R.S., on the mode of fertilization in one of the species. Dr. Prain has published a most interesting paper on *Palms*, and another on the Flora of the Laccadive Islands; and he has prepared with reference to a suggestion of the Agricultural Department of India, papers on the Non-indigenous Element in the Andaman Islands, the Flora of Diamond Island. He has besides elaborated a large and important monograph of the difficult and extensive genus *Strobilanthus* in the third Present passing through the press, and will soon be published in the volume of the Garden Annals.

Botanical collections in Burma and the Andaman Islands.—The Government of India, in the Agricultural Department, having made over to the Director of the Agricultural Department, having made over to the Director Rs 1,000 for the purpose of collecting specimens in Burma and the Andaman Islands, enabled to do more than usual in both these provinces. A native Collector was sent into the Shan Hills, and a European Collector very successful. The country was still, however, rather unproductive in successful collecting. Dr. Prain personally visited Diamond Island, Andaman Islands, and also the Great Coco and other islands which lie to the north of that group, and which were previously botanically unknown. Dr. Prain secured good collections in all these localities, and, as already stated, he has prepared some results of these visits for publication. In 2500 the exploration grant was expended in maintaining a native collector in the Aka Hills, under the supervision of Mr. Penny. The collector was, however, unable to penetrate far into the Aka country. A Eurasian collector was also subsidised in carrying out his work.

5. *Library.*—The library has been entirely re-arranged; many fresh and small memoirs, hitherto uncatalogued, have been procured; and a new catalogue has been prepared by Dr. Prain. A large number of volumes have also been rebound, and a few new books have been acquired.

6. *Interchange of plants and seeds.*—From the issues of packets of seeds as appendices to this report, it will be seen that the number for the previous year; and during the year amounted to 3,619 as against 2,075 for the previous year; and that no fewer than 58,901 living plants were distributed, as against 31,183 during 1888-89. Both plants and seeds were issued mostly for public purposes. Sales to private persons of plants, which are desired to interfere with Private nurseries are not encouraged, as it is deemed desirable to keep the commercial enterprise. Packets of seeds to the number of 13,993, the numbers being thirty per

• Living plants were received during the year, both in number and in value, in excess of those of last year.

7. Lloyd Botanic Garden.—Mv. W. A. Kennedy was in charge of the Botanic Garden at Darjeeling for nine months of the year. During the remaining three months Mr. Kennedy was on privilege leave in Europe,**1

general improvement of the station of Darjeeling by planting young trees in all hopeful spots. This is, however, a very difficult and, I fear to some extent, a thankless task; for the present happiness and unbridled liberty of milk-cows and goats is considered by many of the residents as of more consequence than the future amenity of the station.

both at Scutaria and at the maintenance of the garden. And the who for botanical work, is conducted by the Government of Assam and Butmah, was also coming from the Herbarium and library during the year.

knowledge assistance in comparing specimens of various Indian and Proudlock

Prosonno Coolidge, head of the office establishment, admirably served as overseer, both discharged their severe attack of influenza, which he died from. A faithful servant of the Government, by which nowadays a high degree of security and conservative amount of knowledge is maintained, and of their cultivation and uses, 10. The usual gentlemen of the present day, usual appendices, are as follows:

APPENDIX I.

Statement showing plants received from 1st April 1889 to 31st March 1890.

FROM WHOM RECEIVED.	Wardian cases.	Boxes.	Number of plants.
Royal Garden, Kew, London	4	1	175
Royal Botanic Garden, Peradeniya, Ceylon	2	1	70
Botanic Garden, Glasgow	3	5	683
Ditto, Georgetown, Demerara	1	...	330
Ditto, Singapore	...	2	19
Ditto, Ootacamund	...	2	290
Ditto, Saharanpur	...	15	927
Ditto, Darjeeling	...	2	1,116
Zoological Garden, Alipore	...	2	2
Agri-Horticultural Society, Calcutta	...	4	792
Agri-Horticultural Garden, Lahore	...	4	24
Conservator of Forests, Madras	...	4	7
Messrs. Kröner Brothers' Royal Palm Nurseries, Manatee, Florida	...	...	395
Messrs. H. Low and Company, Clapton Nursery, London	2	1	5
» P. Sanders and Company, St. Albans, England	...	1	18
E. D. Sturtevant, Esq., Florist, Borden Town	...	...	46
Army and Navy Auxiliary Co-operative Supply, Limited, Westminster	1	1	2
T. C. Anderson, Esq., Ceylon	...	...	27
F. W. Bartlett, Esq., Calcutta	...	...	85
Dr. Bell, Chittagong	...	...	4
A. Betts, Esq., Calcutta	...	...	1
Major A. W. Baird, K.E., Calcutta	...	1	1
Sir W. Bowman, Joldwyns, Dorking	...	...	2
L. McCaw, Esq., Calcutta	...	...	32
Dr. D. p. Cunningham, Calcutta	3	3	2
C. Curtis, Esq., Penang	...	...	331
JJrs. Day, Calcutta	1	...	1
Q. Durnford, Esq., Singapore	...	...	193
Captain Elcoate, S. Victory	...	...	5
Dr. French, Buxa, Bhootan	...	7	1
G. Garmie, Esq., Mungpoo	...	...	335
Johnble O. B. Garrett, Calcutta	...	1	2
General Gatacre, D. S. O.	1	1	1
W. Barton Groves, Esq., Dacca	1	1	32
W. G. Head, Esq., Crystal Palace, London	2	...	347
H. C. Johnston, Esq., Singapore	1	...	4
W. George Macleay, Pendell Court, England	...	4	27
J. L. Lister, Esq., Kalimpong	...	...	242
Mrs. Lyall, Calcutta	...	...	1
Mr. C. Mackenzie, Calcutta	2	...	6
Mr. H. Man, Esq., Andanians	...	9	162
Mr. Maries, Esq., Gwalior	...	3	830
Mr. H. T. Mayers, Esq., Allahabad	...	1	29
J. N. O'Connell, Esq., Simla	...	12	39
Mr. Parkes, Esq., Kalimpong	...	...	726
S-B. Peal, Esq., Sibsagar	...	5	5
Mr. McD. Peche, Esq., Moulmein	4	...	530
M. V. Portman, Esq., Andamans	2	...	84
Dr. D. Prain	...	...	m
Mr. S. D. Prain	...	3	44
Mr. J. C. Prazer	...	1	289
Mr. Hose, Esq., Lucknow	1	2	70
Mr. J. Smith, Esq., Duuedin	...	...	96
Mr. Stalkartt, Esq., Ghoossery	...	...	2
Mr. C. J. Warden, Calcutta	...	...	2
Mr. P. C. Sein, Seebpore	...	1	1
» S. P. Chatterjee, Calcutta	...	1	357

APPENDIX I—continued.

FROM WHOM RECEIVED.				Wardian cases.	Boxes.	Number of plants.
Haree Mallee, Maniktolla	...	...	...	...	4	94
Abdool Hok	...	...	...	...	2	866
Unknown donors	...	...	...	...	...	166
Bought from bazar	...	...	...	...	...	4
Botanic Garden, Saharanpur	...	...	...	}	...	2,250
Ditto, Bangalore	...	...	...		...
Deputy Postmaster, General, Lucknow	...	...	...		...
C. Maries, Esq., Superintendent, State "Gardens, Gwalior	...	...	...	...	...	13,392
Agri-Horticultural Society's Garden, Madras	...	...	...	...	...
Total				31	100	

APPENDIX II.

Statement showing plants sent out from 1st April 1889 to 31st March 1890.

TO WHOM SENT.				Wardian cases.	Boxes.	Number of plants.
Government House Garden, Calcutta	...	...	...	...	...	23
Belvedere Garden, Alipore	...	...	...	...	...	8
His Highness the Maharajah of Jeypore	...	...	...	...	14	193
Royal Garden, Kew, London	...	...	3	...	4	419
Imperial Garden, St. Petersburg	...	...	...	...	1	79
Eoyal Botanic Garden, Peradeniya, Ceylon	...	...	...	...	1	11
Botanic Garden, Edinburgh	...	...	...	...	1	71
Ditto, Glasgow	...	...	1	...	1	110
Ditto, George Town, Demerara	...	...	2	...	1	36
Ditto, Ootacamund	...	...	...	...	4	ft
Ditto, Saharanpur	...	...	...	...	2	555
Ditto, Darjeeling	...	...	...	...	2	19
Eden Garden, Calcutta	...	...	...	...	...	10
Zoological Garden, Alipore	...	...	...	...	1	31
Public Garden, Bhagulpore	...	...	...	...	1	4
Victoria Garden, Bombay	...	...	1	...	24	58
Agri-Horticultural Garden, Lahore	...	...	...	...	...	35-3
Ditto, Calcutta	...	...	...	...	...	450
Sir George Macleay, Pendell Court, Surrey	...	...	1	...	...	*
„ W. Bowman, Joldwynds	...	...	...	...	1	70
\WG. Head, Esq., Crystal Palace, London	...	...	...	...	1	7?
R. M. Eedhead, Esq., Manchester	...	...	1	...	2	154
E. Smith, Esq., Dunodin	...	...	1	...	1	146
T. Brocklebank, Esq, Liverpool	...	...	1	...	1	31
James Orr, Esq., England	...	...	...	...	1	44
Mrs. E. N. Otter, England	...	...	...	...	1	46
The Dowager Marchioness of Waterford	...	...	1	...	...	38
Lady Bradford, England	...	...	...	...	1	38
Miss Little, Blackheath	...	...	...	...	1	si
Political Agent, Sikkim	...	...	...	...	23	180
Ditto Superintendent, Jhalrapatan	...	...	...	...	1	4
Chief Commissioner, Andamans	...	...	2	...	...	39
Superintendent of Forests, Penang	...	...	...	...	3	306
Director of Land Records and Agriculture, Rangoon	...	...	...	...	2	48
Officiating Director, Forest School, Dehra-Dun	...	...	...	...	1	19
Deputy Commissioner, Garo Hills, Assam	...	...	...	...	8	242
Sub-divisional Officer, Alipore, Western Duars	...	...	...	...	14	200
Ditto, Feni	...	...	...	...	2	38
Ditto, Pakur	...	...	...	...	11	22^
District Magistrate, Bhagulpore	...	...	...	...	7	164
Cantonment Magistrate, Dum-Dum	...	...	...	...	...	250
Ditto, Barrackpore	...	...	...	...	...	25

APPENDIX II—continued.

TO WHOM SENT.	Wardian cases.	Boxes.	Number of plants.
Deputy Magistrate, Ooloobaria	150
Secretary, District Board, Sarun	...	17	400
Ditto, Railway Institute, Jubbulpore	...	12	300
Ditto, Church Committee, Midnapore	...	2	35
Chairman, District Board, Noakhally	...	12	285
Ditto, ditto, Serajgunge	...	11	250
Ditto, Moorshidabad Municipality	...	3	48
Ditto, Serampore Municipality	65
Ditto, Rampore Beaulah Municipality	...	16	362
Ditto, Khulna Municipality	...	3	68
Chairman; Bogra Municipality, Sultanpur	...	2	60
Ditto, Midnapore Municipality	250
Ditto, Calcutta Municipality	...	4	400
Ditto, Station Committee, Silchar	...	4	54
District Engineer, Bhagulpore	...	25	660
Ditto, Dinagepore	...	31	730
Ditto, Pabna	...	4	100
Ditto, Midnapore	1,000
Ditto, Damooda District	...	49	1,000
Ditto, Town Road Municipality, Dacca	...	3	65
Ditto, Khulna	...	5	102
Executive Engineer, Burdwan	...	6	102
Ditto, Sijberrah	200
Sub Overseer, Nazirgunge	12
Overseer, in charge Serajgunge Division	...	8	200
Ditto, Calcutta Workshop Division, Seebpore	12
President, Board of Revenue, Calcutta	200
Ditto, Roads and Buildings Corporation, Calcutta	500
Ditto, Presidency Jail, Calcutta	74
Ditto, Jail, Alipore	...	1	85
Ditto, Jail, Burdwan	...	1	50
Ditto, Jail, Mymensing	...	2	50
Ditto, Central Jail, Dacca	...	1	80
Ditto, Waterworks, Singapore	...	2	84
Ditto, Foundry and Shell Factory, Cossipore	261
Ditto, Small Arms Ammunition Factory, Dum-Dum	50
Ditto, Pussewa Factory, Jaunpore	...	1	1
Matmg Superintendent, Customs and Preventive Services, Calcutta	8
Manager, Garjeng Jhora Tea Estate, Jalpaiguri	...	1	12
Ditto, Mahmarra ditto, Assam	...	9	109
Surveyor-General, Calcutta	101
Deputy Postmaster-General, Lucknow	...	2	62
Officiating Master of the Mint, Calcutta	276
Statist, Calcutta	322
Resident, Calcutta	250
Principal, General Hospital, Alipore	1,222
La M... Medical College, Calcutta	500
Senior Artiniere, Calcutta	267
The Se... House, University, Calcutta	36
St. ... Orphan School, Calcutta	100
Reformatory School, Kiddyepore	100
St. ... Boarding School, Alipore	20
St. Agnes' School, Howrah	70
Christ... ch Parsonage, Calcutta	150
Soldier's Garden, Fort William	2,964
Eastern Indian Railway	...	18	2,159
Officer in charge, Bengal State Railway	3,300
Barrackpore Park	100
C & ... Bank of India - Australia and China, Calcutta	76
Govt Dockyard, Kidderpore	1,103
Practical Horticultural Institution, Cossipore	...	1	50
Bar... the Little Sisters of the Poor	24
His... the Most Eeverend Archbishop Goethals	1 maund rhea stem.
	12
	4

APPENDIX II—continued.

To WHOM SENT.	Wardian cases.	Boxes.	Number of plants.
Reverend Father C. Cesary, Jamalpore	...	3	47
„ Dumont, Ranchi	...	1	36
„ H. B. Hyde, St. John's Church, Calcutta	246
„ F. Rolfe, Howrah	24
„ F. W. A. Smith, Raneegunge	...	3	24
„ A.M. Banerjee, Calcutta	300
Hon'ble C. B. Garrett	239
T. C. Anderson, Esq., Ceylon	1	...	15
C. A. B. Anderson, Esq., Jalpaigori	...	3	38
Mr. S. Apar, Calcutta	20
J. Ayers, Esq., Howrah	...	1	14
H. Bahr, Esq., Rampore Hât	16
G. W. Bartlett, Esq., Calcutta	13
A. Betts, Esq., Calcutta	50
J. Bradshaw, Esq., Seebpore	...	1	100
Miss. A. Bradshaw, Mussoorie	...	23	21
J. S. Brook, Esq., Jamalpore	500
Mrs. Buckley, Garden Reach	20
Colonel T. Cadell, v.c., Andamans	1	...	84
Chamberlain, Esq., Calcutta	6
F. Collis, Esq., Calcutta	...	1	4
Lt.-Col. Cowper, Poona	2
Dr. D. D. Cunningham, Calcutta	75
Mrs. Day, Calcutta	199
H. Doran, Esq., Howrah	...	5	40
Dr. J. A. Dyer, Pachamba	50
Sir John Edgar, K.C.I.E., Calcutta	12
Mr. Ezra, Calcutta	...	1	1
Mrs. Fleming, Calcutta	...	1	146
J. Gammie, Esq., Mungpoo	...	2	6
J. H. Gilbert, Esq., England	...	2	81
G. B. Groves, Esq., Dacca	1	...	37
John Halves, Esq., Calcutta	73
Captain Henderson, 8. S. <i>Goo>kha</i>	2
„ Ditto, S. S. <i>Manora</i>	...	22	6
„ Hutchinson, Burma	216
W. E. Kilburn, Esq., Calcutta	[[[	6	6
J. L. Lister, Esq., Nimbong	...	3	135
Mrs. Lyall, Calcutta	221
G. Mafflin, Esq., Calcutta	102
E. H. Man, Esq., Andamans	1	...	34
C. Maries, Esq., Superintendent, State Gardens, Gwalior	...	45	1,970
Mrs. Maxwell, Howrah	...	11	24
Gk H. T. Mayer, Esq., Cawnpore	...	1	278
E. G. McLeod, Esq., Kis^engunge	...	5	2
E. F. Mondy, Esq., Dacca	2
Mrs. Morrison, Ghooserj]	3
C. Nickels, Esq., Garden Reach	*420
G. W. Noal, Esq., Seebpore	94
J. D. Osmer, Esq., Calcutta	...	6	112
E. H. Palmer, Esq., Chandbally	...	3	22
G. McD. Peche, Esq., Moulmeln	14
F. Pereira, Esq., Calcutta	...	1	84
Colonel Perreau, Calcutta	58
W. Pigott, Esq.	20
J. Q. Pigot, Esq.	113
M. V. Portman, Esq., Andamans	4	...	261
J. Robinson, Esq., Bhagulpore	...	11	300
E. C. Ryland, Esq., Rangamati	...	20	23
J. S. Slater, Esq., Seebpore	...	2	56
W. P. Smith, Esq., Bhagulpore	51
Mrs. Thomson, Calcutta	4
Dr. C. J. Warden, Calcutta	...	2	50
C. A. Wilkins, Esq., Bhagulpore	20,00*
Messrs. Maurice, Feelman & Co., Calcutta	1
„ Burn & Co., Calcutta

* And 4 mannds rhea stems.

APPENDIX II—concluded.

TO WHOM SENT.	Wardian cases.	Boxes.	Number of plants.
Bo wreah Cotton Mills Company, Limited	1,000
Raja Mohima Eanjan Eai Chowdhoory, Eungpur	172
-Baboo Eai Prosonno Coomar Banerjee, Bahadoor, Calcutta	14
» „ Setal Chand Nahar Bahadoor, Azimgunge	2	38
» G. C. Datta, Seebpore	111
» P. C. Sein, „	14
» S. P. Chatterjee, Calcutta	269
5> A. K. Bose, Belgoriah	7
5> A. T. Lahiri, Krisnaghur	1	1
» B. O. Chatterjee, Baraset	1
» B. L. Mookerjee, Seebpore	52
» Q' C. Dass, Nazirgunge	2
» H. C. Gangooly, Santipur	5
5> H. S. Eoy, Calcutta	1
» H. T. Dass, Mondulghat	4	2
M J. C. Lahiri, Calcutta	24
5> J. C. Biswas, Seebpore	3
» K. C. Palit, Calcutta	8
v K. M. Pal, Seebpore	6
j) K. N. Ghose, Bantra	2
» M. N. Eoy, Calcutta	3	42
»» N. B. Mitra, Dinajpur	7	148
» O. N. Sein, Bally	1
»> P. C. Eoy Chowdhoory, Seebpore	2
» E. K. Eoy, Goneshpur	34
» R. Maleah, Howrah	13
j> R. Mottle, Mozuffeerpore	15
» S. B. Ghose, Seebpore	16
» S. C. Chatterjee, Calcutta	4
M S. C. Mookerjee, Seebpore	50
» T. N. Chatterjee, Calcutta	5
55 ? N. Sein, Umbica-Culna	17
»> -S. N. Singh, Balgarh	1	114
» -Dadabhoy, Calcutta	1	12
»> Venayek Earn Chander Laxmonjee, Bombay	1
^robo Kumar Brahmochery, Seebpore	2
W ⁿ Chander Punchagni, Cossipore	3
^aikSgobeed, Nazirgunge	6
» Jomeerudy, Thana Makooah	34
ml ¹ f. m. Abdo ¹ Somer, Buxara	1
ghaBill Kazie, Seebpore	2
goburdhun Nusker, Trisbigha	6	359
^P Chand Boiragi, Majirhat	4
^an thander, Malie, Nurseryman, Maniktolah	100
Har ¹ , Malie, Maniktolah	18
Mess ^{rs.} F. Sander and Co., St. Albans, England	2	2,078
Total ...	24	602	58,901

APPENDIX III.

Statement showing seeds received from 1st April 1889 to 31st March 1890*

FROM WHOM RECEIVED.		Number of parcels or packets.
W. T. Threlton, Esq., Director, Koyal Garden, Kew, London		43
Dr. Kegel, Imperial Garden, St. Petersburg, Russia		13
Boyal, Botanic Garden, Peradeniya, Ceylon		4
Botanic Garden, Jamaica		1
Ditto, Trinidad	///	12
Ditto, Demerara	///	5
Ditto, Adelaide	...	35
Ditto, Melbourne	...	78
Ditto, Rockhampton	...	14
Ditto, Hobart Town	...	59
Ditto, Hong-Kong	...	1
Ditto, Singapore	...	3
Ditto, Mauritius	...	1
Ditto, Ballarat	...	13
Ditto, Saharanpur	...	53
Ditto, Darjeeling	...	320
Ditto, Calcutta	...	3
Victoria Garden, Bombay	...	1
George H. T. Mayer, Esq., Memorial Garden, Cawnpore	^	3
baron Ferdinand von Mueller, F.R.S., Melbourne, Australia		6
Messrs. Dammann & Co., San Giovanni, Italy	..	66
" Raffles Brothers, Royal Palm Nurseries, Manatee, Florida	...	33
Secretary, Queensland Acclimatisation Society, Brisbane,	...	3
C. Curtis, Esq., Forest Department, Penang	...	3
Secretary to the Agri-Horticultural Society of India, Calcutta	...	7
Ditto ditto, Madras	...	1
Superintendent, Horticultural Garden, Lucknow	...	50
Ditto ... Government Agri-Horticultural Garden, Lahore	...	175
Conservator of Forests, Northern Circle, Madras	...	20
Deputy Conservator of Forests, Assam	...	2
Ditto, Haliyal, North Canara	...	1
District Forest Officer, North Malabar, Manantoddy	...	5
Baptist Mission, Pubna	...	22
W. H. Cheetham, Esq., Calcutta	..	1
Manager, Doonagiri Tea Estate, Ranikhet	...	1
rove Durban, Natal	...	1
I. bamne, Esq., Mungpo	...	130
Deputy Commissioner, Garo Hilla, Assam	...	1
Joseph F. Hughes, Esq., Townsvilt	^	2
Dr. G. King, Esq., Salt Range, Shahpur	...	19
J.L. Li'er, Esq., Kaliinpong	...	1
District Forest Officer, Kurnool, Madras	...	1
SSa al School and Hospital,	...	8
C. Maries, Esq., Morar, Gwalior	...	1
Khusrubagh, Allahabad	...	21
... ..	...	7
... ..	...	2
... ..	...	8
A. Simson, Esq., Royal Botanic Garden, Calcutta	...	1
Munshi J. braham, Colombo, Ceylon	...	1
Abdool H. ungoon	...	1
Unknown parties	...	17
Total	...	1,282

APPENDIX IV.

TO WHOM SENT.		Number of parcels or packets.
W. T. Thiselton Dyer, Esq., r.K.s., CM.a., Director, Eoyal	425	
Garden, Kew, London	209	
Dr. Eegei, Imperial Garden, St. Petersburg,	13	Russia
Eoyal Botanic Garden, Peradeniya, Ceylon	4	
Botanic Garden, Jamaica	134	
Ditto, Trinidad	295	
Ditto, Cambridge	88	
Ditto, Brisbane, Queensland.	106	
Ditto, Melbourne	32	
Ditto, Hobart Town, Tasmania	1	
Ditto, Ballarat, Australia	293	
Ditto, Edinburgh	136	
Ditto, Demerara, British Guiana	15	
Ditto, Buitenzorg, Java	17	
Ditto, Singapore	2	
Ditto, Ootacamund	80	
Ditto, Saharanpur	117	
uiuo, Darjeeling	87	
Zoological Garden, Melbourne		Socite Anonyme de Leopold, Bruxelles,
M. le Administrateur-Directeur, de le	8	
M. le Directeur, Internationale, rare	1	
M. le Directeur, du Jardin Botanique de V.Btat,	83	
Herr Max Leichtl	2	
Director, Jardin des Arbres Horticole, Baden. Baden	1	
Secretary to the "Agri-Saltual Soci^ of India,	1	
vjaicuua	19	Bhagulpur
Secretary to the Public Garden, Lucknow	15	
Superintendent, Horticultural Garden, Lahore	4	
Ditto, Agri-Horticultural Garden, Madras	65	
Ditto, Duthie Park, Aberdeen	2	
Ditto, Victoria Garden, Bombay	37	
Ditto, SK State Garden, Korar	1	
Ditto, Balasore Intermediate Jail, Balasore	2	
Ditto, Beerbhoom Jail	1	
Ditto, Bhagulpore Central Jail	7	
Ditto, Burdwan Jail	2	
Ditto, Central Jail, Alipore	17	
Ditto, Do. Eajahmundry	1	
Ditto, Jail, Durbhanga	2	
Ditto, pore	1	
Ditto, Monghyr Jail	1	
Ditto, Palamow Intermediate Jail, Palamow	1	
Ditto, Purneah Jail		
Ditto, Kurnafuli Tea Assöciation, Hulda Valley,	5	
Chittagong Tributary Mahals, Outack	12	
Officiating Superintendent, keliya, Ceylon	7	
T. O. Anderson, Esq., Mas India Office, London	107	
Sir A. J. Arbuthnot, x.c.s.i	1	
Signor T. Arcangeli, Italy Chelsea, London	4	
William Bull, Esq., *L.S. Durban	1	
B. L. Cumberland, Esq.,	8	
C. Curtis, Esq., Penang	37	
A. Forbes, Esq., Morkeu, Aberdeen	5	
W. G. Head, Esq., Crystal Palace, London	3	
R. D. Hoyt, q., Proprietor, Bay View Nurseries, Florida	106	
Joseph Hug Esq., Townsville, Queensland	27	
James Inglis, Esq., Sydney, Australia	16	
Mrs. Irvine, Scotland	62	
H. C. Levin, Knockdrin Castle, Ireland	2	
indisi	4	
von Muller, F. R. S., University, Melbourne	8	
J. Nelson, Esq., Florida		

APPENDIX IV—continued.

TO WHOM SEKT.	Number of P [^] or packets.
Everend A. Pakenham, Ireland	18
David Prain, Esq., Fettercairn, Scotland	12
Lieutenant C. O. Reid, Penang	3
R. M. Redhead, Esq., Springfield, England	37
Alexander Thomson, Esq., 14, Carden Place, Aberdeen	12
George F. Wilson, Esq., Heather Bank, Weybridge Heath, England	39
Thomas C. Wilson, Esq., Soerabaya, Java	1
Messrs. Dammann and Company, San Giovanni, Italy	36
” Hugh Low and Company, London	22
” Reaoner Brothers, Royal Palm Nurseries, Manattee, Florida	2
” F. Sander and Company, St. Albans, England	3
” Haage and Schmidt, Erfurt...	5
” James Veitch and Sons, London	1
Deputy Commissioner, Kohat	2
Ditto Tura	6
Conservator of Forests, Northern Circle, Madras	1*
Ditto, Shillong	1
Assistant Conservator of Forests, Jhelum	10
Ditto, Ajmere	21
Acting Conservator of Forests, Southern Circle, Madras	1
Officiating Conservator of Forests, Nagpur	1
Sub-Assistant Conservator of Forests, Jalpaiguri	1
Executive Engineer, Brahraini-Byturni Division, Cuttack	1
Ditto, Dehree Workshop Division, Dehree	1
District Engineer, Dinajpur	6
Ditto, Rungpur	1
Chief Engineer, East Indian Railway, Calcutta	1
Collector and District Magistrate, North Arcot	11
Civil Surgeon, Prome	43
Ordnance Officer in charge of the Arsenal, Fort William	6
District Staff Officer, Quartermaster-General's Department, Fort William	4
W. Craw, Esq., Ranikhet	2
Manager, Bengal Stone Company, Limited, Calcutta	5
Proprietor and Manager, Pikeparah Nursery, Calcutta	1
Sub-Divisional Officer and Chairman, Local Board, Ranaghat	6
Ditto, Pakur	27
Station Master, Toungoo-Mandalay Extension, Myotta	21
Principal, Government College, Ajmere	3
Lieut.-Col. H. B. Abbott, Jhalrapatan	3
Political Agent, Bhopal, Sehore	106
J. Barclay, Esq., Silchar	1
C. C. Bush, Esq., Mazira, Assam	43
Reverend John (Jain, Dumagudiem, Godavari	1
J. Gammie, Esq., Mungpoo	22
David Foggo, Esq., Calcutta	2
W. T. Hall, Esq., Rangoon	1
Lieutenant H. Hodges, Monywa	4
Captain Hutchinson, Teu	2
T. Kanaran, Esq., Tellicherry, Malabar	1
J. Muir Mackenzie, Esq., Calcutta	1
George H. T. Mayer, Esq., Khusru Bagh, Allahabad	13
George H. T. Mayer, Esq., Lucknow	1
Major N. C. Martelli, Dholpur	10
J. W. Midru, Esq., Masulipatam	6
Mrs. J. M. MacMiller, Chioacole	1
E. F. Mondy, Esq., Dacca	4
Mrs. Nolan, Darjeeling	12
R. Pantling, Esq., Mungpoo	6
Reverend W. Sutherland, Kalimpong	1
Mrs-Talbot, Bikanir	1
George Thomas, Esq., Monghyr	1
Mrs R. H. L. Townsend, Calcutta	1
M. R. Weld, Esq., Ganjam District, Berhampur	3
Ditto ditto ditto, Kurnool	31
Sir Alexander Wilson, Calcutta	1
G. Marshall Woodrow, Esq., Poona	127

APPENDIX IV—concluded.

TO WHOM SENT.			Number of parcels or packets.
			1
Pundit U. Narasinga Rao, Mangalore	...	...	20
Baboo D. N. Basu, Seebpore	...	...	11
„ D. P. Dutta, Oawnpore	...	...	25
„ Gk C. Datta, Seebpore	...	...	3
„ H. L. Singh, Ajaigarh	...	...	2
„ M. C. Baumik, Sajapukar, Shampur	...	...	1
» M. M. Bosu, Bogra	...	...	3
„ M. D. Mookerjee, Chinsurah	...	...	9
» N. O. Boy, Calcutta	...	...	2
» P. N- Singh, Bankura	...	...	3
„ R. M. Bose, Shahabad	...	...	1
> S. L. Pragnarain, Agra City	...	...	1
	Total	...	<u>3,619</u>

Q. KING, M.B., *Brigade-Surgeon,*
Superintendent, Royal Botanic Garden, Calcutta.

FINANCIAL DEPARTMENT.

MISCELLANEOUS.

DABJEELING, THE 14TH JUNE 1890.

RESOLUTION.

READ The Annual Report of the Botanic Gardens for the year 1889. Dr. King's report, which will as usual give an interesting account of the work done during the year, has been maintained in a high state of efficiency. Particular attention has been especially attended to, and organised in Burma and Assam has added to it some valuable collections. Under the recent order of the Government of India this exploration will be extended, and the operations has been centralised in the Calcutta. The grants has been appointed Director of the Botanic Gardens of Assam will enable collections to be made on a larger scale and more extensive than in the past. In future years a separate report a separate Department, it has been ordered that in the next year should be submitted on the subject.

2. During the year Dr. King, issued a second volume of the chestnuts of the Indo-Malayan region. The third and concluding part of his important *Journal of the Forests of India* has lately been issued. Dr. Prain has also issued papers which are described in the Superintendent's Report, and to the Superintendent of the Botanic Gardens, and to the Lieutenant-Governor and successful discharge of his able Assistant, Dr. Prain, for the very thorough their duties throughout the year.

3. The thanks of the Lieutenant-Governor and Superintendent of the Botanic Gardens, and of the Report, be submitted to the Government of India, in the Revenue Department, for information. Resolution be forwarded to the Superintendent of the Botanic Gardens for information.

By order of the Lieutenant-Governor, of Bengal,
H. J. S. COTTON,
Secretary to the Government of Bengal

No. M $\frac{2-B}{3}$ 2.

Copy to be sent to the Superintendent of the Botanic Gardens, Calcutta, for information.

By order of the Lieutenant-Governor of Bengal,

H. J. S. COTTON,
Secretary to the Government of Bengal.

CALCUTTA,
The 14th June 1890.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE YEAR 1890-91.

No. 15G, dated Seebpore near Calcutta, the 20th May 1891.

From—BRIGADE-SURGEON GEORGE KING, M.B., LL.D., F.R.S., C.I.E., Superintendent,
Royal Botanic Garden, Calcutta,
To—the Secretary to the Government of Bengal, Financial Department.

I HAVE the honour to submit herewith the one hundred and fourth Annual Report of the Royal Botanic Garden.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE YEAR 1890-91.

As regards general operations in the garden, there is but little that is of importance to report for the year. One of the main driving roads leading from the Government banyan tree to the great tree near the drain garden is for the purpose of being directed to a good deal of the unusual rains. We have had a heavy fall of rain, and the embankment along the river have since been raised in places have been heightened, so as to prevent the recurrence of such a mischance in future years. The Department of Public Works having this year completed the wire fence along the whole of the garden outside the boundary previously defined by a wall, the encroachments of unscrupulous persons and others have, it is to be hoped, been put an end to for the cultivation of the conservatories is satisfactory, and the health of the plants which is generally in them leaves little to be desired. The collection of orchids, which is a flower eclipsing even that of the previous year.

2. Much attention has as usual been given to the cultivation of plants of economic interest. No new introduction of plants was made during the year.

3. Work in the herbarium was as active as usual, the whole of my own time and attention being devoted to it. Fifteen specimens during the year have been of such importance as to be added to the appendix. From this list it will be seen that these specimens exceeded 20,000, and that no fewer than 6,311 of these were sent to the Herbarium at Kew, thus deepening the debt which the Garden already owes to that great national institution. The collected garden of St Petersburg also contributed 1,150 specimens, chiefly by the Central Asian explorers Przewalski and Potanin. Mr. G. Mansfield, conservator of Forests in Assam, contributed no less than 1,284 specimens, chiefly consisting of bamboos and Magnoliaceae which after having been distributed (according to Mr. Mann's desire) to the great herbaria of Europe. Other Forest officers who contributed during the year are—Mr. Aho sent a beautiful suite of 450 Beluchistan plants; Mr. Gamble, who sent several critical species; and Mr. Curtis of the Penang Forest Department, the most valuable and interesting species. From the Botanic Gardens at Melbourne a valuable veteran, Baron Von Muller, F.R.S., contributed no less than 61 species; while Mr. Ridley of the Singapore garden sent 845. To General G. B. we are indebted for 304 critical plants from the Khasia Hills; to Jatacre for 127 species from the Shan States in Burma; to Mr. S. Peal

for 210 specimens from Sibsagar, Assam; and to Mr. L. W. 28. 853 from Perak. By collectors working directly these are the Great of brought in. Chief amongst the direct Island; and about 1,800 collected in the Andamans, the 580 from Sikkim, the principal her Mr. E. H. Man. Mr. Gamble, Junior, sent 580 from Sikkim, the principal her journeys to the Andamans and Khasia Hills yielded 4,229 specimens (all carefully named) were issued to in Europe.

4. *Botanical collections in Burma and Assam*—Annual report, the Government of India now gives Burma and Rs. 1,000 for the botanical exploration of the provinces, and give ja mens while the Governments concerned make similar grants, and these arrange is 0 for collecting. During the year full advantage was taken of so far as funds would admit; and, as a result, I visited f assistance of collecting operations in that province. With the inn assistance of the lamented Chief Commissioner (Mr. Quinton) and of the Chief of Forests, arrangements for employing native collectors were already borne fruit. I also visited the Andamans where, the kindness of the Chief Commissioner, Colonel T. Cadell, with the help of Mr. E. H. Man, I was enabled not only to make but to arrange for the continuation of the work by Burmese mission of Captain Hoskyns, R.N., of Her Majesty's surveying Prain (Curator of the Herbarium) was not only allowed vessel during part of her operations in the Bay of Bengal arrangement also made by the kindness of Captain put down a second time on the Great Coco Island for a few days, and enabled to pay short visits to the Little Coco and to Rutland for the visit made by Dr. Prain under similar circumstances. Great Coco had not previously been explored by a botanist, and Rutland islands were this year visited for the first time. visits will in due time be published by Dr. Prain. A named Brazer was subsidised as a collector in Cachar and the while afusalman collector, named Abdool Hok, was sent to the Shan Hills in Upper Burma. Both of these men did Dr. Leslie was also kind enough to arrange for collections at the frontier stations in Burma. By the kind permission of C.B. (the Chief of the Intelligence Department), the Department was so good as to look after a collector made at the base of the Eastern Himalaya, and some very mens were thus added to the herbarium.

5. *Publications.*—During the year the bulk of the material published in the third volume of the Garden Annals was prepared. The first of these, on *Bedicularis* by Dr. Prain, was (as stated in my last report) the previous year. The third memoir, on the genus *Gomph* by Dr. Prain, and the second and fourth by myself, on Indian Indo-Malayan species of *Myristica*, were elaborated during review. Owing to unavoidable delays, it has not been possible to publish volume within the year, but its publication will not much be delayed. Dr. Prain has contributed to the journal of the Asiatic Society a new species of *Ellipanthus*, also a second and much longer *Labiatop*, in which 46 species (23 of which are new to science the result of recent exploration) to the Flora of British India. of a series of papers by myself on the Malayan Flora have a buted to the journal—just mentioned.

6. *Library.*—The work of rebinding the library has been completed during the year. A few new books have been acquired by purchase; and from the Director of the Royal Garden at Rew, there have been received a number of books—some of them of very great interest—withdrawn as duplicates from the library of that noble institution.

7. *Interchange of plants and seeds.*—The distribution of plants were received as appendices to this report show that, during the year, 18,816

and that 55,204 were distributed ; white seeds were received and 3,132 were issued. As usual, the recipients were both of 1 mostly public officers.

The Lloyd Botanic Garden, which I recently inspected, is in very good order. In addition to the garden itself, Mr. Kennedy is charged with the maintenance of the conserving trees in the barest and ugliest parts, not only from the ravages of goats and cattle, but from the depredations of Nepalese and Bhutias, who seem to delight in trying to pull down the slender stems of these unfortunate plants.

9. The sums provided in the budget for the year are the estimate both at Calcutta and Darjeeling in both.

for by F.R.S., the authorities at Kew, and especially Mr. G. Don, who has resigned when (as not unfrequently happens) knotty botanical questions arise. Mr. McHardy, recently Cuttack, who has worked with much energy and ability during the year, and his place was taken by Mr. A. C. Hartless, of the Cinchona Plantation, was brought down to give assistance, but on the arrival from Kew of a new staff, Mr. G. T. Lane, Mr. Hartless returned to his office. During his spell of service here, Mr. Hartless did excellent work, and my acknowledgments are particularly a due to him as head of the office. Babu Gopal Chunder Datta. The issues and receipts of

11. Five appendices are attached to the Herbarium. seeds and plants, and the receipt of specimens in

APPENDIX I.

Statement showing plants received from 1st April 1890 to 31st March 1891.

FROM WHOM RECEIVED.	Wardian cases.	Boxes.	Number of plants.
Royal Garden, Kew, London ...	5	2	221
Royal Botanic Garden, Edinburgh	1	21
Ditto, Peradeniya, Ceylon ...	"2	...	85
Botanic Garden, Singapore ...	1	" 2	171
Ditto, Ootacamund	1	314
Ditto, Saharanpur	2	1,741
Ditto, Darjeeling	20	282
Ditto, Bangalore ...	"1	4	899
Memorial Garden, Cawnpore	1	5
Belvedere Garden, Alipore	12
Agri-Horticultural Society, Calcutta	"*4	198
Ditto, Lahore	3	52
Ditto, Madras	1	1,000
Horticultural Garden, Lucknow	1	30
Municipal Garden, Bombay	1	1,000
La Martinière School, Calcutta	7
Chief Commissioner, Andamans ...	" 5	...	357
Revenue and Agricultural Department, Simla	115
Deputy Postmaster-General, Lucknow	" 1	367
G. W. Bartlett, Esq., Calcutta	4
Mrs. A. Betts, Calcutta	25
General H. Collett, C.B., Shillong	"*2	91
Dr. D. D. Cunningham, F.B.S., Calcutta	32
C. Curtis, Esq., Penang	" 3	150
Mrs. Fische, Barrackpore	4
G. Gammie, Esq., Mungpoo	"*5	389
W. Goss, Esq., Jalpaiguri	1	59
Dr. Griffiths, Allahabad	1	10
J. L. Lister, Esq., Nimbong	1	289
G. Mann, Esq., Shillong	14	4,342
C. Maries, Esq., Gwalior	17	2,711
J. Parkes, Esq., Bhootan	12	690
G. McD. Peche, Esq., Moulmein	7	918
Dr. C. J. Simons, Assam	3	89
A. Simson, Esq., Calcutta	3
E. Trelawny, Esq., Calcutta	1
Colonel Waterhouse, Calcutta	86
Collected by Dr. G. King, Khasia Hills and Andamans	52
...	67
Collected by Dr. D. Prain, Great Coco Island	65
Ditto Mr. R. L. Proudlock, Mungpoo	122
Ditto Badul Khan, Plant Collector, Assam	"*2	761
Ditto Abdool Hok, ditto, Burma	6	944
Babu S. P. Chatterjee, Calcutta	5	35
Unknown donors	2	...
Total ...	14	125	18,816

APPENDIX II.

Statement showing plants sent out from 1st April 1890 to 31st March 1891.

TO WHOM SENT.	Wardian cases.	Boxes.	Number of plants.
Government House Garden, Calcutta ...	...	...	23
Belvedere Garden, Alipore ...	"1	...	21
The Representative of the Government of Nepal ...	...	4	31
The Hon'ble Nawab Asan-Uah Khan bahadoor, C.I.E., Dacca ...	...	10	87
Royal Garden, Kew, London ...	...	2	56
Royal Botanic Garden, Peradeniya, Ceylon ...	"1	...	40

APPENDIX II—continued.

To WHOM SENT.	Wardian cases.	Boxes.	Number of plants.
Botanic Garden, Saharanpur ... ..	...	18	380
Ditto, Darjeeling ... ..	...	2	65
Zoological Garden, Alipore ... ..	...	...	88
Horticultural Garden, Lucknow ... ..	...	2	30
Agri-Horticultural Garden, Lahore ... ..	...	17	229
Ditto, Calcutta ... ..	...	...	61
Sir George Macleay, Surrey	"1	...	8
Political Agent, Jeypore, Rajputana ... ..	...	4	107
Conservator of Forests, Sunderbuns ... ..	...	...	112
Superintendent of Forests, Penang ... ..	...	# 7	54
Forest Officer, Katikoond ... ..	...	7	135
Port Officer, Calcutta ... ..	...	...	52
Officer Commanding the Garrison, Changsil ... ..	...	2	76
Chief Commissioner, Andamans	2	14	390
Commissioner of Orissa ... ..	...	4	100
Ditto Burdwan ^ ... ..	...	...	25
Deputy Commissioner of Hazaribagh ... ..	...	2	40
Subdivisional Officer, Feni	* • *	2	20
Ditto, Pakur ... ..	...	11	238
Ditto, Derghur ... ..	...	6	121
Ditto, Rajmehal	* •	8	180
Ditto, Naraingunge ... ..	...	2	35
Covenanted Deputy Collector in charge, Chittagong ... ..	...	3	50
Settlement Officer, Western Duars	* ..	34	440
Secretary, District Hoard, Sarun ... ..	...	5	210
Chairman, District Board, Noakhally ... ..	...	31	691
Ditto, Pooree ... ..	...	2	37
Ditto, Furreedpore ... ..	...	10	200
Ditto, Tipperah ... ..	...	23	570
Ditto, Dinajpur	* *	...	198
Chairman, Local Board, Samastipur	• •	6	135
Ditto, Jessore Municipality	* •	5	104
Ditto, Khulna Municipality ... ..	...	4	90
Ditto, Kumarkhali Municipality	* *	1	21
Vice-Chairman, Jamalpur Municipality ^ ... ..	...	7	135
Ditto, Murshidabad Municipality	* *	2	50
District Engineer, Khulna	• •	2	105
Ditto, Jalpaiguri ... ..	...	5	105
Ditto, Backergunge ... ..	...	25	470
Ditto, Patna ... ..	...	28	575
Ditto, Lohardugga ... ..	...	14	345
Ditto, Beerbhoom	"	2	37
Ditto, Midnapore ... ..	...	...	1,000
Ditto, Bhagalpur ... ..	...	17	400
Executive Engineer, Buxar Division ... ..	...	92	2,000
Superintendent, Foundry and Shell Factory, Cossipore ... ..	...	...	148
Superintendent, Calcutta Workshop Division ... ..	...	...	252
Ditto, Presidency Jail, Calcutta ... ..	...	...	j,640
Ditto, Tura Jail, Assam ... ..	...	5	72
Ditto, Jalpaiguri Jail ... ..	...	2	23
Ditto, Alipore Jail ... ..	...	...	401
Ditto, Hazaribagh Jail ... ..	...	1	50
Ditto, Midnapore Jail ... ..	...	...	670
Ditto, Victoria Garden, Bombay	1	...	30
Ditto, Lai Bagh, Bangalore	1	1	40
Manager, Mookhamcherra Tea Estate ... ..	...	1	160
Ditto, Jute Mills, Seebpore ... ..	...	...	360
Surveyor-General, Calcutta ... ..	...	...	35
Deputy Postmaster-General, Lucknow ... ..	...	2	44
The Master of the Mint, Calcutta ... ..	...	...	76
Howrah Hospital ... ..	...	...	3,042
Medical College Hospital, Calcutta ... ..	...	...	100
Principal, Medical College, Calcutta ... ..	...	...	10
Reformatory School, Alipore ... ..	...	...	100
La Martinière School, Calcutta ... ..	...	...	29
Christ Church Parsonage, Calcutta ... ..	...	...	150
St. John's Church, Calcutta ... ..	...	...	386

APPENDIX II—continued.

TO WHOM SENT.	Wardian cases.	Boxes.	Number of plants.
Howrah Church	12
Protestant Home, Calcutta	12
Indian Museum, Calcutta	100
Leper Asylum, Calcutta	24
Assistant Registrar, Calcutta University	200
Board of Revenue, Calcutta	4,184
Soldiers' Gardens, Fort William	2,400
E. I. Railway, Howrah	...	80	2,000
E. B. State Railway, Sealdah	68
Earrackpore Park	1,792
Sulkeah Salt Golah	125
Bazar of the Little Sisters of the roor	26
Bengal Mills, Garden Reach	20
Women's Charitable Society, Calcutta	312
Women's Friendly Society, Calcutta	50
Fancy Bazar for ditto ditto	6
The Hon'ble Sir Alfred Croft, K.C.I.E., Calcutta	Palpa ⁴ .Va	...	202
Hon'ble C. B. Garrett, Calcutta	1
W. B. Bliss, Esq., Calcutta	67
Mrs. Apar, Calcutta	72
T. J. Ayres, Esq., Howrah	...	8	J38
H. Bahr, Esq., Assam	2
Lady Barbour, Calcutta	109
J. Benson, Esq., Seebpore	...	2	38
Mrs. A. Betts, Calcutta	30
Dr. S. Borah, Tezpur	38
Mrs. Brihl, Engineering College	100
R. Clare, Esq., Calcutta	33
W. B. Colville, Esq., Ballygunge	63
H. Cockell, Esq., Motiharry	9
H. Cowasji, Esq., Calcutta	39
Dr. D. D. Cunningham, Calcutta	205
Mrs. Day, Calcutta	...	53	8
„ H. Doran, Howrah	1,300
J. N. Eaton, Esq., Chakradharpore	63
Sir John Edgar, K.C.I.E., Calcutta	12
Captain Edge, S. S. <i>Peshiva</i>	206
Mrs. Fiddian, Howrah	...	3	220
J. Fleming, Esq., Calcutta	...	2	31
G. Denison Foldger, Esq.	611
J. Gammie, Esq., Mungpoo	...	3	30
W. Graham, Esq., Calcutta	...	1	47
Dr. Griffiths, Allahabad	15
T. Grant, Esq., Sainthia	...	5	16
Captain Gray, S. S. <i>City of Canterbury</i>	...	4	121
W. Goss, Esq., Rangamati	...	1	100
W. M. St. Clair Grant, Esq., Bhagalpur	...	3	9
A. M. Gasper, Esq., Moradabad	...	1	34
G. B. Groves, Esq., Dacca	...	1	15
H. E. Houghton, Esq., Pharwar	...	2	40
J. D. Kohus, Esq., Java	1,429
Mr. R. A. Lyall, Calcutta	...	1	12
Captain Longworthy, S. S. <i>Soana</i>	...	2	28
D. Low, Esq., P. & O. Agent, Bnndisi	21
Mrs. Mackenzie, Calcutta	91
E. H. Man, Esq., Andamans	12
Captain Mann, S. S. <i>Bawa</i>	...	4	1
T. W. Man, Esq.	127
C. Maries, Esq., Gwalior	...	3	100
Mrs. Maxwell, Howrah	297
E. F. Mondy, Esq., Calcutta	...	1	67
G. H. T. Mayer, Esq., Cawnpore	1
Mrs. Morrison, Ghosery	16
M. Nahar, Esq., Azimgunge	186
A. C. Nairn, Esq., S. S. <i>Nepal</i>	320
P. Nolan, Esq., Alipore	150
G. W. Noal, Esq., Seebpore	...	1	32
J. D. Osmers, Esq., Calcutta	10
Graham Peddie, Esq., Madhupur, E. L. ^{Rajivaya}

APPENDIX II—continued.

TO WHOM SENT.	Wardian cases.	Boxes.	Number of plants.
J. Pratt, Esq., Midnapore	4	85
R. Pantling, Esq., Mungpoo	1	31
G. McD. Peche, Esq., Moulmein	1	17
J. Phillips, Esq., Allahabad	15	294
P. Playfair, Esq., Alipore	6
Mrs. Prain, Kurseong	"10	347
Chief Commissioner, Andamans ...	1	2	68
Charles Ross, Esq., Seebpore	285
W. Reeves, Esq., Sylhet	1	20
— Simmons, Esq., Calcutta	9
Dr. Simpson, Calcutta	1,527
Mrs. Simpson, Calcutta	6
A. Simson, Esq., Calcutta	15
J. S. Slater, Esq., Seebpore	791
Charles Stiffe, Esq., Calcutta	6
E. Trelawny, Esq., Calcutta	342
Colonel R. Warburton, Peshawar	2	23
Dr. C. J. Warden, Alipore	100
Colonel Waterhouse, Calcutta	4
T. Watson, Esq., Calcutta	1
Mrs. E. V. Westmacott, Calcutta	1
Herbert Winn, Esq., Belvedere, Chunar	2	36
J. V. Woodman, Esq., Rangamati	1	8
Messrs. Gillanders, Arbuthnot & Co., Calcutta	4,400
„ Kilburn & Co., Calcutta	12
„ T. J. Barr & Co., Calcutta	3,500
„ F. Sander & Co., St. Albans	9	3,031
River Steam Navigation Company, Limited, Garden Reach	100
Prince Nooroodeen Khan, Russapagla	2
Babu A. B. Moitra, Sant%ore	1	3
„ A. C. Chowdhoooy, Sulkeah...	2	16
„ A. K. Bose, Helgoriah	28
„ A. N. Bose, Calcutta	10
„ A. C. Banerjee, Cossipore	1
„ B. M. Paramanick, Burdwan	200
„ B. B. Gangooly, Krishnagar	2	7
„ B. Mookerjee, Hazaribagh	1	15
„ B. Ghosh, Taki...	310
„ D. N. Basu, Seebpore	127
„ D. N. BaEerjee, Calcutta	9
„ G. C. Datta, Seebpore	233
„ G. C. Gupta, Calcutta	n
„ G. C. Barral, Krishnagar	3
„ J. C. Pal, Calcutta	175
„ J. N. Chowdhoooy, Seebpore	3
„ J. C. Biswas, Calcutta	503
„ J. N. Banerjee, Seebpore	2
„ J. N. Mullick, Calcutta	1
„ J. P. Gupta, Nashipur	1	6
„ K. P. Nusker, Thana Makooah	100
„ K. M. Mookerjee, Calcutta	16
„ K. P. Chowdhoooy, Seebpore	50
„ M. D. Dey, Burdwan	46
„ M. L. Mundul, Kidderpore	100
„ N. M. Bhattacharjee, Majirhat	20
„ N. L. Nusker, Thana Makooah	100
„ P. R. Maity, Nazirunge	4
„ P. C. Banerjee, Ranaghat	1	23
„ R. N. Porail, Midnapore	5
„ R. C. Roy, Kanchi	3	29
„ S. C. Roy, Goneshpur	6
„ S. N. Roy, Calcutta	10
„ S. P. Chatterjee, Calcutta	545
Chowdhoooy Mahadeo Prosad, Nanpur	4	100
Sibsanker Prosad, Gya	1	3
Soorjoo Den Narain Sing, Balegurh	1	44
Hernam Dass, Garden Reach	3
Nonidh Roy, Mozufferpore	3

APPENDIX II—concluded.

TO WHOM SENT.	Wardian cases.	Boxes.	Number of plants.
Nunda Kissore Dass, Gya	...	5	100
Badul Khan, Ghoshpur	175
Shaik Gobordhun, Trishbiga	2
Hurry Malie, Manicktollah	8
Ishan Chandra Malie, Calcutta	...	2	10
M. S. Muntaz AH, Saharanpur	5
Morfoodul Hock, Calcutta	6
Musseebullah Chuprassie	43
Dewan Mallie, Thana Makooah	20
Shadir Mallie, ditto	5
Shaik Soobid Mallie, ditto	12
„ Solomon, ditto
Total	13	710	55,204

APPENDIX III.

Statement seeing seeds received from 1st April 1890 to 31st Marek 1891.

FROM WHOM RECEIVED.	Number of parcels or packets.
W. T. Thiselton Dyer, Esq., r.B.s., c.M.G, Director, Royal Garden, Kew, London	10
Dr. Regel, Imperial Garden, St. Petersburg, Russia	111
Royal Botanic Garden, Peradeniya, Ceylon	21
Botanic Garden, Trinidad	10
Ditto, British Guiana	5
Ditto, Adelaide	50
Ditto, Melbourne	21
Ditto, and Domain Garden, Melbourne	25
Ditto, Port Darwin	19
Ditto, Hobart Town	50
Ditto, KockhamDton	7
Ditto, Buitenzorg, Java	77
Ditto, Singapore	11
Ditto, Mauritius	9
Ditto, Saharanpur	28
Ditto, Darjeeling	742
Ditto, Bangalore	96
Garden, Cawnpore	2
Melbourne, Australia	1
W. Anderson, Esq., Townsville, Queensland	10
F. M. Bailey, Esq., Brisbane	16
T. H. Cupps, Esq., Belu, Chumparun	5
Messrs. Dammann and Co., San Giovanni, Itava	1
Manager, Queensland Acclimatization Society, Bnsban	149
C. Curtis, Esq., Forest Department, Penang	12
Secretary to the Agri-Horticultural Society of inaiia	3
Ditto	10
Superintendent, Agri-Horticultural Garden, Jnampet, Madras	4
Ditto	121
Conservator of Forests, North Circle, Madras	1
Ditto, Burma	3
Forest Officer, Poona	5
Asiatic Society, Bengal, Calcutta	1
Economic Museum, Calcutta	1
G. Bartlett, Esq., Calcutta	2
J. Gammie, Esq., Mungpoo	4
Dr. George King	19
J. L. Lister, Esq., Kalimpong	7
E. H. Man, Esq., Port Blair	17
W. Pigot, Esq., Calcutta	J
Dr. David Prain, Great Coco Island	4
Baboo B. Ghosh, Taki	2
Munshi Abdool Hok, Plant Collector	20
Total	1,714

APPENDIX IV—concluded.

TO WHOM SENT. #	Number of parcels or packets.
Conservator of Forests, Northern Circle, Madras ...	26
District Forest Officer, South Malabar, Nilambur ...	5
Forest Officer in charge Chittagong Division, Chittagong	88
District Engineer, Rungpur	1
Executive Engineer, Aska, Ganjam ...	6
Officiating Collector of Purneah	20
Consul-General for France, Calcutta^ ...	1
Garrison Quarter Master, Fort William	60
General Officer Commanding, Mandalay	53
Inspector of Salt and Abkari Revenue, Ganjam ...	1
Political Agent, Abu, Rajputana ...	13
Political Resident, Turkish Arabia, British Residency, Bagdad ...	20
H. Uahr, Esq., Sonthal Colony, Dhubri	91
T. E. Carter, Esq., Dacca Kail way ...	6
Captain F. O. B. Campbell, Jhansi	3
Dr. Cunningham, Calcutta	1
M. Finucane, Esq., as., Calcutta	1
J. Gammie, Esq., Mungpoo	104
Dr. Glynn Griffith, Allahabad	1
H. A. Herbert, Esq., Calcutta	1
Mrs. Hodges, Monywa, Chindwin	25
Captain Linsell, Andamans	10
C. P. Lloyd, Esq., The Buffs, Dum-Dum	2
James C. Kelly, Esq., Forest Department, Tezpur	63
D. McL. Morrison, Esq., Calcutta	12
T. F. Peppe, Esq., Ranchi	29
A. A. Philbert, Esq., Meiktila	1
Mrs. Prain, Kurseong	1
Colonel D. Robertson, Shillong	1
Captain J. G. Robinson, Dehra Dun	15
Lieutenant Tullock, Fort William	9
Thomas ^Tardle, Esq., Leek, England	1
Dr. C. J. H. Warder, Medical College, Calcutta	1
M. R. Weld, Esq., c s, Kurnool	52
Brigadier-General Wolsley, C.B., Mandalay	6
Louis Zindug, Esq., Calcutta	1
Rajah Ram Narain Singh, Khaira, Jamooee	3
Babu A. C. Banerjee, L.M.S., Allahabad	1
„ N. C. Dey, Seebpore	6
„ N. G. Sein, Seebpore	8
„ P. B. Dutt, Calcutta	7
„ P. C. Saha, Calcutta	18
Munshi Ali Hosan, Chandpur	3,132
Total	<u>3,132</u>

APPENDIX V.

List showing contributions to the Herbarium during 1890-91.

From Royal Herbarium, Kew —				
Dr. Henry's Chinese collection	...	...	...	2,532
Dr. Henry's Chinese duplicates	...	...	...	312
Ball's Ferns about	...	...	600	
Monro's grasses about	...	...	1,000	1,600
				109
Vidal's Manilla plants	...	...	...	13
Burbidge's North Borneo plants	...	...	...	192
Balansa's Tonquin plants	...	...	...
Duplicates of Mr. C. B. Clarke's Herbarium	...	...	...	746
Duplicates of the late Dr. Wight's Herbarium	...	...	...
Duplicates from Mr. Duthie's Central India collection	...	...	...	97
Duplicates of grasses collected by Dr. Lawson at Ootacamund	...	...	...	45
				6,311
Royal Botanic Garden, St. Petersburg; Central Asian plants of				1,15
Przewalski's and Potanin's journeys	...	...	...	761
Baron Von Mueller, K.C.M.Q., P.U.S., Melbourne, Australia	...	...	...	845
Mr. Ridley, Botanic Garden, Singapore	...	...	...	<i>n.</i>
Dr. Trimen, F.E.S., Botanic Garden, Peradeniya	...	...	...	83
Mr. C. Maries, Gwalior	...	...	...	22
Mr. J. S. Gamble, Dehra Dun	...	...	...
Dr. Barclay, Simla	...	...	...
Dr. Leslie's Burma collectors—				
Mr. Coleat Yeu	...	...	...	50
Mr. Cooper at Bernardmyo	...	...	...	90
				140
				24
				55
Dr. Watt (duplicate <i>Labiatae</i>)	...	...	...	450
Mr. Talbot, Forest Department, South Canara	...	...	...
Mr. Lace's Beluchistan plants	...	...	...
From the Saharanpur Herbarium—				
Plants collected by Lieutenant Hunter on West Punjab Frontier	...	...	...	99
Ditto <i>Labiatae</i> (duplicates) and a few Central Indian plants	...	...	...	76
				175
				395
				853
Mr. Curtis, Forest Department, Penang	...	...	...	688
Mr. Wray, Perak	...	...	...
Mr. Pringle (Mexican plants)	...	...	...	930
Mr. G. Mann, Shillong (5 sets of bamboos, each 186 species)	...	...	...	354
Mr. G. Mann, Magnoliaceae, etc.	...	...	...	1/284
				21
Mr. W. W. Waine, Assistant Conservator of Forests, Sikkim	...	...	...	210
Mr. S. E. Peal, Sibsagar	...	...	...	304
General Collett, c.B., Shillong	...	...	...	127
General Gatacre, c.B., Shan States	...	...	...
Garden collectors :—				
Dr. King; Andamans' journey	...	...	...	690
Ditto; Khasia do.	...	...	...	270
				960
Dr. Prainj Great Coco journey	...	...	...	1,283
Mr. E. H. Man, Andamans, about	...	...	...	1,800
Mr. Prazer	...	...	...	850
Abdool Hok	...	...	...	1,100
Babullah (with Lieutenant Colomb)	...	...	...	200
Mr. G. Mann's Khasia collectors about	...	...	...	500
Mr. G. Gammie, Sikkim plants	...	...	...	585
				20,816
Total	...	...	...

G. KING, M.B., *Brigade-Surgeon,*
Superintendent, Royal Botanic Garden, Calcutta.

FINANCIAL DEPARTMENT.

MISCELLANEOUS.

No. 2969.

DAHJEELING, 18TH JUNE 1891.

RESOLUTION.

READ—

The Report of the year shows the Botanic Garden, not only as a public centre of the highest value to all botanical students, but also as a place of instruction. More than 20,000 specimens were added to the Flora of regions so widely removed as Australia, the Shan States, the Khasi Hills, the Andaman Islands, the Great Coco Island. To the contributors of these specimens, Messrs. Curtis, Ridley, S. Peal, and L. Wray, and to the Government of Burma, and the Andaman Islands, the thanks of the Government are due.

2. A third volume was added to the series of garden annals, containing monographs by Dr. King and others on Indo-Malayan species. Unfortunately, however, owing to certain delays, it was found impossible to publish the volume in the year. Both the Superintendent and the Curator of the garden contributed valuable papers on botanical subjects to the Journal of the Botanical Society.

3. The Lloyd Botanic Garden, under the supervision, is reported to be in good order. In course of time it is hoped that the damage done by the destruction of fine trees may be in some measure repaired.

4. The thanks of the Government are due to Dr. King, the Superintendent, and Dr. Pram, the Curator, for the successful administration of the garden during the year.

Ordered that a copy of this Report be forwarded to the Government of India, in the manner in which it is usual to be done. Resolution be forwarded to the Superintendent for information.

By order of the Government of Bengal,
H. H. RISLEY,
Offg. Secy to the Govt. of Bengal;

Copy forwarded to the Superintendent of the Royal Botanic Garden, Calcutta, for information.

By order of the Lieutenant of Bengal,
STREATFIELD,
Undersecretary to the Government of Bengal.

CALCUTTA,
The 26th June 1891.

FINANCIAL DEPARTMENT—

MISCELLANEOUS.

CALCUTTA, THE 29TH JUNE 1892.

RESOLUTION—No. 2211.

READ—

Annual Report of the Eoyal Botanic Garden, Calcutta, for the year 1891-92. The report shows that the year has been successful as regards outdoor operations, and that much has been done to improve the condition of the garden as regards...

the exertions of the garden staff, many casualties occurred especially among the finer and rarer palms. Valuable additions were made to the Herbarium, among which may be mentioned a collection of plants from Kew, a beautiful collection of Australian plants from Baron Von Mueller, and a collection from the north-west Himalayas, Jaunsar-Bihár, Dehra Dun, the Malay Peninsula, Burma, North Canara, Sindh, Chota Nagpur, Khasia, Assam, the Duars, Independent Sikkim and the Andamans.

Cooke, Wood and Alcock, the Andaman Islands, Parasnath, and the Khasia-Jaintia Hills; and his botanical garden...

of the garden annals was issued, and the bulk of the material for the volume, containing a monograph on the important family of the Asiatic Society...

The Lloyd Botanic Garden, Calcutta, was visited by the Superintendent of the Garden, who reported that the mischief caused by locusts, which caused at the time...

to be in excellent order. The garden is now reported to be in excellent order. The Superintendent of the Garden, the Superintendent of the Garden, the Superintendent of the Garden...

Ordered also that a copy of this Resolution be forwarded to the Superintendent, Eoyal Botanic Garden, for information.

By order of the Lieutenant-Governor of Bengal,

H. H. RISLEY,

Of a Secretary to the Govt. of Bengal,

2212.

COPY forwarded to the Superintendent of the Eoyal Botanic Garden for information.

By order of the Lieutenant-Governor of Bengal,

H. J. McINTOSH,

Offg. Undersecretary to the Govt of Bengal.

CALCUTTA, The 30th June 1892.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR
THE YEAR 1891-92.

No. 21G, dated Sibpur, the 11th May 1892.

From—SURGEON D. PRATH, M.B., F.K.S.E., Acting Superintendent, Royal Botanic

To—The Secretary, Government of Bengal, Financial Department

I HAVE the honour to submit herewith the one hundred and fifth Annual Report of the Royal Botanic Garden.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE
YEAR 1891-92.

THE year under review has been one of great activity as regards outdoor operations. Another supplementary allotment by Government for the purpose of improving the condition of the outdoor staff has been mainly devoted to rework the Howrah gate and the College gate entrances of the garden by a new and proper alignment, and to remake the College gate entrance to Colonel Kyd's garden in rendered necessary by the fact that this approach, one of the garden, and the road that must, after the river bank from Howrah, be the principal means of access to the garden, could not hitherto, owing to its low level, even safety during the rains. The necessary deal of earth-cutting, and advantage has been taken to enhance the appearance of the larger ones that have been aligned by Dr. the adjustment of their levels to admit of same time to obviate scouring during left to be done is so formidable as that of the part cutting necessary for the roads in Palmetum at least. Still further improvements were being taken of the unusually low tides that prevailed February and March to repair and strengthen and are inaccessible. The conservatories are though some of the palms have suffered from the Part of 1892, it has been possible to bring the a trying season with few actual losses to record, jeans equal to that of the last five or flowering very early, and though those that usual, the conditions to which they Jarch rendered the blossoms of all the Out of doors the abnormal season has P though for a time all other work was suspended employed only in watering plants, many especially among the finer and rarer palms to save all the individuals, it has fortunately are to the stronger ones to preserve alive some species in the garden.

2. *Economic plants.*—The attention directed to the cultivation and introduction of the chief event of the year under this head has been the "sisal hemp" (*Agave ugata*, ftoyald-ardens, Kew, in June 1891 kindly obtained

the Calcutta Garden, from Florida and kept these at Kew till they were strong enough to stand the voyage to Calcutta. The boxes reached Calcutta on the October 1891; unfortunately a considerable percentage of the plants died on the way out, and it has been necessary to nurse the survivors carefully, venturing to distribute them. They are now being distributed; as usual in such cases, the garden authorities are being assisted by the Agri-Horticultural Society of India, which heartily co-operates in bringing plants of this kind to the notice of the public and in furthering their distribution especially among the planting community.

Herbarium.—The work in this department was of the usual description. Over 19,000 specimens were contributed to the Herbarium during the year from various sources; while the distribution of authentically-named specimens to other herbaria reached the high total of 10,505. sheets. The precise details of these accessions and of the distribution are shown in two of the appendices. The chief benefactor to the Calcutta Herbarium has again been the Government of India, Herbarium, Kew, to the Director of which institution the Calcutta owes a great debt that can never be repaid. Baron Von Mueller has again sent a beautiful collection of Australian plants; the Herbarium has been greatly enriched by further accessions of Tibetan, Chinese, and Mexican species. The baharanpur Herbarium has presented 954 plants from the North Malaya; Mr. J. H. Luce has sent a contribution of 627 specimens from the same region; Mr. J. S. Gamble has sent 250 from Jaunsar-Bihar and Patna; Mr. H. A. N. O. of the Singapore Garden, has sent 498 specimens from the Malay Peninsula, mainly from the recently explored provinces of Pahang; General Sir H. Collett, K.C.B., has again befriended the Herbarium by sending some interesting plants from Khasia and Manipur; Dr. L. A. Wood has contributed some specimens from the more remote valleys of Upper Burma; Mr. S. P. Talbot's collection from Upper Assam; Dr. J. J. Wood a very complete collection from Chota Nagpur; Mr. W. A. Talbot another interesting collection from North Canara; Dr. ... interesting

collection of the plants of the little visited Laccadive Archipelago, made and collected by the Naturalist of Her Majesty's Indian Marine Survey, the Chief recipient of distributed specimens have been the great national herbaria; in the United Kingdom, Kew, the British Museum, Edinburgh, the Universities of Cambridge and Manchester; in India and the Madras (Government Central Museum), Bombay (Imperial Forest School), Ceylon (Botanic Garden); Perak (Government Herbarium); Straits Settlements, Royal Botanic Garden, Java; University Herbarium, Melbourne, Australian Herbarium, the Smithsonian Institution, Washington, the Imperial Gardens, St. Petersburg; the National Botanical Gardens, Berlin, Vienna, Paris, Florence, and Leiden; the University Herbaria of Vienna, Utrecht, and Upsala, and the great Herbarium of M. de Candolle at Geneva.

4. *Botanical collection*.—During the year full advantage was taken of the various opportunities offered for the botanical exploration of the provinces allotted to the Superintendent of the Royal Botanic Garden, Colonel T. Cadell, V.C., Chief Commissioner of the Andamans, whose assistance has been often to be acknowledged, having invited Dr. Prain to revisit Port Blair and connection with ...

Malaya, Andaman, Car-Nicobar, and other places never before botanically investigated. Mr. E. H. Man has again most kindly superintended the collection

specimens in the neighbourhood of Port Blair by Burmese convicts. In November 1891, Dr. Prain visited Mount Parasnath and made a botanical tour in Chota Nagpur, while in March 1892 he was directed to make a botanical tour in the Khasia, and more particularly the Jaintea Hills. This tour was in connection with the botanical survey of Assam and Burma, Government of India and the local Governments of Burma and Assam give annual grants. In connection with this survey also Mr. Proudlock, the garden, was sent in February 1892 on a collecting tour to Tavoy, and Mergui. In Assam two native collectors were at work in the hills for the greater part of the year; latterly they collected on the frontier; the recent troubles in this region have unfortunately as yet prevented Mr. McCabe from taking the men into the interior of the Lushai country, and personally supervising their work, as he has most kindly From Burma, besides the Tenasserim and Mergui collections, other We been received from the garden collector, Abdul Hok, who has been at work in the Shan Hills and the Ruby Mine districts; some specimens have also been received from frontier stations under the arrangement mentioned in last year's report as having been kindly made by Dr. Leslie.

5. *PuMcatiom.-DuAng* the year the third volume of the *Gaiden Annals* was issued, and the greater part of the fourth volume, which is to consist of a monograph by Dr. King of the difficult and important family, has been elaborated. Besides this Dr. King has also continued his series of Papers on the Malayan Flora, part 3 (dealing with the natural order, *Sterculiaceae*, and *Tiliaceae*) having been published in the beginning of the year, while part 4 (dealing with *Anonaceae*) is, at its close, in the hands of the printer. These papers are published in the *Journal of the Asiatic Society* and in the same *Journal* two descriptive papers on a new species of a two new species of *Wpptompetalum-h&ve* been published by J. Prain, who has in the same place published the account of the *Group*, referred to as in preparation when the last Annual Report of the Asiatic Society has also published Dr. Prain's account of the botanical results of his visits to Little Andaman and the Nicobars.

6. *ZOry.*-Some new books have been presented to the Library; a good number of old books have been rebound. Perhaps the most interesting occurrence in connection with the Library has been the acquisition of a portrait of Colonel Robert Kilduff, a distinguished soldier, was in the possession of the Horticultural Society, the Curator of the Herbarium, with Dr. Prain, the Society to be allowed to have it copied for the Botanic Garden. The President and Council having agreed to request a copy of the original carefully, the Curator who is a School of Art, has now been completed, and the portrait of the propriety June 1786 suggested to the Honourable the Board of the Court of "establishing a Botanic Garden," and who the Court of the Court of the death in 1793-an officer described by the Rectors in the letter in which, in 1787, the attention he has honourable Board in the previous year, as one shown to a matter which may one day prove of high value in our esteem constituents and to his country, stands most deservedly at length hangs in the museum of the in

Us name is so intimately associated. The distribution lists attached to this *interchange of plants and seeds* were received and 40,000 packets were distributed, a sum of seeds 1,580 packets were received and 40,000 packets were distributed, the recipients both of plants and seeds being, as is usual, nearly all public officers.

8. *£%< i?oto<c (7anf<»,* and was in excellent condition under the charge of Mr. W. A. Kennedy, and here lights; the day of 10th July, on which date locusts appeared in the garden, when no coolies could be obtained happened unfortunately to the destruction was Turned, and the creatures could not be kept but, being left alone, in some parts of the garden not less

Thanks, however, to Mr. Kennedy's energy and care, the damage committed was wonderfully quickly remedied, and long before the close of the year the garden had again been brought into a state of excellent order.

9. The sums provided in the budget for the maintenance of the garden both at Calcutta and Darjeeling were utilized in full; indeed, owing to the Accountant-General having found it necessary to charge directly against the garden budget allotments the cost of and freight on Europe stores sent to the Secretary of State from England, there will be a small technical deficit. This is the first occasion on which these charges have been directly deducted from the budget allotments; as no intimation that the step would be necessary was made by the Accountant-General till 11th March 1892, and as a statement of the full amount of the charges under this head was not communicated till 28th April 1892 (after the financial year had closed), it was impossible to apply to Government for an additional grant to meet the charges under this head before the close of the financial year, and equally impossible to regulate the expenditure for the year so as to meet the charges under this head, the existing allotment. The steps necessary for the adjustment of the accounts are now being taken. The revenue of the Darjeeling garden fell short of the estimate by Rs 42—a circumstance altogether to be accounted for by the visitation of locusts; the revenue of the Calcutta garden, on the other hand, somewhat exceeded the estimated receipts for the year.

10. Dr. King, Superintendent of the Garden, was absent on leave for two months and 26 days from 15th July; during his absence the duties of Superintendent were performed by Dr. Prain in addition to his own duties as Curator of the Herbarium. Mr. R. L. Proudlock has been Curator of the Garden during the year; Mr. G. T. Lane has been Assistant Curator, and the officers have worked well, as has the Head Clerk, Babu G. C. Datta, and the office staff under him.

11. Six appendices are attached, which show the issues and receipts of seeds, the issues and receipts of plants, and the accession and distribution of specimens.

APPENDIX I.

Statement showing plants received from 1st April 1891 to 31st March 1892.

FROM WHOM RECEIVED.	War-dian cases.	Boxes.	Number of plants.
Royal Gardens, Kew, London ...	3	2	1,140
Royal Botanic Garden, Peradenya, Ceylon	1	...	36
Botanic Garden, Durban, Natal	...	...	32
Ditto, Trinidad	...	1	15
Ditto, Buitenzorg, Java	2	...	96
Ditto, Saharanpur	...	1	677
Ditto, Darjeeling	2	27	3,860
Ditto, Bangalore	...	...	52
Victoria Garden, Bombay	3	...	77
Memorial Garden, Cawnpore	...	1	93
William Bull, Esq., F.L.S., Chelae a, London	...	1	43
Messrs. H. Low and Sons, Clapton Nursery, London	...	1	24
Messrs. F. Sander & Co., St. Alto, England	1	...	24
Agri-Horticultural Society, Calcutta	...	7	1
Ditto ditto, Lahore	...	...	347
Ditto ditto, Madras	...	...	700
Ditto ditto, Rangoon	...	...	3
M. Ridley, Esq., Government Agricultural Garden, Lucknow	...	...	500
La Martiniere School, Calcutta	...	...	2
Gwalior State Garden	...	...	410
Cossipore Practical Institution	V	...	7
B. Rose, Esq., Deputy Postmaster-General, Lucknow	...	...	560
C. A. B. Anderson, Esq., Kolaban	...	...	45
G. W. Bartlett, Esq., Calcutta	...	1	2
R. M. Blarney, Esq.	...	...	3
W. Boxall, Esq., Mandalay	...	6	254
Captain Elcote of the S.S. <i>Victory</i>	...	...	1
J. Gammie, Esq., Mungpoo	1	...	579
Hon'ble C. B. Garret, c.s., Calcutta	...	1	1
T. C. Huxley, Esq., Peradenya	...	4	30
J. L. Lister, Esq., Bhutan	2	...	176
Lieutenant E. J. Lugard, B.S.C.	...	1	3
E. H. Man, Esq., Port Blair	...	...	242
Linel de Niceville, Esq., Calcutta	...	...	1
R. Pantling, Esq., Mungpoo	...	...	7
J. Parkes, Esq., Bhutan	1	...	355
G. Mo. D. Peche, Esq., Moulmein	...	...	343
P. Schiller, Esq.	...	...	1
Dr. C. J. Simons, Assam	A'nana	...	15
J. S. Slater, Esq., Engineering College	...	...	65
Walter Stiefelagen, Esq., Assam	...	...	4
Colonel Waterhouse, Calcutta	...	1	1
G. Marshall Woodrow, Esq., Poona	Andamans	...	63
Collected by Mr. H. C. Broudhock at Mungpoo	...	...	218
Collected by Mr. H. C. Broudhock at Calcutta	...	...	337
Teendaria Dum-Dum, and Tanasserim	...	3	558
Ditto by Abdul Hak at Burma	...	...	26
Collected by Mr. H. C. Broudhock at Andamans	...	...	31
Ditto by Babooullah Jharam at Burdwan	...	5	638
Ditto , Balagarh	...	1	43
Babu S. P. Chatterjee, Calcutta	...	...	607
Shaik Sadar Mallee, thana Makooah	...	i	
"Unknown donors	...	...
Total	17	~65*	14,251

APPENDIX II.

Statement showing plants sent out from 1st April 1891 to 31st
March 1892.

To WHOM SENT.	War- dian cases.	Boxes.	Number of plants.
Royal Gardens, Kew, London ...	1	1	43
Imperial Garden, St. Petersburg, Russia	2	326
Royal Botanic Garden, Peradeniya, Ceylon...	"2	1	151
Botanic Garden, Janmica ...	3	"	78
Ditto, Singapore ...	1	1	113
Ditto, Durban, Natal ...	2	...	48
Ditto, Rangoon	1	6
Ditto, Ootacamund	1	114
Ditto, Saharanpur	3	206
Ditto, Darjeeling	1	18
Victoria Garden, Bombay	1	6
Memorial Garden, Cawnpore	3	97
Government House Garden, Calcutta	1
Belvedere Garden, Alipore	37
Zoological Garden, Alipore	2
His Excellency the Governor of Madras ...	"i	...	35
Military Secretary to His Excellency the Viceroy	100
G. Barclay, Esq.	"i	90
William Bull, Esq., Chelsea, London	8	46
J. Galloway, Esq., Kilmeny, Scotland	"i	50
M. Edouard Guillaume, 105, Boulevard Brune, Paris	1	38
T. C. Huxley, Esq, Peradeniya...	1	56
Sir George McLeay, Pendeli Court, England	8
S. M. Main waring, Esq., Natal ...	1	...	37
Dr. George Niven, Didsbury, Manchester	"2	J29
R. M. Redhead, Esq.	1	100
Madame Finet, Rue St. Germain, Paris	1	56
Mrs. Faraday Smith, Tunbridge, England	1	110
Colonel C. E. Stewart, Tabreez, Persia ...	"4	...	42
Messrs. Hugh Low and Sons, Clapton Nur- sery, London	16	2,800
Messrs. F. Sander & Co., St. Albans, England	6	1,695
Agri-Horticultural Society of India, Calcutta	500
Ditto ditto, Madras	1	6
Agri.-Horticultural Garden, Lahore	14	262
Ditto ditto, Lucknow	1	6
Chief Commissioner, Burma	1	19
Commissioner of Police, Calcutta	324
Deputy Commissioner, Rangamatti, Chitta- gong	1	224
Ditto, Jalpaiguri	7	100
Assistant Commissioner of Salt and Abkari Revenue, Ballasore	1	30
Director, Forest School, Dehra Dun	9	185
Collector of Murshidabad, Berhampore	7	158
Officiating Collector, Chittagong	3	26
Magistrate of Bhagalpur	3	60
Magistrate and Collector, Mymensingh	11	240
Subdivisional Officer, Pakaur	401
Ditto, Rampurhat	"7	180
Chairman, Sirajganj Municipality	5	120
Ditto, District Board, Noakhali	12	300
Cantonment Magistrate, Barraekpore	170
Magistrate and Chairman, District Board, Nadia	4	1,000
Vice-Chairman, District Board, Naogaon	1	25
Ditto, Local Board, ditto	2	50
District Engineer, Backergunge, Barisal	14	350
Ditto, District Board, Midnapore	40	1,000

APPENDIX II—continued.

TO WHOM SENT.	War-dian cases.	Boxes.	Number of plants.
Assistant Engineer, Central Board Works, Calcutta	400
Assistant Engineer, Alipore Subdivision, Dehika	...	52	1,000
Superintendent of Jail, Alipore	16
Superintendent of Jail, Midnapore	478
Superintendent of Jail, Midnapore	1,140
Ditto of Jalpaiguri	...	2	34
Superintendent, Tura Sub-Jail, Assam	...	1	17
Ditto, Barrackpore	34
Ditto; Lunatic Asylum	1,810
Ditto, Foundry	317
Ditto, Cossimbazar Shell factory	12
Ditto, Horticultural Institution, Cossimbazar	867
Ditto, ... & Co., Ltd., Calcutta	20
The Badli Golf Club, Calcutta	18
Manager, Bengal Mills, Garden Reach	300
The Master of the Mmt, Calcutta	200
Meteorological Department, Calcutta	50
Postmaster, Diamond Harbour	...	5	109
Deputy Postmaster-General, Lucknow	...	2	136
Ditto, ditto, Dinapore	...	4	80
Settlement Officer, Jalpaiguri	1,869
Soldiers' Gardens, Fort William	200
Dum-D	24
The Captain and Steward, Attica	126
Medical College Hospital, Calcutta	1,113
Howrah Hospital	3,450
La Marturito School, Calcutta	100
Christ Church School, Calcutta	400
St. Joseph's Church, Calcutta	100
Church of England, ... Mission	1,380
Calcutta	130
General Assembly's Institution	2,000
E. I. Railway, Howrah	...	6	140
E. B. S. Eailway, Sealdah	49
A. A. Apcar, Esq., Calcutta	19
C. A. B. Anderson, Esq.	12
T. B. Anderson, Esq.	6
T. J. Ayres, Esq., Howrah	...	1	50
Mrs. E. M. Bacon, Lahtpui	...	1	42
H. Bahr, Esq., Sonthal Colony	1
G. W. Bartlett, Esq., Calcutta	300
Miss Buchanan, Calcutta	3
Mrs. E. M. OOB, Calcutta	34
Dr. D. D. Cunningham, F.R.S., Calcutta	1
Rev. J. A. Elliott	4
Mrs. Fiddian, Howrah	...	9	220
J. Gammie, Esq., Mungpoo	55
W. G. R. Garrett, C.S., Calcutta	5
Mrs. Gillespie, Howrah	...	1	4
T. Grant, Esq., Sainthia	80
H. H. Hamilton, Esq., Calcutta	3
Mrs. Home, Calcutta	...	6	114
A. C. Hartless, Esq., Mungpoo	727
Dr. Hoemle, Calcutta	...	1	136
G. Huddleston, Esq., Khagore	120
Rev. H. B. Hyde, Calcutta	7
E. W. Jewett, Esq., Calcutta	2
J. Johnson, Esq., S.E. CWjtf	24
W. Kilburn, Esq., Calcutta

APPENDIX II—continued.

To WHOM SENT.	War- dian cases.	Boxes.	Number of plants.
Dr. George King, M.B., C.I.E. *	32
G. T. Lane, Esq.	16
Mrs. Leeson, Calcutta	24
C. S. Lethbridge, Esq., Calcutta	2
Prince Linben, Calcutta	2
C. Little, Esq., "	12
Mrs. Lyall, "	2,123
" Macdonell, Engineering College	752
Col. J. Mackesy, Tirhut	34
E. H. Man, Esq., Port Blair	...	1	34
C. Maries, Esq., Gwalior	...	34	249
J. W. Mawhood, Esq., Calcutta	...	5	2,500
Mrs. Maxwell, Howrah	100
M. Nahar, Esq., Azimganj	...	"3	24
M. Nod, Esq., Cachar	2
R. Pantling, Esq., Mungpoo	...	2	61
R. L. Proudlock, Esq.	2
Dr. P. Rahan, Khulna	...	"2	50
" D. O'C. Kaye, Calcutta	36
G. O. Ranger, Esq., Ballygunge	15
H. R. Reily, Esq., Cuttack	...	8	116
W. Roberts, Esq., Sulkeah Salt Golah	302
J. Robinson, Esq., Bhagalpur	...	13	326
P. C. Rodrygues, Esq., Bombay	...	1	6
Charles Rosa, Esq., Sibpur	200
Colonel H. Sadler, Calcutta	112
Mrs. Shaw, Engineering College	1,761
C. J. Simson, Esq., Mahmarra Tea Estate	1	4	82
J. S. Slater, Esq., Engineering College	962
Mrs. Goldsmith, Calcutta	125
E. M. Smith, Esq., Calcutta	8
Captain A. Symons, S.S. <i>Cathay</i>	...	5	218
A. Thompson, Esq., Jalpaiguri	...	1	4
J. H. Toogood, Esq., Engineering College...	508
Dr. C. J. Warden, Alipore	8
Mrs. Wicks, Howrah	11
R. Wimberley, Esq., Port Blair	...	1	15
W. T. Wood, Esq., Calcutta	6
George Yule, Esq., Jiagunge	...	2	25
Messrs. W. B. Mactavish & Co., Calcutta	...	8	164
The Hon'ble Nawab Asanullah Khan Baha- door, C.I.E., Dacca	...	9	150
Rai Bahadour Hari Dass Vehari Dass, Dewan Sahib of Jutiagadh, Bombay	...	1	236
Kumar Gogendra Narayan, M.R.A.C, Kuch Bihar	...	5	129
Chowdhoo Mahadeo Prosad, Nanpur	...	4	100
Pandit Shahoo Ram Sharup, Thakurdwara	...	1	6
Babu Soorjoo Deo Narain Sing, Bailegarh	69
" A. C. Banerjee, Allahabad	2
" A. T. Lahiri, Nadia	...	1	6
" B. B. Ghosh, Taki	...	1	71
" B. Sing Ray, Haripal	...	2	10
" D. N. Shaynia, Motihari	...	1	25
" G. C. Datta, Sibpur	36
" G. C. Haider, Serampore	51
" G. C. Roy, Baranagore	26
" H. S. Roy, Calcutta	7
" J. B. Bose, Comilla	7
" J. N. Haul, Ghosh pur	100
" K. C. Palit, Calcutta	104
M. N. Dey, Calcutta	10
N. S. Datta, Howrah	100

APPENDIX II—concluded.

TO WHOM SENT.	War. dian boxes.	Boxes.	Number of plants.
Babu N. C. Eoy, Calcutta	24
" N. C. Baral, Calcutta	771
" N. GK Mookerjee, Jamtara	195
" P. C. Ghosh, Calcutta	15
" E. C. Eoy, Eanchi	29
" E. Malleah, Howrah	28
" E. E. Ghosh, Dacca	2
" S. C. Bhuttacharjee, Santipur	9
" S. K. Eoy Chowdhury, Taki	16
" S. P. Chatterjee, Calcutta	50
" W. A. Sen, Eamkrishtopur	2
Essen Chundra Dass, Nurseryman, Manick-	21
tolla	
Gopal Chundra Samunta, Nurseryman,	300
Manicktolla	4
Hari Dass Dass, Nurseryman, Manicktolla	
Neyraai Charun Samanta, Nurseryman,	200
Manicktolla	2
Mahomed Shahib, Garden Beach	7
Munshi Tustemudin, Calcutta	24
Shaik Dewan Mallee, Thana Makooah	
Total	20	403	46,435

APPENDIX III.

Statement showing seeds received from 1st April 1891 to Su^t *March 1892.*

FROM WHOM RECEIVED:	Number of parcels or packets.
W. T. Thiselton Dyer, Esq., M.A., C.M.G. Director, Royal Gardens, Kew, London	131
Dr. Eegel, Imperial Garden, St. Petersburg, Russia	213
Koyal Botanic Garden, Perademya, Ceylon	16
Botanic Garden, Adelaide	1
Ditto, Brisbane	3
Ditto, British Guiana	2
Ditto, Bangalore	7
Ditto, Port Darwin	29
Ditto, Darjeeling	262
Ditto, Grenada	2
Ditto, Hongkong	7
Ditto, Jamaica	7
Ditto, Mauritius	12
Ditto, Mussoorie	1
Ditto, Eockhampton	2
Ditto, Saharanpur	30
Ditto, Singapore	1
Ditto, Trinidad	19
Ditto, Queen's Botanic Garden, Oawnpore	5
George H. T. Mayer, Esq., Memorial Garden, Oawnpore	6
G. Carstensen, Esq., Superintendent,	2
B ^A Ferdinand-Yon Mailer, r., ... Melbourne;	4
Senary To the Agri-Horticultural Society of India;	1
Sup ^C Sfndent, Agri-Horticultural Garden, Madras	152
F. Ditto Government Forests, School Circle, Western Provinces and Oudh, Dehra Dun	2

APPENDIX III—concluded.

FROM WHOM RECEIVED.	Number of parcels or packets.
Assistant Conservator of Forests, Darjeeling Division	1
Deputy Conservator of Forests, Dehra Dun Division	1
Forest Officer in charge, Chittagong Division, Rangamati	1
J. Gammie, Esq., Mun gpo	4
Signor T. Hanbury, F.L.S., La Mortola, Ventimigha, Italy	146
Mr. Kingdon, Madagascar	4
J. L. Lister, Esq., Kalimpong	8
Manager, Palm and Citrus Nursery Company, Santa Barbara, California	22
E. H. Mann, Esq., Port Blair	1
C. Maries, Esq., Gwalior	368
Messrs. Dammann & Co., Teduccio, Italy	13
Messrs. Reasoner Brothers, Royal Palm Nurseries, Manatu, Florida	29
Dr. David Prain	1
Colonel Pritchard	13
R. L. Proudlock, Esq.	1
Revenue and Agricultural Department, Government of India	1
Babu Bishumbhur Ghose, Taki	1
„ Nittanunda Mondul	3
Munshi Abdul Hok, Plant Collector	38
Unknown donor	—
Total	—

APPENDIX IV,

Statement showing seeds distributed from the Royal Botanic Garden during

TO WHOM SENT.	the year 1991-92- of reels or packets.
W. T. Thiselton Dyer, Esq., F.R.S., C.M.G., Director, Royal Gardens, Kew, London	96
Dr. Eegel, Imperial Garden, St. Petersburg, Russia	102
Royal Botanic Garden, Peradeniya, Ceylon	19
Botanic Garden, Buitenzorg, Java	5
Ditto, Darjeeling	235
Ditto, Port Darwin	16
Ditto, and Domain Garden, Melbourne	11
Ditto, Ganesh Khund, Poona	1
Ditto, Grenada	10
Ditto, Rockhampton	5
Ditto, Saharanpur	3
Ditto, Singapore	4
Memorial Garden, Cawnpore	2
Taj Garden, Agra	5
Victoria Garden, Bombay	1
Nizam's Government Gardens, Aurangabad	2
Baron Ferdinand Yon Mueller, F.R.S., Melbourne	19
Herr Professor Rawenhoff, Botanic Garden, University, "Utrecht	69
Secretary to the Agri-Horticultural Society of India, Calcutta	3
Ditto # ditto, Rangoon	2
Superintendent, Agri-Horticultural Garden, Lahore	4
Ditto, ditto, Lucknow	16
Ditto, ditto, Madras	3
Ditto, Bhagalpur Jail	1
Ditto, Intermediate Jail, Bogra	1
Ditto, Comilla Jail	1
Ditto, Motihari Jail	1
Ditto, Patna Jail	1

APPENDIX rV'—continued.

To WHOM SENT.	Number of parcels or packets.
Assistant Jailor, Noakhali Jail	1
Pandit Shadookwa Eao, Assistant Superintendent, wara	2
Private Secretary to	42
	112
Lieutenant Colonel "Lord William Beresford, C.I.E., Military Secretary to the Viceroy	3
Mrs. Betts, 116, Kipon Street, Calcutta	12
to His Highness Alipore	1
Sir W. Bowman, F.R.S., Jodhpur, India	98
University, Glasgow	54
Professor Bower, F.B.S., Calcutta	48
Public Works	32
Department, Ghakradharpur	49
H. Oloete, Esq., Writers' Buildings, Calcutta	47
Brigadier-General H. Collet, C.B. S.W. ^ g --mla	187
Lieutenant-Colonel, Intelligence ^ ry, ^ po ^	47
Records and Agriculture,	25
Rangoon	2
Deputy Conservator of Forests, Buxa Subdivision, Buxa Duar, Jalpaiguri	1
Forest Officer in charge, Chittagong Division, Chitta-	1
gongr	1
Forest Officer, Port Blair, Andamans	1
District Forest Officer, Bellary, Madras	1
Ditto, Chingleput, Madras	1
Ditto, Nellore, Madras	2
District Engineer, Bhagalpur	1
Ditto, Bahga	8
Ditto, Raugpur	1
Executive Engineer, Eastern Bengal State Railway,	12
	1
	1
Overseer, District Board, Sirajganj	37
	190
Department, Khulna	9
Konigl. Botanisches Museum, Berlin	3
Esq., Kanity, Vizagapatam	2
Director, Forest School,	75
DehraDun	90
J. Gammie, Esq., Mungpoo	5
Robert Philip Heilgers, ^ q-, to P ^ l ^ q J Eoyal	1
Austro-Hungarian Consul, Calcutta	1
Prine, Paris	1
outh	1
Malabar, Madras	1
James Inglis, Esq., Sydney, Australia	1
Rev. J. C. Inglis, Mainpuri	4
Inspector, Salt and Abkari	166
Kevenue, Vizaga-	43
patam	50
The Acting Imperial and Royal Austro-Hungarian	2
utta	59
McKendrick, F.R.S., University,	19
Glasgow, Scotland	4
Rev. A. Logsdail, S. ^ » ^	4
Singhbhum	27
Esq., Natal	
The Duthie Park, Aberdeen	
C. Maries, Esq., Gwahor	
Messrs. Kilburn and Co ^ Calcutta	
Clapton Nurs	
London	
h and Co, Calcutta	

APPENDIX IV—concluded.

To WHOM SENT.	dumber of parcels or packets.
Messrs: Williamson, Magor and Co., Calcutta	10 j
„ Stanley, Price and Co., Calcutta ...	g m
„ J. P. Williams and Bros., Heneratgoda ...	
D. MacNair, Esq., Lock End, Kodikanal, Madura	g4
District, Madras Presidency	26
Officer in medical charge, Station Hospital^ Pachmarha	
The Medical Officer in charge, Station Hospital, British	^
Troops, Barrackpore ...	\
Rev. O. Pakenham, Longford Lodge, Ireland	^
G. T. Paschould, Esq., Deohri, Fyzabad ...	
F. W. Phillips, Esq., in charge, Public Garden,	g
Allahabad ...	
Hugh C. Prance, Esq., District Superintendent of	^
Police, Shwebo, Burma ...	53
Mrs. Prain, Sureil, Kurseong...	4\$
The Garrison Quarter-Master, Fort William, Calcutta	
R. Milne Redhead, Esq., Springfield, Seedley, Man-	gl
Chester ...	/
Mr. Robinson, Howrah ...	j
H. J. Roberts, Esq., Calcutta ...	
Kinton Stevens, Esq., Palm and Citras Nursery, Call-	^
ifornia ...	
R. Thieneniam, Esq., Gardener to the Hon'ble George	19 j
King, Queensland, Australia ...	3
Captain Thwaytes, Moulmein, Burma ...	
Surgeon-General W. Walker, M.D., Claremont, Alleyn	^
Park ...	j±
M. R. Weld, Esq., Kurnool, Madras ...	g
G. Marshall Woodrow, Esq., College of Science, Poona	^
Dr. M. N. Ganguli, Medical Practitioner, Cawnpore ...	^
Pandit T.J. Narsing Row, Court Road, Mangalore ...	^
N. Ramalinga Nayager, Esq., Madras ...	
Shariff Salemahamud, Esq., Commercial Agent, Juna-	^
gudah State, Kathiawar ...	j
Rai Surj Mull Jhoonjhoonwallah Bahadur, Calcutta ...	
Babu Avinas Chundra Banerjee, Assistant Surgeon,	1g
Allahabad ...	g
Babu Abinash Chundra Sen, Sibpur ...	
„ Bipin Behari Chattopadhyay, Medical Officer,	^
Niduta Charitable Dispensary ...	i
Babu Bissumbhur Ghose, Taki ...	20
„ Dabendra Nath Basu, Sibpur ...	^4
„ Gopal Chundra Datta, do. ...	5
„ Jadub Chundra Biswas, Calcutta ...	g
„ Nimai Churn Dey, Sibpur ...	
„ Protap Narain Singh, retired Deputy Magistrate,	^
Bankura ...	
Total ...	2,972

APPENDIX V:

List showing contributions to the Herbarium during 1891-9^*

Herbarium, Royal Gardens, Kew	2 300
Dr. Henry's Chinese plants	1 763
Mr. A. E. Pratt's Tibetan plants	1 777
Baron Sir P. Yon Mueller, K.C.M.G., F.R.S., Melbourne ;	
Australian plants	'gj7
Mr. C. Pringle's Mexican plants	gQQ
Mr. H. N. Ridley, Singapore; plants from Pahang,	498
Malay Peninsula	^4
Saharanpur Herbarium; plants of Kashmir, etc.	25°
General Sir H. Collett, K.C.B.; plants of Assam, etc.	25^
J. S. Gamble, Esq.; plants of Jaunsar-Bihar	ftp!
J. H. Laoe, Esq.; plants of Bashahr	JJJ
W. A. Talbot, Esq.; plants of Canara	

APPENDIX V—concluded.

Dr. A. Alcock, Her Majesty's Indian Marine <i>Investigator</i> ;	300
— Laccadive plants	334
Dr. J. J. Wood; plants of Chota Nagpur	64
Dr. L. A. Waddell; Sikhim plants	44
Captain Fulton; plants of Upper Burma	212
Mr. S. E. Peal; plants of Upper Assam	128
Mr. E. Heawood; plants of the Duars	56
Mr. T. Cooke, C.I.E.; plants of Scinde	
hardened collectors-	
Mr. Pantling; orchids of the Sikhim Himalaya	1,418
Dr. Prain; Narcondam, Barren Island, Nicobars, etc.	930
Ditto; Chota Nagpur	500
Ditto; Jaintea Hills	320
Andamans collections, under supervision of	
E. H. Man, Esq.	2,300
Assam collections; Native collectors	1,019
Burma collections; Mr. Proudlock, Tenasserim	520
Do. do; Munshi Abdul Hok	1,974
Do. do; Dr. Leslie's collectors	33
	<hr/> 9,014
Total	<hr/> 19,105

APPENDIX VI.

List showing distribution of authentically named Herbarium Specimens during 1891-92.

Herbarium, Royal Gardens, Kew	830
British Museum, London	537
Saharanpur Herbarium	281
Royal Botanic Garden, Edinburgh	309
Ditto ditto, Peradeniya	319
Botanic Garden, Singapore	319
Government Central Museum, Madras	219
College of Science Museum, Poona	247
Government Museum, Perak	406
J. S. Gamble, Esq., Director, Forest School, Dehra Dun	199
Dun	277
C. Curtis, Esq., Forest Herbarium, Penang	102
W. A. Talbot, Esq., Forest Office, N. Canara	332
Herbarium, Imperial Gardens, St. Petersburg	263
Ditto, Royal Garden, Buitenzorg	404
Smithsonian Institution, Washington, U.S.A.	257
Imperial Museum, Vienna	204
Botanic Garden, Vienna University	436
Royal Botanical Museum, Berlin	103
Ditto ditto, Florence	266
Herbarium, Jardin des Plantes, Paris	519
Royal Herbarium, Leiden	263
Herbarium of the University of Cambridge	195
Ditto ditto of Upsala	168
Ditto ditto of Utrecht	527
Ditto ditto of Melbourne	206
Ditto ditto of Aberdeen	188
Herbarium of Owen's College, Manchester	461
M. A. de Candolle, Geneva	269
Signor O. Beocari, Florence	774
Gustav Mann, Esq. (<i>Ferns</i>)	625
Dr. V. F. Brotherus, Helsingfors (<i>Mosses</i>)	
Total	<hr/> 10,505

D. PRAIN, M.B., *Surgeon, i.M.s.*,

Acting Superintendent, Royal Botanic Garden, Calcutta.

n • • • *i* *. TW. *i* from thence he traversed the V/1-KI
 Gammie returned to the range, visiting the Ghoja, Y[^] — Zoy-lap-la[?] — Tista bridge.
 nna plantation by the military road, from Gh[^] of which he
 Hrv Pa[^] ng's collections consisted exclusively of orchids, of
 has spared most admirable drawings which I trust it[^] J[^] J[^] Z
 possible to publish. The collections from the Andaman* have been made by
 two Burmese, who have worked under the supervision of Mr. *[^] an ** £
 whose efforts to help in the exploration of these islands have been most
 interested and laborious, and to whom this garden is very deeply de[^]-
 Native collectors were sent as usual to Assam and Burma, and they brought
 back fairly good collections of common plants. Owing to my absence on
 furlough during seven months of the year, no botanical tour was made either
 ^ D[^] S[^] P[^] l[^] S[^] S[^] during the year D, 11 ^ ^ *[^] ^ ^ TM ^
 Bombay Natural History Society a paper on the botany of the Lacc
 founded on a collection of plants made in these islands by A. Alcock,
 Surgeon Naturalist to the Indian Marine S[^] ^ r[^] e[^] y[^] S[^] ^ y[^] ^ Z[^] f[^] £
 Journal of the Asiatic Society, and Barren Island, based on collections
 made in these islands by
 Dr. Prair

flavescens; while in Hooker's *Icones plantarum*
 he published descriptions and figures of three new species of plants. The
 fourth volume of the Garden Annals was under preparation and it will not be ready for publication until the current year. A paper giving
 progress was also made in the preparation of the fifth volume. A paper giving
 a detailed systematic account of all the members of the natural family of
Anonaceae indigenous to British India was published by myself in the Journal
 of Asiatic Society of Bengal.

best preventive of the ravages of the book maggot.
 7. *Interchange of plants and seeds.* The re attached
 as appendices to this report. They show total of 1[^] 8[^] g[^] h[^] r[^] f[^] ^ ^
 packets of seeds received, and of 4[^] i[^] o[^] y[^] plants auo, v, *[^]
 out during the year.

first
 during the remaining three (while
 G. A. Gammie acted as its Curator. The garden escaped locusts, but suffered
 slightly from hail.

9. The budget allotments both of the Calcutta supplementary
 gardens were spent almost to the full, as the estimated revenue for
 Ks. 5,000 given for improvements in the garden and that for the Royal
 the Lloyd Botanic Garden, Darjeeling, was Ks. 1,000. This total sum of
 Botanic Garden Calcutta was Bs. 1,000; total Ks. 1,000. This total sum of
 Ba. 1,900 was revised by the revenue officer to
 Rs. 2,000, which sum was accepted by the Darjeeling
 the two gardens for 1892-93. The actual realization for the year
 garden Rs. 785 and for the Calcutta garden Rs. 1,215.

10. I was absent in Europe on furlough and my duties were performed during my absence by
 and my duties were performed during my absence by
 B. L. Proudlock was Curator, and Mr G. Kennedy
 Calcutta garden during the year. They performed their respective duties to
 and G. Gammie in the Darjeeling garden. The head-writer, Babu G. C.
 the satisfaction both of Dr. Prām and Datta, and the office and garden staff have a
 Datta, and the office and garden staff have a

11. Details of the receipts and of the Herbarium specimens will be found in the six tabular
 Herbarium specimens will be found in the six tabular
 as appendices to this report.

APPENDIX L

*Statement showing plants received from 1st April 1892 to 31st
March 1893.*

FBOM WHOM RECEIVED.	War- dian cases.	Boxes.	Number of plants.
Royal Gardens, Kew, London ...	2	5	3,215
Botanic Garden, Durban, Natal ...	2	36	36
Ditto, Port Darwin ...	••	•••	22
Ditto, Singapore ...	••	i	36
Ditto, Saharanpur ...	••	2	354
Ditto, Darjeeling ...	••	15	3,1H
Memorial Garden, Cawnpore ...	••	1	76
Messrs. John Laing and Sons, Forest Hill, London ...	•••	2	78
Messrs. Hugh Low and Co., Clapton Nursery, LOT, (1, 6, 7) ...	••	2	58
Messrs. F. Sander & Co., St. Albans, England ...	•••	2	31
Agri-Horticultural Society of India, Calcutta ...	••	••	60
Ditto Garden, Lahore ...	••	2	62
Zoological Garden, Alipore ...	••	••	12
Deputy Conservator of Forests, Sunderbuns ...	••	••	230
Executive Engineer, Balasore ...	••	1	1
Gwalior State Garden ...	••	5	186
C. A. B. Anderson, Esq., Talipara, Jalpaiguri ...	1	6	461
H. G. Batten, Esq., Mergui ...	1	1	259
Hon'ble J. Buckingham, C.I.E., Assam ...	*•	••	2
Sir Henry Collett, K.C.B., Peshawar ...	••	••	9
Dr. D. D. Cunningham, F.R.S. ...	••	••	204
J. Gammie, Esq., Mungpoo ...	••	6	469
G. Barton Groves, Esq. ...	••	••	6
C. Little, Esq., Calcutta ...	••	••	1
E. H. Man, Esq., Port Blair ...	8	••	617
J. Parkes, Esq., Bhutan ...	••	••	777
G. McD. Peohe, Esq., Moulmein ...	1	6	614
J. Phillips, Esq., Allahabad ...	••	••	47
J. S. Slater, Esq., Engineering College ...	••	••	12
Robert V. Woods, Esq. ...	1	••	18
Colonel Wylie, c.s.i., Khatmandu, Nepal ...	••	••	92
Collected by Dr. David Prain at Shillong ...	#•	••	6
Ditto by Mrs. Prain in Assam ...	••	••	650
Ditto by Abdul Hook in Burma ...	••	5	1,640
S. P. Chatterjee, Calcutta ...	••	••	101
Shaik Sadar Mallee, Thana Makooah ...	••	••	25
Total ...	16	62	13,585

APPENDIX II.

*Statement showing plants sent out from 1st April 1892 to 31st
March 1893.*

TO WHOM SENT.	War- dian cases.	Boxes.	Number of plants.
Boyal Gardens, Kew, London ...	2	1	64
Botanic Garden, Buitenzorg, Java ...	1	# " 1	24
Ditto, Ootacamund ...	••	••	143
Ditto, Bangalore ...	••	1	89
Ditto, Saharanpur ...	••	2	50
Ditto, Darjeeling ...	••	1	40
Memorial Garden, Cawnpore ...	••	5	125

APPENDIX II—*continued.*

TO WHOM SENT.	War- dian cases.	Boxes.	Number of plants.
Government House Garden, Calcutta	130
Belvedere Garden, Alipore	145
Zoological Garden, Alipore	1,285
Secretary, Board of Revenue, Calcutta	4
Sir Alexander Arbuthnot, India Office, London	...	1	74
George W. W. Barclay, Esq.	...	1	87
Sir Edward Durand Bart., C.B.	1	...	8
Lord Marcus Beresford, London	...	1	228
The Eight Honourable Sir Mountstuart Grant Duff	...	1	89
Monsieur le Gouverneur des Etablissements Francois des les Indes, Pondichery	1	...	26
Professor M. M. Hartog, Queen's College, Cork, Ireland	...	1	57
W. G. Head, Esq., Crystal Palace, London	1	...	19
W. D. P. Keppel, Esq.	1	...	24
D. Low, Esq., Brindisi	1	...	33
8. M. Mainwaring, Esq., Natal	1	...	142
Andrew Murray, Esq.	...	1	96
Dr. George Niven, Didsbury, Manchester	...	1	131
F. M. Scargill, Esq., York	...	1	65
Messrs. Hugh Low and Co., Clapton Nursery, London	...	10	2,500
Agri-Horticultural Society of India, Calcutta	385
Ditto Garden, Lahore	...	22	336
Ditto ditto, Lucknow	...	2	50
Chief Commissioner of Assam	...	1	12
Settlement Officer, Sikkim	...	1	31
Deputy Commissioner, Mergui	1	...	43
Chief Commissariat Officer, Presidency Command	2,126
Sergeant Gates, Commissariat Department, Calcutta	5
Magistrate of Howrah	1,200
Chairman, District Board, Mymensingh	...	15	302
Vice-Chairman, Station Committee, Silchar	...	1	25
Subdivisional Officer, Buxar	...	1	15
District Engineer, Backergunge, Barisal	...	17	425
Ditto, Dinajpur	...	12	300
Ditto, Faridpur	...	24	600
Ditto, Jalpaiguri	...	2	50
Ditto, Khagole, Patna	...	1	36
Ditto, 24-Parganas	450
Executive Engineer, Buxar	...	80	2,000
Ditto, Contai	...	4	100
Assistant Engineer, Central Road Works, Calcutta	780
Ditto, Purulia subdivision, Asansol	...	104	2,500
Overseer, Calcutta Municipality, Calcutta	120
Superintendent of Jail, Alipore	2,943
Ditto, Dacca	...	7	166
Ditto, Midnapore	300
Ditto, Gorakhpur	...	4	100
Ditto of Police, Alipore	70
Ditto, Indian Museum, Calcutta	402
Ditto, Lunatio Asylums, Alipore	64
Ditto, Gunpowder Factory, Ishapur	36
Ditto, P. and O. Company, Calcutta	800
Manager, Bengal Coal Company, Limited, Barakar	...	1	25
Ditto ditto, Eaniganj	...	1	25
Ditto Khooldeah Colliery, Giridih	...	2	50

APPENDIX II—continued.

To WHOM SENT.	War- dian cases.	Boxes.	Number of plants.
Manager, Laikdee Colliery, Barakur	2	50
Ditto, Sodepur Coal Company, Limited, Sitarampur	1	25
Soldiers' Gardens, Fort William	4,140
Ditto, Barrackpore	100
Ditto, Alipore	56
Medical College Hospital, Calcutta	100
Howrah Hospital	534
Deputy Director, Her Majesty's Indian Marine Dockyard, Kidderpore	24
Bible School, Howrah	100
Christ Church School, Calcutta	100
Chaplain of Howrah	50
Sir Edward Bradford, London	21
Church of England Zana Mission Society, Calcutta	100
St. John's Church, Calcutta	50
La Martiniere School, Calcutta	42
Ravenshaw College, Cuttack	4	95
General Assembly's Institution	150
East Indian Railway, Howrah	200
Eastern Bengal State Railway, Sealdah	100	2,000
J. S. Alley, Esq., Bhandara	1	3
C. A. B. Anderson, Esq., Talipara, Jalpaiguri ...	1	5	88
A. A. Apar, Esq., Calcutta	8
A. A. Apar, Esq., Sibpur Jute Mill	12
Colonel Baird, R.E., F.R.S., Calcutta Mint	66
J. W. Barnett, Esq., Tellecherry	1	10
Mrs. Betts, Calcutta	25
Revd. G. R. Broadhead, Calcutta	110
Rudston Brown, Esq., Garul, Tirhut	1	12
Hon'ble J. Buckingham, C.I.E., Assam	4	101
R. J. Cave, Esq., Purnea	1	10
J. Connor, Esq., Government Docks	6
J. Cooke, Esq., M.A., Poona	1	6
Miss Criper, Calcutta, for bazar	100
H. D. Christian, Esq., Monghyr	4	105
Dr. D. D. Cunningham, M.D., F.R.S.	89
F. Curtis, Esq., Bhagalpur	4	100
A. Darkins, Esq., Calcutta	3
Miss E. F. Garlah, Raipur	1	2
G. Barton Groves, Esq.	12
J. A. Gammie, Esq., Mungpoo	12	493
C. B. Garret, Esq., as., Alipore	85
Mrs. Gillespie, Howrah	44
Revd. J. A. Graham, M.A., Kalimpong	1	6
W. Graham, Esq., Serampore	250
Miss E. M. Hall, Agurpara	14	300
„ Hamilton, M.B., Calcutta	3
Captain Henderson, S.S. <i>Golconda</i> ...	1	...	3d
Dr. Hoernle, Calcutta	945
C. Ingram, Esq., Tavoy ...	1	...	34
Mrs. Johnson, Cachar	10	250
H. E. Rear Admiral Kennedy, Trincomallee	6	85
Dr. George King	1
W. A. Lee, Esq., Sibpur	1/58
C. Little, Esq., Calcutta	1
Revd. A. Logsdail, Chaibassa	1	10
A. Macdonell, Esq., Engineering College	8
E. H. Man, Esq., Port Blair ...	10	...	392
Gwalior State Garden	503
Mrs. Maxwell, Howrah	3	24
Captain Marr, S.S. <i>City of Bombay</i>	2	29
R. Pantling, Esq., Mungpoo

APPENDIX II—*continued.*

To WHOM SENT.	War. dian cases.	Boxes.	Number of plants.
G. McD. Peche, Esp., Moulmein	...	1	43
T. Pereira, Esq., Calcutta	1
James Peter, Esq., Monoomookh	...	"3	60
Mrs. Prain	...	1	20
Kevd. J. Pratt, Midnapore	...	"1	11
E. L. Proudlook, Esq.	32
S. E. Rita, Esq., Jaintapur, Cuttack	...	"1	40
W. Eoberts, Esq., Salt Gollah, Sulkea	30
J. Robinson, Esq., Bhagalpur	...	11	270
Charles Ross, Esq., Sibpur	8
Mrs. Sandell, Calcutta	70
„ Scully, do.	401
„ Shaw, Engineering College
J. F. Simmonds, Esq., Howrah
A. Simson, Esq., Calcutta	10
J. S. Slater, Esq., Engineering College	138
Talangi Chinaman, Calcutta	15
Eevd. H. Uffman, Purulia	...	9	200
Sergeant R. D. XJrquhart, Calcutta Mint	2
W. Walker, Esq., Mahamarrah Tea Plan- tation, Assam	...	2	26
Colonel J. W. Waterhouse, Calcutta	282
Mrs. H. Wicks, Howrah	7
G. Marshall Woodrow, Esq., M.A., Poona	...	1	15
E. V. Woods, Esq.	...	1	28
Colonel Wylie, c.s.i., Khatmandu, Nepal	...	1	94
Messrs. Burn and Co., Howrah...	14
„ Macknight Anderson & Co, Calcutta	...	4	70
„ W. B. Mactavish & Co., Calcutta	...	6	78
„ Thomson & Co., Calcutta	140
Eajah of Khaira	2
Eajah Mohimaranjan Eoy Chowdhuri Baha- dur, Eaja of Kakina	...	16	309
Prince Noorudin Khan, Bussapaglah	8
Linbill, Calcutta	6
Eai Prossunno Coomer Banerjee, Bahadur, Calcutta	1,870
Set Narainjee Dwarkdas, Malabar Hill, Bombay	...	4	76
Mossrs. Qunputral Luchmiuarayan, Delhi	...	1	27
Babu B. B. Ghosh, Taki	10
„ B. B. Kuper, Burdwan Eaj estate	...	2	14
„ B. G. Misra, Mankur	7
„ D. N. Bose, Sibpur	48
„ F. D. Eoy, Howrah	100
„ G. C. Datta, Sibpur	20
„ G. C. Halder, Serampore...	30
„ H. C. Mitra, Cossipore	218
„ K. C. Palit, Calcutta	295
„ K. G. Missra, Burdwan	13
„ K. P. Dass, Caloutta	18
„ L. M. Mookerjee, Sibpur Library	100
„ L. M. Nundey, Calcutta	4
„ M. C. Ghosh, Barisal	8
„ N. C. Chatterjee, Daulatpur	...	1	4
„ N. P. Datta, Howrah	100
„ P. C. Koy Chowdhoory, Taki	3
„ E. B. Roy, Serampore	5
„ E. Malleah, Howrah	5
„ E. T. Eoy, Calcutta	19
„ S. C. Ghosh, Calcutta	506
„ S. Deo Narayan Sing, Baligarh	...	8	294
„ S. P. Chatterjee, Calcutta	126
„ S. P. Ghosh, Calcutta	500

APPENDIX II—concluded.

TO WHOM SENT.	War-dian cases.	Boxes.	Number of plants.
Babu T. C. Gossamy	10
Munshi Wahidbux, Calcutta	14
Maulvi Ahmed Khan, Bahadur, Calcutta	4
„ Murfoodul Hock, Calcutta	3
Syed Abdool Sovan Chowdhury, Bogra	1	40
Shaik Sader Malee, thana Makooah	12
„ Ismile Malee	1
Pollaram Dass, Malee, Alipore	2
Hurnam Dass, Garden Reach	2
Mayadhur Ooriah, Sibpur	2
Grand Total ...	26	583	43,619

APPENDIX III.

Statement showing the receipts from April 1892 to 8 March 1893.

FROM WHOM RECEIVED.	Number of parcels or packets.
W T Thiselton Dyer, Esq., F.R.S., C.M.G., Director, Royal Botanic Gardens, Kew, London...	7
Director, Imperial Botanic Gardens, St. Petersburg	4
Disol Royal Botanic Gardens, Peradeniya, Ceylon	2
Botanical Department, Antigua	1
Botanic Garden, British Guiana	2
Bangalore	5
Ditto, Grenada	3
Ditto, Hongkong	10
Ditto, Jamaica	5
Ditto, Saharanpur	61
Ditto, Singapore	8
Ditto, Trinidad	7
Ditto, Queensland	3
Ditto, Fiji	1
Ditto, Buitenzorg	4
Ditto, Durban	2
Ditto, Floriana	3
Ditto, Port Darwin	3
B Sir Ferdinand Von Mueller, K.C.M.G., F.R.S., University, Melbourne, Australia	17
Superintendent, Horticultural Garden, Luck	5
Ditto, Agri-Horticultural Society,	2
Ditto, ditto, Lahore	1
Ditto, ditto, Lahore	460
Ditto, Government Gardens, Cawnpore	1
J. Skyes Gamble, Esq., Conservator of Forests, School Circle, North-Western Provinces and Oudh, Dehra Dun	1
Messrs. Begg, Dunlop & Co., Calcutta	2
W. Botting Hemsley, London	12
Dr. T. Cooke, C.I.E., College Bombay	1
J. Vivett-Carnac, Esq., C.I.E., Ghazipur	1
J. Esq., Government Cawnpore	4
Mungpoo	257
G. A. Gammie, Esq., Mungpoo	1
R. L. Heinig, Esq., Sunderbans, Bengal	3
H. H. Hildebrand, Esq., Fort Stedman, Shan Hills	1
Messrs. Kilburn & Co., Calcutta	2
J. L. Lister, Esq., Pashok, Darjeeling	1
C. Maries, Esq., Superintendent, Gwalior State Garden	1

APPENDIX III—concluded.

FROM WHOM RECEIVED.	Number of parcels or packets.
W- C. Macpherson, Esq., c.s., Officiating Director of Land Records and Agriculture, Bengal...	6
E. H. Man, Esq., C.I.E., Port Blair ...	7
Dr. A. Milne ...	1
M. Naudin, Villa Thuret, Antibes ...	4
Messrs. Reasoner Bros., Manatee, Florida ...	3
A. F. Simson, Esq., Calcutta ...	1
G. F. Wilson, Esq., F.R.S., Heather Bank, Weybridge Heath, near London ...	35
The Opium Agent, Bihar, Bankipore ...	1
Officiating Civil Medical Officer, Hazaribagh ...	1
The Deputy Conservator of Forests, Darjeeling Divi- sion... ..	1
Academy of Sciences, California, San Francisco ...	6
Messrs. Dammann & Co., San Giovanni, Italy ...	48
Abdul Khalil, plant collector, Burma ...	IT
Munshi Abdul Hook, plant collector, Burma ...	24
Bishumbhur Ghosh, Dakhinraripara, Taki ...	2
Pundit Balaba Balaji Nene, medical practitioner ...	1
Dadar Alii, Poona City, Bombay Presidency ...	2
Shaik Babuoollah, plant collector, Andamans ...	2
Total ...	<u>1,061</u>

APPENDIX IV.

Statement showing seeds distributed from the Royal Botanic Garden during the year 1892-98.

TO WHOM SENT.	Number of parcels or packets.
His Excellency the Viceroy ...	201
W. T. Thiselton Dyer, Esq., F.R.S., C.M.G., Director, Royal Gardens, Kew, London ...	406
Director, Imperial Botanic Garden, St. Petersburg, Russia ...	155
Royal Botanic Garden, Edinburgh ...	240
Ditto, Peradeniya ...	11
Director, Royal Botanic Garden, Glasnevin, Dublin ...	222
Ditto, Botanic Gardens, Adelaide ...	4
Ditto, ditto, Athens ...	1
Ditto, ditto, Basel ...	1
Ditto, ditto, Berlin ...	3
Ditto, Botanical Department, Brisbane... ..	3
Ditto, Botanic Garden, Buitenzorg ...	13
Ditto, ditto, Cambridge ...	4
Ditto, ditto, Dublin ...	2
Ditto, ditto, Missouri ...	3
Ditto, ditto, Florence ...	2
Ditto, ditto, Malta ...	2
Ditto, ditto, Melbourne ...	2
Acting Director, Forests and Gardens, Colony of Mauritius ...	5
Director, Botanic Garden, Oxford ...	2
Ditto, Gardens and Public Parks, Cape Town ...	2
Ditto, Botanic Gardens, Pamplemousses, Mauritius ...	2
Ditto, ditto, Grenada ...	3
Ditto, ditto, Sydney ...	4
Ditto, ditto, Trinidad ...	5
Ditto, Colonial Botanic Garden, Wellington ...	2
Ditto, Vienna... ..	2
Ditto, Botanical Department, Northern Saharanpur ...	India, 225
Director, Imperial Forest School, Dehra-Dun ...	2

APPENDIX IV—*continued.*

To WHOM SENT.	Number of parcels or packets.
Director, Department of Public Gardens and Plantations, Jamaica	8
Director, Department Jard. Botan. Rio de Janeiro, Brazil	2
Ditto, de Jardin Bot., Madrid, Spain	1
Ditto, de Jardin Bot., Lisboa	1
Assistant Director of Agriculture, Government of Madras, Madras	2
Direktor, des bot. Garten, Tjuniversitat, Austria	1
Ditto, ditto, Miinchen, Germany	1
Ditto, Kgl Bot. Garten, Berlin	154
Ditto, des bot. Garten, Bonn, Germany	1
Ditto, ditto, Breslau, Germany	1
Ditto, Bot. Garden, Darmstadt, Germany	1
Ditto, Bot. Garden, Dresden	1
Ditto, Bot. Garten, Strassburg	1
Directeur, Jardin Botanique de l'Etat, Bruxelles	49
Ditto, du Jardin Botanique, Geneve	1
Ditto, du Jardin Botanique, Lyons	1
Ditto, Jardin des Plantes, Paris	3
Direotore, dell' Orto Botanico, Firenze	1
Ditto, dell' Orto Botanico, Palermo... ..	3
Ditto, dell' Orto Botanico, Napoli	1
Ditto, dell' Orto Botanico, Eoma	1
Secretary, Agri-Horticultural Society of India, Calcutta	3
Ditto, ditto, Madras	3
Ditto, ditto, Rangoon	1
Secretary and Manager, Acclimatisation Society's Gardens, Brisbane	4
Superintendent, Duthie Park, Aberdeen	164
Ditto, Taj and Government Garden, Agra	4
Ditto, Nizam's Government Gardens, Aurangabad	1
Superintendent, State Garden, Bangalore	3
Ditto, Victoria Gardens, Bombay	1
Ditto, and Government Botanist, British Guiana	4
Superintendent, Memorial Garden, Cawnpore	4
Ditto, Cossipore Practical Institution of Horticulture, Floriculture, and Agriculture, Cossipore	31
Superintendent, Botanic Garden, Ganeshkhanda	1
Ditto, ditto, B obart Town, Tasmania	2
Ditto, ditto, Hongkong	3
Ditto, Botanic and Afforestation Department, Hongkong	2
Superintendent, Agri-Horticultural Garden, Lahore	2
Ditto, Botanical Department, Leeward Islands	7
Ditto, Horticultural Garden, Lucknow	9
Ditto, Agri-Horticultural Society's Garden, Moulmoin	2
Superintendent, Agri-Horticultural Society's Gardon, Eangoon	4
Superintendent, Botanic Garden, Rockhampton	4
Ditto, ditto, Saharanpur	149
Ditto, ditto, Singapore	17
Ditto, ditto, Singapore	16
C. Maries, Esq., Gwalior	2
Curator, Botanioal Stations, Antigua	221
Ditto, Lloyd Botanic Garden, Darjeeling	4
Ditto, Botanic Gardens, Durban	4
Ditto, Botanical Station, Fiji	2
Ditto, Botanic Garden, Glasgow	2
Ditto, Botanical Station, Lagos	2
Ditto, University Botanic Garden, Oxtord	22
Ditto, Botanic Gardens, Port Darwm	2
Ditto, Botanioal Station, St. Vmcent	2
Colonial Botanist, Botanical Department, Bnsbaue	2
Government Botanist, Botanic Gardens, Melbourne	2
M. Adoluhe van don HamlG, St. Maurice Lille, France	1
Babu Bijoy Upendra Bose, Paikpara Nursery	1

APPENDIX IN—continued.

To WHOM SENT.	Number of reels per packet*
Chairman, Municipal Garden Committee, Karaohi ...	1
Messrs. Dammann & Co., Italy ...	2
Messrs. Haage & Schmidt, Erfurt, Prussia ...	2
„ Easoner Brothers, Eoyal Manatee, Florida ...	2
E. D. Hoyt, Esq., Bay view, Florida ...	2
Babu Hari Das Mitra, Vice-President of the Cossipore Practical Institution of Horticulture ...	1
Babu Nitya Gopal Mukerjee, Berhampur...	2
„ Opondra Chandra Singh, Bhagalpur	2
The Kathiawar Agenoy Engineer, Kajkote	1
District Engineer, Agra ...	1
Ditto, Eangpur ...	1
Executive Engineer, Balasore...	1
Ditto, Chota Nagpur Division ...	1
Ditto, Dogam, Ganjam district ...	1
Superintending Engineer, Bari Doab Circle, Dalhousie Assistant Engineer, Purulia subdivision, Bengal-Nagpur Eailway ...	1
Assistant Commission, Jowai ...	1
Civil Surgeon, Gaya ...	1
Conservator of Forests, Central Circle, Madras	2
Deputy Conservator of Forests, Dharwar ...	1
Extra Assistant Conservator of Forests, Ajmere	1
Assistant Superintendent, Port Blair, Andamans	1
Forest Officer, Port Blair, Andamans ...	1
Collector, Azamgarh ...	1
Ditto, Puri ...	1
Deputy Collector, on special duty, Berhampore	0
District Forest Officer, Bellary ...	2
Ditto, Chingleput ...	1
Ditto, South Malabar ...	2
Ditto, Nellore ...	2
C. Curtis, Esq., Forest Department, Penang	1
Inspector, Salt and Abkari Eevenue, Vizagapatam ...	1
Medical Officer, British Troops, Barraokpore ...	14
Ditto in charge, Station Hospital, Benares ...	1
Ditto ditto, Dum-Dum	1
Ditto, Pachbadra Salt Lines, Eajputana ...	1
Superintendent, Jail, Alipore ...	1
Ditto, Central Jail, Bhagalpur ...	1
Ditto, Jail, Hazaribagh ...	1
Ditto, Jail, Malda ...	2
Ditto, Jail, Mymensingh ...	1
Ditto, ^ Central Jail, Eajshal^i ...	1
Jailor, Eanohi ...	1
Lieutenant-Colonel H. Wylie, c.s.i., Polfitioal Agent, Nepal ...	1
Consil-General for France, Calcutta ...	1
EoBERT Philip Heilgers, Esq., Austro-Hungarian Consul, Calcutta ...	1
Director of Land Eecords, Poona ...	1
District Traffic Superintendent, Eailway, Fatehgarh ...	1
Assistant Secretary, Board of Eeveuue (Separate Eevenue), Madras ...	1
Private Secretary to His Excellency the Governor of St. Helena ...	1
E. H. Haviland, Esq., Lahore ...	3
Colonel Hunter, Governor, Tokar distriot, Egypt ...	1
James C. Neal, Esq., P.H. C.M.D., Oklahama Experiment Station, Stillwater, Oklahama ...	1
Honorary Seoretary to the Countess of Dufferin's Fund, Bankura ...	16
Principal, College of Science, Poona ...	2
Ordnano© Officor in Charge, Fort William Arsenal ...	2
Medical Store-keeper to Government, Calcutta ...	5
Commandant of the Pakoka Battalion, Military Polioe, Pakoka ...	8
Record-keeper, Deputy Commissioner's office, Meiktila	2

APPENDIX IV-continued.

To WHOM SENT.	Number of parcels or packets.
Lieutenant-Colonel H. B. Abbott, Jodhpur ...	5
C. A. B. Anderson, Esq., Taliparah, Jalpaiguri ...	30
T. Allan, Esq., Panagor, near Burdwan ...	8
E. N. Atherton, Esq., Batticaloe, Ceylon ...	3
Sir Alex. Arbuthnot, K.C.S.I., India Office, London ...	58
Dr. J. Campbell Brown, Liverpool, England ...	45
The Hon'ble Lord Brownlow, Ashridge, Hertfordshire ...	67
Lieutenant-Colonel H. Wilberforce Clarke (late), R.E., San Francisco ...	1
J. E. U. Crawford, Esq., Ubban Estate, Saklaspur ...	1
John Crossley, Esq., Westminster ...	34
J. F. Connely, Esq., Perth, Western Australia ...	154
F. E. Durham, Esq., Calcutta ...	1
H. G. Elves, Esq., Andoversford ...	193
Alex. Forbes, Esq., Aberdeen... ..	42
Dr. M. Foster, F.R.S., Cambridge, England ...	20
Dr. E. F. Franceschi, California ...	5
J. Gammie, Esq., Mungpoo ...	5
C. B. Garrett, Esq., Calcutta ...	2
A. M. Gasper, Esq., Moradabad ...	2
Herr Paul Dicte, Greiz, Germany ...	30
P. Hamburg, Esq., F.L.S., La Mortala, Italy ...	1
W. Harvey, Esq., Aberdeen ...	1
W. G. Head, Esq., Crystal Palace, London ...	7
W. W. Johnson, Esq., Manickcbak, Malda ...	17
Hon'ble Mr. Justice O'Kinealy, Calcutta ...	78
H. M. Kinlock, Esq., Etawah, North-Western Provinces ...	1
Herrn Max. Lichtloin, Baden, Germany ...	106
Eevd. A. Logsdail, Chaibassa... ..	4
Messrs. H. Low & Co., Clapton Nursery, London ...	1
W. E. Mackenzie, Esq., Alipore Duars ...	1
E. H. Man, Esq., C.I.E., Port Blair ...	102
Baron F. Von Muller, F.R.S., Melbourne ...	83
M. Naudin, Antibes, Alpes, Maritimes, France ...	12
Dr. G. Niven, Manchester, England ...	36
Eevd. Father Raphael, Saugor, C.P. ...	1
S. Eobson, Esq., Bankipore ...	2
Herr B. Kechenbach, Germany ...	27
Heir Emil Ritter Von Mayersbach ...	2
Captain J. Warner Euddach, Calcutta ...	8
Messrs. Stanley Price & Co., Calcutta ...	114
A. Simpson, Esq., Calcutta ...	1
Eevd. S. F. Scobell, Mussourie, North-Western Provinces ...	37
Major-General H. L. A. Tottenham, Tasmania ...	2
Professor J. W. H. Trail, University, Aberdeen ...	1
E. Pantling, Esq., Mungpoo ...	46
Hon'ble Kevd. Arthur Pakenham, Longford Lodge, Crumlin, Ireland ...	119
David Prain, Esq., Fattercairn ...	73
M. E. Weld, Esq., c.s., Kurnool ...	31
G. F. Wilson, Esq., F.R.S., Heatherbank, Weybridge, London ...	270
The Right Hon'ble Viscount de Vesci ...	73
Postmaster, Diamond Harbour ...	12
Sub-Postmaster, Sibpur ...	2
Babu Abinash Chandra Banerjee, Allahabad ...	2
Daroga Abdul Ajjj, Garden Each ...	50
Babu Bisumbhur Ghosh, Taki ...	1
„ Devendranath Basu, Sibpur ...	20
„ Gopal Chandra Dutta, Sibpur ...	1
Munshi S. M. Ibraheem, Delhi ...	45
Pandit Jowala Dat Parshad, Lahore ...	1
Dr. S. Mahomed Hossein, Junagadh ...	1
Babu Mohur Singa, Dehra-Dun ...	2
Shahibzada Nooroodin Khan, Bussapagla... ..	2
N. N. Banerjee, Esq., Assistant to Director of Land Records and Agriculture, Bengal ...	2
Babu Nandalal Bandhopadhyaya, Balasore ...	1

APPENDIX IV—concluded.

TO WHOM SENT.	Number of parcels of packet*—
Babu Nani Gopal Sen, Sibpur	3
XL Narasinga Rao, Mangalore	2
„ Purustum Dass, Government Engineering College	8
Alladin Shariff, Esq., Veraval, Kathiawar.; ...	1
Shariff Salemahommed, Esq., Commercial Agent, Juna-	1
gadh State, Veraval	2
Babu S. F. Chatterjee, Calcutta	1
„ Shoshi Bhusan Banerjee, Vattah	1
Total	3,072

APPENDIX V.

List showing contributions to the Herbarium during 1892-93.

Herbarium, Royal Gardens, Kew (General)	2,200
C. B. Clarke, Esq., per Director, Eoyal Garden, Kew (Indian)	606
Herbarium, Imperial Garden, St. Petersburg (Turkestan ana	218
Brazilian)	600
Herbarium, Botanic Garden, Vienna (European)	849
Herbarium, Royal Gardens, Berlin (South American, African)	24
Herbarium, Royal Gardens, Leiden (Malayan Archipelago)^	417
Baron Sir Ferd. V. Mueller, Melbourne University (Australian)	1,424
Herbarium, Botanic Garden, Singapore (Malayan Peninsula)	221
Government Museum, Perak (Malayan Peninsula)	1,144
G. D. Haviland, Esq., North Borneo (Bornean)	1,559
Herbarium, College of Soience, Poona (Western Indian)	195
J. S. Gamble, Esq., Forest School, Dehra Dun (N.-W. Himalayan)	121
G. F. Scott-Elliot, Esq., (Egyptian)	269
C. Curtis, Esq., Forest Department, Penang (Malayan Peninsula)	273
C. G. Pringle, Esq., United States (Mexican)	76
General Sir H. Collett, K.C.B., Cherat (N.-W. Frontier)	5
Dr. V. F. Brotherus Helsingfors, (Mosses, General)	13
Miscellaneous specimens (Indian) ... ..	...
Garden Collectors:—	
Mr. R. Pantling (Orchids of Sikkim)	1^00
G. Gammie (Independent Sikkim)	1,021
E. H. Man, Esq., C.I.E. (Andamans collections)	867
Dr. Prain (North Bengal)	68
Native Collectors, Botanical Survey of Burma	1,064
„ „ „ of Assam	852
Total	1^750

APPENDIX VI.

List showing distribution of authentically named Herbarium Specimens during 1892-93.

Herbarium, Eoyal Gardens, Kew	1,063
British Museum, London	490
Saharanpur Herbarium	650
Boyal Botanio Garden, Edinburgh	141
Ditto ditto, Peradeniya	23
Botanic Garden, Singapore	08
Govenpaent Central Museum, Madras	41
College of Science Museum, Poona	36
Government Museum, Perak	07
J. 8. Gamblo, EB^., Director, forest School, Dehra	49
Dun	8
C. Curtis, Esq., Forest Herbarium, Penang	373
Herbarium, Imperial Gardens, St. Petersburg	117
Ditto, Eoyal Garden, Buitenzorg, Java ... ..	...

APPENDIX VI—concluded.

Smithsonian Institution, "Washington, U.S.A.	...	421
Imperial Museum, Vienna	...	150
Botanic Garden, Vienna University	...	265
Royal Botanic Garden, Berlin	...	302
Ditto ditto, Florence	...	447
Herbarium, Jardin des Plantes, Paris	...	261
Royal Herbarium, Leiden	...	250
Herbarium of the University of Cambridge	...	175
Ditto ditto of Upsala	...	228
Ditto ditto of Utrecht	...	156
Ditto ditto of Melbourne	...	180
Ditto ditto of Aberdeen	...	92
Herbarium of Owen's College, Manchester	...	187
M. A. de Candolle, Geneva	...	278
Colonel Beddome	...	632
Botanic Garden, St. Louis, Missouri, U.S.A.	...	10
Dr. J. H. Sandborg	...	68
Natal Botanic Garden, Durban	...	191
Queen's College, Cork	...	98
Total	...	<u>8,787</u>

G. KING, M.B., *Brigade-Surgeon, Lt.-Col.*,
Superintendent, Royal Botanic Garden, Calcutta.

FINANCIAL DEPARTMENT.

MISCELLANEOUS.

DARJEELING, THE 13TH JUNE 1893.

RESOLUTION.-No. 2875Mis.

READ—

The Annual Report of the Royal Botanic Garden, Calcutta for the year 1891-92, and the Government Resolution thereon.

THE report, which is one of considerable interest, at a steady advance was made during the year in improving the garden to a scientific centre and as a pleasant resort for the public. At the end of the year the season was abnormally dry, and although this had the effect of destroying a number of palms and other out-door plants, they were repaired to a great extent before the cold season set in.

From Melbourne, Poona, Singapore, Mysore, Dehra Dun, Peshawur, Manipur, Assam, North Borneo, Penang, Perak, and Egypt. To the contributors of these specimens, including Dr. Cooke, Messrs. Ridley, Haviland, Curtis, Wray, Gamble, Clarke, Sconce-Elliott, and Sir Henry Collett, thanks of Government are due. Arrangements were also made through the direct agency of the garden officials for continuing the work of collection in Assam, Burma, and the Andaman Islands. Furthermore, Mr. Gammie (Junior), of the Government Cinchona Plantation, was specially deputed under the orders of Government to make a botanical exploration of the less known parts of Sikkim and the Tibetan frontier: the results of his exploration will be published in the fifth volume of the preparation, and will be published in the current year.

The Lieutenant-Governor's thanks are due to the Herbarium, who officiated in the preparation of the Report, and to the Superintendent of the Botanic Garden, who has been so efficient in his management.

Ordered that a copy of this Report be forwarded to the Government of India, in the Department of Agriculture, for information.

Ordered also that a copy of this Resolution be forwarded to the Superintendent, Royal Botanic Garden, for information.

By order of the Lieutenant-Governor of Bengal,
J. A. BOURDILLON,

Offg. Secretary to the Government of Bengal

No. 2876Mis.

Co. forwarded to the Superintendent of the Royal Botanic Garden for information.

By order of the Lieutenant-Governor of Bengal,
N. BONHAM-CARTER,

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

CALCUTTA,
27th June 1893.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA.
FOR THE YEAR 1893-94.

No. 16G., dated Royal Botanic Garden, Sibpur, the 15th May 1894.
From—GEORGE KING, Esq., M.B., F.R.S., C.I.E., Superintendent, Royal Botanic
Garden, Calcutta
To—
Annual Report of the Royal Botanic Garden.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE
YEAR 1893-94.

THE most notable feature in the year was the severe storm, almost amounting to a cyclone, which did considerable damage to the trees both in the way of complete uprooting and in the breaking of branches. So great was the destruction that the labour staff was engaged for about six weeks in sating up, and fastening with wire such trees as were small enough to be put in away, and even broken stems and branches. The complete loss of their thatch, the conservatories suffered little beyond the complete loss of their thatch. From the extra grant of money provided, Xmas, were raised in round Kyd's monument, and two of the roads joining from Kyd's monument level and repaired. An old bridge on the main avenue was widened, and the river bank gate, as a modification of the width of 22 feet. As the result of these changes, a fine avenue, the latter now runs between Kyd's monument, and the gate of the bank road. Will, owing to the rapidly advancing to the garden by land, the leading from Calcutta, soon be the main entrance. The platform on which Kyd's improvement is one of prime importance had repair, the mosaic pavement monument stands had for some years during the year that pavement having suffered greatly from a trial; that the monument to the was replaced by one of more substantial and obelisk by Banks) memory of founder of the garden (a great interest. With the view of is now in a setting more befitting it, a garden shortly become its main improving the part of the garden near what was two or three years been entrance by land, much labour has, during the past two or three years have spent on the three main roads which lead to that the third—that which runs already been put into excellent condition; but the year which has just along the river bank is still in a bad state of repair. The The entered upon, I hope to put that load also in good condition. The existing road (like so many of the roads) requires to have its levels altered in many places; its curves also, and its slopes and undulation of the grass by the, some of the most laborious that improvement. This kind of work is a tremendous one. The current year limited amount of it can be undertaken in an, will then remain the should see the completion of the, and several other main road leading from the river gate to the, season the river did but a leading from the river gate, during the rainy season, which in my last roads in the centre of the garden, during the rainy season, which in my last

Garden, Kew. There are now conveniently be looked after and housed. For some years past considerable difficulty in getting and keeping together a gang of coolies for the out-door garden work. During the past year this difficulty has been more keenly felt than ever. The coolies who prove of far the most valuable for the garden work

Oh's fi... in Calcutta as "hangars." These are really KaU**
Chota fcagpur. They are a hard-working docile race, and their men* *
but Tn... y^own, not only in the neighbourhood of Gal***
and h... the tea distincts, that there is g/eat competition for their **< *%
the o ^ ^ A W T S are eve... rywhere being offered to them. M* ^ ^ %
the cost of food has for some years been almost steadily on the ino^ of a
good T... /therefore that in order to secure the continuous service* of a
have f... be given. *Or ^ *%*> better wages than heretofore will

Seeds of r l ^ T lmJe been issued gratuitously to various appHf^
DlanTfrL wV... have been f Tly ^ven to "various tea-planters. Coca I B ^
can, froTtl, e na... ur... he l... 88 * ^ kn ^wn as c ^ c ^ ^, is prepared. This alk ^ d
for it T t... of ^ neVer come into vei T extensive use, and the de ^ a
occasLallv ^ I ^ grG^ below the ^ 7 - But, as high P"ce a >
W. b. S Tef... y years been got for batches of coca leaves, pl ^ e n
dfscreeUon V... ^ g ^ l the fiut... tivation with more enthusiasm ^
these w l ^ k t s... of s i s s a l... hemp were in active demand for a time, ^ d
nutfwTf... ^ ^ / s P o s s i b l e... Cola ^ ninata (which produces the; to ^
TbZL... T... tent. Seed of the grass, known var ou ^
Thfa TM... r... wXC... He botamCal name is... iMtemJVote*) ^ & rf... ^ j
my S i... a possible raw material for paper twenty-five years ago, I
was in the Forest Department in the North-West Provinces. It is very common
in the Siwalik range, and in the Bhabar forests of the Chawal and Kamaon in

Ford pap... mii's rth... haVllg b en Submitted * « the late Mr. Routledge ^ j j j
by him to be little inferior to *Esparto* as a raw material for paper. was d
two subsequently to this it was discovered, by the ' ' o Dr. J. S. Gamble of
the F... D... partm... « t... f... «... » i» So L t s of Chot... ^
SamnEf... it W... «... » i» Ulliv Paper M... ^
the only one near Calcutta. The sample was approved of at Bally, ^
since then the use of this grass has so increased that it now forms the chief
raw material of an industry which in this country... probably only in its
infa... it is
poss... It
is a... n of

the Japan paper mulberry tree in Bengal have hitherto led to so little result.
The fibre of this tree is much superior to *bhubar*, and, as I stated in several of
my annual reports some years ago, it can be most readily grown in Bengal.
There is still a small stock of the tree in the garden ready for issue to any
applicant who may be forthcoming.

3. *Herbarium*.—The work during the year has been of the usual charac-
ter, many scientific references having been answered and plants having been
identified for numerous correspondents. The collection was largely increased
during the year by the receipt of 16,387 specimens from other herbaria, from
botanists in various parts of the world, and from collectors sent out from the
garden. On the other hand, 12,517 specimens of Indian plants (all carefully
named) were issued to various country and
in Europe. The chief contribut
Garden, Kew (Mr. W. T. T... se
were receiv^rl ^ se yer), from whom no lesstnan 5,854 named ^

Northern India... H. Mr. FT. M. B. J. uthle » Dir... ector of the Botanical ~ Singa-
p... ley, Director of the botanic Of% e set of
Andamans plants, amounting to 6U specLens wf ^ 8 iTf! 5 en% the supervi-
sion of Mr. E. H. Man of Port Blair to whom Vr ^ o \ leCt ^ d TMA? * » Aiov much
ing:—
Tiflis,

who gave 353 plants of the Caucasus; Mr. Curtis of the Forest Department who presented 221 species from Penang. Baron Von Mullet of Melbourne also supplemented his liberal contributions of former years by presenting last year 305 interesting Australian plants. To Mr. Medley Wood the Director of the Imperial Forest School, for 164 plants from Dehra Dun; to Mr. A. Talk and to Mr. H. H. Haines, of the Indian Forest Department, for plants from the forests of North Kanara and from those of the Jalpaiguri district, respectively. The collections made by members of the staff during the year included 439 plants by Dr. Prain; 1,397 by Mr. Pantling of the Cinchona plantation; 376 by Abdul flue, botanical collector in Assam; and 1,018 by Abdul Kholi, collector in Upper Burma. The chief recipients of specimens were the Uéctoils of the Botanical Survey of Bombay and of Northern India, to whom 617 and 292 named specimens were respectively sent. The Botanical Gardens of Singapore and Penang received respectively 477 and 529 specimens. To the Herbarium of the Royal Garden, L w , 423 specimens, and to the British Museum 679 specimens were sent. Other recipients were institutions to whom plants had been received, and the botanical institutions of England and at the continent of Europe, chief amongst which may be mentioned * ^ < ° f * of Cambridge, Edinburgh, Cork, Berlin, Paris, Geneva, ^ ^ ^ ^ p e ^ H ^ a ^ Upsala, St. Petersburg and Florence. Collections were also sent to Coope Full College near London and to the Smithsonian J ^ t ^ a ^ £ J £ f ^ ^ ^ . Full details, both of the specimens received and of those distributed, will be found in Appendices V and VI of this report.

4. Enquiry into Ganja cultivation.-During three months of the year, Dr. Prain, Curator of the Herbarium, was on special duty in connection with an enquiry into the mode of cultivation and storage of the various preparations of Indian hemp (*Cannabis sativa*) known by the vernacular names of ganja, oharaş, lhanrj, ni majun. The chemical, and physiological action of these drugs were also included in the scope of the research. The termination by of his labours, an exhaustive report of the results of the research is at present in the use of the Commission recently

5. Botanical. Dr. Prain contributed to the journal of the Asiatic Society of Bengal for the first time, subjects, in which a good many species of plants are described. The titles of these papers are "On the genus *Colquhounia*"; "On the Flora of N ^ a m ^ the sam ^ journal"; "On some methods of preparing Botanical specimens, of the Malayan Penin- I contributed parts 5 and 6 of my " ^ ^ f e / X ^ f l ^ Wing the year also being occupied by a monograph by myself of ^ ^ ^ Robert Kyd, the Prefixed to the volume is a biography (with P ^ ^ ^) of the founder of the garden, who died in 1877, and a

6. Librarian.-A small number of ^ ^ ^ ^ X d e n , Kew, while many few were received as a donation from the Royal Uaic ^ , volumes were re-bound.

7. Interchange of plants, and ^ e d s ^ n ^ a p p ^ n d ^ d o f g e e d s . The totals of full details of the receipts and issues both of plants and of seeds are as follows:—

Received 18,403; issued 58,512; ^
& packets received 858, issues ^

8. Lloyd Botanic Garden, Darjeeling. As the lists show, the ^ ^ ^ ^ J S ^ K > D g the entire year, under the charge of Mr. W. A. K ^ n ^ n t e n d ^ ^ ^ p l a n t i n g ^ n d ^ c o n - S S ^ i t t X ^ ^ 2 2 £ S i n d e e d i n m a n y p a r t s , o f t h e

For both gardens the budget was also an additional grant of Us. ^ ^ ^ ^

road-making and other improvements. The revenue derived from the surplus plants and seeds at the Calcutta Garden was Rs. 2,215-9-6, and Darjeeling Rs. 877, both sums being slightly in excess of the estimates.

10. On his return from special duty on the enquiry into Ganja (whose health had been much impaired by his labours) went on three privilege leave. During the remaining six months of the year he performed the duties of Curator of the Herbarium with his accustomed devotion. While Dr. Prain was absent on leave, Mr. G. A. Gammie, Cinchona Department, officiated as Curator of the Herbarium and with great assiduity. Mr. Gammie is already known to Government by an interesting botanical tour which he made two years ago in a previously little known part of the Eastern Himalayan. Mr. R. L. Proudlock, Assistant Curator of the Garden during the year and did excellent service. Mr. G. I. Assistant Curator, also worked most cheerfully. Towards the close of the year the staff was recruited by the arrival from Kew of Mr. Davies. Mr. V. I. was in charge of the Darjeeling Garden during the year and worked to the satisfaction, as did also Babu Gopal Chandra Datta and the other members of the Garden, office and out-door staff.

... be fou[^]
i^l • ^{^n} ^{^e} s*x a^{pp}en^{dices} which accompany this report w^{il}l be fou[^]
full details of all receipts and issues for the nursery, seed-house and -ti^{erbarium}.

APPENDIX No. I.

Statement showing plants received from 1st April 1893 to 31st March 1894.

FBOM WHOM RECEIVED.	War- dian cases.	Boxes.	Number of plants.
1	2	3	4
Eoyal Gardens, Kew, London ...	2	...	71
Botanic Garden, Durban, Natal ...	1	...	33
Ditto, Trinidad	1	10
Ditto, Singapore ...	2	1	73
Ditto, Saharanpur	1	6
Ditto, Mussoorie	50
Ditto, Darjeeling	15	1,732
Ditto, Bangalore	2	281
Memorial Garden, Cawnpore	1	134
Government Botanic Garden, Mussoorie	1	1,000
Belvedere Garden, Calcutta	1
Zoological Garden, Calcutta	4
Superintendent, Victoria Garden, Bombay	1	1,000
W. Boxall, Esq., Singapore	2	123
S. Batty, Esq., Seychelles	1
W. Lawson, Esq., London	314
Messrs. H. Low and Son, Clapton Nursery, London	2	71
Messrs. F. Sander & Co., St. Albans, Eng- land ...	1	...	28
Agri-Horticultural Society of India, Calcutta	289
Ditto Garden, Eangoon ...	1	...	217
Ditto ditto, Madras	1	1,062
Ditto ditto, Lahore	1	3
Ditto ditto, Lucknow	1	21
Deputy Conservator of Forests, Khulna	510
Assistant Superintendent, Alfred Park, Allahabad	61
Howrah Hospital	150
Silk Association, Calcutta	1,700
Messrs. Stanley Price & Co., Calcutta	67
C. A. B. Anderson, Esq., Talipara, Jalpaiguri	1	58
W. J. M. McCaw, Esq., Calcutta	2
Dr. D. D. Cunningham, M.D., F.R.S., Calcutta	8
J. S. Gamble, Esq., Dehra Dun	1	14
J. A. Gammie, Esq., Mungpoo	5	636
Dr. Griffiths, Allahabad	70
E. H. Man, Esq., C.I.E., Port Blair ...	2	...	99
C. Maries, Esq., Gwalior	3	286
— Martin, Esq., Raipur	5
J. Parkes, Esq., Nimbong	921
G. McD. Peche, Esq., Moulmein	7	961
Hon'ble P. Play fair, Calcutta	1
Mr. J. Prazer, Mandalay	1
A. J. Reid, Esq., Cachar	2
J. S. Slater, Esq., Engineering College	12
H. B. H.-Turner, Esq., Calcutta	1
Dr. C. J. H. Warden, Calcutta	242
Colonel Waterhouse, Calcutta	14
G. Marshall Woodrow, Esq., P ^o ona	2	1,009
Colonel Wylie, c.s.i., Khatmandu, Nepal	72
Babu S. P. Chatterjie, Calcutta	2	1,100
S. D. Narayan Sing, Balegarh	1	52
" S. D. Narayan Sing, Balegarh	105
Dr. George ... R. I. ... Esq., collected in Sikkim and Lower Bengal	270
Abdul Hue, collected in Assam and bnan Hiis	1	3,448
Unknown donors	2
Total ...	9	54	18,403

APPENDIX II.

Statement showing plants sent out from 1st April 1893 to 31st
March 1894.

To "WHOM SENT."	War. dian cases.	Boxes.	Number of plants.,
1	2	3	4
Royal Gardens, Kew, London ...	1	...	28
Botanic, -Garden Durban, Natal ...	1	...	39
Ditto, Ootacamund	1	158
Ditto, Bangalore	1	2
Ditto, Sabaranpur	1	47
Ditto, Darjeeling	2	80
Victoria Garden, Bombay	2	120
Memorial do., Cawnpore	30
Government House Garden, Calcutta	38
Belvedere Garden, Calcutta	14
Zoological Garden, Calcutta	12
His Excellency the Governor of Madras	2	30
The Right Hon'ble Earl of Ilchester	1	105
Captain J. G. Turner, His Excellency the Viceroy's Body Guard	5	101
Mrs. R. Hannah, Kensington, London, W....	...	1	65
Professor M. M. Hartog, Queen's College, Cork, Ireland	1	96
Monsieur A. W. Hearn, Villa St. Louis, Marseilles	1	74
The Hon'ble James Inglis, Sydney, Australia ...	1	1	172
Mrs. Storer,*Purley, England ...	1	...	38
O. M. Salvago, Bsq., Alexandria	5	617
Colonel R. 8. Frowd Walker, Perak, Penang ...	2	...	91
Agri-Horticultural Society of India, Calcutta	1,974
Ditto ditto, Madras	1	2
Ditto ditto, Rangoon ...	1	...	34
Ditto ditto, Lahore	8	116
Ditto ditto, Lucknow	1	2
Deputy Commissioner, Sonthal Parganas, Dumka	40	1,010
Chief Commissariat Officer, Presidency Command, Calcutta	500
Conservator of Forests, Southern Circle, Nag- pur	2	24
Deputy Conservator of Forests, Sundarbans...	1,130
Magistrate of Howrah	993
Ditto of Monghyr	2	50
Deputy Magistrate of Chunar	2	30
Secretary, Nurbudda Club, Jubbulpore	4	74
Chairman, Municipality, Ajmere	4	50
Ditto, Sirajganj Municipality, Sirajganj	2	50
Vice-Chairman, Dinajpur Municipality, Dinaj- pur	7	180
Ditto, District Board, Noakhali	13	340
Subdivisional Officer, P. W. Department, 4th Section, Ranchi	6	150
District Engineer, Backergunge, Barisal	12	300
Ditto, Bhagalpur	5	120
Ditto, Dacca	10	264
Ditto, Dinajpur	40	1,000
Ditto, Faridpur	18	450
Ditto, Lohardaga	8	200
Ditto, Mymensiugh...	...	7	90
Ditto, Manbhum, Purulia	16	400
Ditto, Pabna	200
Ditto, 24-Parganas	800

APPENDIX II—continued.

To WHOM SENT.	War- dian cases.	Boxes.	Number of plants.
1	2	3	4
Executive Engineer, Buxar	47	1,030
Ditto, Burdwan	8	200
Ditto, 2nd Division, Calcutta...	7
Ditto, Calcutta Workshop Divi- sion, Sibpur	30
Superintending Engineer, Arraj	...	1	20
Assistant Engineer, B. N. P. auw» Jr., Chucker- dharpur	...	120	3,000
Superintendent of Jail, Jubbulpore	...	2	50
Ditto of Presidency Jail, Calcutta...	3,773
Ditto, Horticultural Institution, Cossipore	553
Ditto, Gunpowder Factory, Cossipore	36
Assistant Superintendent, Alfred Park, Alla- hab	...	5	120
Manager Kalline Cherra Tea Estate, Atgram,	...	4	700
GetSTManager, Bengal Coal Company, Limited, Raniganj	...	3	75
Manager, Laikdee Colliery, Barakur	...	3	75
Ditto, Sanctoria Colliery, Damooda	...	3	75
Ditto, Sodepur ditto	...	3	75
Ditto, Khooldeah Colliery, Giridih	...	12	74
Ditto, A. N. Roy Estate, Berhampore	...	2	12
Ditto, Surka Estate, Midnapore	1,198
Soldiers William Medical Calcutta	615
Howrah Hospital	446
Station Hospital, Dum-Dum	12
Chaplain of Howrah	1,934
St. Agnes' Scho Howrah	100
Church of Engl Zanana Mission Society, Calcutta	6
Church of S«tod"Women" ^ Association, Caloutta	100
St. John's Church, Calcutta tta	12
La Martiniere Scho Bhawanipur	2,330
London Missionary ion, Calcutta	1,715
General Assembly's ion, Calcutta	...	1	300
Raj Coomar College, Nowgong, Bundlekhand	100
East Indian Railway, Howrah	1,680
Eastern Bengal State Railway, Sealdah	69
Indian Museum, c ^f* r- l< n l i t a'	800
The Master of the Mint, Calcutta.	66
Captain of the S. S. D****'	24
A. Apar, Esq., Calcutta	...	18	110
K t M B ^ n, D Mi Son House", Lalitpur...	...	1	52
C. M. Banister, Esq., Luoknow	1	24
Mrs. Betts, Calcutta	...	1	90
Revd. W. P. Byers, M. E. Mission, Asansole	...	8	100
D. W. G. Coley, Esq., Calcutta	855
Dr. D. D. Cunningham, M.D., F.R.S., Calcutta	3
Esq., Penang	...	1	40
Mission House, Pachamba	...	7	124
Mr» Petto, Sibpor	30
William ig., Bombay	...	1	11
J. S. Ga Dehra Dun	...	2	9
Mungpoo...	...	6	301
Miss E. A. Qarlah, Kamptee	21	36

APPENDIX II—continued.

To WHOM SENT.	War. dian cases.	Boxes.	Number of plants.
1	2	3	4
J. Gillespie, Esq., Howrah	7
Revd. J. A. Graham, M.A., Kalimpong	...	4	95
W. Grabam, Esq., Serampore	300
Dr. Griffiths, Allahabad	5	asi
G. Barton Groves, Esq.	4
H. H. Hamilton, Esq., Caloutta	80
Mrs. G. Henderson, Calcutta	48
C. S. Hicbman, Esq., S.S. Warren Hastings..	4
Dr. Hoernle, Calcutta Madrassa	36
Eevd. C. W. Jackson, Calcutta	1
Colonel Jarrett, Calcutta	2
W. H. Jobbins, Esq., Caloutta	100
Mrs. Kennedy, London	...	1	18
Dr. George King	51
G. T. Lane, Esq.	1	4
J. E. Lee, Esq., Hyderabad	...	1	5
J. L. Lister, Esq., Pasbok	...	7	100
C. Little, Esq., Calcutta	29
Revd. A. C. Locket, Santirajpur	...	2	12
R. A. Lyall, Esq., Calcutta	417
A. Macdonell, Esq., Engineering College	51
E. H. Man, Esq., C.I.E., Port Blair	...	4	159
C. Maries, Esq., Gwalior	...	1	20
Mrs. Maxwell, Howrab	757
Revd. J. P. Meik, Bolepur	...	3	34
J. A. Millar, Esq., Hazaribagh...	...	2	14
Revd. A. Nottrott, Ranlii	...	30	745
R. D. Newing, Esq., Calcutta	12
R. Pantlingr, Esq., Mungpoo	1	14
Revd. GL M. Panes, Teor Hill Mission, Boidyanath	1	330
G. McD. Pecbe, Esq., Moulmein	...	1	10
A. Peppe, Esq., Rancbi	...	1	20
James Peter, Esq., Monooraookh	...	2	45
Hon'ble P. Play fair, Calcutta	4
Revd. J. G. Potter, Baptist Mission, Agra	...	2	50
R. L. Proud lock, Esq.	...	1	20
Mr. W. Roberts, Salt Gola, Sulkea	1,054
J. Robinson, Esq., Bbagalpur	21	525
Mrs. Ryland, Calcutta	600
Captain Row, Shillong	...	1	17
Mrs. Sandell, Calcutta	1,072
„ Shaw, Engineering College	923
Dr. Simpson, Health Officer, Calcutta	1000
J. S. Slater, Esq., Engineering College	i,341
Miss Steen, Sibpur	53
W. Steward, Esq., Assam	22
Hon'ble O. C. Stnvong, CaWUa	DO
E. H. Stevens, Esq., Muzaffarpur	...	4	100
8. M. L. Thomson, Esq., Calcutta	1
E. Trtlawney, Esq., Calcutta	500
H. B. Turner, Esq., Calcutta	14
Mrs. J. Twidnle, Calcutta	2
Revd. H. Uffman, Purulia	...	8	200
C. Wallich, Esq.	...	2	24
J. Wilson, Esq., Shillong	...	4	80
Messrs. Macknight, Anderson & Co., Caloutta..	...	9	4,550
Messrs. F. Sander & Co., St. Albans, England	...	13	4,495
Indian Husbandry Company, Ltd., Calcutta...	500
Indian Drugs Supply Company, Ltd., Caloutta	100

APPENDIX II—concluded.

To whom sent.	War-dian cases.	Boxes.	Number of plants.
1	2	3	4
Messrs. Stanley Price & Co., Calcutta	65
Rajah of Khaira	2
Syed Bakhuralie Khan, C.I.E. Pindrawal	...	8	146
Prince Nooroodin Khan, Russapaglan	9
Syed Nawabali Chowdhury, Calcutta	...	13	98
Dr. Abdul Salam, Bhopal	...	2	49
Sovan Ali Khan, Hazipur	1
Rai Prosunno Coomar Banerjee, Babadoor,	10
Calcutta	...	1	20
Rai Sheo Narayau Bahadoor, Moradabad	...	2	242
Babu Soorjoo Deo Narayan Sing, Balegarh,	2
" H. N. Dass, Garden Reach	40
" Q. F. Mookerjee, Oobordanga	2
" G. N. Sen Gupta, Sibpur	4
" G. L. Mullick, Calcutta	24
" G. O. Datta, Sibpur	10
" B. B. Sen Gupta, Calcutta	16
" B. B. Ghosh, Taki	200
" J. P. Gour, Benares	1
" J. N. Dass, Calcutta	2
" K. C. Deb, Comilla	2
" Ki C. Mookerjee, Sibpur	1
" K. O. Roy, Calcutta	...	8	200
" K. N. Roy, Purulia	...	1	6
" K. N. Roy, Saharanpur	6
" K. P. Dass, Calcutta	1
" N. L. Mullick, Calcutta	6
" P. C. Ghosh, Calcutta	...	1	10
" R. C. Roy, Ranch!	6
" S. B. Bose, Belgoriah	56
" S. P. Chatterjee, Calcutta	...	1	6
" S. P. Banerjee, Ghazipur	5
" U. P. Bhattacharjee, Calcutta	1
Arjoon Chunder Mallee, ManiktoUah	250
Harradhan Dass, ditto	202
Harree Mallee, ditto	1
Gopal Mallee,	...	11	672
Total	...	672	58,512

APPENDIX III.

Statement showing seeds received from 1st April 1893 to 31st March 1894.

FROM WHOM RECEIVED.	Number of parcels or packets.
W. T. Thiselton Dyer, Esq., F.R.S., C.M.G., C.I.E., Director, Royal Botanic Gardens, Kew, London	9
Director, Royal Botanic Garden, Peradeniya, Ceylon	1
" Botanical Department, Jamaica	3
" of Land Records and Agriculture, Calcutta	1
" du Jardin Botanique, Rio de Janeiro, Brazil	10
Botanic Garden,	75
Ditto, British Guiana	8
Ditto, Durban Natal	1
Ditto, Hongkong	6
Ditto, Lagos, W. Africa	3
	2

APPENDIX III—concluded.

FROM WHOM RECEIVED.			Number of parcels or packets.
Botanic Garden, Mussoorie	...	...	1
Ditto, Oodeypore	...	...	2
Ditto, Hock hampton	...	...	2
Ditto, Saharanpur...	...	...	68
Ditto, Singapore	...	...	6
Ditto, St. Louis	...	...	88
Ditto, Trinidad	...	...	1
Hon'ble J. Buckingham, C.I.E.	...	...	1
Baron Sir Ferdinand Von Mueller, K.C.M.G., &C,	...	...	47
University, Melbourne	...	...
Superintendent, Government Horticultural Gardens,	...	...	22
Lucknow	...	...
Ditto, Agri-Horticultural Society's Gardens,	...	...	8
Madras	...	...	24
Ditto ditto, Lahore	...	...	4
C. H. Shinn, Esq., College of Agriculture, Berkeley,	...	...
California	...	...
C. Curtis, Esq., Assistant Superintendent, Forest De-	...	...	1
partment, Penang	...	...	1
G. M. Peche, Esq., Moulmein	...	...	1
The Opium Agent of Bihar, Dinapore	...	...	2
E. L. Heinig, Esq., Sunderbans	...	...	123
Messrs. Dammann & Co., Italy	...	...	7
„ Haage and Schmidt, Erfurt	...	...
„ Reasoner Brothers, Royal Palm, Nurseries,	...	...	35
Oneco, Florida, U. S. A. ....	...	...	132
Messrs Stanley Price & Co., Calcutta	...	...	39
E. H. Man, Esq., C.I.E., Port Blair	...	...	3
G. H. T. Mayer, Esq., Memorial Garden, Cawnpore	...	...	3
J. Gammie, Esq., Mungpoo	...	...	2
H. H. Hildebrand, Esq., Fort Stedman, Burma	...	...	17
Dr. F. Franceschi, Los Angeles, California	...	...	4
C. Maries, Esq., Gwalior	...	...	10
J. Sykes Gamble, Esq., Dehra Dun	...	...	79
G. A. Gammie, Esq., Mungpoo	...	...	1
J. Parkes, Esq., Nimbong, Darjeeling	...	...	1
J. L. Lister, Esq., Pashok	...	...	2
W. Walker, Esq., Dipling	...	...	1
Mrs. Pugh	...	...	1
Miss Thomson	...	...	1
Total	...	...	858

APPENDIX IV.

Statement showing seeds distributed from the Royal Botanic Garden during the Year 1893-94.

TO WHOM SENT.			Number of parcels or packets.
W. T. Thiselton Dyer, Esq., F.R.S., C.M.G., C.I.E.,	...	...	158
Director, Royal Gardens, Kew, London	...	...	73
Royal Botanic Garden, Edinburgh	...	...	3
Ditto, Glasnevin, Dublin	...	...	10
Ditto, Peradeniya, Ceylon	...	...	152
Botanic Garden, Adelaide	...	...	3
Ditto, Bangalore	...	...	6
Ditto, Buitenzorg, Java	...	...	2
Ditto, Cambridge	...	...	256
Ditto, Darjeeling	...	...	4
Ditto, Demerara	...	...	1
Ditto, George Town	...	...	80
Ditto, Glasgow	...	...	9
Ditto, Hongkong	...	...	2
Ditto, Melbourne	...	...

APPENDIX IV—continued.

To WHOM SENT.	Number of parcels or packets.
Botanic Garden, Natal	7
Ditto, Oxford	2
Ditto, Saharanpur	19
Ditto, Singapore	17
Ditto, Sydney	1
Ditto, Trinidad	4
Ditto, Vienna	1
Direktor, des "hot. Gartens, Graz, Austria	5
Ditto, Kgl. Bot. Gartens, Berlin	1
Ditto, Jardin des Plantes, Paris	1
Director, Botanic Department, Brisbane	1
Ditto, Experimental Station, Klatter, Java	2
Secretary, Agri-Horticultural Society of India, Calcutta	11
Ditto, ditto, Madras	13
Ditto, ditto, Rangoon	7
Secretary and Manager, Acclimatisation Society's Gardens, Brisbane	1
Assistant Secretary, Board of Revenue, Madras	1
Chief Commissioner, Baroilly	1
Director, Department of Public Gardens and Plantations, Jamaica	2
Superintendent, Agri-Horticultural Gardens, Lahore	12
Ditto, Government Horticultural Gardens, Lucknow	4
Superintendent, Victoria Gardens, Bombay	100
Ditto, Raj Garden, Darbhanga	1
Ditto, Shahi Bagh, Shikarpur	21
Ditto, Cossipore Practical Institution of Horticulture, Cossipore	4
Ditto, Dumka Jail, Dumka	1
Ditto, Puri Jail, Puri	1
Subdivisional Officer, P. W. D., Ranchi	12
Ditto, ditto, 4th Section, Ranchi	12
Ditto, ditto, Kandia, Barakar	12
Ditto, and Chairman, Local Board, Ranaghat	1
District Engineer, Birbhum	6
Ditto, Hazaribagh	6
Ditto, Pabna	110
Executive Engineer, Ajmere	11
Ditto, Chota Nagpur Division, Ranchi	1
Ditto, Shwebo Division, Shwebo	1
Conservator of Forests, Central Circle, Madras	2
Extra Assistant Conservator of Forests, Central Circle, Ajmere	24
F. W. K. Syburg, Esq., H. I. G.M.'s Consul, Bombay	13
Consul-Gonoral forth© Netherlands, Calcutta	1
Imperial and Royal Austro-Hungarian Consul-General, Calcutta	1
Ditto ditto, Bombay	1
Inspector of Salt and Abkari, Tuticorin Circle, Madras	2
Colonel Sir John Ardagh, C.B., K.C.I.E., Government House, Calcutta	127
Baron Sir Ferdinand Von Mueller, K.C.M.G., F.R.S., Melbourne	82
Lieut.-Col. Abbott, Jodhpore House, Abu	2
C. A. B. Anderson, Esq., Taliparah, Jalpaiguri	5
Sir Alexander Arbuthnot, K.C.S.T., London	54
Dr. J. Campbell Brown, Liverpool	40
Lord Marcus Beresford, London	65
H. Bahr, Esq., Guma Duar, Dhubri	2
Mrs. Betts, Calcutta	2
G. F. Baker, Esq., Calcutta	11
S. S. Bowles, Esq., North Queensland	8
G. H. Buchanan, Esq., Queensland	7
N. G. Collins, Esq., Ballygunge	2
F. E. Collis, Esq., Umballa	2
C. Curtis, Esq., Forest Department, Penang	7
J. F. Connelly, Esq., W. Australia	1

APPENDIX IV—concluded.

TO WHOM SENT.	Number of parcels or packets-
S. Coxon, Esq., Saugor, O. P.	14
S. W. Donne, Esq., Santirajpur, Nadia	2
Dr. Francisco Debono, Floriana, Malta	13
Eevd. E. Evans, Shillong	18
Dr. E. F. Franceschi, California	16
G. E. Fox, Esq., Gbazipur	3
E. Finimore, Esq., Eanchi	10
Mrs. Fisher, Lahore	5
J. Gammie, Esq., Mungpoo	3
J. Sykes Gamble, Esq., Dehra Dun	4
A. C. Griffin, Esq., Seaforth, Nilgiris	2
M. Edward Guillaume, Paris	2
A. C. Hartless, Esq., Government Cinchona Plantation, Mungpoo	11
T. Hanbury, Esq., La Mortola, Liguria, Italy	3
E. H. Heinig, Esq., Forest Officer, Khitfna	39
Sir J. D. Hooker, K.C.S.I., Sunningdale, London	73
W. W. Johnson, Esq., Hayatpur, Malda	44
C. E. Jayetilike, Esq., Kurumjala, Ceylon	1
E. A. Kenyon, Esq., Assistant Superintendent, Tele- graph Department, Director-General's office, Cal- cutta	1
M. J. C. Kennedy, France	13
Eevd. E. Logsdail, Chaibassa	1
C. Maries, Esq., Gwalior	20
Eevd. A. J. McLean, Chittagong	2
G. Middleton, Esq., North Coorg	9
S. H. Milner, Esq., Allahabad	1
Dr. J. Grey McKendrick, F.R.S., Glasgow	79
C. Noble, Esq., Nurseryman, London	71
M. C. Naudin, Antibes, France	4
H. W. Newton, Esq., Chandernagore	7
Dr. H. B. Purves, Civil Surgeon, Howrah	7
David Prain, Esq., Fettercairn, Scotland	16
E. Pantling, Esq., Mungpoo	6
G. F. Pashand, Esq., Emmanagore, Fyzabad	1
Pestonjee Pochajee Poeha, Esq., Bombay	1
S. Eobson, Esq., Bankipore	2
F. L. Eid, Esq., Chairman, Ajmere Municipal Committee, Ajmere	1
C. A. Eadice, Esq., as., Calcutta	7
Messrs. Easoner Brothers, Oneco, Florida	9
E. C. Eoy, Esq., Eauchi	1
Messrs. Stanley Price & Co., Calcutta	196
Messrs. F. Sander & Co., St. Albans, England	4
Messrs. H. Low & Co., Clapton Nursery, London	1
G. Sam, Esq., Howrah	2
Mr. T. A. Stewart, Aberdeen	20
E. Trelawney, Esq., Calcutta	4
Dr. J. W. H. Traill, F.R.S., Aberdeen	52
General Tomkies, R.E., C.I.E.	14
C. G. Weldon, Esq., Ceylon	1
C. Wallich, Esq., Jalpaiguri	1
G. F. Wilson, Esq., Heatherbank, Weybridge, London	66
Babu U. Narasinga Eao, Mangalore	1
Maung Po Hla, Record-keeper, Meiktila, Burma	2
M. E. Ky. Marella Kamarajee, Kasimkot	40
Dr. S. Mahomed Hossein, Junagadh	1
Babu Bhuban Chunder Kuv, Dum-Dum	2
„ Moorary Mohon Dutta, Calcutta	1
„ Shoshi Blmsan Banerjee, Bhattah, Purnea	1
„ S. P. Chatterjee, Victoria Nursery, Calcutta	1
„ Gopal Chandra Datta, Sibpur	26
„ Devendranath Basu, Sibpur	20
„ Abinash Chandra Sen, Sibpur	1
Lala Bhola Nath, Belanganj, Agra	12
Narayan Chandra, Nurseryman, Calcutta	1
Total	2,625

APPENDIX V.

List of Herbarium specimens received during the year 1893-94.

	Number.
W. T. Thiselton Dyer, Esq., F.R.S., C.M.G., Director, Koyal Botanic Gardens, Kew, London	5,854
J. F. Duthie, Esq., Director, Botanical Survey, Northern India ...	1,427
H. N. Ridley, Esq., Superintendent, Botanic Garden, Singapore ...	1,509
b. E. Rita, Esq., Jowai, Assam	157
G. T. Scott-Elliot, Esq., Egypt	295
G. D. Haviland, Esq., Borneo	155
Dr. G. Radde, Tiflis	353
C. Curtis, Esq., Botanic Garden, Penang	221
C. G. Pringle, Esq., Charlotte, Vermont, U.S.A.	272
Dr. Cummins, Gnatong, Sikkim	49
J. Sykes Gamble, Esq., Dehra Dun	164
Baron Sir Ferdinand Von Mueller, Melbourne	305
J. Medley Wood, Esq., Natal... ..	236
S. Robson, Esq., Bankipore	36
W. A. Talbot, Esq., Deputy Conservator of Forests, N. D. Kanara ...	45
E. de Crespigny, Esq., M.D., Beckenham, Kent, England	101
Dr. Prain	439
R. Pantling, Esq., Cinchona Plantation	1,397
Columbia College Herbarium, New York... ..	341
Dr. Hans Schinz, Zurich	243
G. M. Woodrow, Esq., College of Science, Poona	6
H. H. Haines, Esq., Jalpaiguri	43
p .. M. L. Fernald, Esq., Cambridge, Mass., U.S.A.	223
collected in connection with the Botanical Survey of India—	
E. H. Man, Esq., C.I.E., Andamans	611
N. C. Mandal, Upper Burma... ..	511
Abdul Kholil, ditto	1,018
Abdul Hue, Assam	376
Total ...	16,387

APPENDIX VI.

List of Herbarium Specimens distributed during the year 1893-94.

Director, Royal Garden, Kew	423
Herbarium, British Museum	679
Director, Botanical Survey of Bombay	617
Ditto ditto, Northern India	292
Herbarium, Jardin des Plantes, Paris	453
Ditto, Royal Museum, Berlin	718
Ditto, Imperial ditto, Vienna	256
Ditto, Botanic Garden, do.	269
Ditto, University, Utrecht	212
Ditto, ditto, Leiden	460
Ditto, ditto, Upsala	487
Ditto, ditto, Florence	342
Ditto, ditto, Cambridge	71
Ditto, ditto, Edinburgh	241
Ditto, ditto, Aberdeen	214
Ditto, Queen's College, Cork	188
Ditto, Owen's ditto, Manchester	194
Ditto, Owen's ditto, Manchester	281
M.'A. de Candolle, Geneva	437
Smithsonian Institution, Washington, U.b. A'	205
Natural History Survey, Minnesota, U.b.A.	291
Imperial Garden, St. Petersburg	315
Botanic ditto, Natal	261
Ditto ditto, Buitenzorg, Java	299
Herbarium, Melbourne, Australia	529
Dittos Penang	661
Ditto, Perak	477
Ditto, Singapore	280
Botanic Garden, Peradeniya, Ceylon	42
Botanical Institute, Munich	42

APPENDIX VI-concluded.

Cooper's Hill College, London ...	...	...	63
H. C. Levinge, Esq. ...	...	...	121
W. A. Talbot, Esq., Kanara ...	...	...	142
J. Sykes Gamble, Esq., Dehra Dun	...	...	591
Herbarium, Madras ...	...	...	158
Dr. de Crespigny, London ...	...	...	60
„ Lisboa, Poona ...	...	...	3
„ Christ, Basle ...	...	...	49
„ Linden, Berlin ...	...	...	7
„ A. Henry ...	...	...	1,044
H. F. Groves, Esq., London ...	...	...	50
W. S. Broadway, Esq., Trinidad	...	...	35
			<hr/>
	Total	...	12,517
			<hr/>

G. KING, M.B., *Brigade-Surgeon, Lt.-Col.,*
Superintendent, Royal Botanic Garden,
Calcutta.

FINANCIAL DEPARTMENT .

MISCELLANEOUS.

DAKJEELING, THE 13TH JUNE 1894.

RESOLUTION—No. 3462Mis,

READ—

The Annual Report of the Royal Botanic Garden, Calcutta, for the year 1893-94.

Read again—

The Annual Report of the Royal Botanic Garden, Calcutta, for the year 1892-93 with the Resolution recorded thereon.

Dr. King's report gives an interesting account of the operations conducted during the past year. A severe storm occurred in May, and though in the conservatories little damage was done, several trees outside were completely uprooted.

been Stained in a high state of efficiency to the cultivation and distribution of plants

general use, and that the demand is. The Lieutenant-Governor stores his regret with a t c c t X I S tt (of wMcKall stock s4 i. available) proves

specimens, the chief contributors being Royal Garden, Kew; Mr. Duthie, Director of the Boreal India; and Mr Ridley, Director of sets of plants were also received from Mr. M^fVilerVMelboijne), Mr. Wood Dr.Radde(Tiflis),Mr.Curtis(Penang), (Natal), Mr. Sykes Gamble (Dehra-Dnn), Haines (Jalpaiguri). To all these donors. the members of the garden staff, were Dr. Prain, Curator of the Herbarium, Mr. and two native collectors in A s s a large number of specimens was sent to various botanical institutions, among which maybe mentioned Ue w c k of Bombay 'and Northern India, the Botanical the Royal Garden, Kew, the British Museum, Edinburgh, Cork, 'Berlin, Paris, St. Petersburg and Florence, as well as to sonian Institution, Washington.

Dr. as deputed to undertake an During a poxtion of he submitted an interesting and valuable report of the Indian Hemp and the final orders of the fourth volume of the Anna Poned till the report of the Indian Hemp year, comprising of a monograph of the naceoe. Both Dr. King and Dr. subjects to the Journal of the Asiatic society

& The Lloyd Botanic Garden in Darjeeling has been kept in ^{excellent} condition by Mr. Kennedy, who also superintended the planting of trees in ^{many} parts of the station.

7. The thanks of the Lieutenant-Governor are again due to ^{Mr. King} his excellent administration of the Garden during the year and to ^{Vr>} for his assiduous and exhaustive enquiries above mentioned.

By order of the Lieutenant-Governor of Bengal,

J. A. BOURDILLON,

Offg. Secretary to the GovU of Beng^a

No. 3493Mis.

COPY forwarded to the Superintendent, Royal Botanic Garden, for ^{informa-}tion.

By order of the Lieutenant-Governor of Bengal,

J. H. TEMPLE,

Offg. Under-Secretary to the Govt. of Beng^{al}

CALCUTTA,
The 20th June 1894.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA.
FOR THE YEAR 1894-95.

No. *m*, of 1895, »*?*/0*0/?*£ Cnntendent, Bojal
From—GEOBGB KING, ESQ., M.B., LL.D., F.R.S., C.W, *

To—The
I HAVE the
Royal Botanic Garden, Calcutta. port of the

U. UAL EEPOEI OF TM E ^ ^ OTANIC GARDEN, CALCUTTA.
FOE THE YEAR 1894-95.

THE weathe, during the yea, presented - ^, t of note, except that the
rainfall was rather below the average. I he growth ox *the plants in the garden,
both in the conservatories and in the open ground, was satisfactor and very
little damage was done by the storms of ^ d ^ l ^ ^ u r i n g the year
hot season. The chief improvements effected in ^ garae, and the repai / and
were the remodelling of the inte 7 ^ V r i e r bank 3 from the engine-house
alteration of the road which runs along t h e T ^ T M ^ is the one standing
to the College gate ^ T M ^ J f i \$ J F £ ^ * * ~ and the
between that in which the orchids aiej > . s i t u a t i o n, but also in area, size,
Palm-house. It is intermediate not only J J ^ ^ conservatory and smaller
and height; being shorter ^ * ^ ^ ^ £ j £ This intermediate con-
in extent and lower in the roof than the ramL now*
servatory, not having been interfered ^ J ^ ^ s therefore taken during
rather choked with overgrow* plants O = ts ^ and, ^ h a w n g been done,
the rainy season to clean* oi it > enar. B. ^ p a new - lan, farmore artistic
the Curator, Mr. B. L. ^ ^ S ^ A ^ A; X n t ^ ^ ' a t t e ^ r s e r i e S having h T
than the former one. All the ch ^ e r t j j a ^ u r a t o r, Mr < H. J. Davies, under
planted out in this house by ^ ^ A ^ t h e plants, have had a little time to
Mr. Proudlock's direct^, the, resdt, I C ^ ^ g ^ ^ , ^ . In the whole of
establish themselves) should, I anticipate, be TM? in a pot, everything being
this large house there is not ^ ^ J ^ ^ ^ J L i , in the other con-
planted in the ground; the ^ £ > ^ t o thoae of pot cdtiire. Having
servatories, proved so much more satistactory xii ^ . ts and i. ^ sides and also (m
from the roof are a number of baskets conta nng. D. e an , ^ ^ ^ the river
part) its roof are covered by creeping plants. ^ i n e ^ ^ in bringing the
bani road to which allusion has above ^ ^ a , in wide n i n g it; in removing
whole to, as nearly as possible, a ^ ^ 0 X m' side; and in improving the
the trees which formed an avenue <> ^ V ^ £ £ B i y a mile long, the labour
grassy slopes on each side of it. tmprovements was Considerable. The earth
involved in carrying out all ^ . " S S ^ i t ^ " taken T ^ 7 ^ t l
required for raising its level and fox J T M * T M > either to enlarge any of thQ
bed of the river, so that ^ ^ ^ e n or T S c a y a t e any new ones. The
ponds already existing m the ga £ T M ^ J e along the northern edge of the
removal of the trees which formed * h < < a v ^ w ^ have been opened up into
road is a great improvement as many * J i t (on of mucn soil from the river
the interior^ the garden. A ^ J ^ L leading down to ike portions, of the
bed, long gentle slopes have been ^ e t J r t on a lower level than the
garden onlachside which are, for the * £ J ^ east of the river entrance
road. The roads in the part of the ^ garae, remains so still e one for ^
are now in excellent condition; but mucn n t r a n c e many of e s e e i n g ^
improvement of those to the west ot tna* u > > Towards the end of the
in Pan unsatisfactory condition xn several ^ h i n h i n e p e c t e ^ i ^ . ^ s h r i ^
Year a eood deal was done in the way oi : 5 ^ h e current season thlg
SdVeefTn the eastern half of the g h a l t n . A n D B ^ ^ buildings erected
process will be continued in the wesne.

during the year by garden labour, and out of the garden budget allocated for the year, a lodge for durwans near the river entrance, some godowns, a blacksmith's shed near the Curator's house, and a glass-roofed nursery for the growth of such kinds of orchids as cannot stand the heat of the monsoon months. More houses of the latter description are much wanted, and their construction should be undertaken as soon as funds become available. I had hoped, long before now, to have been able to chronicle the progress along the road leading from Calcutta to the garden via the Shalimar point, along the river-bank. I regret, however, that the road is still in an unfinished state. Visitors having on various occasions expressed the opinion that a guide book of the garden would be useful, I prepared, during the year, a list of the plants of this sort which Government were pleased to print, and of which a list of the plants to be had by purchase at the garden gates. In order to make this list intelligible, it became necessary to name the various roads in the garden, the names chosen being in all cases those of Indian Botanists, of whom the garden or Herbarium are especially indebted. In the accompanying list I furnish with a map, and, besides a description of the garden, I give a brief sketch of its history since its foundation in 1786.

2. *Economic plants.*—Although no plant of economic interest received special attention during the year, there was, as usual, a distribution of useful plants. Many hundreds of fruit trees were planted by various applicants, mostly for public purposes; and applications for the cultivation of plants (in the cultivation of which there has recently been a slight revival of interest) were also met as far as was possible.

3. *Herbarium.*—A large amount of work has been done in the Herbarium, many scientific references having been replied to, and plants having been named for various correspondents. The collection was increased by the receipt during the year, of 13,119 specimens from other scientific centres, from the Herbarium in India and in other parts of the world, and from collectors sent out to the Royal Garden, Kew, who presented no fewer than 2,198 specimens. Dr. A. J. Baker, a missionary labouring in Formosa, sent 1,066 specimens of plants indigenous to that island. Mr. J. S. Gamble, Director of the Imperial Forest School, Dehra Dun, augmented his most liberal contributions of former years by the addition during the past one, of 455 specimens. From Mr. N. Ridley, Director of the Botanic Garden, Singapore, 667, and from Mr. C. Curtis, Superintendent of the Botanic Garden, Penang, 46 specimens of Malayan plants were respectively received. Valuable contributions of Malayan plants were also received from Mr. L. Wray, Junior, Perak, and from Dr. J. D. Haviland, Borneo. Mr. H. Heinig, Deputy Conservator of the Sunderbans Forest Division, sent in 363 admirably preserved specimens of the flora of that region, while Mr. H. H. Haines, Conservator of Forests, Jalpaiguri, presented 56 specimens from the Duars and Sikkim Terai. From Mr. M. Lawson, Government Botanist, Travancore, were received 356 specimens of Travancore plants. This was a particularly acceptable contribution, as the flora of Travancore was very poorly represented in the Herbarium. The veteran Botanist Baron Von Schlechtendal sent 237 Australian species. Of American plants there were 440 plants from the Smithsonian Bureau of National Exchanges, 410 species from Mr. A. A. Heller, Louisville, South Texas; and 253 from the Conservator of Forests in Mexico. Mr. Gustav Mann, for many years well known as a collector of Forests in Assam, sent from Munich (where he has now settled) 200 specimens of orchids collected by him some years ago in the Assam Forests. Mr. Medley-Wood, Superintendent of the Botanic Garden, Natal, there were received 328 plants, and from Mr. Duthie, Director of the Botanical Survey of North India, 128; while Dr. Prain, Curator of the Herbarium, sent 121 plants collected by him in Switzerland during his furlough. The collections made by the agency of the establishment were considerable, Mr. G. A. Gammit, Curator of the Herbarium, having collected 1,431 specimens; while Mr. H. Man, C.L.E., to whom this garden is indebted for most efficient help during many years, superintended the collection in the Andaman Islands of 847 specimens. From Upper Burma there were sent by Abdul Kholil (a native collector) 720 specimens; and by Mr. J. C. Prazer (an Eurasian collector) 410 specimens. In the neighbourhood of Gay a 334 specimens (chiefly of grasses) were

collected by a garden collector named Shaik Mokim; while Jonardan, the chief of the seed house, brought from the neighbourhood of Baidynath 169 specimens. Mr. R. Pantling, of the Cinchona Plantation, sent 546 specimens of orchids. On the other hand, no fewer than 15,539 specimens of carefully named Indian plants were distributed to scientific institutions and to private botanists in various parts of the world. The recipients of the largest numbers were the Director of the Royal Garden, Kew, to whom 2,044 specimens were sent; the Royal Herbarium, Berlin, to which 1,009 were issued; the Herbarium of the Jardin des Plantes, Paris, which received 545; and the Herbarium of the British Museum, London, to which 817 were sent. Other recipient institutions in Europe were the Herbaria at St. Petersburg, Vienna, Upsala, Leiden, Utrecht, Florence, Zurich, Fribourg, Cambridge, Edinburgh, Aberdeen, and the private Herbaria of M. M. De Candolle of Geneva and Drake de Castello of Paris. Amongst Asiatic institutions, specimens were sent to the Government Herbaria at Madras, Saharanpur, Dehra Dun, Peradeniya, Buitenzorg, Singapore, Perak and Penang. Lastly, contributions were sent to three American institutions, viz., the Smithsonian Institution, Washington, the Botanical Survey of Minnesota and the Herbarium presided over by Professor Sargeant; while one was sent to the University Herbarium at Melbourne in Australia.

4. *Botanical Publications.*—No volume of the Annals of this Garden was issued during the past year. The fifth volume has, however, been in active preparation, and will, it is hoped, be issued during the current year. An important Paper on *Indian Convolvulaceae* was contributed to the Journal of the Asiatic Society of Bengal by Dr. D. Prain, Curator of the Herbarium. In the same Journal there was also published the seventh part of *my Materials for a Flora of the Malayan Peninsula*. Dr. Cummins, of the Army Medical Staff, who worked for some time in the Herbarium as a volunteer, contributed to the same Journal an account of a new species of *Lathrcea* found by him near Grnatong on the Sikkim-Tibet frontier.

5. *Library.*—A few books were purchased during the year; and some Presentations were received from Kew and from other scientific institutions to which contributions of Herbarium specimens and volumes of the Garden Annals had been sent.

6. *Interchange of Plants and Seeds.*—The living plants issued from the nurseries during the year amounted to 42,188 as against 22,553 plants received. Packets of seeds to the number of 13,059 were also issued, while 1,213 were received. Full details of these transactions will be found in the appendices to this report.

7. *Lloyd Botanic Garden, Darjeling.*—The chief improvements carried out in this garden during the year were the improvement of some of the pathways and the reconstruction of the propagating house. As originally laid out, the walks were, from want of money, merely tracks cut in the soil with a layer of sand laid on the surface. Paths made after this fashion become very slippery during the rainy season; and, for some years past, Mr. Kennedy, the Curator of the garden, has been employing his labour-force whenever it could be spared in improving these paths by metalling them. A considerable instalment of this work was done during the past year, but a good deal still remains to be done to complete it. In rebuilding the propagating house only local timber has been used; it is therefore hoped that no repairs will be necessary for some years. The ventilating arrangements of the large conservatory are still in a very unsatisfactory state. The Public Works Department have, however, undertaken to make them more efficient during the current year. The troublesome cockchafer grub which worked such havoc in the garden some years ago has now, in a great measure, disappeared; and, with proper precautions in the application of manure, it is hoped it may soon do so entirely. Besides his garden duties, which he discharged with efficiency, Mr. Kennedy superintended the planting of trees along roads and in odd corners of ground within the station.

8. The budget allotments of funds for both the Calcutta and Darjeling gardens were spent in full. The revenue derived from the sale of surplus plants and seeds amounted for the Calcutta garden to Es. 1,274-5-0, and for the Darjeling garden to Us. 880, both of which sums were credited to Government Avenue.

(4)

9. A few weeks after the opening of the year, Dr. Prain, Curator of the Herbarium, proceeded to England on furlough for eight months. His absence was, however, subsequently extended to fourteen months. Since Dr. Prain's departure, the duties of Curator have been performed with much steadiness and efficiency by Mr. G. A. Gammie, of the Cinchona Department. Mr. R. L. Proudlock, Curator of the Royal Garden, worked with assiduity during the whole year, and to his skill and good taste the laying out of the intermediate conservatory is entirely due. Mr. G. T. Lane, Assistant Curator, was in charge of the indoor operations until November, when he was appointed to act as Superintendent of the Government gardens at Allahabad, in place of Mr. Hill, who went on furlough. Mr. Lane worked cheerfully and well. Mr. H. J. Lane, who had been sent out from the Royal garden, KeW, a few weeks before the beginning of the year, was in November appointed to officiate for Mr. Lane, and has done excellent service. The chief writer, Babu Gopal Ojha, and the other members of the office staff, have also worked to my satisfaction. In the six appendices which accompany this report will be found details of the receipts and issues of seeds and of living and dried plants.

APPENDIX No. I.

Statement shying plants received from 1st April 1894 to Zht
March 1895.

FROM WHOM RECEIVED.	War- dian cases.	Boxes.	Number of plants.
1	2	3	4
Eoyal Gardens, Kew, London ...	3	1	119
Botanic Gardens, Penang ...	1	1	75
Ditto, Saharanpur	2	1,626
Ditto, Darjeeling	16	2,034
Memorial Garden, Cawnpore	1	384
Government House Garden, Calcutta	7
Dr. A. Henry, China	...	1	2
Messrs. F. Sander & Co., St. Albans, Eng- land	...	4	157
Agricultural Society of India, Calcutta	901
Ditto Garden, Bangoon	2
Ditto ditto, Lahore	104
Ditto ditto, Lucknow	151
La Martinière School, Calcutta	1
Conservator of Forests, Tayoy ...	1	...	10
Ditto, DehraDun	3	241
Deputy Conservator of Forests, Sunderbans...	...	4	2
W. Alston, Esq., Jalpaigun	1	...	186
H. G. Batten, Esq., Tavoy	2	633
Hobble J. Buckingham, C.I.E., Assam	1	30
W. Boxall, Esq., Eangoon	1	10
Dr. D. D. Cunningham, C.I.E., F.R.S., Calcutta	4
J. A. Gammie, Esq., Mungpoo	6	489
A. C. Hartless, Esq., "	6	1	50
E. H. Man, Esq., C.I.E., Port Blair	...	1	656
C. Maries, Esq., Gwalior	1	20
J. B. Menzies, Esq., Assam	...	4	358
Dr. E. D. Murray, Chittagong	1	20
E. Pantling, Esq., Mungpoo	1	589
J. Parkes, Esq., Kalimpong	...	3	1,208
G. McD. Peche, Esq., Moulmein	...	10	1,169
W. Penny, Esq., Assam	7
Mr. J. Prazer, Burmah	204
E. Eose, Esq., Allahabad ft...	...	1	2
J. S. Slater, Esq., Engineering College	2
H. Sharman, Esq., Eajputana	11
C. H. Swindon, Esq., Calcutta	1	2
Dr. George Watt, C.I.E., M.D., Calcutta	9
Babu Soorjoo Deo Narayan Sing, Balegarh...	1,012
S. C. Ghatterjee, Calcutta	49
George A. Gammie, Esq., collected in Sunder- bans	...	1	553
E. E. Proudlock, Esq., collected in Sikkim	...	3	6,012
Abdool Kholil, collected in Burmah	51
Shaik Sader Mallic, thana Makosah	...	2	550
Unknown donors ... xi' College of Sciences, Poona	1,340
The Superintendent, Victoria Garden, Bombay	1,000
Ditto, Mysore Government Bo- tanic Garden, Bangalore	500
Total	12	71	22,553

APPENDIX II.

Statement showing plants sent out from 1st April 1894 to 31st
March 1895.

TO WHOM SENT.	War- dian cases.	Boxes.	Number of plants.
1	2	3	4
Eoyal Gardens, Eew, London ...	27	8	948
Botanic Garden, Penang ...»	<•	i 8	62
Ditto, Saharanpur ...	...	9	246
Memorial Garden, Cawnpore ...	...	...	44
Government House Garden, Calcutta ...	...	...	101
Belvedere Garden, Calcutta ...	...	...	174
Zoological Garden, Calcutta ...	...	...	532
Taj Garden, Agra ...	...	* 1	71
His Highness the Maharajah of Kuch Bihar	...	48	1,210
Captain J. G. Turner, His Excellency the Viceroy's Body Guard ...	...	...	15
The Eight Hon'ble the Earl of Annesley, Ireland ...	...	i	67
Professor E. O. Cunningham, Belfast ...	...	x	66
J. Earle Drax, Esq., Dorsetshire ...	1	...	27
L. Ducasse, Esq., Natal ...	2	...	69
His Excellency Sir Arthur Havelock, G.C.M.G., &c, Colombo ...	1	...	30
Mrs. Patton, Moorcroft, Surrey, England ...	1	i	103
„ Eobertson, Scotland ...	1	...	34
C. M. Salvago, Esq., Alexandria ...	3	...	77
Messrs. Hugh, Low & Son, Clapton Nursery, London ...	...	11	1,500
Messrs. F. Sander & Co., St. Albans, Eng- land ...	...	7	5,998
Agri-Horticultural Society of India, Calcutta ...	...	...	128
Ditto ditto, Lahore ...	..	4	105
Ditto ditto, Lucknow ...	..	12	260
Deputy Commissioner, Tavoy ...	1	...	46
Chief Commissioner, Andamans ...	1	..	47
Chief Commissariat Officer, Presidency Command, Calcutta ...	...	...	100
Deputy Conservator of Forests, Sundarbans...	..	...	599
Deputy Magistrate of Jalpaiguri ...	...	1	6
Sub-divisional Officer, Siwan, Saran ...	...	x	10
Ditto, Eanaghat ...	..	z	150
Subordinate in charge, Purulia sub-division,..	...	A	50
Secretary to the Howrah Municipality ..	...	...	30
Chairman, District Eoad Cess Committee, Lobardaga ...	...	...	80
Chairman, Municipality, Khulna ...	...	8	160
Ditto, Local Board, Samastipur ...	...	1	20
District Engineer, Bhagalpur ...	...	41	1,020
Ditto, Birbhum ...	...	18	327
Ditto, Burdwan ...	...	18	334
Ditto, B.-N. Eailway, Chakra- dharpur ...	...	120	3,000
Ditto, Dinajpur ...	!	24	600
Ditto, Hazaribagh ...	...	4	66
Ditto, Hilli, Bogra district ...	...	4	100
Ditto, Hooghly ...	7.	17	400
Ditto, Kaliaganj ...	...	...	100
Ditto, Nawabganj ...	...	...	200
Ditto, Noakhali ...	...	...	210
Ditto, Singhbhum ...	...	5	105
Ditto, 24-Parganas ...	...	...	965
Executive Engineer, Arrah Division, Arrah...	...	1	25

APPENDIX II—continued.

TO WHOM SENT.	Wardian cases.	Boxes.	Number of plants.
1	2	3	4
Executive Engineer, Chota Nagpur Division, Chakradharpur	16	400
Executive Engineer, Siwan	4	80
Superintending Engineer, Cliinsurali	1	20
District Superintendent of Police, Arrah	4	80
Ditto ditto, Faridpur	4	100
Superintendent of Presidency Jail, Calcutta...	3,663
Ditto of Jail, Jessore	1	40
Ditto do., Jubbulpore	4	73
Ditto of Government School of Arts, Calcutta	126
Superintendent of the Civil Veterinary Department, Bengal, Calcutta	300
Superintendent of Horticultural, &c, Institution, Cossipore	6
Manager, Indian Husbandry Co., Ltd., Calcutta	2,000
Ditto, Sanctoria Colliery, Giridih	3	26
Soldiers' Gardens, Fort William	1,020
Medical College Hospital, Calcutta	57
Eden Hospital, Calcutta	90
Howrah Hospital	62
Station Hospital, Dum-Dum	24
Medical Depôt, Calcutta	24
Civil Surgeon, Chapra	5	125
Chaplain of Howrah	303
St. Agnes' School, Howrah	100
St. John's Church, Calcutta	118
St. Vincent's Home, Kidderpore	50
La Martinière School, Calcutta	56
Church Mission Society, Calcutta	200
London Missionary Society, Bhawanipur	14
Bishop of Lucknow, Allahabad...	...	1	6
Thomason College, Roorkee	535
Eastern Bengal State Railway	2	50
Bengal-Nagpur Railway	4	61
Indian Museum, Calcutta	214
Royal Indian Marine Dockyard, Kidderpore	100
R. V. Aguilar, Esq., Shibpur	3
G. L. Anderson, Esq., Calcutta	20
Mrs. Barr, Residency, Indore	2	86
H. C. Bennertz, Esq., Calcutta	10	2,259
Mrs. Betts, Calcutta	2
A. Brownlow, Esq., Chittagong...	...	1	100
Revd. W. O. Connor, Purulia	2	23
Dr. D. D. Cunningham, M.D., F.R.S., Calcutta	122
H. J. Davis, Esq.	383
H. L. Fleury, Esq., Asansol	8	200
G. A. Gammie, Esq.	199
George Gellatly, Esq., Calcutta...	20
J. Graham, Esq., Serampore	121
G. A. Grierson, Esq., Howrah	16
A. C. Hartless, Esq., Mungpoo	n	306
Mrs. A. A. Hedrick, Banda	4	100
Dr. Hendley, C.I.E., Jeypore	1	40
D. Herbert, Esq., Caohar	10	250
Revd. J. Jackson, Calcutta	1
W. W. Johnston, Esq., Malda	2	50
G. H. Loader, Esq., Jalpaiguri	3	76
Mrs. Lyall, Calcutta	430
Lady MacDonnell, Calcutta	150

APPENDIX II—concluded.

To WHOM SENT.	War. dian cases.	Boxes.	Number of plants.
1	2	3	4
Mrs. Maekinnon, Calcutta	188
Revd. N. Madden	6	100
E. H. Man, Esq., C.I.E., Port Blair	2	...	75
Mrs. Maxwell, Howrah	300
J. B. Menzies, Esq., Mangaldaye	...	4	98
J. Monro, Esq., C.B., Ranaghat...	...	9	252
R. Pantling, Esq., Mungpoo	11	1,121
Kevd. G. H. Parsons, C.M.S., Nadia	100
F. E. Patteson, Esq., Calcutta	200
G. McD. Peche, Esq., Moulmein	...	1	2
G. W. Place, Esq., Chapra	1	24
J. Pratt, Esq., Midnapore	2	24
R. L. Proudlock, Esq.	5
Mrs. Ryland, Calcutta	380
„ Shaw, Engineering College	588
J. S. Slater, Esq., Engineering College	325
W. M. Smith, Esq., Madhupur	...	5	104
Hon'ble C. C. Stevens, c.s.i., Calcutta	1
S. A. Swain, Esq., Howrah	24
Revd. H. Tjffman, Purulia	12	265
E. Y. Westmacott, Esq., Calcutta	78
Mrs. Williamson, Calcutta	350
A. G. M. Wodschow, Esq., Purnea	...	4	80
Babu Soorjoo Deo Narayan Sing, Balegarh...	...	2	23
„ A. C. Sen, Sibpur	2
„ B. B. Ghosh, Taki	6
„ B. D. Khan, Chandernagore	11
„ B. L. Sen Gupta, Calcutta	25
„ B. M. Banerjee, Sibpur	8
„ B. M. Roy, Raghunathpur	...	1	5
„ C. N. Nag Chowdhury, Calcutta	...	3	57
„ D. N. Bose, Sibpur	10
„ G. C. Soy Chowdhury, Calcutta	2
„ G. L. Mullick, Calcutta	5
„ H. N. Dass, Garden Reach	...	1	17
„ H. Lall, Sutna	4	1,210
„ J. Chakravarti, Magura	1
„ J. C. Biswas, Calcutta	1
„ J. G. Law, Calcutta	6
„ J. N. Chatterjee, Krishnagar	...	1	100
„ M. L. Samunta, Ooloobaria	7
„ P. B. Dutta, Calcutta	8
„ P. C. Ghosh, Calcutta	60
„ P. C. Shaha, Calcutta	7
„ R. D. Yurma, Kunderki	1	6
„ S. N. Pall Chowdhury, Krishnagore	...	1	82
„ S. P. Chatterjee, Calcutta	1
„ T. C. Chowdhury, Sibpur	3
Sayed Abdool Aziz, Metiabruz	3
Mier Mahamad Sahib, Murshidabad	8
Munshi Golam Nubbee Khan, Bhita	...	1	23
„ Syed Abdool Hayee, Birbhum	...	3	100
Faizullah Bhoys, Calcutta	
Total ...	15	568	42,188

APPENDIX III.

Statement showing seeds received from 1st April 1894 to 31st March 1895.

FROM WHOM RECEIVED.		Number of parcels or packets.
W. T. Thiselton Dyer, Esq., F.B.8., C.M.G., Gardens, Kew, London	...	9
Directeur Botanique, Saigon	...	27
Director, Botanic Garden, St. Petersburg, Rus	...	52
Director, Botanic Garden, Peradeniya, Ceylon	...	23
Director, Forests and Agriculture, Calcutta	...	1
Botanic Garden, Adelaide	...	94
Ditto, Bangalore	...	4
Ditto, British Guiana	...	2
Ditto, Darjeeling	...	29
Ditto, Durban, Natal	...	17
Ditto, Glasnevin, Dublin	...	284
Ditto, Grenada	...	1
Ditto, Hongkong	...	1
Ditto, Jamaica	...	9
Ditto, Mauritius	...	20
Ditto, Saharanpur	...	34
Ditto, Singapore	...	10
Baron Sir Ferdinand Von Müller, K.C.M.G., F.R.S., Uni- versity, Melbourne	...	58
Superintendent, Agri-Horticultural Institute, Gardai, Madras	...	4
Superintendent, Agri-Horticultural Institute, Gardens, Lahore	...	69
Superintendent, Zoological Gardens, Alipore	...	1
Secretary, Agri-Horticultural Society of India, Calcutta	...	108
Herbarium of the University of California	...	1
Conservator of Forests, Eastern Circle, Mandalay	...	1
District Forest Officer, Cuddapah	...	1
Extra Assistant Conservator of Forests, Sunderbans Division	...	2
Messrs. ... Italy	...	33
Messrs. ... Royal Palm Nurseries, California, United States of America	...	48
Messrs. ... William Brothers, Heneratgoda, Ceylon	...	1
Messrs. ... Anlop & Co., Calcutta	...	1
Arm. ... Auxiliary Co-operative Supply Com- pany, London	...	1
Cap. ... vedere	...	1
C. ... Assistant Superintendent, Forest Department, Penang	...	12
Dr. ... California	...	10
Dr. ... anta Bart	...	42
J. Sykes Gamble, Esq., Beta. Dun	...	1
G. A. Gamble, Esq., Sikki	...	1
R. ... Inspector-General of Forests to the Government of India, Calcutta	...	1
A. F. R. Hoernle, Ph.D., Principal, Calcutta Madrasa	...	1
J. L. Lister, Esq., Pashok	...	3
E. H. Man, Esq., C.I.B., Port Blair	...	66
M. le Professor Max Cornu, Paris	...	1
J. Parkes, Esq., N ^ 0 0 ^	...	5
R. ... Esq., ...	...	1
R. Proudlock, Esq., Sibpur	...	1
E. S. Rogers, Esq., Ruby Mines, Burma	...	2
George ... Reporter on Econo- mics, M.B., C.M., C.I.E., to the Government of India, Calcutta	...	143
... to the Government of India, Calcutta	...	2
... oodrow, Esq., College of Science, Poona	...	1
... a Martinière College, Calcutta	...	2
Babu B. Ghose, Lahore	...	2
Shaik Mokim, Plant Collector	...	2
Total	...	1,243

APPENDIX IV.

Statement showing seeds distributed from the Royal Botanic Garden during the year 1894⁹⁶,

TO WHOM SENT.	Number [^] parcels or packets.
W. T. Thiselton Dyer, Esq., F.R.S., C.M.G., C.I.E., Director, Eoyal Gardens, Kew, London ...	282
Directeur du Jardin Botanique, Saigon ...	23
Director, Botanio Garden, St Petersburg, Russia ...	86
„ Eoyal, Botanic Garden, Peradeniya, Ceylon	18
Botanio Garden, Bangalore ...	10
Ditto, Buitenzorg, Java ...	22
Ditto, Cambridge ...	58
Ditto, Darjeeling ...	378
Ditto, Demerara ...	3
Ditto, Edinburgh ...	120
Ditto, Glasgow ...	4
Ditto, Glasnevin, Dublin ...	62
Ditto, Grenada ...	12
Ditto, Hongkong ...	9
Ditto, Innspruck, Germany ...	76
Ditto, Oxford ...	1
Ditto, Saharanpur ...	22
Ditto, Singapore ...	23
Ditto, Trinidad ...	3
Director, Department of Public Gardens and Planta- tions, Jamaica ...	7
Secretary, Agri-Horticultural Society of India, Calcutta ...	3
Secretary, Agri-Horticultural Society, Madras ...	24
Ditto, ditto, Eangoon ...	10
Assistant Secretary, Board of Eevenue, Madras ...	1
Superintendent, Agri-Horticultural Gardens, Lahore...	14
Ditto, ditto, Madras...	1
Ditto, Government Horticultural Gardens, Lucknow ...	25
Ditto, Municipal Gardens, Karaohi ...	8
Ditto, H. H. the Nizam's Public Gardens, Hyderabad ...	8
Ditt^ Taj and Government Gardens, Agra ...	3
Ditto, Victoria Gardens, Bombay ...	26
Ditto, Zoological Gardens, Alipore ...	1
Ditto, Cossipore Practical Institution of Horti-Flori-Agriculture, Cossipore	2
Proprietor, Dum-Dum Nursery, Dum-Dum ...	2
District Engineer, Birbhum ...	7
Ditto, Lohardaga ...	5
Ditto, Manbhum ...	9
Ditto, Pabna ...	8
Ditto, Palamau ...	12
Ditto, Singhbhum ...	12
Executive Engineer, 2nd Division, Bari Doab Canal, Amritsar ...	1
Ditto, Balasore Division, Balasore ...	4
Ditto, Public Works Department, Muesoorie ...	6
Ditto, Shwebo Division, Shwebo, Burma	1
Eesident Engineer, B. G. I. P. Eailway, Dhola, Kathiawar ...	9
Assistant Engineer, B.-N. Eailway, Jharsagra ...	3
Ditto, No. 2 Sub-division, Samastipur ...	1
Overseer, Public Works Department, Eanohi ...	3
Sub-Overseer, Burhee, Chota Nagpur ...	9
Ditto, District Board, Sirajganj ...	6
Supervisor, Hazaribagh ...	5
Subordinate, Public Works Department, in charge Kendra Sub-division, Kendra, Gobindpur ...	12
M. le Conservateur, Jardin Botanique, Geneve, Swit- zerland ...	54
Conservator of Forests, Central Circle, Madras ...	1

APPENDIX IV—*continued.*

TO WHOM SENT.	Number of parcels or packets.
Sub-divisional Officer, Bhola ...	1
Ditto, Goalundo ...	1
Ditto, Jowai ...	1
Ditto, Kishorganj ...	1
Ditto, Manickganj ...	1
Ditto, Jamalpur, Mymensingh ...	1
Ditto, Madaripore ...	1
Ditto, Munshiganj ...	1
Ditto, Netrokona ...	1
Ditto, Narainganj, Dacca ...	1
Ditto, Patuakhali ...	1
Ditto, Siwan, Saran ...	2
Ditto, Tangail ...	2
Superintendent, Palamau Jail, Palamau ...	1
Ditto, Jessore Jail, Jessore ...	1
Ditto, Saran Jail, Chapra ...	1
Ditto, Puri Jail, Puri ...	1
Ditto, Central Jail, Midnapore ...	1
Ditto, Central Jail, Bhagalpur ...	1
Divisional Forest Officer, Jerruck, Hyderabad ...	2
Assistant Registrar, Punjab University, Lahore ...	1
First grade Hospital Assistant, Aurangabad, Deccan...	2
Chairman, District Board, Partabgarh ...	2
Vice-Chairman, Town Committee, Cooch Behar ...	12
Messrs. Andrew, Yule & Co., Calcutta ...	1
" Balmer, Lawrie & Co., Calcutta ...	1
" H. Low & Co., Clapton Nursery, London ...	3
" Reasoner Brothers, Oneco, Florida ...	13
" F. Sander & Co., St. Albans, England ...	5
" J. P. William and Brothers, Heneratgoda, Ceylon ...	11
The Most Noble the Marquis of Lansdowne, K.G., Bowood, Somersetshire ...	114
Baron Sir Ferdinand Von Miiller, K.C.M.G., F.R.S., Melbourne ...	90
Cantonment Magistrate, Rangoon ...	1
Officiating District Judge, Chittagong ...	1
Principal, Government College, Ajmere ...	3
Ditto, Forest Officer, Nikosia, Cyprus ...	5
Inspector of Salt and Abkari Revenue, Manikpatna, Puri ...	4
Inspector of Salt and Abkari Revenue, Konda, Vizaga- patam ...	2
Postmaster, Diamond Harbour ...	45
Sir A. J. Arbuthnot, K.C.S.I., London ...	48
Colonel Abbott, Jodhpar House, Abu ...	10
Miss Adams, La Martinière, College, Calcutta ...	1
M. J. Bharwada, Esq., Gndal, Kathiawar ...	13
Dr. Bower, Glasgow ...	34
C. Curtis, Esq., Forest Department, Penang ...	3
H. R. H. Coxe, Esq., Puri ...	1
H. J. Davies, Esq., Sibpur ...	23
Paul Dietel, Esq., Calcutta ...	96
Revd. W. Diller, Chaibassa ...	16
H. C. Ferard, Esq., c.s., Banda ...	1
Dr. F. Franceschi, California ...	139
J. Sykes Gamble, Esq., Dehra Dun ...	6
G. A. Gammie, Esq., Sibpur... ...	47
J. Gammie, Esq., Mungpoo ...	21
Major M. A. Gray, Shillong^... ...	4
M. Edouard Guillaume, Paris ...	4
A. C. Hartless, Esq., Mungpoo ...	27
Mrs. Hodges, Mhow, C. I. ...	8
T. Hanbury, Esq., Ventimiglia, Italy ...	3
W. W. Johnson, Esq., Hayatpur ...	2
G. T. Lane, Esq., Allahabad ...	126
H. Ledgard, Esq., Cawnpore... ...	1
Revd. A. Logsdail, Chaibassa ...	1

APPENDIX IV—concluded.

TO "WHOM SENT.	Number of parcels or packets.
P. V. Luke, Esq., Calcutta	1
Revd. A. J. McLean, Chittagong	1
C. Maries, Esq., Gwalior	11
E. H. Man, Esq., C.I.E., Port Blair	1
J. B. Menzies, Esq., Kalaigaon, Mangaldai	23
W. T. Marshall, Esq., J. P. Patterdale Hall, England	79
C. Noble, Esq., Sunningdale, London	6
M. le Naudin, Antibes, France	1
A. Perry, Esq., Winchmore Hill, London	34
R. Pantling, Esq., Mungpoo	62
S. Robson, Esq., Bankipore	3
E. Eose, Esq., Allahabad	9
M. Scowen, Esq., Colombo, Ceylon	2
W. N. Sealy, Esq., Gorakhpur	8
C. H. Shinn, Esq., Berkeley, California	6
Dr. Hans Schinz, Zurich, Switzerland	81
S. O. Smith, Esq., Agra	1
Surgeon-Lieutenant-Colonel E. N. Stoker, Dharmsala	16
F. W. K. Von Vyburg, Esq., Bombay	2
W. M. Thorburn, Esq., c.s., Kurnool	3
George Watt, Esq., M.B., CM., C.I.E., Eeporter on Economic Products to the Government of India, Calcutta	4
G. W. Wilson, Esq., Heatherbank, London	93
G. Marshall Woodrow, Esq., Poona	12
Miss Wharton, Allahabad	1
Colonel H. Wylie, c.s.i., Katmandu, Nepal	2
Arthur Young, Esq., Cyprus	5
Eajah of Khaira, Monghyr	1
Pundit Mohur Singh, Dehra Dun	1
Krishnarao Jeshwant Jog, Tasgaon	1
Sahibzada Nooroodeen Khan, Russapagla	8
Manickji Meherwanji, Bilimoria, Esq., Bombay	4
Babu Devendranath Basu, Sibpur	20
„ Gopal Chandra Datta, Sibpur	26
„ Hem Chandra Banerjee, Sibpur	3
„ Jadj^Chandra Biswas, Calcutta	3
„ Jatf(R)hary Ghosh, Sibpur	20
„ Kanti Bhusan Banerjee, Motihari	1
„ Pulin Behary Dutt, Calcutta	10
„ Satcowri Deb, Calcutta	1
„ XJpendra Nath Mitter, Andul	4
Total	59

APPENDIX V.

List of Herbarium specimens received during the year 1894-95.

	Number.
The Director, Eoyal Garden, Kew	2,198
Dr. A. Henry, Formosa	1,066
J. Sykes Gamble, Esq., Dehra Dun	455
R. L. Heinig, Esq., Sunderbans	363
H. H. Haines, Esq., Jalpaiguri	56
J. F. Duthie, Esq., Director, Botanical Survey, N. India	128
Hemp Drugs Commission	13
S. Robson, Esq., Mussoorie	47
Dr. Brazier-Creagh, Karachi	58
J. Davies, Esq., Kuram Valley	9
Major Burn-Murdoch, R.E., Shillong	6
R. Rose, Esq., Allahabad	3
S. Fraser, Esq., Darjeeling	1

APPENDIX V—concluded.

	Number.
W. O. Taylor, Esq., Orissa ...	1
A. Sinythia's, Esq., Forest Department, Assam ...	3
W. A. Talbot, Esq., Forest Department, Kanara ...	4
M. A. Lawson, Esq., Director, Botanical Survey, Madras ...	356
P. Lancaster, Esq., Calcutta ...	1
Surgeon-Captain D. Prain, Curator of the Herbarium ...	121
G. Mann, Esq., Munich ...	251
Baron Von Müller, Melbourne ...	237
Director, Botanic Garden, Buitenzorg, and Mr. Koorders, Conservator of Forests ...	706
J. D. Haviland, Esq., Borneo ...	272
H. N. Eidle, Esq., Singapore ...	667
J. Medley-Wood, Esq., Natal ...	328
L. Wray, Esq., Junior, Perak ...	222
C. Curtis, Esq., Penang ...	46*
Smithsonian Bureau of Exchanges, Washington, T.J.S. A. ...	603
Mr. C. G. Pringle, Mexico ...	253
Mr. A. A. Heller, S. Texas ...	440
<i>Collected Department ally.</i>	
G. Gammie, Esq., in Assam ...	1,434
E. H. Man, Esq., C.I.E., in the Andamans ...	847
R. Pantling, Esq., in Sikkim... *	54\$
J. Gammie, Esq., ditto ...	4
W. A. Kennedy, Esq., Darjeeling ...	1
J. C. Prazer in Burmah ...	150
Abdul Koleel ditto ...	720
Shaik Mokim in Bengal ... *	334
Jonardun Lushker ditto ...	169
	4,205
Total ...	13,119

APPENDIX VI.

List of Herbarium specimens distributed during the year 1894-95.

	Number.
Herbarium, Royal Garden, Kew ...	2,044
Ditto, Imperial Garden, St. Petersburg ...	289
* Ditto, University, Edinburgh ...	239
Ditto, ditto, Florence ...	368
Ditto, Madras ...	204
Ditto, * University, Utrecht ...	234
Ditto, ditto, Upsala ...	183-
Ditto, ditto/ -Cambridge ...	212
Ditto, Smithsonian Institution^ Washington, United States of America ...	516
Ditto, Singapore ...	561-
Ditto, Royal Museum, Berlin ...	1,009
Ditto, Botanic Garden, Vienna ...	188*
Ditto, Imperial Museum, Vienna ...	222
Ditto, Botanic Garden, Peradeniya, Ceylon ...	239
Ditto, Jardin des Plantes, Paris ...	545
Ditto, Perak ...	476
Ditto, Botanical Survey of Northern India ...	424
Ditto, Penang ...	420
Ditto, University, Aberdeen ...	329
Ditto, Melbourne, Australia ...	241
Ditto, University, Leiden ...	564
Ditto, M. A. deCandolle, Geneva ...	641
Ditto, British Museum, London ...	817
Ditto, Minneapolis, Minnesota, U.S.A. ...	72
Ditto, Botanic Garden, Buitenzorg, Java ...	424
Ditto, Owen's College, Manchester ...	181
Ditto, College of Science, Poona ...	182
Ditto, Friburg ...	474

APPENDIX VI—concluded.

	• Number.
J. Sykes Gamble, Esq., Dehra Dun ...	128
W. A. Talbot, Esq., KaWa ...	105
Botanic Garden, Natal * ...	269
Herbarium, Queen's College, Cork ...	122
Natural History Survey, Minnesota, U.S.A. ...	177
H. C. Levinge, Esq., Ireland ...	515
Dr. Hans Schinz, University, Zurich ...	566
M. Drake de Castello, Paris ...	577
Sir William Roberts, M.D., F.R.S., London ...	400
Professor Sargeant, U.S.A. ...	202
R. Pantling, Esq., Mungpoo, Kurseong ...	93
Dr. G. Watt, Calcutta ...	1°
Professor, Keefs, Botanischer Garten, Erlangen, • Germany ...	°
C. Ford, Esq., Botanic Garden, Hongkong ...	^
Dr. T. Cooke, Imperial Institute, London ...	^
A. C. Hartless, Esq., Labdah, Mungpoo ...	^
Total ...	<u>15,530</u>

G. KING, M.B., Brigatle-Surgeon-Lieut.-Col,
Superintendent, Royal Botanic Garden, Calcutta.

FINANCIAL DEPARTMENT .

MISCELLANEOUS.

DARJEELING, THE 14TH JUNE 1895.

RESOLUTION—NO. 156T.—F.

HEAD—

The Report of the Royal Botanic Garden, Calcutta, for the year 1894-95.

Among the principal improvements effected during the year in the garden, which has now for a number of years been a most popular resort, may be mentioned the entire remodelling of one of the conservatories, which has been laid out on a new and more artistic plan. The road running along the river bank from the engine-house to the gate of the Sibpur College has been considerably improved, and several small buildings and a glass-roofed house for certain orchids have been erected by garden labour. Dr. King's singular talent for landscape gardening has enabled him, during the 24 years he has been in charge, to add greatly to the beauty of the garden by skilful grouping of trees and shrubs, and it now ranks high among similar institutions for picturesque scenery no less than for scientific completeness. Within the past year he has laid the public under a further obligation by bringing out a Guide to the garden, the want of which had been long felt. The book contains a description of the garden, and a brief sketch of its history since its foundation in 1786, and copies can be had by purchase at the garden gates, and from Messrs. Thacker, Spink and Company, booksellers, Calcutta.

2. The Herbarium attached to the garden received material additions during the year; more than 13,000 specimens were added to it, illustrating the flora of England, Switzerland, the United States, Mexico, the Malay Archipelago, Borneo, Formosa, Australia, Natal, Assam, Northern India, Travancore and the Andaman Islands. To the contributors of these specimens, Mr. Thiselton Dyer, Dr. Prain, the Smithsonian Bureau of National Exchanges, Mr. Heller, Mr. Pringle, Mr. Wray (junior), Mr. Eidley, Mr. Curtis, Dr. Haviland, Dr. Henry, Baron von Müller, Mr. Medley-Wood, Mr. Gustav Mann, Mr. Duthie, Mr. Gamble, Mr. Lawson, and Mr. E. H. Man, C.I.E., the thanks of Government are due. Nearer home, Messrs. Heinig and Haines, Deputy Conservators of Forests, contributed to the garden valuable specimens of the flora of the Sunderbans, the Bhutan Duars, and the Sikkim Terai; and the Lieutenant-Governor will be glad to see more officers of the Forest Department in Bengal cultivate botanical research and assist the garden by their collections. The collectors employed by the Calcutta garden have also added some valuable contributions. A large number of specimens was sent out from the garden to various botanical institutions in Europe, America, Australia, the Straits Settlements and in India.

3. Of the Lloyd Botanic Garden at Darjeeling there is apparently little to record. The report does not state how far it fulfils the purpose for which it was originally established, of bringing together in one place those specimens of the indigenous flora of the Eastern Himalayas which can be grown at the elevation of Darjeeling. Fuller information on this point should be given in future reports.

4. The Lieutenant-Governor desires to acknowledge the excellent work done by Dr. King during the past year, and to express his unqualified satisfaction that this Province has secured the retention of his services for at least two additional years.

By order of the Lieutenant-Governor of Bengal,

H. H. EISLEY,

Secretary to the Government of Bengal

(2)

No. 157T.—F.
COPY forwarded to the Superintendent, Royal Botanic Garden, for
information.

By order of the Lieutenant-Governor of Bengal,

H. H. RISLEY,
Secretary to the Government of Bengal.

DARJEELIKG,
The lith June 1895.



ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR
THE YEAR 1895-96.

10

No. 16GK, dated Eoyal Botanic Garden, Sibpur, the 12th May 1896.

Prom—BRIGADE-SURGEON-LIEUTENANT-COLONEL GEORGE KING, M.B., LL.D., F.L.S.,

F.R.S., C.I.E., Superintendent, Royal Botanic Garden, Calcutta,

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

I HAVE the honour herewith to submit the 109th Annual Report of the
Royal Botanic Garden, Calcutta,

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE
YEAR 1895-96.

THE weather of the official year 1895-96 was remarkable for the great dryness of the months from October to March. Not only did the rainy season end prematurely, but the showers which are not unusual about the beginning of January entirely failed this year, and there was not a single storm from the north-west. The result of this excessive dryness on the plants growing out of doors has been disastrous. In spite of all efforts in the way of artificial watering, many small plants have died; and many trees, even of large size, will be disfigured by the loss of branches which have withered. The excessive dryness of the air during the few weeks when the majority of the orchids came into bloom had the double effect of reducing the size of these beautiful flowers, and of hastening their withering. The flowering-trees out of doors were also stimulated into putting out unusually large numbers of blossoms of smaller size than usual. The solitary benefit derived from the drought was that the water in the Garden lakes fell so low that it was possible, by cutting some of them off from the supply of water lifted from the river by the steam-pump, to run them quite dry, and thus to obtain from their beds a quantity of earth which will be of great use in raising the levels of numerous roads which are much in want of being heightened. Chief amongst such roads is the avenue leading from the river entrance to the Banyan tree. This, which is more than a third of a mile long, is one of the most prominent in the Garden. Towards the middle of it the level sinks, so that the roadway is below the surrounding ground. This depression not only produces an unpleasing effect, but it forms a cup in which water freely collects during the rains. By means of the earth recovered from the lakes near this road, I hope, during the year now entered upon, greatly to improve this avenue, as well as the ground on each side of it. During the year the Dyer and Falconer Avenues had their levels raised and were repaired, the soling bricks and burnt-brick metal required for the purpose having as usual been made within the Garden. With the relaying of the two avenues just mentioned, the eastern half of the Garden has now been well supplied with good roads. Much, however, still remains to be done in the western half. The Banyan avenue will probably be taken in hand during the current year, but it will not be possible to do more. The Roxburgh Avenue, which is in a very bad condition during the greater part of its length; the Thomson Avenue, which is almost unfit for wheeled traffic; and various shorter roads will have to lie over for future occasions when special grants of money can be obtained. During the cold weather the new road running from the Shalimar Point to the garden was opened for traffic by the Public Works Department; and, with its opening, people coming to the Garden by land began to enter it via a gate which was previously but little used. Anticipating this change, I had for some years back been improving the Garden in the neighbourhood of that gate. During the current year the final touches were put upon that part of the Garden, and it is now one of the prettiest spots within its boundaries. The gate itself is however rather mean and small, and a larger one ought to be provided as soon as funds permit. A year or two ago the Platform on which Kyd's Monument stands was paved with marble, Sir Charles Elliott having made a special grant of money for the purpose. Last year,

by a similar grant, marble steps to the platform were provided, in the garden of the former cemented ones. No buildings were erected during the year. I had hoped to have been able to build a house in the Nursery, but funds were not sufficient. Such a house be put in hand as soon as possible. A glass-roofed house for the ferns is still also one of the desiderata of the Garden. Few of the grass-roofed conservatories which have proved so perfectly successful for orchids, palms, and other plants. In consequence of there not being a conservatory, the public never see the Garden fern collection, which is to be kept in nursery houses near the Curator's quarters. Towards the end of the official year much was done towards thinning the large trees with trees to the south-west of the great Banyan. During the year an interesting addition to the Garden trees was made in the shape of cutting of the sacred *Bo* tree of the jaipuri hills. *Sr^h^i^T^S^k^y^a* Muni, the founder of the Buddhistic faith, lived on this island in the large lake near the big Banyan, from which, when it will be well seen, and at the same time it will not be easily accessible.

2. *Economic plants.*—At the request of the Reporter on Economic Plants to the Government of India, patches of two species of *Sida* were cultivated in the Garden, with the view of testing the value of their fibres for cordage. The crops grown on these patches were made over to the officer just mentioned. At his request also quantities of *Adhatoda Vasica* were prepared in the nurseries for issue to tea-plantations, the decoction of the leaves of this plant having a popular reputation as an insecticide. A few experiments were made in the nurseries by Mr. R. L. Proudlock, with the view of testing the merits of *rheea* plants for the manufacture of paper. The results, however, were of a somewhat doubtful nature. During the year were less numerous than in former years, and the timber trees were issued to public officers in all parts of the Province. The Director of Land Records and Agriculture, having been for some time unable to obtain a botanical report on the various races of wheat and being unable to supply adequate material for a study of the subject, suggested that a portion of the Sibpur Experimental Farm should be supplied during the cold weather of 1895-96 to raising wheat from the various wheat-growing districts. This suggestion was acceded to by Mr. Macpherson, and Dr. Prain has during the year made observations on the samples of wheat grown in the plot placed at his disposal. His report on the races grown, and on their names to the names they bear in the different districts, will be in the hands of the Director of Land Records and Agriculture at an early date.

3. *Herbarium.*—Work in the Herbarium was carried on with vigour; and during the year 17,403 specimens were received, while 11,093 carefully named specimens of Indian plants were issued to various scientific institutions all over the world. The chief donors to the Herbarium were the Royal Garden, Kew, who contributed 1,974 specimens, and the Botanical Department of the Natural History Museum, London, who transmitted 1,129 duplicate specimens not required by that institution. From Dr. Engler, Conservator of the Royal Herbarium, Berlin, were received 518 specimens, and from the authorities of the Botanical Museum of the University of Vienna 1,000. Dr. Hans Schinz, Director of the Botanic Garden, Zurich, contributed 558; and the veteran Baron Von Mueller, Government Botanist & Melbourne, augmented his former munificent donations by 313 specimens during the past year. From American botanists large contributions were received; the Smithsonian Institution at Washington having sent 134 specimens, while Messrs. Pringle contributed 431 Mexican specimens, The Government of the Straits Settlements contributed 850 specimens, collected chiefly in Malacca; and Mr. E. H. Man, to whom for many previous years the Herbarium has been greatly beholden, sent 257 from the Andaman Islands. Among officers of the Indian Forest Department who made presentations,

journal appeared descriptions of thirty-three new species of Sikkim orchids, by Mr. R. Pantling, of the Cinchona Plantation, and myself.

5. *Library*.—A few books were added to the library, and in exchange for copies of the *Garden Annals*.

6. *Interchange of plants and seeds*.—Full details of the issues of these will be found in Appendices I, II, III, and IV, having been 30,898 plants and 2,384 packets of seeds, and plants and 1,177 packets of seeds. Amongst the collections of received during the year the most interesting, from a botanical view, was that made in Assam by Dr. G. Watt, C.I.E., during a tour made in that province in connection with his researches into Dr. Watt's collection consisted of no less than 1,215 plants, many

much interest. *Calcutta Botanic Garden, Darjeeling*.—This Garden was during the whole year by the Curator, Mr. W. A. Kennedy, who, besides his Garden, has charge of the Shrubbery grounds and of the various parts of the station. During the year Mr. Kennedy various improvements on the roads and conservatories within the very remarkable plant was added to the Darjeeling garden, namely, a gigantic specimen of the beautiful Australian fern, *Todea barbara*. This plant was the personal gift of the distinguished botanist, Baron Von Müeller, K.C.M.G., F.R.S., who for many years has been the highest authority on the botany of the Australian Colonies. Baron Von Müeller times presented many valuable plants to the Calcutta Garden, but his latest gift, outrivals all his previous contributions. The *Todea* which the Darjeeling Garden was removed by the Baron, at his own expense, from a lonely valley far distant from his residence in Melbourne. It weighs upwards of half a ton, and ought, when it has had sufficient time to expand its leaves, to form a magnificent object.

8. The budget allotments of funds, both for the Calcutta and Darjeeling Gardens, were spent in full. The proceeds of the sale of surplus seeds, amounting to Rs. 1,107-1-6 for the Calcutta Garden and Rs. 1,014-8-6 for the Darjeeling Garden, were paid into the Government treasury as usual.

9. Dr. Prain (who had been on furlough to Europe) returned in June, and since then he has been in charge of the Herbarium. Dr. Prain was appointed Professor of Botany in the Calcutta University in place of myself. Government having allowed me to retire from my appointment. During Dr. Prain's absence the Herbarium work was carried on by Mr. G. A. Gammie (of the Cinchona Plantation), who on Dr. Prain's return reverted to his own appointment at Mungpoo. For the first time in the year Mr. R. L. Proudlock held the appointment of Curator of the Garden. Towards the end of January he was transferred to the Ootacamund Government Garden at Ootacamund, and his place here was filled by Mr. Lane (the Assistant Curator), who returned during the year from Allahabad where he had held an acting appointment. Mr. Lane's place on this Garden was in turn filled by Mr. Davies, who had previously been a probationer under the new scheme for providing a corps of gardeners. Mr. Proudlock's advancement to the Ootacamund Garden thus gave of giving well-merited promotion to Messrs. Lane and Davies, during the year has been very satisfactory. The offices both of the Garden and of the Cinchona Plantation have, during the year, been in charge of Babu Gopal Chandra Datta, who has worked with his usual assiduity.

10. The usual appendices (six in number) which accompany this report give full details as to the distribution of plants, seeds, and Herbarium specimens.

APPENDIX I.

Statement showing Plants received from 1st April 1895 to 31st March 1896.

FROM WHOM RECEIVED.	War-dian cases.	Boxes.	Number of plants.
1	2	3	4
Royal Gardens, Kew, London ...	2	3	IPO
Botanic Gardens, Durban, Natal ...	1	...	31
Ditto, Bockhampton, Australia	1	362
Ditto, Singapore	1	24
Ditto, Saharanpur	1	49
Ditto, Darjeeling	5	321
Ditto, BaDgalore	20
Memorial Garden, Cawnpore	4	160
Zoological Garden, Calcutta	2
Baron Sir Ferdinand Von Müller, K.C.M.G., F.R.S., University of Melbourne.	1
Government Botanist, Melbourne, Australia...	3
Messrs. H. Low & Son, Clapton Nursery, London.	...	3	103
" F. Sander & Co., St. Albans, England	...	4	345
Agri-Horticultural Society of India, Calcutta	167
Ditto ditto, Lahore	2	7
Ditto ditto, Lucknow	5	159
Assistant Director of Land Records and Agri- • culture, Bengal, Calcutta.	6
Deputy Magistrate, 24-Parganas, Calcutta	4
H. J. Batten, Esq., Tavoy ...	1	2	464
J. Brown, Esq., Bally	6
Dr. Burton Brown, Kohima	2
C. Curtis, Esq., Penang ...	2	...	50
Giessler, Esq.	134
G. A. Grierson, Esq., Howrah	1
G. Barton Groves, Esq., Abu, Eajputaua	1	18
C. A. James, Esq., Shillong	1	20
A. Y. Kelson, Esq., Khidderpore	10
G. T. Lane, Esq., Allahabad	12
E. H. Man, Esq., C.I.E., Port Blair ...	2	...	282
C. Maries, Esq., Gwalior	1	15
J. Martin, Esq., Eaipur	3	80
R. Pantling, Esq., Mungpoo	1	1,368
J. Parkes, Esq., Nimbong	5	1,669
Mr. J. C. Prazer, Burma	9	1,079
G. McD. Peche, Esq., Moulmein	8	1,378
J. S. Slater, Esq., Engineering College	40
T. J. Spooner, Esq., Kathiawar	2
Mrs. Sykes, Calcutta	6
C. H. Turner, Esq., Calcutta	29
G. Marshall Woodrow, Esq., College of Science, Poona.	...	1	51
Colonel Wylie, c.s.i., Khatmandu, Nīpal	83
Babu B. K. Gulia, Pabna	4
" J. N. Mookerjee, Khulna	3
" Nisul Pathi, Cuttack	3
* " P. C. Chatterjee, Chundytolla	8
Budeen Nusker, thana Makooah	1
Nazir of Chittagong.	2
Dr. George Watt, M.B., c.M., LL.D., F.R.S., C.I.E., collected in Assam.	...	19	1,215
Dr. David Prain, M.A., M.B., collected at Jub- bulpore, &c.	28
E. L. Proudlock, Esq., collected in North- Wost, Himalayas, &c	359
H. J. Davies, Esq., collected in Mungpoo, &c.	...	1	83

APPENDIX I—concluded.

To WHOM SENT.	War. dian cases.	Boxes.	Number of plants.
1	2	3	4
Abdul Kholil, collected in Fort Stedman	280
Unknown donors	4	603
T. J. Spooner, Esq., Resident Engineer, Dhola Junction, Dhola, Kathiawar.	2,700
The Superintendent, Victoria Gardens, Bombay	500
Total ...	8	85	14,842

APPENDIX II.

Statement showing Plants sent out from 1st April 1895 to 31st
March 1896.

Eoyal Gardens, Kew, London ...	3	2	385
Botanic Garden, Ootacamund ...	...	3	70
!Qitto, Darjeeling ...	...	3	52
Victoria Garden, Bombay ...	...	1	6
Belvedere Garden, Calcutta ...	...	...	8
Zoological Garden, Calcutta ...	...	...	276
Public Garden, Benares ...	...	6	150
Government Gardens, Nagpur ...	...	1	58
His Excellency the Viceroy's Bodyguard, Ballygunge.	...	...	600
Henry Bald, Esq., Goulburn Valley, Australia	1	...	24
The Eight Hon'ble Sir Mountstuart Grant Duff, York House, Twickenham.	...	1	88
Herr Hermann Dietel, Graz, Germany ...	2	...	71
E. Hindmarsh, Esq., Xillingworth House, Northumberland.	...	"j	86
Messrs. Hugh Low & Son, Clapton Nursery, London.	...	14	1,320
Agri-Horticultural Society of India, Calcutta	...	...	40
Ditto ditto Garden, Lahore	...	7	73
Ditto ditto ditto, Lucknow	...	2	11
Chief Commissioner, Andamans ...	1	...	40
Deputy Commissioner, Dacca ...	...	...	208
Ditto, Tavoy ...	1	1	20
Ditto, Tezpur ...	...	6	152
Chief Commissariat Officer, Presidency Command, Calcutta.	...	...	1,000
Deputy Magistrate, 24-Parganas, Caloutta ...	...	...	3
Subdivisional Officer, Bihar ...	...	3	74
Chairman, Kishoreganj Municipality ...	...	4	100
Vice-Chairman, Municipality, Dinajpur ...	...	2	60
Ditto, ditto, Krishnagarh ...	...	8	200
Ditto, Town Committee, Cooh Behar ...	...	10	247
District Engineer, Backergunge, Barisal ...	...	15	350
Ditto, Bhagalpur ...	...	52	1,100
Ditto, Bogra ...	...	106	2,640
Ditto, Burdwan ...	...	4	100
Ditto, Dinajpur ...	...	28	700
Ditto, Hooghly ...	...	24	600
Ditto, Mymensingh ...	...	80	2,000
Ditto, Noakhali ...	...	14	350
Ditto, Eangpur ...	...	21	525
Ditto, 24-Parganas ...	...	...	305
Executive Engineer, Calcutta Workshop, Sib- pur.	...	...	60

APPENDIX II—continued.

To WHOM SENT.	War- dian cases.	Boxes.	Number of plants.
1	2	3	4
Executive Engineer, Ohta Nagpur Division, Ranchi	...	20	495
Resident Engineer, Dhola Junction, Kathiawar	...	6	153
Superintendent, Central Jail, Bhagalpur	...	9	60
Ditto, Presidency Jail, Calcutta	2,700
Ditto, Mysore State, Bangalore	...	1	100
Medical College Hospital, Calcutta	30
General Hospital, Calcutta	24
Howrah Hospital	50
St. Agnes' School, Howrah	100
St. Thomas's Church, Howrah	100
St. Vincent's Home, Kidderpore	100
Pratt Memorial School, Calcutta	110
Church Missionary Society, Calcutta	112
East Indian Railway, Qiridih	...	2	30
Director, Department of Land Records and Agriculture, Rangoon,	...	1	20
Director, Forest School, Dehra Dun	...	1	5
Officiating District Judge, Faridpur	...	4	75
Commanding Officer of the S.S. <i>Clan Grant.</i>	14
Government Experimental Farm, Sibpur	25
Revd. T. H. Barnett, Howrah	15
Colonel Barr, c.s.i., Residency, Indore	...	1	6
Miss BradsTiaw, Civil Engineering College	4
J. Brown Esq., Bally	20
Hon'ble C. E. Buckland, Calcutta	3
B. Bunckholdoz, Esq., Rampur Hat	...	2	12
J. M. Campbell, Esq., Byculla Club, Bombay	...	2	30
Dr. D. D. Cunningham, M.B., F.R.S., Calcutta	24
H. J. Davies, Esq.	20
G. Doveson, Esq., Calcutta	18
G. A. Gammie, Esq.	...	1	102
J. Gammie, Esq.	...	1	5
W. Graham, Esq., Calcutta	131
Charles Gray, Esq., Coonoor, Nilgiri Hills	...	3	104
Mrs. Grierson, Howrah	375
G. Barton Groves, Esq., Abu, Rajputana	...	1	11
A. C. Hartless, Esq., Mungpoo	...	3	51
R. L. Heinig, Esq., Khulna	1
Mr. Jouslain, Consul-General for France, Calcutta.	...	1	50
Dr. George King, Darjeeling	...	1	10
James Lawrie, Esq., Munshi Bazar	...	2	45
E. L. Sebright, Esq., Bankipore	...	16	400
Thomas Lee, Esq., Sibpur	46
C. Little, Esq., Calcutta	161
Mrs. R. Lyall, Calcutta	210
J. Macphail, Esq., Simultola	...	8	200
Revd. N. Madsen, Pakur	...	5	100
E. H. Man, Esq., C.I.E., Port Blair	...	1	40
A. C. Mlanuk, Esq., Mogul Hat	...	1	25
J. Martin, Esq., Raipur	...	1	4
James Mouro, Esq., C.B., Ranaghat	...	4	72
E. Newton, Esq., Meerut	...	1	300
Revd. J. W. O'Connor, Purulia	...	2	55
R. Pantling, Esq., Mungpoo	...	30	1,464
Revd. C. J. Palmer, Calcutta	^a
G. McD. Peche, Esq., Moulmein	...	1	13
James Peter, Esq., Munshi Bazar	...	3	60

APPENDIX II—concluded.

To WHOM SENT.	War. dian cases.	Boxes.	Number of plants.
1	2	3	4
Capt. E. W. Petley, Calcutta	10
W. Boberts, Esq., Sulkea Salt Golahs	206
Mrs. Secales, Bankura	6	150
Mrs. Shaw, Engineering College	329
J. S. Slater, Esq., Engineering College	2	131
Mrs. Herbert J. Smith, Barla Factory	5	26
W. M. Smith, Esq., Madhupur	1	106
J- T. Sinclair, Esq., Calcutta	10
The Hon'ble C. C. Stevens, c.s.i., Calcutta	2
Mrs. Sykes, Calcutta	12
„ Thomas, Calcutta	8	2
W. Trotter, Esq., Chalsa, Duars	200
C. H. Turner, Esq., Calcutta	11	58
Revd. H. Uffman, Purulia	245
S. E. Voigt, Esq., Ballygunge	8	20
C. Wailich, Esq., Chalauni tea estate, Mai Bazar.	200
Colonel J. Waterhouse, Calcutta	152
E. V. Westmacott, Esq., Calcutta	1	60
Revd. Peacly T. Wilson, Sitapur	6	12
John Wise, Esq., Jessore	560
Messrs. Bird & Co., Calcutta	400
„ Kilburn & Co., Calcutta	6	550
„ Mackillican & Co., Calcutta	150
„ Stanley Price & Co., Calcutta	4	80
„ Clark, Young & Co., Colombo	7	400
„ F. Sander & Co., Nurserymen, 88 Albans, England.	...	2	2-8u0
„ James Yeitoh & Sons, Royal Exotic Nursery.	500
Prince Linbin, Calcutta	7	1
Babu Narayan Dass, Rasra	2	167
„ Soorjoo Deo Narayan Sing, Balegarh...	33
„ M. A. Kabir, Barabigha	150
„ B. B. Ghosh, Taki	2	4
„ B. L. Ghosh, Hazaribagh...	...	2	9
„ B. G. Lall, Siliguri	2	29
„ T. J. N. Bose, Calcutta	48
„ O. C. Bhadra, Calcutta	1
„ F. C. Pandit, Nazirganj	1
„ G. C. Datta, Sibpur	2	12
„ H. C. Shaha, Mogul Hat	8
„ H. N. Dass, Garden Reach	4
„ H. P. Datta, Sibpur	2
„ H. S. Roy, Calcutta	8
„ J. C. Biswas, Calcutta	200
„ J. N. Mullick, Calcutta	41
„ K. C. Dass, Chinsurah	7
„ K. K. Mundal, Tollygunge	2
„ P. C. Ghosh, Calcutta	4
„ R. B. Roy, iSerampore	6
„ R. C. Mookerjee, Calcutta...	4
„ S. P. Chatterjee, Calcutta	3
„ S. P. Chowdhury, Calcutta	1	10
„ S. P. Roy, Siliguri	1	4
Munsbi Faziulla Bhoy, Calcutta	110
Shaik Peer Bux, Matiabruj	2
Shama Charan Samunto, Manicktolla	9
Total ...	9	637	30,898

APPENDIX III.

Statement showing Seeds received from 1st April 1895 *to 31st March 1896.*

FBOM WHOM RECEIVED.	Number of parcels or packets.
W. T. Thiselton Dyer, Esq., F.R.S., C.M.G., C.I.E.,	6
Director, Royal Gardens, Kew, London	1
Directeur du Jardin Botanique, Saigon ...	3
Director, Royal Botanic Garden, Peradeniya, Ceylon	2
Botanic Garden, Bangalore ...	46
Ditto, Brisbane ...	38
Ditto, Buitenzorg ...	8
Ditto, Darjeeling ...	8
Ditto, Grenada ...	1
Ditto, British Guiana ...	5
Ditto, Jamaica ...	2
Ditto, Rockhampton ...	19
Ditto, Saharanpur ...	10
Ditto, Singapore ...	1
Ditto, Trinidad ...	-
Baron St Ferdinand Von Müller, K.C.M.G., F.R.S., University, Melbourne	4
Secretary, Agri-Horticultural Society of India, Calcutta	3
Superintendent, Government Horticultural Garden, Lahore	590
Superintendent, Government Horticultural Garden, Lucknow	6
Superintendent, Agri-Horticultural Society's Garden, Madras	2
Deputy Conservator of Forests, Darjeeling Division, Darjeeling	6
Deputy Opium Agent, Malwa Opium Agency, Indore..	1
Director of Land Records and Agriculture, North-Western Provinces and Oudh	17
Inspector, College of Agriculture, University of California, Berkeley, United States of America	11
Curator of Department of Public Instruction, Technical Education Branch, Sydney...	1
Messrs. Dammann & Co., Italy	42
,, Herb and Wulle, Italy	136
,, J. P. William Brothers, Heneratgoda, Ceylon	2
,, Reasoner Brothers, Royal Palm Nurseries, Oneco, Florida, United States of America	3
,, Stanley Price & Co., Calcutta	73
Hon'ble J. Buckingham, C.I.E., Sibsagar ...	1
Revd. J. Campbell, Manbhum	1
Dr. D. D. Cunningham, Calcutta	19
Dr. F. Franceschi, California	2
G. A. Gammie, Esq.	11
J. Gammie, Esq., Mungpoo ...	38
J. Sykes Gamble, Esq., Dehra-Dun	1
G. Barton Groves, Esq., Abu, Rajputana.	1
M. le Docteur Edouard Hecteel, Paris	2
J. L. Lister, Esq., Pashok	29
E. H. Man, Esq., C.I.E., Port Blair	3
R. Pantling, Esq., Mungpoo ...	5
J. Parkes, Esq., Nimbong ...	1
S. E. Rita, Esq., Jowai	1
J. J. Sinclair, Esq., Calcutta ...	3
W. A. Talbot, Esq., Kanara	1
A. G. Tytler, Esq., Sewan ...	10
George Watt, Esq., M.B., CM., C.I.E., Reporter on Economic Products to the Government of India, Calcutta	10
Total	<u>1,177</u>

APPENDIX IV.

Statement showing Seeds distributed from the Royal Botanic Garden during the year 1895-96.

To WHOM SENT.	Number of parcels or packets.
W. T. Thiselton Dyer, Esq., F.B.S., C.M.G., C.I.B., Director, Royal Gardens, Kew, London ...	129
Directeur du Jardin Botanique, Saigon ...	9
Director, Botanic Garden, St Petersburg, Russia ...	11
„ Royal Botanic Garden, Peradeniya, Ceylon	17
Botanic Garden, Bangalore ...	10
Ditto, Berlin ...	11
Ditto, Buitenzorg, Java ...	13
Ditto, Brisbane, Queensland ...	174
Ditto, Cambridge ...	11
Ditto, Darjeeling ...	147
Ditto, Demerara ...	2
Ditto, Dresden, Germany ...	9
Ditto, Edinburgh ...	13
Ditto, Glasgow ...	3
Ditto, Glasnevin, Dublin ...	12
Ditto, Grenada ...	7
Ditto, Hongkong ...	6
Ditto, Innsbruck, Germany ...	10
Ditto, Oxford ...	2
Ditto, Saharanpur ...	19
Ditto, Singapore ...	21
Ditto, Trinidad ...	2
Director, Department of Public Gardens and Plantations, Jamaica ...	2
Secretary, Agri-Horticultural Society of India, Calcutta ...	11
Ditto, ditto, Rangoon ...	2
Superintendent, Government Gardens, Allahabad ...	2
Ditto, Government Agri-Horticultural Gardens, Lahore ...	4
Ditto, Government Horticultural Gardens, Lucknow ...	60
Ditto, Agri-Horticultural Garden, Madras ...	17
Ditto, Public Gardens, Nagpur ...	1
Ditto, His Highness the Nizam's Public Gardens, Hyderabad, Deccan ...	13
Ditto, Victoria Gardens, Bombay ...	17
Ditto, State Gardens, Gondal, Kathiawar ...	24
Ditto, Cossipore Practical Institution of Horti-Agriculture, Cossipore ...	1
District Engineer, Birbhum ...	1
Ditto, Pabna ...	7
Ditto, Palamau, Daltonganj ...	9
Ditto, Singhbhum ...	2
Executive Engineer, Balasore Division, Balasore ...	1
Ditto, Chota Nagpur Division, Ranchi	1
Ditto, Southern Shan States Division, Fort Stedman, Burma ...	14
Resident Engineer, B. G. I. P. Railway, Dhola, Kathiawar ...	1
Sub-Overseer, Burhi, Hazaribagh ...	1
Ditto, District Board, Serajganj ...	2
Subordinate in charge, Chakradharpur subdivision, Singhbhum ...	6
Subordinate in charge, Chota Nagpur Division, Burhi	1
Ditto, Hazaribagh subdivision, Hazaribagh ...	2
Ditto, Kendra subdivision, Kendra, Gobindpur ...	13
Garrison Quarter-master, Fort William, Calcutta ...	41
M. le Conservateur, Jardin Botanique, Geneve, Switzerland ...	9
Conservator of Forests, Central Circle, Madras ...	3
Officiating Deputy Conservator of Forests, Palamau, Daltonganj ...	34

APPENDIX IV—*continued.*

TO WHOM SENT.	Number of parcels or packets.
Superintendent, Central Jail, Raipur	1
Ditto, Puri Jail, Puri	1
Ditto, Noakhali Jail, Noakhali	1
Ditto, Temple Medical School, Patna	21
Divisional Forest Officer, Jerruck, Karrachi	2
Messrs. Dammann & Co., Italy	111
" Herb and Wulle, Italy	171
99 H. Low & Co., Clapton Nursery, London	5
" Kilburn & Co., Calcutta	1
" F. Sander & Co., St. Albans, England	5
9, Reasoner Brothers, Oneco, Florida	5
" Stanley Price & Co., Calcutta	66
" J. F. William Brothers, Heneratgoda, Ceylon	1
Extra Assistant Conservator of Forests, Ajmere	2
Acting Imperial and Royal Austro-Hungarian Consul, Calcutta	1
Civil Surgeon, Kyaukpyu, Burma	1
Principal Forest Officer and Inspector of Agriculture, Nikosin, Cyprus	4
Manager, Kbagra Estate, Court of Wards, Kishanganj, Purnea	1
The Most Noble the Marquis of Lansdowne, K.G., Bowood	9
Baron Sir Ferdinand Von Muefler, K.C.M.G., F.R.S., Melbourne	97
Field Marshall Sir Donald Stewart, G.C.B., &C., Chelsea Hospital, London	1
Professor Dr. E. Huth, Frankfört, Brandenburg, Germany	9
Herr Graf zu Schwerin, Germany	15
Sir A. J. Arbuthnot, K.C.S.I., London	9
Lord Annesley, County Down, Ireland	1
Colonel Abbott, Abu	9
Dr. Bower, F.R.S., Glasgow	9
Dr. Campbell Brown, Liverpool	1
N. E. Brown, Esq., Kew, London	1
Surgeon-Major H. J. Barnes, Ahmednagar, Deccan	2
M. C. De Candolle, Geneve, Switzerland	1
Harold Baty, Esq., Seychelles, Mauritius	32
Revd. H. F. Corhyn, Abbottabad	182
M. Arduino Cassini, Turin, Italy	29
M. Maximo Cornu, Paris	4
Dr. F. Franceschi, California, United States of America	1
J. Sykes Gamble, Esq., Dehra-Dun	2
J. Gammie, Esq., Mungpoo	80
J. B. Uauldin, Esq., Gauhati	1
F. Hanbury, Esq., Liguria, Italy	1
F/C. Harrison, Esq., Madras	2
E. L. Heinig, Esq., Khulna	29
W. G. Head, Esq., London	2
H. Hildebrand, Esq., Shan Hills, Burma	4
A. C. Hartless, Esq., Mungpoo	21
W. T. Hamilton Holmes, Esq., Madras	1
James Lawrie, Esq., Manoomukh, Sylhet	1
T. Longmuir, Esq., Denork, St. Andrews	50
Eevd. A. Logsdail, Chaibassa	6
Lieutenant E. I. Lugard, Shillong	1
C. Macnaughten, Esq., Eajkot	103
C. Maries, Esq., Gwalior	15
Eevd. M. Macnicol, Mahanadi	6
Dr. McKendrick, F.R.S., Glasgow	1
W. T. Marshall, Esq., J.P., Patterdale Hall, near Penrith, England	9
M. Naudin, Antibes, France	1
C. Noble, Esq., Sunningdale, London	9
E. Pantling, Esq., Mungpoo	34
Mrs. C. H. Pope, Jiaganj, Murshidadad	6

APPENDIX IV—concluded.

To WHOM BENT.	Number of parcels or packet*
David Prain, Esq., Fettercairn, Sootland	9
Dr. Hans Schinz, Zurich, Switzerland	g 74
Colonel Scott, E. A., Calcutta	j 7
M. Scawen, Esq., Port, Colombo	...
Surgeon-Major A. R. W. Sedgefield, Ghazipur	...
Mrs. T. A. Stewart, Aberdeen	...
W. M. Thorborn, Esq., c.s., Kurnool	...
J. T. Tyson, Esq., Pana Basti, Jalpaiguri	...
Dr. J. W. H. Trail, F.R.S., Aberdeen, Sootland	...
G. T. Wilson, Esq., London	...
M. E. Webb, Esq., Hindugalla, Ceylon	...
C. G. Welldon, Esq., Norwood, Ceylon	...
G. Marshall Woodrow, Esq., Poona	...
Mr. Byranji Edulji, Dharamtul, Assam	...
„ Manickji Mehrwanji, Hyderabad, Sind	...
„ Munchersah Matabhoy, Bombay	...
Pandit Jahar Parshad, Lahore	...
Faizel Eubhoy, Calcutta	...
Maung Po Hla, Pan tan ar, Burma	...
Munshi AH Amjat Khan, Hingajiya, Sylhet	...
„ M. A. Alii, Sitapur	...
Sahibzada Nooroodeen Khan, Rassapagla	...
Babu Devendranath Basu, Sibpur	...
„ Gopal Chandra Cuattorjee, Hazaribagh	...
„ Jadub Chandra Biswas, Calcutta	...
„ Jadunath Gossain, Calcutta	...
„ N. B. Dutta, Cossipore *	...
„ Sasee Shakher Datta, Calcutta	...
„ T. Kanaram, B.A., Tellicherry	...
Total distributed	... <u>2,384</u>

APPENDIX V.

*List of Herbarium Specimens received during the year 1895-yv**

	Number
The Director, Eoyal Garden, Kew	i Q74
Dr. A. Engler, Konigl. Botanisches Museum, Berlin	12
J. Sykes Gamble, Esq., Dehra Dun	15g
B. L. Heinig, Esq., Sunderbans	g
J. F. Duthie, Esq., Director, Botanical Survey, N. India	2g
W. A. Talbot, Esq., Forest Department, Kanara	OAQ
M. A. Lawson, Esq., Director, Botanical Survey, Madras	Jog
Surgeon-Captain D. Prain, Curator of the Herbarium	*jg
Baron Von Mueller, Melbourne	...
J. Medley-Wood, Esq., Natal	*i
Mr. C. G. Pringle, Mexico	6A
Mr. A. A. Heller, U. S. A.	8J
G. M. Woodrow, Esq., College of Science, Poona	...
Botanische Abtheilung Naturhistorischen des K. K. Hofmuseums (K. K. Botanisches Hofobinet). Yienna	, ^Q * <<
Geo. V. Nash, Esq., Columbia College, New York, U.S.A.	7UD
Smitbsonian Institution, U.S., National Museum, Washington	01 I, 1
Director, Botanic Garden, Buitenzorg, Java	H
A. Colbourn, Esq., Woolhampton	* > QQ
Dr. Grant, Dalhousie	&
Botanical Museum, Vienna University	1,000
Dr. Hans Schinz, Direktor d. Botanischen Gardens, Zurich	55Q
E. de Crespigny, Esq., M.D., Crowcombe, Beokenham, Kent, England...	- H
Eoyal Botanical Museum, Berlin	A

APPENDIX "V"—concluded.

	Number.
Messrs. Kilburo & Co., Fairlie Place, Calcutta	5
The Director, Botanical Department, British Museum, London	1,129
J. D. Henderson, Esq., Doonagiree Tea Plantation, Ranikhet, N. P.	18
Rajaba Balajee, Medical Practitioner, Dolkuralee, Poona City	12 180
The Forest Department, Settlements, Malacca	850
<i>Collected Departmentally.</i>	
E. EL. Man, Esq., C.I.B., in the Andamans	257
G. A. Gammie, Esq., Sunderbans	509
J. A. Gamxnie, Esq., Sikkim	172
E. Pantling, Esq., do.	3,06a
S. E. Rita, Esq., Jowai, Assam	3
Abdul Kholil, Upper Burmak	578
Total received	<u>4,582</u> <u>17,403</u>

APPENDIX VI.

U of Herbarium Specimens distributed during the year 1895-96.*

	Number.
Herbarium, Royal Garden, Kew	313
Ditto, Imperial Garden, St. Petersburg	296
Ditto, University, Edinburgh	245
Ditto, ditto, Florence	249
Ditto, Madras	122
Ditto, University, Utrecht	94
Ditto, ditto, Upsala	330
Ditto, JangaSL. Washington,	234
Ditto, United States of America	410
Ditto, Singapore	445
Ditto, Koyal Museum, Berlin	679
Ditto, Botanic Garden, Vienna	200
Ditto, Ceylon	332
Ditto, Jardin des Plantes, Paris	157
Ditto, S n i k a l S u n j y of Northern India	678
Ditto, Penang	304
Ditto, University, Aberdeen	630
Ditto, Melbourne, Australia	248
Ditto, University, Leiden	124
Ditto, M. C. deCandolle, Geneva	213
Ditto, British Museum, London	383
Ditto, Java	462
Ditto, Java	455
Ditto, College of Science, Java	105
Ditto, Java	217
Ditto, Java	114
Ditto, Java	182
Ditto, College of Science, Java	182
Ditto, Java	359
Ditto, Java	137
J.S. G. Esq., Dehra Dun	95
W. I. Talbot, Esq., Kanara	148
W. I. Talbot, Esq., I	153
College, Cork	246
ay, Minnesota, U.S.A.	510
iversity, Zurich	787
Paris	209
M. Drake deCas-	82
Professor Sargent, U.S.A.	125
G. Scott Elliott, Esq.	21
a' Mann, Esq., Muenchen	21
P. G. Watt, Calcutta	21
Total distributed	<u>11,093</u>

a KINGM., Brigade-Surgeon-Lieut..Col.,

Superintendent, Royal Botanic Garden, Calcutta.

FINANCIAL DEPARTMENT.

MISCELLANEOUS.

DARJEELING-, THE 15TH JUNE 1896.

RESOLUTION—No. 182T.-F.

READ—

The Report of the Royal Botanic Garden, Calcutta, for the year 1895-96.

The season from October to March was abnormally dry, and many plants and trees perished or were damaged by the drought. Steady progress has, however, been made in improving the Botanic Garden, not only as a scientific centre for botanical students, but also as a pleasure resort for the public. Several garden roads were repaired, and the new road running from the Shalimar Point to the Garden was opened for traffic by the Public Works Department. The steps leading to Colonel Kyd's monument were renovated and paved with marble; and a cutting from the sacred *Bo* tree at Budh Gaya was presented by Mr. Grierson, late Magistrate of Howrah, and planted in the Garden.

2. Attention was as usual given to the cultivation and distribution of plants of economic value. Among these the *Sida*, a fibre-producing plant, and the *Adhatoda Vasica*, a decoction of which is popularly believed to be a powerful insecticide in tea plantations, were cultivated at the instance of the Reporter on Economic Products. The decoction of *Adhatoda Vasica* was submitted to a test, but the results are reported to have been of a somewhat doubtful nature. A portion of the Sibpur Experimental Farm was devoted to raising wheat from samples of seed supplied from the various wheat-growing districts in Bengal, and Dr. Prain, the Curator of the Herbarium, is now preparing a report on the races grown and on their relation to the names they bear in different districts.

3. The collection in the Herbarium was increased by more than 17,000 specimens, the chief contributors being the Director of the Royal Garden, Kew, and the Keeper of the Botanical Department of the National History Museum, London. Valuable sets of plants were also received from Dr. Engler (Berlin), the Botanical Museum of the University of Vienna, Dr. Hans Schinz (Zürich), Baron Von Mueller (Melbourne), the Smithsonian Institution at Washington, the Messrs. Pringle, Mr. Heller, Mr. Nash (Columbia College, New York), Mr. Man (Andaman Islands), the Government of the Straits Settlements, Mr. Sykes Gamble (Dehra Dun), Mr. Talbot (Canara), Mr. Lace (North-West Himalaya), Mr. Duthie (Botanical Survey Department, Northern India), Mr. Lawson (Botanical Survey Department, Madras), Mr. Woodrow (Botanical Survey Department, Bombay) and Mr. Gammie (Senior) of the Cinchona Plantation. Mr. Heinig, Forest Officer of the Sundarbans, and Mr. Gammie (Junior), of the Mangpuh Cinchona Plantation, contributed to the Garden valuable specimens of the flora of the Sundarbans. The native collectors employed by the Garden have also added some valuable contributions. On the other hand, a large number of specimens were sent out from the Garden to the Director of the Herbarium at Kew, the Keeper of the Botanical Department at the British Museum, the Directors of the University Herbaria at Edinburgh, Aberdeen, Cambridge, Berlin, Zurich, Florence, Vienna, Utrecht, Leyden, Upsala and Melbourne; the Botanical Survey Department, Northern India; the Smithsonian Institution, Washington; and to several other Botanical institutions.

4. During a portion of the year Dr. Prain was deputed to the wheat-growing districts of Upper India with the object of enquiring into the "host" or vehicle by which the blight affecting wheat and barley, commonly known as "rust" is propagated from year to year. The matter is one of the utmost importance, and it is hoped that Dr. Prain's investigations may render it

possible to take effective measures for the prevention of these destructive blights.

3. During the year two volumes were added to the interesting series of Garden Annals, containing monographs by Sir Joseph D. Hooker on Indian Orchids and by Dr. D. D. Cunningham on the obscure pue as deep and uensitivity in plants, most of which he traces to purely P botanical subjects to various scientific journals.

b. Who Lloyd Botanic Garden at Darieeling was in charge of *;***£ the who earned out various improvement* in the roads and conservatories. A gigantic specimen of the beautiful Australian fern T* & i & w weighing upwards of half a ton, was presented to the Garden by the g^g guishod botamst Baron Von Mueller, K.C.J.I., F.B.a The attention of I* called to paragraph 3 of the Resolution on hist year's report. gift

f. The thanks of the Lieutenant-Governor are again duo to ^ for their Hi* Superintendent, and Dr. Prain, the Curator of the Herbarium, successful administration of the Garden during the year.

By order of the Lieutenant-Governor of Bengal,

H. H. RISLEY,
Secretary to the Govt. of Bengal.

No. 3328Mis.

COPY forwardud to the Superintendent of the Roynl Botft«^{IC} Garden, ('ulcutta, for information.

By order of tlic Li tuteiiaait- Governor of Bengal,

B. FOLEY,
Unde• Secretary to the Govt. of & ngal.

CHOFFTA,
The 17th June 1895.



ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE
THE YEAR 1898-ST.

No. HG., dated GoTemnient Cinohona Plantation, Mungpoo, the 12th May 1897.

From—BRIG A DE-SUKKON-LIEUT ENANT-CO JON EL GKOKGEKING, M.H., LL.D., V.L.S.
K.K.S., C.I.B., Superintendent, Royal Botanic Garden, Calcutta,

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

I HAVE the honour herewith to submit the 110th Annual Report of the
Royal Botanic Garden, Calcutta.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE
YEAR 1898-ST.

THE scantiness of the rainfall which characterised the year 1895-96 was repeated during the year 1896-97, with the unfortunate but inevitable result that a number of plants which had been weakened by deficiency of moisture during the former year succumbed during the latter. The mortality was highest in the conservatories, and was not due so much to the want of water, which was given as freely as possible by artificial means, as to its quality. The tanks from which the conservatories are supplied contain in ordinary seasons sweet water all the year round. But at the end of last rainy season they were filled, on account of the partial failure of the monsoon, less than the usual proportion of rain-water, their contents having had to be supplemented more largely than usual by water pumped into them from the river. As the season advanced their water thus became proportionally more brackish than usual, and many delicate plants perished, not from dryness, but from the unsuitable quality of the moisture supplied to them. The show of orchids, which during the month of March and April makes the conservatories so popular, was also affected by the season, and was much poorer than usual. The months of February and March were indeed unusually showy; but the supply of moisture, which in the former months was, came too late to counteract the effects of two unusually dry years. The chief improvement effected in the garden during the year was the relaying of the long straight avenue which leads from the river entrance to the great banyan tree. This involved many alterations in level, not only in the roadway itself, but in the grassy slopes on each side of it. The soil required for making up the levels and for improving the slopes was obtained (as was mentioned in last year's annual report) by deepening the large tanks in the Western part of the garden, no addition whatever having been made to the area occupied by water, which in that part of the grounds is already quite enough. The avenue on which these improvements were effected is crossed about its middle by the Hooker avenue (another of the main roads in the garden); and the alterations made in the levels of the former involved alterations also in those of the latter near the point of crossing. The changes made in these two roads, and the removal of a number of trees from their margins, have had the effect of opening up several fine vistas in a part of the garden where the views used to be rather cramped and confined. Before the end of the official year a beginning had been made towards making similar improvements in the Ularke and Thomson avenues, both of which have been in a bad state for years. It is hoped that these may be successfully completed during the current year, and that thus another considerable instalment shall be completed of the improvements which are still required to make the garden what it ought to be. No buildings were erected during the year. Additional coolies are however, urgently wanted; a fern conservatory is still a desideratum; another fluted plant-house is wanted for the nursery. Those may, it is

and
be provided with the present financial pressure on Government has
been relieved. The number of visitors to the garden is steadily increasing.
Even during the hot-weather and rainy seasons, during which in times past
visitors used to be very few, parties of bicyclists have begun to make the

garden a resort, the smoothness of the roads offering apparently a gratification to people on wheels.

2. *Economic plants.*—During the cold season patches of the 7th Central Farm of mustard cultivated in Bengal were grown in the Sibpur Experiment Station adjoining the garden. This was done so that Dr. Prain might study the growth of these crops under observation, with the view of furnishing the Agricultural Department with accurate information as to the races and varieties which they belong. The results, which go to establish the accuracy of the observations arrived at 90 years ago by Dr. Roxburgh (the second Superintendent of the garden), are of great interest both botanically and economically. A series of observations on the races of wheat cultivated in Bengal by Dr. Prain on the same farm during the cold season of 1906-1907, and Dr. Prain was then fortunately able to discover the host of the rust which too frequently works such havoc with the wheat crops of the plain and of the Central Provinces. The results of the series of observations on "wheats" have just been issued, while those on "mustards" are to be published, by the Department of Land Records and Agriculture. There was during the year a revival of the interest in rhea. Large numbers of plants were consequently applied for by planters. These indents were met as far as possible; and, in view of a continuing demand, the rhea field, which has for years occupied a corner of the garden, has been thoroughly cultivated and manured. As was the case in previous revivals of interest in rhea, various processes for the manufacture of fibre have been patented and advertised; and joint-stock companies have been formed to work them. The real difficulty at present seems, however, to be in securing a supply of the raw material than in finding a market for it successfully after it has been put on the European market. The cultivation of fruit trees and of trees for planting avenues within municipalities and villages have been made during the year. Details of these will be to second appendix attached to the present report.

3. *Herbarium.*—Work in the Herbarium was carried on by Dr. Prain and myself with as much vigour as circumstances permitted. During the year 13,989 specimens were added to the Collection; while 12,197 specimens of fully named plants were distributed to the chief Herbaria in Europe and Asia. The chief donor to the Herbarium was Mr. Duthie, Director of the Botanical Survey of Northern India, who contributed 2,066 specimens. Next was Mr. Thiselton Dyer, Director of the Royal Garden, Kew, who contributed 1,757. Mr. Ridley, Director of the Botanic Garden, Singapore, contributed 629. Mr. Lin, Director of the Imperial Herbarium, St. Petersburg, contributed 999 specimens and 847 specimens. An extremely interesting collection of Tibetan plants was contributed by M. E. Drake del Castillo of France. M. Musy, Custodian of the Musée Cantonal of Fribourg, was the donor of an interesting collection numbering 550 species of plants collected in Southern India by the Swiss Botanist, Perrottet. In exchange for these plants of Perrottet a large named collection of plants of India has been sent to M. Musy. This exchange transaction was arranged by Dr. Prain while he was on furlough in Europe two years ago. Mr. Heinig, Deputy Conservator of Forests in the Andaman Islands, the Herbarium is indebted for 627 specimens. Mr. Heinig is an old and valuable contributor from whom in past years excellent collections have been received. Other members of the Forest Department who made contributions during the year are Mr. J. S. Gamble, Director of the Forest School, Dehra Dun; Mr. Talbot, Deputy Conservator of Forests, Kanara, and Mr. H. H. Talbot, Deputy Conservator of Forests in Bengal, who sent respectively 77, 339, and 12 specimens. From the late Baron von Mueller, one of the most liberal contributors to the Calcutta collection in years past, there was received, before his lamented death, a most interesting collection of 301 critical species, chiefly from New Guinea. From Dr. Engler of the Imperial Herbarium, Berlin, were received 20 specimens. From America were received 20 specimens from Mr. G. V. Nash of Columbia College, New York; 5 specimens from Mr. A. H. Curtiss of Jacksonville, Florida; and 5 specimens from Mr. A. H. Curtiss of the Hawaiian Islands. Surgeon-Captain F. C. Maynard contributed 12 interesting plants collected by him during the delimitation of the Dehra Dun

frontier. These plants formed the subject of a joint paper by Dr. Maynard and Dr. Prain, which was published during the year in the *Records of the Botanical Survey of India*. Mr. Dun sent from the Chin Hills an interesting lot of plants; while Dr. Treub, Director of the Botanic Garden, Buitenzorg, presented 215 specimens; and the veteran Dr. Eadlkofer of the Royal Herbarium, Munich, sent 197 most interesting species. Other donors were Mr. T. Baker of the Technological Museum, Sydney, Dr. Günther Beck of the Forests of Travancore. By the direct agency of the garden staff there were collected during the year three sets of plants; viz., Sikkim plants to the number of 1,794 by Mr. R. Pantling; plants of Upper Burma to the number of 530 by Abdul Kholil; and Bhutan plants to the number of 205 by Shaik Mokeem. The latter collector accompanied Dr. A. R. Anderson, Officiating Superintendent of the Indian Museum, who made as shooting excursion into Bhutan. The plants were collected in the neighbourhood of Buxa. Issues of named specimens of Indian plants were made during the year to most of the great botanical institutions in Europe, amongst which may be mentioned those at Kew, the British Museum, the Jardin des Plantes, Paris, the Imperial Museum, St. Petersburg, the Royal Museum, Berlin; to the Herbaria of the Botanic Garden and of the Imperial Museum, Vienna; to the great De Candolle Herbarium at Geneva, to the Herbaria of the Universities of Edinburgh, Cambridge, Aberdeen, Upsala, Zurich, Leiden, Utrecht, Florence; to those of Owen's College, Manchester, and to that of M. Drake del Castello at Paris, and of Sir Dietrich Brandis at Bonn. Contributions were also sent to America to the Smithsonian Institution, Washington, the Arnold Herbarium at Harvard, to the Natural History Survey of Minnesota, Minneapolis; to Australia for the Melbourne Herbarium; to Java for the Buitenzorg Herbarium, and to the Strait Settlements for the Herbaria at Singapore and Perak. In India plants were distributed to the Director of the Botanical Survey of Northern India, to the Herbarium of the College of Science, Poona, to that of the Madras Government at Madras, to that at Peradeniya, Ceylon, and to the collections of Mr. Talbot, Kanara, and of Mr. Gamble, Dehra Dun.

4. *Botanical publications.*—During the year the second part of the fifth volume of the *Annals* of the garden was issued. This volume consists of descriptions, with figures, of about one hundred new or interesting species. About one-fourth of the letter-press of the volume was contributed by Mr. P. Briehl of the Educational Service of Bengal, a smaller portion was written by Dr. Prain, and the remainder is my own work. The seventh volume of the *Annals* was also issued during the year. This volume consists of a monograph of the Indian species of Bamboos by Mr. J. Sykes Gamble, Director of the Forest School, Dehra Dun. The bamboos, owing chiefly to the infrequency of their flowering, have hitherto been little understood, and the different species have been very imperfectly recognised. Mr. Gamble, at once a Forest Officer and a botanist, years ago recognised the difficulties connected with the identification of the species of this most important group of plants, and he has devoted years to their study. After much patient labour he has succeeded in producing an account of them which leaves nothing to be desired. In addition to a description of every species found growing within the limits of the Empire, Mr. Gamble in his monograph gives a list of its vernacular names in the different provinces, with a summary of its uses. The volume contains, moreover, an excellent lithograph of each species drawn by a trained draftsman, with careful analyses of the parts of the flower from Mr. Gamble's own pencil. The eighth volume of the *Annals* is now in preparation, and will, it is hoped, be published during the year now entered upon. Dr. Prain, Curator of the Herbarium, contributed during the past year the following papers to the *Journal of the Asiatic Society of Bengal*:—*Novicee Indicce*, XI, XII, XIII, XIV (*Two new species of Lagotis*; *Description of a new genus of Orchidaceae*; *Further additional Convolvulaceae*?; *Some additional Solanaceae*) and, in conjunction with Dr. King, a paper on *Croftia*, a new genus of Scitamineae. In the *Records of the Botanical Survey of India* Dr. Prain has published, in conjunction with Dr. Cunningham, a note on *Indian wheat-rusts*, and in conjunction with Dr. Maynard a note on the Botany of the *Biluch-Afghan Boundary Commission*. He has also written a note on the Races of wheat cultivated in Bengal for the publications of the Department of

Land Records and Agriculture, Bengal, and a Supplementary Report for the Board of Revenue, Lower Provinces, besides contributing to the *Indian Forester*, *Bulletin de VErbier Boissier*, &c. To the *Asiatic Society of Bengal*, I contributed the ninth part of my *Malayan Peninsula*. In the preparation of this part, I received assistance from Dr. Prain, who elaborated for it the account of the difficult family of Leguminosae.

5. *Library*.—The usual periodicals and a few books were in the library during the year. Some of these were received in exchange of the garden Annals, the others were purchased.

6. *Interchange of living plants and seeds*.—The full details of the receipts and issues of plants and seeds during the issue of plants was unusually large, and amounted to 54,874. Of these about 20,000 were rhea plants given gratuitously to various persons of trying rhea cultivation on a large scale. The plants received 17,981. Amongst these was a fine lot of very interesting things, over 2,000, collected by Dr. G. Watt, C.I.E., during a tour in Assam in his capacity of Reporter on Economic Products to the Messrs. Gattmie, Pantling, and Parkes of the Cinchona Plantations. Mr. Davies, Assistant Curator of the garden; and from Mr. Peckham, Mr. Spooner, C.E., Kathiawar, and Mr. Ridley of Lucknow contri- buted liberally. Messrs. Sander & Co. and Messrs. L. Low & S. Son, also made handsome contributions, as did Mr. P. Lancaster, the Agri-Horticultural Society of India, and Mr. S. P. Chatterjee, Calcutta. Lastly, a most interesting collection was received from Garden, Kew. Of seeds, 1,043 packets were received during the year, 2,234 packets were distributed.

7. *Lloyd Botanic Garden, Darjeeling*.—The history of this garden the year was one of misfortune. During the early months the most trying, and when the rainy season at last began it was heavy downpours of rain which caused many small landslips and grounds. And, towards the end of July, there occurred a violent rain and wind which lasted for about two hours, and by which larger trees were either uprooted or broken to pieces. The fall of course injured many of the shrubs and herbaceous plants; and the day after the storm the garden presented a miserable appearance. The repair of the damage, as far as it was capable of, cost much money which otherwise would have been spent on improvement of the patch of ground which for the past ten years has been the Curator as a vegetable garden expired in June. The Municipality to renew the lease, and intimated their intention of building on the building project, however, was abandoned, and an arrangement was Government by which this piece of land is to be made over to the Garden in perpetuity. These arrangements have not yet, however, been officially completed, and the patch of land has not as yet been formally over. Mr. Kennedy has been in charge of the Lloyd Garden during the year, and, in addition to his work in the garden, he has been in charge of the Shrubbery grounds and of the various trees planted along roadsides within the limits of the Municipality. Mr. Kennedy has as usual worked steadily energetically.

8. The budget allotments of money both for the Calcutta and Darjeeling Botanic Gardens have been fully spent, with the exception of some savings on account of exchange compensation allowance. The proceeds of sales of surplus plants, amounting for the Calcutta garden to Rs. 73-9 and for the Darjeeling garden to Rs. 1,060, were paid into the Government treasury.

9. No one connected with the garden went on furlough during the year. Dr. Prain was as usual in charge of the Herbarium and Library. His services are already too well known to Government to require any mention. During the year his devotion to economic botanic work was in connection with his researches into the cultivated forms of wheat and with his investigation into the host of wheat-rust of the plains, the last

been conducted conjointly with Dr. D. D. J. J. & 2 i T. ane
 and H. J. Davies filled respectively the posts of Curator
 of the garden during the entire year and both U under the recently
 year Mr. G. H. Cave pined the garden as a g. the Director of Kew
 sanctioned graded scheme. Mr. Cav«J^*j^h an excellent reputa-
 from the staff of that institution ^d came to ^ ^ ses both ^ gotanic
 tion, which I have little doubt^e ^ " ^ ^ ^ L - the charge of Babu
 Garden and of the Cinchona Plantation have ^ J ^ ^ recognition.

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APPENDIX I.

Statement showing plants received from 1st April 1896 to 31st March 1897.

FBOM WHOM RECEIVED.	War- dian cases.	Boxes.	Number of plants.
1	2	3	4
Eoyal Gardens, Kew, London	3	...	107
Botanic Gardens, Ootacamund	3	129
Ditto, Bangalore	4
Ditto, Darjeeling	15	518
Government Museum and Public Gardens, Trivandrum.	1	...	38
Memorial Garden, Cawnpore	1	13
Khusru Bagh, Allahabad	41
Zoological Garden, Calcutta	50
Eden Garden, Calcutta	3
W. G. Head, Esq., Crystal Palace, London...	...	1	415
Messrs. H. Low & Son, Clapton Nursery, London.	...	3	107
,, F. Sander & Co., St. Albans, England	2	2	155
,, Searl & Sons, Sydney	2
Agri-Horticultural Society of India, Calcutta	183
Ditto ditto Eangoon	10
Ditto ditto Madras	1	...	24
Ditto ditto Lahore	4	27
Ditth ditto Lucknow	1	562
Deputy Conservator of Forests, Andamans...	...	1	15
H. G. Batten, Esq., Tavoy	318
P. Braine, Esq., Paragoda, Ceylon	1	6
J. Gammie, Esq., Mungpoo	6	605
J. Giesselere, Esq., Calcutta	391
Dr. G. Griffiths, Allahabad	6	255
Dr. Hallier, Hamburg	12
J. Martin, Esq., Kaipur	2	246
Eev. H. Mould, Rajputana	1	18
E. Pantling, Esq., Mungpoo	3	169
J. Parkes, JKaq^Nimbong	2	1,999
G. McD. Peche, Esq., Moulmein	13	2,616
P. Playfair, Esq., Calcutta	60
N. B. EanacTe, Poona	84
G. O. Eanger, Esq., Ballygunge	1
8. E. Rita, Esq., Khasia Hills, Assam	1	42
Dr. R. C. Sanders^M.D., Calcutta	14
T. J. Spooner, Esq., Kathiawar...	3	4,863
Dr. George Watt, M.B., CM., E.R.S., C.I.E., Calcutta.	...	4	2,328
Hon'ble Nawab Ashanullah Khan Bahadur, Dacca.	65
Babu S. P. Chatterjee, Calcutta	1	806
Dr. George King, M.B., LL.D., F.R.si, C.I.E., collected at Sureil.	51
Dr. David Prain, M.A., M.B., collected in Ranchi and South India.	107
H. J. Davies, Esq., collected in Mussooree and Andamans.	219
Shaik Mokim, collected in Bhutan	269
Abdul Kholil, collected at Fort Stedman	1
Unknown donors	33
Total	7	74	17,981

APPENDIX II.

Statement showing plants sent out from 1st April 1896 to 31st March 1897.

To WHOM SENT,	Wardian cases.	Boxes.	Number of plants.
1	2	3	4
Eoyal Gardens, Kew, London	2	1	153
Botanic Garden, Ootacamund	6	268
Ditto, Saharanpur	1	4
Ditto, Darjeeling	12
Victoria Garden, Bombay	1	10
Memorial Garden, Cawnpore	2	65
Raj Garden, Darbhanga	52
State Garden, Baroda	4	87
Government House Garden, Calcutta	94
Eden Garden, Calcutta	23
Zoological Garden, Calcutta	319
Macpherson Park, Allahabad	2	50
His Excellency the Viceroy's Body-guard, Ballygunge.	120
David Anderson, Esq., Monifieth, Dundee	1	200
Col. Lord W. Beresford, v.c., C.I.E., Carlton House Terrace, London.	1	49
Dr. McIntyre, S.S. <i>Umbazi</i>	1	...	195
W. Barclay Sandeman, Esq., Sussex, England	1	200
Lord Wantage, V.C., K.C.B., Herts, England...	1	5,170
Messrs. F. Sander & Co., St. Albans, England	12	2,031
Agri-Horticultural Society of India, Calcutta	63
Ditto ditto Nagpur	5	35
Ditto ditto Madras	1	...	130
Ditto ditto Lahore	12	60
Commissioner, Burdwan	2	20
Ditto, Dacca	1	34
Ditto of Police, Calcutta	132
Deputy Commisioner, Tezpur	7	10,200
Conservator of Forests, Pegu Circle, Rangoon	116
Deputy Conservator of Forests, Sonthal Far- ganas, Dumka.	5	1,212
Magistrate, Burdwan	41	1,004
Ditto, 24-Parganas, Calcutta	105
Cantonment Magistrate, Jubbulpore	3	60
Officiating Magistrate, Noakhali	4	400
Subdivisional Officer, Raniganj	16	55
Ditto, Feni	3	1
Secretary, Byculla Club, Bombay	42
Ditto, Government. Museum and Public Gardens, Trevandrum.	1	...	100
Vice-Chairman, Municipality, Dinajpur	4	100
Chairman, District Board, Monghyr	4	24
Ditto, Tezpur Municipality, Assam	1	250
District Engineer, Backergunge, Barisal	10	750
Ditto, Bhagalpur	30	100
Ditto, Faridpur	4	470
Ditto, Singhbhum	21	3,000
Ditto, Bengal-Nagpur Railway, Midnapore.	120	2,000
Ditto, Mymensingh	80	206
Ditto, Noakhali	9	300
Ditto, Purnea	12	1,400
Ditto, Rangpur	56	120
Executive Engineer, Calcutta Workshop Division, Sibpur.	300
Executive Engineer, East Sone Division, Bankipore.	12	635
Executive Engineer, Chota Nagpur Division, Kanchi.	30	

APPENDIX II—continued.

To WHOM SENT.	War- dian cases.	Boxes.	Number of plants.
1	2	3	4
Superintendent, Presidency Jail, Calcutta	2,095
Ditto, Gunpowder Factory, Ishapur	120
Soldiers' Gardens, Fort William	656
Howrah Hospital	1,275
Civil Medical Officer, Noakhali	...	1	6
Chaplain of Howrah	20C
St. Agnes' School, Howrah	100
St. Vincent's Home, Kidderpore	100
Little Sisters of the Poor, Calcutta	6
Catholic Orphanage, Calcutta	300
Reformatory School, Alipore	500
Mrs. Findon, East Indian Eailway, Howrah	2
Indian Museum, Calcutta	147
Experim ental Farm, Sibpur	400
Managing Agents and Secretaries, Strand	250
Bank Press Company, Limited, Calcutta.	
Tollygunge Club	1,018
President, Outram Institute, Dum-Dum	100
H. Bahr, Esq., Sonthal Colony, Tamarhaut, Assam.	...	9	212
T. Beck, Esq., Aligarh	...	2	24
Mrs. E. A. Betts, Calcutta	52
H. J. Biggs, Esq., Howrah	40
Hon'ble Mr. Justice Blair, Allahabad	...	6	121
C. H. Bompas, Esq., Chakradharpur	...	5	117
J. S. Brown, Esq., Bally Paper Mill	...	4	1,450
Mrs. Casperz, Chittagong	13
„ Havelock Charles, Calcutta	521
John Chittayagam, Esq., Madras	...	1	106
T. G. Cleeve, Esq., Calcutta	12
R. P. Cookerell, Esq., Lucknow	1
Dr. D. D. Cunningham, M.B., F.R.S., Calcutta	15
„ Forsyth, Calcutta	20
A. M. Gasper, Esq., Moradabad	...	1	2
Mrs. C. "E. FitzGibbon, Howrah	275
„ Gillespie, Howrah	13
C. H. Gordon, Esq., Segowlie	...	2	500
Dr. R. G. Griffith, Allahabad	...	12	300
A. L. Harman, Esq., Segowlie	...	2	500
Col. King-Harman, Calcutta	4
Rev. W. B. Hearn, Karmator	...	8	200
Geo. W. Hodgkinson, Esq., Cawnpore	*,	8	154
Mrs. Hcernle, Calcutta	325
C. A. Kraal, Esq., Calcutta	4
A. Lace, Esq., Calcutta	200
T. Lee, Esq., Sibpur	3
J. E. Lister, Esq., Jamalpur	6
P. Low, Esq., Brindisi	...	1	40
Mrs. R. Lyall, Calcutta	1,336
Mrs. Mackinnon, Garden Reach	5
J. Martin, Esq., Raipur	...	1	4
J. Mayer, Esq., Allahabad	...	3	62
Surgn.-Oapt. F. Maynard, Ranchi	...	1	12
Eev. A Meurree, Ranchi	...	2	50
p _r . D. M. Moir, Calcutta, for General Hospital	70
E. Newton, Esq., Meerut	...	1	114
Mr. Osgo'd, Cossipore	3
R. Pantling, Esq., Mungpoo	...	22	802
F P*lmer, Esq., Arrah	...	8	250
G. McD. Peché, Esq., Moulmein	...	1	2
			84

APPENDIX II—concluded.

TO WHOM SENT.	War- dian cases.	Boxes.	Number of plants.
1	2	3	4
J. Peter, Esq., Monoomookh	2	50
W. Raitt, Esq., Ranigunge	11	260
G. O. Ranger, Esq., Ballygunge	2
S. E. Rita, Esq., Shillong, Assam	...	"1	2
A. Roger, Esq., Garden Reach	48
F. Rowat, Esq., Mihijam	4	100
Dr. R. C. Sanders, Calcutta	30
J. S. Slater, Esq., Engineering College, Sibpur	576
Dr. W. J. Simpson, Calcutta	4
T. J. Spooner, Esq., Bombay	4	91
J. A. Thompson, Esq., Caloutta	4
E. Thorpe, Esq., Segowlie	2	1,000
H. Thorpe, Esq., Hurdeah, Segowlie	...	4	500
Col. J. Waterhouse, Calcutta	2,512
Messrs. Burn & Co., Howrah	410
„ Hoare, Miller & Co., Caloutta	15
Rivers Steam Navigation Company, Limited, Garden Reach.	36
The Hon'ble Nawab Ashanulla Khan Ba- hadur, C.I.E., Dacca.	...	5	100
Nawab Sayed Abdool Sovan Chowdhury, Caloutta.	33
Raja Mohima Runjun Rai Chowdhury, Rangpur.	...	8	50
Babu Soorj Deo Narayan Sing, Baligarh M.	...	2	62
Munshi Mahamad Ershad Ali Khan Chow- dhury, Nator.	...	3	21
Babu B. B. Ghosh, Taki	30
„ C. C. Bhadra, Calcutta	2
„ D. N. Banerjee, Cossipore	1
„ G. C. Datta, Sibpur	198
„ G. C. Haldar, Serampore...	2
„ H. C. Mookerjee, Sibpur	9
„ J. N. Mitra, Ajhapur	50
„ J. N. Singha, Baksara	2
„ M. M. Buxi, Cooch Behar	...	1	12
„ M. S. Dass, Midnapore	5	30
„ N. G. Bhaduri, Krishnaganj	...	2	9
„ N. C. Baral, Calcutta	200
„ N. N. Roy Chowdhury, Sibpur	1
„ P. C. Ghosh, Caloutta	15
„ P. N. Bose, Bhawanipur...	3
„ R. C. Roy, Ranchi	1	4
„ S. P. Chatterjee, Calcutta	22
„ S. C. Bhattacharjee, Bhawanipur	4
„ S. C. Ghosh, Ulubaria	38
„ S. N. Dass, Calcutta	200
„ T. N. Banerjee, Calcutta...	12
„ W. M. Thakur, Calcutta	...	6	150
Munshi Abdool Aziz, Dhoologoriah	4
RamNath	1
Total	...	7	682
			54,874

APPENDIX III.

Statement showing seeds received from 1st April 1896 to 31st
March 1897.

FROM WHOM RECEIVED.	Number of parcels or packets.
W. T. Thiselton Dyer, Esq., F.R.S., C.M.G., C.I.E., Director, Royal Gardens, Kew, London ...	14
Director, Department of Agriculture, Smithsonian Institution, Washington ...	121
Director, Royal Botanic Garden, Peradeniya, Ceylon	1
Botanic Garden, Adelaide ...	100
Ditto, Brisbane ...	18
Ditto, Bangalore ...	2
Ditto, Darjeeling ...	36
Ditto, Dresden ...	18
Ditto, Grenada ...	3
Ditto, Hongkong ...	8
Ditto, Jamaica ...	3
Ditto, Rockhampton ...	1
Ditto, Saharanpur ...	151
Ditto, Sydney ...	1
Government Garden, Oawnpore ...	5
Ditto, Ootacamund ...	7
Baron Sir Ferdinand von Mueller, K.C.M.G., F.R.S., University, Melbourne ...	6
Secretary, Agri-Horticultural Society of India, Calcutta ...	3
Agrostologist, United States Department of Agri- culture, Washington ...	1
Curator, Arnold Arboretum, Massachusetts ...	1
Deputy Conservator of Forests, Belgaum ...	6
Superintendent, Government Horticultural Garden, Lahore ...	443
Superintendent, Agri-Horticultural Society's Gar- den, Madras ...	6
Superintendent, Central Jail, Bhagalpur ...	1
Ditto, Gwalior State Gardens, Gwalior ...	1
Ditto, State Gardens, Morvi ...	1
Ditto, Sujjan Niwas Gardens, Oodey- pore ...	2
Ditto, Technological Museum, Sydney	6
Messrs: H. Bull & Son, Gisborne ...	4
„ Reasoner Brothers, Royal Palm Nurseries, Oneco, Florida, United States of America	21
„ F. Sander & Co., St. Albans, England ...	11
Percy Braine, Esq., Wenda, Ceylon ...	2
Colonel Sir Henry Collett, K.C.B., South Kensington, London ...	1
Dr. D. D. Cunningham, Calcutta ...	1
Dr. F. Franceschi, California ...	5
J. Gammie, Esq., Mungpoo ...	1
J. Sykes Gamble, Esq., Dehra Dun ...	7
Mrs. Martin, Raipur ...	1
Dr. D. Prain, Royal Botanic Garden, Sibpur ...	1
J. Parkes, Esq., Nimbong, ...	3
A. Perry, Esq., Winkmore Hill, London	12
George Watt, Esq. M.B., CM., C.I.E., Reporter on Economic Products to the Government of India, Indian Museum, Calcutta ...	4
Rai Dr. Kanye Lall Dey, Bahadur, C.I.E., Calcutta	2
Abdul Kholil, Plant Collector, Fort Stedman ...	1
Total ...	1,043

APPENDIX IV.

Statement showing seeds distributed from the Royal Botanic Oar^d
during the year 1896-97.

To WHOM SENT.	Number of parcels or packets.
W. T. Thiselton Dyer, Esq., F.R.S., CM.G., C.I.E., Director, Royal Gardens, Kew, London ...	132
Director, Botanic Gardens, St. Petersburg, Russia	8
Do., Royal Botanic Garden, Peradeniya, Ceylon	8
Botanic Garden, Bangalore ...	...
Ditto, Berlin ...	...
Ditto, Brisbane ...	...
Ditto, Buitenzorg, Java ...	1
Ditto, Cambridge ...	133
Ditto, Darjeeling ...	59
Ditto, Edinburgh ...	163
Ditto, Palermo, Sicily ...	30
Ditto, Saharanpur ...	3
Ditto, Singapore ...	...
Secretary, Agri-Horticultural Society of India,	-
Calcutta ...	J
Ditto, ditto Moulmein ...	...
Ditto, ditto Rangoon ...	...
Superintendent, Government Gardens, Allahabad ...	...
Ditto, ditto, ditto, Ootacamund	...
Ditto, ditto Agri-Horticultural Gardens, Lahore ..	...
Ditto, ditto Horticultural Garden, Lucknow ...	...
Ditto, Agri-Horticultural Society, Madras	24
Ditto, Victoria Garden, Bombay ...	ljj
Ditto, Raj Garden, Baroda ...	"
Ditto, H. H. the Nizam's Public Gardens, Hyderabad, Deccan ...	...
Ditto, State Gardens, Gwalior ...	...
Ditto, Agri-Horticultural Department, Gondal, Kathiawar ...	...
Ditto, Berhampore Jail, Berhampore, Mur- ehidabad ...	1
Ditto, Mymensingh Jail, Mymensingh ...	1
Ditto, Subsidiary Jail, Kishorganj ...	1
Ditto, Cossipore Practical Institution of Horti-Flori and Agriculture, Cossipore ...	2
Ditto, Temple Medical School, Patna, Bankipore ...	...
Ditto of Surveys, Vankaner, Kathiawar ...	...
Curator, Agricultural and Botanical Department, Sierra Leone, Africa ...	...
De Administrate der Deli Maatschappij, Madan, Sumatra ...	40
District Engineer, Pabna ...	...
Ditto, East Indian Railway, Dinapore	...
Executive Engineer, Southern Shan States Division, Fort Stedman, Burma ...	...
Northern District Officer, Port Blair ...	...
Supervisor in charge, Chakradharpur subdivision, Ohakradharpur, Singhbhum ...	...
Sub-overseer, Distriot Board, Serajganj ...	...
Ditto, Gobindpur subdivision, Gobindpur ...	...
Ditto, Burhi subdivision, Burhi ...	...
Subordinate in oharge Kandra subdivision ...	2
Imperial German Consul, Calcutta ...	4
Signor A. Todaro della Gcdia, Consul-General de Perse, Palermo, Sicily ...	17
Monsieur Le Secretaire General de la Sociote Nationale d' Acclimatation de France, Paris ...	*
H. le Conservateur, Jardin Botanique, Geneve, Switzerland ...	21

APPENDIX IV—continued.

To WHOM SENT.	Number of parcels or packets.
Conservator of Forests, Central Circle, Madras ...	2
Deputy Conservator of Forests, Port Blair ...	79
Divisional Forest Officer, Hyderabad, Sind ...	3
Ditto, Jerruck, Karachi ...	2
Collector of Puri ...	2
Forest Officer, TJIwar State, Ulwar ...	47
Imperial and Eoyal Austro-Hungarian Consul, Calcutta ...	130
Civil and District Sessions Judge, Midnapore ...	1
Messrs. F. Sander & Co., St. Albans, England ...	2
„ Searl & Sons, Sydney ...	1
„ Stanley Price & Co., Calcutta ...	52
„ John Elliott & Co., Calcutta ...	1
„ Reasoner Brothers, Oneco, Florida ...	7
Government Botanist, Melbourne, Victoria ...	83
President, Municipal and District Boards and Deputy Commissioner, Kohat ...	1
Manager, Burdwan Raj Estate, Burdwan ...	1
Manager of Dhenkanal ...	2
The Most Noble the Marquis of Lansdowne, K. G., Bowood ...	20
The Right Hon'ble the Earl of Annesley, Castle Wellan ...	46
Vice-Chairman, Rangpur Municipality ...	6
Post Master, Diamond Harbour ...	1
Professor Dr. E. Huth, Frankfurt, Brandenburg, Germany ...	5
Sir A. J. Arbuthnot, K.C.S.T., London ...	15
A. L. Alexander, Esq., Seaforth, Nilgiri Hills ...	1
Arthur K. Bulley, Esq., Chappel Street, Liverpool ...	20
J. Braine, Esq., Dibrugarh ...	1
Dr. O. Burehand, Hamburg ...	3
Mr. Brien, Beech Cottage, Roxburghshire ...	8
„ Cooverfee Bomonjee, Calcutta ...	1
Percy Braine, Esq., Wenda, Ceylon ...	4
J. F. Church, Esq., Jalpaiguri ...	3
O. Curtis, Esq., Penang ...	3
Surgn.-Lieut. Isaac McDermott, Bangalore ...	2
Dr. F. Franceschi, California ...	3
J. Gammie, Esq., Mungpoo ...	2
Norman Grey, Esq., Kullakambay, Nilgiri Hills ...	1
Rev. A. II, Hildesly, M.A., Sanawar ...	6
G. Leverett, Esq., Masulipatam ...	6
Mrs. Lyail, Cooch Behar ...	1
W. K. Morrison, Esq., Devonshire, Bermuda Islands ...	143
Rev. P. Nordfors, Saugor ...	8
M. C. Naudin, Antibes, France ...	X
Rev. C. M. Pakenham, Crumlin, Ireland ...	1
A. Perry, Esq., Winkmore Hill, London ...	4
David Rain, Esq., Fettercairn, Scotland ...	8
Colonel J. E. Sandeman, Calcutta ...	20
„ Simcox, Gisborne, New Zealand ...	1
H. Babington Smith, Esq., Government House, Calcutta ...	1
T. J. Spooner, Esq., Jetalsar, Kathiawar ...	18
A. Sprenger, Esq., Jersey, Channel Islands ...	2
J. L. Schiller, Esq., New Jersey, U.S.A. ...	3
Mr. C. K. Srinivasachar, Gonicopal, Coorg ...	4
Dr. J. W. H. Trail, F.R.S., Aberdeen, Scotland ...	19
S. L. Watkins, Esq., California, U.S.A. ...	3
George Watt, Esq., M.B., CM., C.T.B., Calcutta ...	3
M. E. Webb, Esq., Peradeniya, Ceylon ...	1
G. W. Wilson, Esq., Weybridge, London ...	17
G. Marshall Woodrow, Esq., Poona ...	5
Lala Mohun Singh, Dehra Dun ...	1
Motilal Tribhovandas Fozdar, Esq., Bombay ...	7
Babu Bata Krishna Datta, Ranaghat ...	1
„ Bishumbhur Ghose, Taki ...	1
„ Banku Behari Singh, Ranaghat... ...	25

APPENDIX IV—concluded.

To WHOM SENT.	Number of parcels or packets.
Babu Dwarka Nath Roy, Bankipore	179
„ Heerulal, Ajaigarli	1
„ Jadab Chandra Biswas, Caloutta... ..	2
„ P. Mookerjee, Bettiah	1
„ Prossonno Coomsr Chatterjee, Serampore	1
„ Panchanan Bhattacharjee, Calcutta	6
„ Shoshi Bhushan Banerjea, Purnea	1
„ Sosee Shakher Datta, Calcutta	1
Shaik Doondi, Calcutta	2
Total distributed ..•	2,234

APPENDIX V.

List of Herbarium Specimens received during the year 1896-97.

	Number.
The Director, Royal Garden, Kew	W ^{b7}
J. Sykes Gamble, Esq., Dehra Dun	"
J. P. Duthie, Esq., Director, Botanical Survey, Northern India	2,069 ^A
W. A. Talbot, Esq., Forest Department, Kanara	^2
H. H. Haines, Esq., Conservator of Forests, Bengal	*1 ^
Geo. V. Nash, Esq., Columbia College, New York, United States, America	557
The late Baron Ferd. von Mueller, F.R.S., K.C.M.G., Melbourne	J ⁸
G. M. Ryan, Esq., Karachi	*8
C. Curtis, Esq., Penang	2,28
H. N. Ridley, Esq., Singapore	79
A. H. Curtiss, Esq., Jacksonville, Florida, United States, America	^00
A. A. Heller, Esq., Hawaiian Islands	^A
N. B. Ranade, Poona	^
T. F. Eourdillon, Esq., Travancore	~T
C. W. Hope, Esq., Dehra Dun	74
Surgn.-Capt. F. P. Maynard, Beluch-Afghan Bound- ary Commission	J?8
C. G. Pringle, Esq., Mexico	jij
M. Em. Drake del Castillo, Rue Balzac 2, Paris	b~*
C. R. Dun, Esq., Chin Hills, Upper Burma	^9
Dr. A. Batalin, Herbarium, St. Petersburg	~I
Prof. A. Engler, Herbarium, Berlin	~*^
Director, botanic Garden, Buitenzorg	*^
Superintendent, Botanic Garden, Palermo	2
Dr. Ritter von Mannagetta Gunther Beck, Vienna	*t
M. le Prof. M. Musy, Musée Cantonal, Fribourg	^0
Prof. Radlkofer, Botanic Institute, Muenohen	^7
R. L. Heinig, Esq., Andamans	*1
Abdul Kholil, Botanical Collector, Upper Burma	*2
R. Pant ling, Esq., Sikkim *	j^
Shaik Mokim, Botanical Collector, Bhotan, &c.	1 ^ *
R. T. Baker, Esq., Technological Museum, Sydney, New South Wales	^5
J. H. Hart, Esq., Trinidad... ..	18 J
M. W. Ridley, Esq., Luoknow	*
S. E. Rita, Esq., Shillong ... ..	|
C. G. Roger, Esq., Ceylon	• 1
H. J. Cox, Esq., Bettiah, North Bihar	* 1
Dr. G. Watt, Calcutta	* 2
J. W. Oliver, Esq., Katha district	* 3
M. Cas. de Candolle, Geneva	* 4
W. A. Kennedy, Esq., Darjeeling	* 5
R. W. Hullett, Esq., Singapore	* 6

APPENDIX N—concluded.

	Number.
Dr. Hare, Fort Aijal, Lushai Hills	1
R. L. Proudlock, Esq., Ootacamund	3
W. J. Fleet, Esq., Assam	2
Conservator of Forests, Pegu Circle, Burma	5
Total received ...	13,989

APPENDIX VI.

List of Herbarium Specimens distributed during the year 1896-97.

	Number.
Herbarium, Royal Garden, Kew	867
Ditto, British Museum, London	615
Ditto, Imperial Garden, St. Petersburg	388
Ditto, University, Edinburgh	215
Ditto, ditto, Florence	294
Ditto, Madras	244
Ditto, University, Utrecht	162
Ditto, ditto, Upsala	305
Ditto, ditto, Cambridge	197
Ditto, Smithsonian Institution, Washington, United States of America	442
Ditto, Singapore	299
Ditto, Royal Museum, Berlin	779
Ditto, Botanic Garden, Vienna	256
Ditto, Imperial Museum, Vienna	219
Ditto, Botanic Garden, Peradeniya, Ceylon	164
Ditto, Jardin des Plantes, Paris	517
Ditto, Perak	351
Ditto, Botanical Survey of Northern India	332
Ditto, Penang	261
Ditto, University, Aberdeen	163
Ditto, Melbourne, Australia	200
Ditto, University, Leiden	411
Ditto, M. C. deCandolle, Geneva	583
Ditto, Minneapolis, Minnesota, United States of America	277
Ditto, Botanic Garden, Buitenzorg, Java	210
Ditto, Owen's College, Manchester	142
Ditto, College of Science, Poona	318
Ditto, Fribourg	65
J. Sykes Gamble, Esq., Dehra Dun	112
W- A. Talbot, Esq., Kanaxa	127
Botanic Garden, Natal	162
Herbarium, Queen's College, Cork	176
Natural History Survey, Minnesota, United States of America	263
Dr. Haus Schinz, University, Zurich	514
M. Drake de Castillo, Paris	470
Professor Sargent, United States of America	291
Munich University	77
G. F. Scott-Elliot, Esq.	214
Sir Dietrich Brandis, K.C.I.E., Bonn	490
Dr. Hallier, Hamburg	47
H. A. Cummins, Esq., London	38
A. B. Rendle, Esq., M.A., Botanic Department, N. H. Museum, Cromwell Road, Kensington, London	30
Arthur Bennett, Esq., F.L.S., England	10
E. M. Holmes, Esq., F.L.S., London	9
Dr. G. Watt, C.I.E., Calcutta	8
Prof. Kranzlin, Berlin	7
.. Dr. K. Goebel, Muenchen	6
E. Pantling, Esq., Mungpoo	3
G. A. Gammie, Esq., Sikkim	3
G. D. Haviland, Esq., Borneo	2
E. G. Baker, Esq., F.L.S., South Kensington, London	1
G. M. Byan, Esq., Karachi	1
Total distributed ...	12,197

G. KING, M.B., Bgde.-Surgn.-Lt.-Col,

Supdt., Royal Botanic Garden, Calcutta.

FINANCIAL DEPARTMENT.

MISCELLANEOUS.

DABJEELING, THE 29TH JUNE 1897.

RESOLUTION—No. 3607Mis.

READ—

The Report of the Botanical Garden, Calcutta, for the year 1896-97.

The failure of the past rains proved fatal to a number of the plants, which had been weakened by the preceding drought of 1895-96. The conservatories, which depend for their water on the tanks in the garden, suffered most, since these tanks had to be supplemented with water from the river, and the quality of the water thus supplied was found unsuitable for the more delicate plants. The principal improvement effected in the garden during the year was the relaying of the avenue leading from the river entrance to the great banyan tree. The opportunity was taken to open out several vistas by removing trees, and before the end of the year the improvement of the Clarke and Thompson avenues was taken in hand. The popularity of the garden has greatly increased owing to its having become a favourite resort for bicycling parties, and visitors in the hot weather and rains, who used to be scarce, are now numerous.

2. With regard to plants of an economic value, Dr. Prain, the Curator of the Herbarium, was engaged during last cold weather in making observations on mustards. To provide samples, patches of the various kinds of mustard cultivated in Bengal were grown in the Sibpur Experimental Farm. Dr. Prain's results, which are said to be of great interest both from a botanical and an economic point of view, will shortly be published by the Department of Land Records and Agriculture. The results of a similar series of observations on the different kinds of wheat, which were made by Dr. Prain in 1895-96, have been recently published. There was a large demand from planters and other persons during the year for rhea plants, the interest in the cultivation of which has revived. The indents were met as far as possible, and the rhea field has been thoroughly cultivated and manured in case the demand continues. Dr. King observes that the real difficulty in respect of rhea seems at present to be rather in securing a supply of the raw material than in finding a process to deal with it successfully after it has been put on the European market."

3. The Herbarium as usual received special attention, and 13,989 specimens were added to the collections during the year, the principal contributors being Mr. Duthie, Director of the Botanical Survey of Northern India, and Mr. Thistleton Dyer, Director of the Royal Garden, Kew. An extremely interesting collection of Thibetan plants was received from Mr. E. Drake del Castillo of Paris, and a similar collection of Southern Indian plants, collected 50 years ago by Perottet, the Swiss Botanist, was contributed by M. Musy, Custodian of the Musée Cantonal of Fribourg. Contributions were also received from Mr. Ridley (Singapore), M. Batalin (St. Petersburg), the late Baron Von Mueller, Dr. Engler (Berlin), Mr. G. V. Nash (Columbia College, New York), Mr. A. H. Curtiss of Jacksonville (Florida), Mr. A. A. Heller (Hawaiian Islands), Dr. Treub (Buitenzorg), Dr. Radlkofer (Munich), Mr. R. T. Baker (Sidney), Dr. Giinther Beck (Vienna), and Mr. C. W. Hope (Dehra Dun). The officers of the Indian Forest Department from whom contributions were received were Mr. R. L. Heinig, Deputy Conservator of Forests, Andaman Islands; Mr. J. S. Gamble, Director of the Forest School, Dehra Dun; Mr. W. A. Talbot, Deputy Conservator of Forests, Kanara; Mr. H. H. Haines, Deputy Conservator of Forests, Bengal, and Mr. Bourdillon, Conservator of Forests, Travancore. Surgeon-Captain F. C. Maynard and Mr. Dun (Chin Hills) also contributed to the Herbarium during the year. Sikkim plants, plants of Upper Burma and Bhutan plants were collected by the direct agency of the garden

staff. A large number of specimens were sent out from the garden to various botanical institutions in Europe, America, Australia, Java, the Straits Settlements, and different parts of India.

4. The second part of the fifth volume and the seventh volume of the Garden Annals were issued during the year. The former consists of descriptions with figures of about one hundred new or interesting species, while the latter comprises a monograph on the Indian species of bamboos, by Mr. J. Sykes Gamble, Director of the Forest School, Dehra Dun, with a description of every species of bamboo found growing within the Empire and a summary of the parts of the flower, and thus supplies a long felt want, since, owing to the scarcity of their flowering, the bamboos have hitherto been little understood. Both Dr. King and Dr. Prain also contributed valuable papers on botanical subjects to the Journal of the Asiatic Society of Bengal.

5. The Lloyd Botanic Garden in Darjeeling suffered severely during the year under review, first from the unusual drought, and subsequently from the exceptionally heavy rains, which at the end of July culminated in a storm which destroyed many trees and plants. The repair of the damage done absorbed much money, which would otherwise have been spent on improvements. The lease of the patch of ground, belonging to the Darjeeling Municipality, which has for some years been worked as a vegetable garden, expired during the year, and it was decided that the land should be made over to Government for incorporation with the garden.

6. The Lieutenant-Governor's thanks are again due to Dr. King, the Superintendent, and Dr. Prain, the Curator of the Herbarium, for their excellent management of the Garden during the year.

By order of the Lieutenant-Governor of Bengal,

H. H. RISLEY,
Secretary to the Govt. of Bengal

No. 3608Mis.

COPY forwarded to the Superintendent of the Royal Botanic Garden, Calcutta, for information.

By order of the Lieutenant-Governor of Bengal,

B. FOLEY,
Under-Secy. to the Govt. of Bengal

CALCUTTA,
The 29th June 1897.

No. 25G., dated Royal Botanic Garden, Sibpur, the 10th May 1898.

From - W. E. O. N. PRAIR, M.B., F.R.S.E., F.L.S., I.M.S., Superintendent, Royal Botanic Garden, Calcutta, Financial Department.

To - The Secretary to the Government of Bengal, 1st Annual Report of the

I HAVE the honour to submit herewith the 1st Annual Report of the Royal Botanic Garden, Calcutta, for the year 1897-98.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE YEAR 1897-98.

THE effects of the scanty rain in the opening paragraph of the annual report for 1897 than the more marked in the months of the two preceding years; and though at the last rainy season the effects on the plants had been at anytime during a period have been, in the case of delicate plants, and in the case of the oichias which have been more unsatisfactory being unusually scanty and come into flower abnormally early, the evanescent. On the other hand, a number of exotic plants that do not usually flower freely have found their way into the garden, and many American species in particular, such as the *Abutilon*, *Ardisia*, *Boehmeria*, *Clusia*, *Conocarpus*, *Eleusine*, *Gonolobus*, *Ipomoea*, *Musa*, *Passiflora*, *Persea*, *Phyllanthus*, *Strobilanthus*, *Syntherisma*, *Tournefortia*, *Urena*, *Zinnia*, &c. The profuse flowering of the Thomson avenue was particularly fine. This was taken in hand just before the commencement of the year, and, in spite of much sickness among the staff, both avenues were brought into an excellent state of repair during the course of the rains, the banks at their sides being put into proper order during the cold weather. The only two roads that still urgently call for attention are the Roxburgh avenue and the unfinished road which leads from the large Banyan to the Andul Road; but both must lie over until funds are available for their repair and the almost equally urgently to the Garden

and the difficulty of making it necessary to address Government, and Government is further additional rules. This sanction has been accorded, and Government is further taking steps to give these rules the force of bye-laws.

2. Economic plants.—During the cold weather a commencement was made by the Curator of the Herbarium with a study of the various kinds of other leguminous crops cultivated in Bengal, samples of which were by the Director of Land Records and Agriculture, and sown in the Sibpur Experimental Farm adjoining the garden. This study may, when completed, be of great value. Note similar in nature to the notes already published on the rhea-seed

subject than those, it has been shown that rhea-seed from plants grown in Lower Bengal is very often infertile. The seed used was partly the produce of plants grown in the garden, and partly seed supplied by Ashington Thomson, Esq., Chandernagore. The experimental culture of a number of varieties of cotton was also undertaken at the request of the Reporter on Economic Products

to the Government of India. A number of tubers, bulbs and seeds of economic interest were received during the year from the Reporter and Products in order to be cultivated and, when they had flowered and determined. In this way the sources of a considerable number of products that were hitherto of unknown or doubtful origin have been ascertained. Many of the results have been quite unexpected, and the arrangement between the Garden, on the one hand, and the Reporter on Economic Products with the Government of Indigenous Drugs Committee on the other, this branch of work has considerably developed, and promises to be of the greatest interest.

3. *Herbarium.*—The work in the Herbarium was carried on in the manner, although the severe illness both of the Superintendent of the and of the Curator of the Herbarium during the months of August and October interfered very considerably with its efficiency. During the year no fewer than 14,482 specimens of carefully-named plants were distributed to the chief herbaria of Europe, America and Asia; this distribution included 13 sets of authentic specimens of the plants figured in the eighth volume of the *Annals of the Royal Botanic Gardens*. In the year 9,475 specimens were added to the collection. The names of the contributors to the Herbarium were Mr. W. T. Thiselton-Dyer, Director of the Botanic Garden at Kew, who gave 957 specimens; Mr. J. F. Duthie, Director of the Botanic Department, Northern India, who contributed 1,207; Dr. Treub, Director of the Botanic Department, Buitenzorg, who gave 579; and Mr. G. R. M. Murray, Keeper of the Botanic Department, British Museum, who contributed 575. An interesting plant from Algeria was presented by Sir H. Collett, and one from Java by Wood; collections of plants from Mexico and from Florida were acquired by purchase; Dr. Gunther Beck von Mannagetta contributed a number of Cryptogamic specimens from the "Vienna Hofmuseum. Small collections of North-West Frontier plants were received from H.H. Johnston and Surgeon-Captain C. J. Milne, and of plants from Mr. G. M. Woodrow and the Hon. H. E. 11. James. The Botanic Department contributed a very excellent collection from the Khasi States and Mr. C. Maries a small collection from the neighbourhood of Gammie. A valuable collection of bamboos and of economic leguminous plants was made in Sikkim during the year, and presented to the Herbarium by Gammie. Sir George King on his departure presented to the Herbarium a small but very interesting collection of European mosses. The most interesting feature of the year has been the receipt of a collection made in the hitherto unexplored Kachin Hills by Lieutenant E. Pottinger, E.A., and by a botanical collector, thanks to the exertions of Lieutenant Pottinger and the kindness of Mr. Cruddas, B.C., Commandant of the Battalion of Military Police at Imphal. It has been possible to depute to this very rich and interesting area of a year's work in this area have been made the subject of a report by Lieutenant Pottinger and myself, which is about to appear in the *Botanical Survey of India*.

4. *Botanical Publications.*—The great work of the year was the completion of an account of the *Orchids of Sikkim* by Sir George King and Mr. R. Pantling. Mr. Pantling had for many years devoted his leisure to making drawings from the living plants of those orchids to be met with near the Cinchona Plantations, and, being strongly recommended by Sir George King, ultimately systematised his efforts into a project of a life-sized figure of the plant, accompanied by analyses of the flower on an enlarged scale, of every orchid found within the limits of the Terai to the snows, in order to illustrate a complete account of the orchid-flora of Sikkim. Mr. Pantling having provided the drawings, these were lithographed, under Sir George King's supervision, in Calcutta, by natives of Bengal trained at the Government School of Art. A number of these lithographs, printed more lightly than the rest, have been coloured, under the careful supervision of Mr. Pantling, by the sons of coolies on the Cinchona Plantation. The work constitutes one of the most magnificent and valuable contributions to systematic and regional botany that

but recently appeared. Sir George King's paper on the *Some New Indo-Malayan Orchids*, chiefly from Burma and from Malaya, is a valuable contribution to the study of the Sikkim species. He published the tenth part of his *Materials for a Flora of the Malayan Peninsula*. During the year 1907, he published some additional papers on zonal species of Labiateae in the *Bombay I. A. W. C. Guruma* records and Agriculture, &c. For the Department of Land Revenue, and for the Government of the ... of books ... s of the

5. ... were obtained, partly by purchase and partly ... Garden. The details of the receipts and issues ... I-IV.

54,874) is due to a smaller demand than in former years as many plants as they are a fine collection of rarities from Colombo ... In connection with the collections of the flora of India at the regular "orchid-water" but quite as showy species, overlooked by commercial kinds, have been ... such contribution is ... to the ... here ... year.

1,116 packets were ... 7. The earthquake that occurred on ... damage to the roof of the Herbarium. The extent was not, however, apparent till a heavy rainstorm occurred a few days after the earthquake, when the whole building became flooded with rain-water to the detriment of all and the complete destruction of some of the most valuable specimens. The officers of the Department of Agriculture, though overwhelmed with safe, effects of realized that, while the collection it contains might be digastrous and roof leakage on the comparatively safe the repairs that were promptly took steps for structural damage, and in the Garden that the Superintendent B. J. The only other building in the necessary occupied a that protects Dr. J. A. D. in interest of

has been made over to the Municipality, but the Commissioner of the ... that the transfer is valid and in order, has advised that effective occupation be deferred pending the settlement of a new proposal in which the Eden Sanitarium is concerned. It is to be hoped that the matter may soon be disposed of. With a view to fulfilling the purpose for which it was originally established, steps are being taken to bring together in the garden complete collections of Eastern Himalayan species of particular natural families. 9. The budget allotments of money both for the Calcutta and the Lloyd Botanic Garden have been fully spent. The proceeds of the sales of surplus plants and books, amounting to Rs. 1,106-3-3 for the Calcutta garden and to Rs. 900 for the Darjeeling one, were paid into the Government treasuries as usual.

10. The year was marked by much sickness J the Superintendent, the Curator of the Herbarium, the Curator of the garden and the Assistant being all incapacitated by malarial fever at one and the same time, to the only office to escape being the Probationer Gardener who joined the garden staff, in view of the sick-ness was that Sir George King, the Superintendent of the Garden, and the Assistant in service of Government, was compelled to ask for permission to retire from the service of Government, with effect from the 28th February 1898, on which day he handed over charge of the gardens of which he has had control since July 1897, and which he has practically made what they are. By reason of his illness as Curator of the Herbarium, absent on privilege leave for 27 days from 27th November, and the Curator of the garden, Mr. G. T. Lane, are being performed by Mr. H. J. Davies, Assistant Curator, while Mr. G. T. Lane, fourth Assistant, Cinchona Plantation, Mungpoo, is acting as Assistant Curator in place of Mr. Davies. Mr. Kennedy, Curator of the Lloyd Botanic Garden, availed himself of three months' privilege leave from 13th December 1897 to 12th March 1898; during his absence his duties were performed by Mr. A. G. H. H. H., third Assistant, Cinchona Plantation, in addition to his own duties. The office of the Botanic Garden has been under the charge of Mr. G. C. Datta throughout the year.

11. The usual tabular statements (six in number) are appended.

APPENDIX I.

Statement showing plants received from 1st April 1897 to 31st March 1898.

FROM WHOM RECEIVED.	Ward- ian cases.	Boxes.	Number of plants.
1	2	3	4
Royal Gardens, Kew, London	2	1	128
Botanic Gardens, Singapore	1	45
Ditto, Penang	156
Ditto, Ootacamund	3	30
Ditto, Darjeeling	569
Memorial Garden, Cawnpore	17	50
Raj Garden, Darbhanga	6
Government House Garden, Calcutta	2	548
Zoological Garden, Calcutta	3
Messrs. E. Sander and Company, St. Albans, England.	2	3	123
Agri-Horticultural Society of India, Calcutta	145
Ditto, ditto of Burma, Rangoon	1	...	19
Ditto, ditto of Punjab, Lahore	6	105
"W. Currie, Esq., Calcutta	1
W. J. Irvine, Esq., Chota Nagpur	1	1
Hon'ble H. E. M. James, c.s.i., Poona	1
J. Lamb, Esq., Shillong, Assam	2
E. H. Man, Esq., C.I.E., Port Blair	4	...	91
O. Maries, Esq., Gwalior	ii	686
J. Martin, Esq., Raipur	ii	7
Dr. J. B. Menzies, Mangaldai, Assam	ii	...
R. Pantling, Esq., Mungpoo	n	976
J. Parkes, Esq., Nimbong	1,680
G. McD. Peche, Esq., Moulmein	*9	1,854
Mrs. J. C. Prazer, Burma	10
8. E. Rita, Esq., Shillong	I	2
J. 8. Slater, Esq., Engineering College, Sibpur.	10
T. J. Spooner, Esq., Kathiawar...	1	3,800
Dr. George Watt, M.B., C.I.E., Calcutta	5	702
Mrs. H. Wylie, Nepal	39
Babu B. M. Roy, Alipore	2
" S. P. Chatterjee, Calcutta	275
Sir George King, M.B., LL.D., F.B.S., K.C.I.E., collected at Suriel.	70
Dr. David Prain, collected in Ceylon	2	49
G. T. Lane, Esq., collected in Singapore	2	1,204
H. J. Davies, Esq., collected in Mungpoo	32
Shaik Mokim, collected in Burma	*7	1,718
Ram Nath, Blacksmith, Baxarab.	1
Bought from Colonel Baird's sale	12
Unknown donors	2	24
Total	9	86	15,212

APPENDIX II.

Statement showing plant* sent out from 1st April 1897 to 31st
March 1898.

To WHOM SENT.	Ward- ian cases.	Boxes	Number of plants.
1	2	3	4
Royal Gardens, Kew, London	1	22
Boyal Botanic Gardens, Edinburgh	...	1	25
Ditto ditto, Berlin	1	25
Botanic Garden, Penang	1	205
Ditto, Ootacamund	2	50
Eaj Garden, Darbhanga	1
State Garden, Gwalior	2	54
Government House Garden, Caloutta	50
Zoological Garden, Calcutta	1,008
Barraokpore Park	1
His Majesty the Shah of Persia	42
Mrs. John Dempster, Park Lea, Manchester	1	150
Messrs. Hugh Low and Company, Clapton Nursery, London.	...	3	500
Messrs. F. Sander and Company, Is- men, St. Albans, England.	...	6	3,605
Agri-Horticultural Society of India, Calcutta	5,016
Ditto ditto, Kangoon	...	10	26
Ditto ditto, Labor	1	195
Commissioner, Bankipore	...	12	300
Deputy Commissioner, Tezpur	1	274
Ditto, Seoni	18	5
Ditto, Dumka	450
Revenue Commissioner, Idar, Bombay	100
Deputy Conservator of Forests, Bengal, Dar- jeeling.	...	19	12
Magistrate, Burdwan	...	8	462
Officiating Magistrate, Noakhali...	160
Subdivisional Officer, Ulubaria	36
Secretary, Tjlliganj Club	...	1	2
Ditto, Municipal Board, Gaya	...	5	2
District Engineer, Backergungo, Barisal	...	31	125
Ditto, lihagaipur	31	780
Ditto, Dinajpur	8	800
Ditto, Faridpur	200
Ditto, Howrah	3	150
Ditto, Malda	4	68
Ditto, Noakbali	90
Executive Engineer, 2nd Calcutta Divi*?TM, Calcutta.	...	1	150
Ditto, Nadia lilverb L/vision, Berhampore.	400
Ditto, Eastern Sono Division, Bankipore.	50
Superintendent, Presidency Jail, Calcutta	562
Ditto of Jail, Airah	1	100
Ditto ditto, Barisal	15
Ditto Foundry and Shell Factory, Cossipore.	600
of Horticultural, &c, Institu- tion, Cossiporo	91
Soldiers' Gardens, Fort William	461
Ditto, Barrackporo	30
Medical College Hospital, Calcutta	613
Eden Hospital, Calcutta	3
Howrah Hospital	1,412
St. Thomas' Church, Howrah	600

APPENDIX II—continued.

To WHOM SENT.	Ward- ¹ ian cases.	Boxes.	Number of plants.
1	2	3	4
St. Vincent's Home, Kidderpore...	200
La Martiniefe School, Calcutta	300
Normal School, Calcutta	200
Indian Museum, Calcutta	2
University, Calcutta...	300
Experimental Farm, Sibpur	50
T. O. Ambler, Esq., Purulia	500
Colonel T. P. G. Angelo, Rae Bareli, Oudh	2	52
Colonel Thomas, 7, Passeggio, Leghorn	1	50
(Livorno), Italy	1	53
Surgeon-Colonel Banks, Calcutta	1,000
J. W. Boilard, Esq., Bankipore	8	200
Dr. J. S. Brooke, Asansol	250
R. Brunfeld, Esq., Alipore	30
Mrs. Burleigh, Calcutta	30
G. H. Cane, Esq.	100
E. C. Chisholm, Esq., Travancore	7	150
lievd. E. Cornelius, Jamtara	2
W. Currie, Esq., Calcutta	4
Dr. Dickie, Calcutta	10
E. H. Elder, Esq., Cossipore	1	1,700
F. R. Elphinstone, Esq., Purulia...	48
A. Falconer, Esq., Rajgunge	1	25
A. Forbes, Esq., Ranchi	1	17
G. Barton Groves, Esq., Abu, Rajputana	4	100
Revd. W. A. Hamilton, Roorkee...	102
E. B. Havell, Esq., Calcutta	850
G. Henderson, Esq., Calcutta	2	30
H. E. Houghton, Esq., Madras	6
Miss James, Calcutta / >	1	8
A. H. James, Esq., Rungliot	1	50
Colonel Jarrett	1	1
J. Lamb, Esq., Shilleng	1	500
W. C. E. Lane, Esq., Golagokuruu Nath	12
W. J. Lewis, Esq., Barkhola, Cachar	790
Thomas Lee, Esq., Sibpur	12
C. Little, Esq., Alipore	431
Mrs. Macdonell, Engineering College, Sibpur...	...	2	11
Surgeon-Major J. W. Macnamara, Tezpur	13	300
Assam...	5	...	191
Revd. J. M. Macphial, Simultola	1	100
E. H. Man, Esq., C.I.E., Port Blair	12
C. Curtis, Esq., Forest Department, Penang	4	200
J. B. Marten, Esq., Mourbliunj	56
Mrs. Maxwell, Howrah	200
Dr. J. B. Menzies, Mangaldai, Assam	100
Surgeon-Major R. H. Moore, M.D., A.M.S.	15	471
Calcutta	9	200
Mrs. Neill, Calcutta...	200
R. Pantling, Esq., Mungpoo	500
Revd. G. A. Panes, Banka, Deoghur	1	6
Major J. N. Passy, Calcutta	30
H. A. Pearson, Esq., Patna	300
G. McD. Peche, Esq., Moulmein	12	300
T. Ponton, Esq., Howrah	4	100
W. Raitt, Esq., Raniganj	2
Revd. te) Rowatt, Mihijam
Mrs. Sanders, Alipur	625
E. W. F. Shaw, Esq., Engineering College, Sibpur	7	155
Mrs. Gordon-Sims, Beguserai

APPENDIX II—concluded.

To WHOM SENT.	Ward- ian cases.	Boxes.	Number of plants.
1	2	3	4
W. M. Smith, Esq., Madhupur	3	88
A. D. Todd, Esq., Howrah	500
Eevd. R. H. Tregellas, Khulna	2	50
Captain T. Welluschug, Austrian Lloyd's Agent	6
W. Weston, Esq., Meherpur	1	25
Mossis. Melville, Henry and Company, Ban- kipore	500
„ Kilburn and Company, Calcutta ...	1	...	5
„ J. Mackilican and Company, Calcutta	6	150
„ F. Kuthven and Company, Purulia	1	1,040
„ Andrew Yule and Company, Calcutta.	1	...	35
Oil Company, Limited, Shalimar	103
Maharaj Dhiraj Kumar Tara Lall Sing, Raghunathpur	2	12
Kumar Rameshwar Malliah, Howrah	30
Prince Linben, Calcutta	2
Nawab Abdool Sovan Chowdhury, Bagura	4
Rai Svrendra Nath Mitra Bahadur, Calcutta.	50
Babu B. M. Roy, Aliporo	28
„ G. D. Chatterjee, Howrah...	2
„ H. C. Roy, Calcutta	5
„ H. C. Shaha, Cooch Behar	1	5
„ J. N. Chowdhery, Sibpur	80
„ J. N. Mitra, Memari	50
„ K. N. Roy, Subarnapur	2	8
„ N. B. Ghoso, Sibpur	30
„ P. C. Chatterjee, Chanditalla	24
„ P. C. Ghosh, Calcutta	4
„ P. N. Bhattacharjee, Calcutta	200
„ R. K. Bhattacharjee, Calcutta	500
„ 8. P. Chatterjee, Calcutta	799
„ U. N. Mitra, Sibpur	2
Monchershaw Motabhoy, Guzrat	500
Nimye Chandra Shamanta, Maniktalla	6
Ram Nath Blacksmith, Backoara	1
Shaik Wahid Bux, Calcutta	50
Total ...	12	306	36,885

APPENDIX IV.

Statement showing seeds distributed from the Royal Botanic Garden
during the year 1897-98.

To WHOM SENT.	Number of parcels or packets.
W.T. Thiselton Dyer, Esq., F.R.S., C.M.G., C.I.E., Director, Royal Gardens, Kew, London ...	116
Director, Botanic Gardens, St. Petersburg, Russia ...	33
Do., Royal Botanic Garden, Peradeniya, Ceylon ...	10
Botanic Garden, Adelaide ...	2
Ditto, Bangalore ...	10
Ditto, Brisbane ...	2
Ditto, Buitenzorg ...	7
Ditto, Birmingham ...	2
Ditto, Cambridge ...	6
Ditto, Christ Church, New Zealand ...	2
Ditto, Darjeeling ...	129
Ditto, Dunedin, New Zealand ...	2
Ditto, D'Urban, Natal ...	27
Ditto, Edinburgh ...	9
Ditto, Glasnevin ...	2
Ditto, George Town, Demerara ...	5
Ditto, Goneshkind, Poona ...	2
Ditto, Graaf Reinet, Cape Colony ...	2
Ditto, Graham's Town, Cape Colony ...	2
Ditto, Grenada ...	2
Ditto, Hobart Town, Tasmania ...	2
Ditto, King William's Town, Cape Colony ...	2
Ditto, Liverpool ...	3
Ditto, Malta ...	2
Ditto, Manchester ...	2
Ditto, Massachusetts, "United States, America ...	1
Ditto, Melbourne, Australia ...	2
Ditto, Montreal, Canada ...	5
Ditto, Nagpur, Central Provinces ...	2
Ditto, Napier, New Zealand ...	2
Ditto, Natal ...	2
Ditto, New York City ...	2
Ditto, Ootacam and ...	11
Ditto, Oxford ...	2
Ditto, Pampelmou8C9, Mauritius ...	5
Ditto, Saharanpur ...	29
Ditto, Singapore ...	5
Ditto, Sydney, New South Wales ...	2
Ditto, Trinidad, West Indies ...	2
Ditto, Uitenhage, South Africa ...	2
Ditto, Wellington, New Zealand ...	2
Secretary, Agri-Horticultural Society of India, Calcutta ...	8
Ditto ditto, Madras ...	19
Ditto ditto, Moulmein ...	3
Ditto ditto, Rangoon ...	11
Secretary, Indian Gardening Association, Calcutta ...	57
Ditto, Royal Botanic Garden, Regent's Park, London ...	2
Superintendent, Government Garden, Allahabad ...	3
Ditto, Botanical Station, Barbadoes, West Indies ...	2
Ditto, Royal Horticultural Society's Garden, Chiswick, London ...	2
Ditto, Royal Horticultural Society's Garden, Lahore ...	16
Ditto, Govt. Horticultural Garden, Luoknow ...	23
Ditto, Victoria Garden, Bombay ...	8
Ditto, State Garden, Baroda ...	3
Ditto, Gwalior State Gardens, Gwalior ...	19
Ditto, Temple Medical School, Patna, Bankipore ...	2
Curator, Botanical Station, Antigua, West Indies ...	2
Ditto ditto, Dominica, ditto ...	2
Ditto ditto, Hawaii, Sandwich Island ...	2
Ditto ditto, Lagos, West Africa ...	2
Ditto ditto, St. Kitts' Nevis, West Indies ...	2
Ditto ditto, St. Luoia, West Indies ...	2

APPENDIX IV—continued.

TO WHOM SENT.		Number of parcels or packets.
Herrn Direktor des bot. Gartens,	Agra, Austria-Hungary	2
Ditto	Basel, Switzerland	1
Ditto	Bern, Switzerland	3
Ditto	Belgrad, Servia	2
Ditto	Bonn, Germany	3
Ditto	Branschweig, Germany	2
Ditto	Breslau, Germany	2
Ditto	Buda-Pest, Austria-Hungary	2
Ditto	Erlangen, Germany	2
Ditto	Frankfurt, Germany	2
Ditto	Freiburg im B., Germany	2
Ditto	Giessen, Germany	2
Ditto	Graz, Austria-Hungary	2
Ditto	Hamburg, Germany	2
Ditto	Heidelberg, Germany	2
Ditto	Innsbruck, Austria-Hungary	2
Ditto	Jena, Germany	2
Ditto	Klagenfurt, Austria-Hungary	2
Ditto	Koenigsberg, Germany	2
Ditto	Kolozsvar, Austria-Hungary	2
Ditto	Krakau, Austria-Hungary	2
Ditto	Laibach, Austria-Hungary	2
Ditto	Leipzig, Germany	2
Ditto	Lemberg, Austria-Hungary	2
Ditto	Muenchen, Germany	2
Ditto	Munster, Germany	2
Ditto	Polytechnikum, Dresden, Germany	2
Ditto	Rostock, Germany	2
Ditto	Strassburg, Germany	4
Ditto	Trieste, Austria-Hungary	2
Ditto	Tuebingen, Germany	9
Ditto	Universität, Prag, Bohemia, Austria-Hungary	2
Herrn Direktor,	Deutsche Universität, Prag, Bohemia, Austria-Hungary	2
Ditto,	Zürich, Switzerland	2
Ditto,	des Grossherzoglich bot. Gartens, Darmstadt, Germany	2
Ditto,	Königlich Botanischen Garten, Dresden, Germany	1
Ditto,	KirSde. W. Ob. le, Alt Galow, Germany	2
Herrn Inspektor, des bot. Gartens,	Bucuresci, Romania	3
M. le Directeur, du Jardin Botanique,	Amsterdam	2
Ditto,	Antibes, France	2
Ditto,	Anvers, Belgium	1
Ditto,	Athens, Greece	5
Ditto,	Bordeaux, France	2
Ditto,	Bruxelles, Belgium	1
Ditto,	Caen, France	2
Ditto,	Cairo, Egypt	H
Ditto,	Christiania, Norway	2
Ditto,	Gaud, Belgium	1
Ditto,	Genève	27

APPENDIX IV—*continued.*

To WHOM SENT.			Number of parcels or packets.
M. le Directeur, du Jardin Botanique,	Groningen, Holland		2
Ditto, ditto,	Kjobenhaven, Den-	mark	1
Ditto, ditto,	Kieff, Eussia	...	1
Ditto, ditto,	Leiden, Holland	...	1
Ditto, ditto,	Leige, Belgium	• • •	1
Ditto, ditto,	Louvaine, Belgium	...	1
Ditto, ditto,	Lund, Sweden	...	1
Ditto, ditto,	Lyon, France	...	1
Ditto, ditto,	Moskau, Eussia	...	1
Ditto, ditto,	Odessa, Kussia	...	1
Ditto, ditto,	Eouen, France	...	1
Ditto, ditto,	Saigon	...	5
Ditto, ditto,	Stockholm, Sweden	...	f.
Ditto, ditto,	St. Denis, Eeunion	...	x
Ditto, ditto,	Upsala, Sweden	...	^
Ditto, ditto,	Warschau, Eussia...	...	7
Ditto, Jardin de la Ville, Nanoy, France	...	...	z
Ditto, Do., Medicale, Faculte de Medicine, Eue	Cuvier, 12, Paris	...	z
Ditto, du Jardin d'acclimatation, Cannes, France	...	...	z
Ditto, Ditto	Hammd, Al-	geria.	y
Ditto, Ditto	Orotava, Canary	Islands.	^
Ditto, du Jardin des Plantes, Clermont-Ferraud	France.	...	^
Ditto, ditto,	Dijon, France	...	z
Ditto, ditto,	Grenoble, France	...	z
Ditto, ditto,	Montpellier,	France.	*
Ditto, ditto,	Nantes, France...	...	1
Ditto, ditto,	Paris	...	%
Ditto, ditto,	Toulouse, France	...	^
Ditto, ditto,	Tours, France	...	^
M. le President de la Commission du Jardin Botanique,	Lille, Nord, France.	...	fit
M. Demole, President du Jardin d'acclimatation, Cannes,	France.	...	***
Big. Direttore, dell'Orto Botanico, Bologna, Italy	••	...	1
Ditto, ditto,	Catania, do.	...	1
Ditto, ditto,	Caserta, do.	...	1
Ditto, ditto,	Ferrara, do.	...	^
Ditto, ditto,	Firenze, do.	...	?
Ditto, ditto,	Genova, do.	...	1
Ditto, ditto,	Modena, do.	...	f.
Ditto, ditto,	Padova, do.	...	2
Ditto, ditto,	Pavia, do.	...	2
Ditto, ditto,	Parma, do.	...	2
Ditto, ditto,	Perugia, do.	...	2
Ditto, ditto,	Pisa, do.	...	2
Ditto, ditto,	Portici, do.	...	4
Ditto, ditto,	Siena, do.	...	2
Ditto, ditto,	Torino, do.	...	2
Ditto, ditto,	E. Universita, Roma	...	1
Ditto, ditto,	de San Giobbe, Venezia,	Italy.	1
Sig. Director, de la Esouela de Medicina, Port au Prince,	Haiti, West Indies.	...	*
Herrn Prof. Engler, Direktor Kgl. bot. Garteto, Berlin,	Germany.	...	9
M. TAdministrateur, du Jardin dee Plantes, Orléans Loiret,	France.	...	^
M. leJardinier en chef, du Chateau Fontainebleau, Seine-et	Marne, France.	...	*

APPENDIX IV-continued.

TO WHOM SENT.	Number of parcels or packets.
M. leJardinier en chef, T wh'n du Luxembourg, Paris	2
M. leJardinier enohef, du Jaram ^ Boulogne, IW ^ va	2
Sig. Director do Jardin bot da Universidade, Coimbra, Portugal.	2
Senor Director, del Jardin botan, Buenos Ayres, Argentina, South America.	2
Jardin botan, Madrid, Spain ...	2
Lima, South America ...	2
Quito, South America ...	2
Santiago, South America.	2
Rio, Brazil, South America	2
Ditto ditto, Rio, Brazil, South America	2
Sig. Direttore, dell Orto Botanico di Brera, Milano, Lombardia, Italy.	38
Signor A. Todaro della Gallia, Consul General de Persia, Palermo, Italy.	2
Director, Department of Public Gardens and Plantations, Jamaica, West Indies.	2
Director, Shaw School of Botany, St. Louis, Mo, United States America.	1
Director of the United States Tropical Nursery, Dabordie, Trinidad.	2
Director, Botanic Gardens and Public Parks, Cape Town, Cape of Good Hope.	6
Professor Drude, Director of Botanical Gardens, Dresden, Sachsen.	1
Ditto, Dr. E. Warming, Director, i W - Garden, University, Copenhagen, Denmark.	2
Ranger, Botanic Garden, Auckland, New Zealand	1
Superintendent, Alipore Jail, Alipore	3
Berhampore Jail, Berhampore, Murshidabad	2
Bhagalpur Jail, Bhagalpur	2
Bogra Intermediate Jail, Bogra	2
Central Jail, Midnapore	2
Central Jail, Raipur	2
Chittagong Jail, Chittagong	2
Comilla Jail, Comilla	2
Dumka Jail, Dumka	2
Hazaribagh Jail, Hazaribagh	2
Jessore Jail, Jessore	2
Maldah Jail, Maldah	2
Motihari Jail, Motihari	2
Mymensingh Jail, Mymensingh	2
Noakhali, Jail, Noakhali	2
Palamau Jail, Palamau	1
Patna Jail, Bankipore	2
Puri Jail, Puri	2
Rajshahi Central Jail, Rampur Boalia	2
Ranchi Jail, Ranchi	2
Rangpur Jail, Rangpur	1
Saran Jail, Chapra	1
Annandale Gardens, Simla	3
of Forests, Marwar, Jodhpur	25
Cossipore Practical Institution, Cossipore	3
Cooch Behar State, Public Works Department	1
Cooch Behar	1
"meat, Cooch Behar	27
	133
	1
	5
MffwSS'SSi^ -	13
	2
	2

APPENDIX IV—continued.

TO WHOM SENT.	Number of pages or packets*
Deputy Conservator of Forests, Belgaum, Bombay Presidency	*
Extra Assistant Conservator of Forests, Tehri (Qarhwal), Tehri ... ^	6
Supervisor in charge, Chakradharpur subdivision, Chakra- dharpur ...	1
Sub-Overseer in charge, Govindpur subdivision, Govindpur District Traffic Superintendent, Bombay-Boroda and Central India Railway, Cawnpore ...	2
Messrs. Hu^h, Low and Company, Clapton Nursery, London	*
„ McLeod and Company, Calcutta ...	2
„ Cutler, Palmer and Company, Calcutta ^	6
„ Reasoner Brothers, Royal Palm Nurseries, Onega, Florida ...	9
„ F. Sander and Company, Nurserymen, St. Albans, England ...	6
„ Dammann and Company, growers of seeds and bulbs, San Giovanni a Teduccio, Provincia di Napoli, Italy ...	2
„ Stanley, Price and Company, Calcutta ^	3
M. le Conservateur, Jardin Botanique, Geneve, Switzerland	87
Government Botanist, Melbourne, Victoria, Australia	2
Colonial Botanist, Queensland, Brisbane ...	2
Administrator, Botanical Station, Gambia ...	*
Sig. Conde de Ficalho, Director do Jardim Bot. da Escola polytecnica, Lisbon, Portugal ...	1
Huzur Deputy Collector, Sukkur, Sind ...	1
Postmaster, Diamond Harbour, 2i-Parganas ...	*
L'Horticole Internationale (Societe Anonyme) Rue Wertz 79, Pare Leopold, Brussels, Belgium ...	1
Hon'ble C. Hardinge, C.B., Her Britannic Majesty's Charge d' Affairs, Teheran, Persia, care of the Political Resident, Persian Gulf ...	4
Right Hon'ble the Earl of Annesley, Castle Wellan Co Down, Ireland ...	35
Professor Dr. V. Wittrock, Director, " Hortus Bergianus," Stockholm, Sweden ...	1
Sir J. D. Hooker, o.c.s.i., C.B., F.E.S., &C, the Camp, Sun- ningdale, London ...	19
Sir George Birdwood, K.C.S.I., &C, India Office, Whitehall, London ...	9
Arthur Ashfield, Esq., Behubor, Nazira Post Office, Assam	*
Surgeon-Captain A. R. S. Anderson, Indian Museum, Calcutta ...	*
A. Brownlow, Esq., Banskhali, Chittagong ...	*
Dr. Bomford, Medical College, Calcutta #	*
Dr. Bower, F.R.S., Professor of Botany, University of Glasgow	A
M. W. Barbey, Les Jordils, Chambezy, pres Geneve, Switzer- land ...	1
W. Bull, Esq., 536, King's Road, Chelsea, London, S. W.	*
John B. Burnett, Esq., Tellicherry, Malabar Coast ...	4
W. Brieu, Esq., Beech Cottage, Bowden, Newton, St. Boswell'e, Roxburghshire ...	6
H. R. H. Coxe, Esq., i.c.s, Civil and Sessions Judge, Midnapore ...	^
M. Oas. de Candolle, Cour St. Pierre, 3, Geneve, Switzerland	A
Lieutenant H. W. Cruddas, Commandant, Military Police, Myitkyina, Upper Burma ...	5
M. Drake del Castillo, Rue Balzac, 2, Paris, France ...	1
Winter Cooke, Esq., care of Mrs. Bomford, Medical College, Calcutta ...	8
C. Curtis, Esq., Forest Department, Penang, Straits Settle- ments ...	2
M. Maxime Cornu, Jardin des Plantes, 57, Rue Cuvier, Paris ...	\
J. M. Domengoe, Esq., Kopa Taluk, Kadur dietriot ...	*
Miss A. Eastwood, San Francisco, United States, America...	^

APPENDIX IV-concluded.

To WHOM SENT.	Number of parcels or packets.
	2
J. Gammie, Esq., Mungpoo	3
T. Hanbury, Esq., La Mortola, P. Italy	2
D. G. Head, Esq., M. of * * * Crystal Palace, Simla, Punjab	23
W. H. Lee, Esq., i.o. Collector of P. g. Barkhol	1
W. H. Lewis, Esq., Dulcbera Tea B. enchen, BATORIK	3
B. H. Man, Esq., Port Blair, Upper Assam	2
K. Pantling, Esq., Deputy Superintendent, Government Cinchona Plantation, Mungpoo	1
G. M. Peche, Esq., Moulmein, Burma	3
Dr. Gk Post, Beirut, Syria	2
J. L. Schiller, Esq., Rutherford, New Jersey, America	7
S. O. Smith, Esq., Delhi	3
Dr. J. W. H. Traill, F.K.S., P. T. A. ; wn (Livorno), Italy	15
Colonel Thomas, 7, Passe Leghorn Palermo Sicily	4
Sig. Direttore, dell' R. Orto Botanico	2
H. V. Eitch, Esq., Chelsea, London, S. W. ; - ^ B e c o n o m i c C. M., C. ; R e ; ^	2
Prof. u ^ W e ' S o m m e n t ^ f I n d i a n M u s e u m	1
Frank, Esq., Nurseryman and Seedsman, Sandh. I. Tasmania	87
S. L. Watkins, Esq., Oak Leaf Nurseries and Floral Gardens, Grizzly Flats, California, United States, America	3
G. M. Woodrow, Thomas S. Ware, L. Wray, Esq., Settlementon, Esq; Heatherbank, Weybridge, near G. M.	7
D. J. S. Yates, San Barbara, California, United States, America	2
M. H. Tounghusband, Esq., KaiP ; Raip ; of, Central Provinces	4
Mr. Cooverjee Bomonjee, Calcutta	3
Sabibzada Nooroodeen Khan, Bussapag	4
Babu Abinash Chandra Sen, Sibpur	4
ment, Oossipore	10
„ Ausit Gangully, Barisal	1
„ Bata Datta, Habibpur, Ranaghat	1
„ Brojo Banerjee, Sub-Overseer, Burhi, Hazari-	5
Mookerjee, Gobardanga, 24-Parganas	1
Datta, Sibpur	24
„ Heerulall, Ajaigarh	1
„ swas, Calcutta	6
„ Purulia, Bengal	1
„ ur, Overseer, Public Works Department, Siliguri	5
„ Prosona Coomar Onawerj ; Chunditolla Nursery,	25
„ Sridhar Chuckerbutty, ; sery, Calcutta	4
of Forests, Palamau ; Assistant Conservator	1
Total distributed	2,177

APPENDIX V.

List of Herbarium Specimens received during the year 1897-98.

	Number.
Director, Royal Gardens Kew (general)	957
Keeper, Botanical Department, British Museum, London (general) .°. # ...	^
Director, Botanical Department, Hof Museum, Vienna (cryptogams)°	^
Sir George King, K.C.I.E. (British mosses)	150
„ H. Collet, K.C.B. (Algerian plants)	jgj
J. Medley Wood, Esq., A.L.S., Durban (Natal plants)	j28
A. H. Curtiss, Esq. (plants of S. United States)	jgQ
C. G. Pringle, Esq. (plants of Mexico)	g^g
Director, Botanical Department, Northern India, Saharan- pur	- ^07
Reporter on Economic Products with Government of India (Assam plants)	*1 188
Director, Botanical Department, Singapore (Plants of Malay Peninsula)	3 ^
Director's Lands Plantentuin, Buitenzorg, Java (Plants of Malay Archipelago)	5 ^
College of Science, Poona (Deccan plants)	50
Lieutenant Pottinger, R.A. (Kachin hill plants)	QQQ
Shaik Mokim, Plant Collector, (ditto)	0 249
R. L. Heinig, Esq., Forest Department (Andaman plants) J. H. Lace, Esq., Forest Department (Plants of Punjab Himalaya).	^SO
G. A. Gammie, Esq. (Sikkim bamboos and economic plants)	1 gJ
C. Maries, Esq. (Naini Tal plants)	^Q
Surgeon-Captain C. J. Milne (Plants from Tirah)	1^6
Surgeon-Major H. H. Johnston (plants from Buner)	34
Hon'ble H. G. M. James, c.s.i. (Sind desert plants)	yj
Petty contributions	j£
	21
Total	^ 9,475

APPENDIX VI.

List of Herbarium Specimens distributed during the year 1897-98.

	Number.
	962
	959
	851
United States, Harvard University, Cambridge, Massachusetts	344
Herbarium, Smithsonian Institution, Washington, United States, America	420
Dr. J. H. Sandberg, Minneapolis, Minn., United States, America	1,353
Reporter on Economic Products to Government of India, Calcutta	574
Director, Botanical Department, Northern India, Saharanpur	388
Government Central Museum, Madras	265
College of Science, Poona	184
J. S. Gamble, Esq., Director, Imperial School, Dehra Dun	180
W. A. Talbot, Esq., Deputy Conservator of Forests, Belgaum	234
Herbarium, Lands Plantentium, Buitenzorg, Java	904
Ditto, Royal Gardens, Berlin	450
Ditto, Brussels	664
Ditto, Florence	470
Ditto, Fribourg	609
Ditto, Leiden	443
Ditto, Munich	885
Ditto, Paris	698
Ditto, St. Petersburg	540
Ditto, Upsala Hofmuseum	790
Ditto, Vier Hofmuseum	399
Ditto, Zurich	835
M. C. de Candolle, Geneva	386
M. E. Drake del Castillo, Paris	25
Herr W. Kinzel, Dahme, Brandenburg	...
Total	14,482

DAVID PRAIN, M.B., Surgeon-Major, I.M.S.,
 Supdt., Royal Botanic Garden, Calcutta.

FINANCIAL DEPARTMENT

MISCELLANEOUS

DAHJEELING, THB 27TH JUNE 1898.

RESOLUTION—No. 3559Mis.

READ—
The Report
Read again—
The Report

of the Royal Botanic Garden, Calcutta, for the year 1897-98.

Jrnl of the Royal Botanic Garden, Calcutta, the year 1896-97, with the Resolution recorded thereon.

THE Botanic Garden has not yet fully recovered from the drought of the last two years. Among the more delicate plants town but scanty blossoms, and most of them came into flower too early and not so beneficial to a number. On the other hand the unusual conditions produced before produced nothing of exotics, and several species flowered, wniere j thoroughly repaired but leaves. The Clarke and Thompson f J a leading from the during the year, and the Rwbuigh Ayonne ind t be j s soon aB (undg banyan tree to the Andul Road will he take o " * ^ J " ever, and it was permit. Visitors to the Garden were more Dumeious ban e den rules. found necessary on this account to make B B I ^ TM ^ ^ I 3 Z " I the cold

2. Plants of an economic value ^ J ^ ^ S r f p u t a M and other weather Dr. Prain commenced the study of ^ g TM ^ J 3 % \ laTg e one, it leguminous crops cultivated in Bengal, but as the " " { I 8 ^ ^ of % 8erie6 of could not be brought to ^ , " P 1 ^ 1 ^ e S ^ concl.sivo, but they tended experiments on the tivnt. o., of rhea-Beedwero 1 to show that e rd derived from plants g * w n . B ^ - J J ^ ^ ^ ^ the Go vern- ^ fertile. At the request of the BePOTel on ^ were experimentally cultivated, ment of India, certain of the vM netlo3 L a h e V bulbs and seeds of plants, of and Die same officer supplied a number of tubers, UUIOB, « were flowered and economic interest to be cultivated and determined, after they reports, the sources of wcnowii or doubtful, have been fruited. In this way, Dr. R ^ of which was u is about to be developed, of economic products, ^ / S f ^ ch of study lecreasedby 9,475 spewmen^ the definitely ascertained, and « i « bron was in

3. Tho collection =n the Herbanum Director of the Royal Garden, Kew; chief donor* being Mr. Tlnscitoi i ^ ^ ment, Northern India; Dr. Watt, Mr. DuUie, Director of the Botanical £ ^ Oo7ernniert of India; Dr. Treub, Reporter on the Economic Products to leOmoi w in Java; ^ Mr. Murray, Director of the Botanic Garden at Buitei ^ eum. An interesting collec- Keeperof the Botanical Department, Bnti ^ w < s eum. Colett, ^ one from tion of plants from Algeria xna r ^ c : 7 e f , * 7 o m of plants from Mexico and from Natal from Mr. Medley Wood, while coll t l TM p ns were also received from Florida were acquired to purchase. C £ TM n . Major Johnston, Surgcon- Dr. Gunther Beck von Mannagcta, < > h / ? T y James Mr. L a c e a n d M r . t a . Captain Milne, Mr. Woodrow, t p 1 ^ ^ ^ ^ that of a collection, which had An addition, that is especially " ^ T O ' c h i ? Hills by Lieutenant Pottinger been made in the hitherto unexplored-K ^ t a , ^ ^ ^ ^ gif George and by a botanical collector who was g uted European mosses, and King presented the garden with a ^ c ^ C t ion of mic leguminous plants Jr. Gammie with a collection of bamboo s f l m l c con 0 mic leguminous plants from Sikkim. The W * r o l ^ ^ L a amounted to 14,483. to the chief herbara of Europe, America, l a amount of an account of the

A The chief work of the year was n'o com* ., (1)w This constitutes Orchid, of Si Mim by Sir George Kfcg and ^ / ^ ^ g botany that, has one of the BBert ooBtributioni. to ^ V ^ j f ^ g ^ ^ f e f l l B u b j e t e were also recently appeared George ^ S r K - contributions of the latter published by Sir

officer including a "Note on the mustards in Bengal," to which referen
made in the Resolution on last year's report.

5. Nothing of especial note occurred at the Loyal Botanic Garden, Darjeeling, during the year. A piece of ground hitherto used as a vegetable garden has been made over to the Superintendent of the Garden for the question of utilising it is under consideration. Steps are being taken to bring together in the Garden complete collections of the species of particular natural families.

6. Sir George King, the Superintendent of the Garden, has retired by ill-health to retire at the end of February last. He had been in the charge of the Garden since July 1871, and his brilliant services have been recognised by Government in a separate Resolution. The Lieutenant-Governor also to thank Sir George King's successor, Surgeon-Major J. J. Fox, for his efficient management of the departments under his care, and to report submitted by him.

By Order of the Lieutenant-Governor of Bengal,

H. H. RISLEY,

Secretary to the Government of Bengal.

No. 3560Mis.

COPY forwarded to the Superintendent of the Royal Botanic Garden, Calcutta, for information.

By order of the Lieutenant-Governor of Bengal?

B. FOLEY,

Under-Secy. to the Govt. of Bengal.

CALCUTTA,

27th 30th June 1898.

S

ROYAL BOTANIC GARDEN, CALCUTTA, FOR
THE YEAR 1898-99.

No. 20G., dated Royal Botanic Garden, Sibpur, the 25th May 1899.

From—MAJOR D. TRAIN, M.B., F.K.S.K., I.L.S., I.M.S., Superintendent, Royal Botanic Garden, Calcutta,

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

I HAVE the honour to submit herewith the 22nd Annual Report of the Royal Botanic Garden, Calcutta, for the year 1898-99.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE YEAR 1898-99.

THE weather of the past year has been more nearly normal than that of the two preceding seasons, and the bad effects of scanty rainfall detailed in the successive reports do not on this occasion have to be recorded. The show orchids this season regained its old standard of excellence, although the actual number of plants in the conservatories was considerably smaller than in years gone by. This was due to the reduction in the stock of plants caused by the unfavourable weather of several successive seasons of drought. At the same time it is becoming year by year more difficult to replace by fresh collections those plants that succumb, owing to the reckless way in which the forests of Sikkim, Assam and Burma have been denuded of their orchids by unintelligent selectors, and it is found that a depleted stock is now only to be made up with great difficulty and at a considerable outlay. The chief improvements effected during the year consisted of rather extensive repairs to the river-bank from the pumping-engine station westwards. Towards the end of the year the Roxburgh Avenue, which was urgently in need of thorough repair, was taken in hand, and it was found possible before the close of the official year to practically complete the necessary earthwork. The want of the requisite funds made it impossible to metal the road within the year under review; this will be done during the ensuing rainy season.

2. *Economic plants*.—Especial attention was as usual given to plants of economic importance, numbers of rhea, rubber and other useful plants being freely distributed. In connection with the question of rubber and gutta-percha samples of the milky juice of species of *Siu\$roxi/ton* belonging to the natural family *Sapotaceae* were sent for examination to Professor Dunstan of the Imperial Institute, London. It is possible that, though these species do not yield a true rubber, the material obtained from them, which more closely resembles gutta-percha than India-rubber, may prove capable of being utilized for various purposes for which it is at present necessary to employ gutta-percha or India rubber. An interesting introduction to India during the year was *Potyga Imigracea*, an African species which yields an excellent vegetable oil. For the sake of a supply of its seed thanks are due to Professor E. Heckel of the Colonial Museum, Marseilles, who has made a careful study of the plant and its product. The cultivation and, on their coming into flower and fruit, the identification of living plants yielding Indian products of hitherto doubtful origin on behalf of the Reporter on Economic Products with the Government of India and on behalf of the Central Indigenous Drugs Committee, have been continued with good results throughout the year. During the year samples of sugarcane affected by disease were submitted for examination from various parts of the Madras Presidency and from almost every district in the Lower Provinces. The reports on these various samples are in the hands of the officers in charge of the Agricultural Departments of these provinces.

3. *Herbarium*.—The work of this Department was carried on as usual during the year. The number of named specimens distributed to other Herbaria was 7185. The work of distribution was considerably interfered with, owing to my having to labour single-handed till 20th June 1898, when Lieutenant Gage took

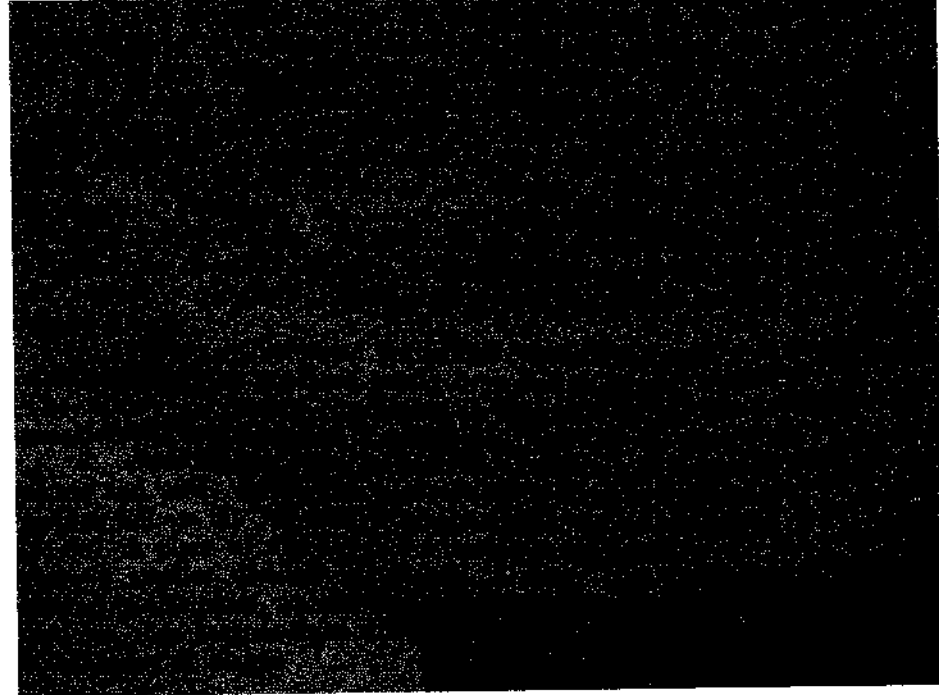
over charge of the post and duties of Curator of the Herbarium, and as

1899 till 30th February

1899. The number of specimens contributed reached 10,672. Collections received being of special interest, and I have the pleasure to

Leiden and Heer Buysinann of Middleburg, Holland, interesting collections were received. A collection of Australian plants was sent by Government Botanist, Melbourne. Three American collections, from the United States respectively and from Mexico, were purchased, while small collections of North American plants were purchased by the United States National Museum, Washington, and by Professor Kingston, Ontario. Mr. Medley Wood of Durban, Professor S. J. J. Wood and Herr Schlechter of Berlin, formerly, of Cape Town, presented interesting sets of South African plants. A very fine collection of Swiss plants was presented by the Director of the Cantonal Museum, Fribourg. The chief contributions were a large and very fine collection of Chinese plants sent by Mr. Henry, Ssumao, and a smaller one from the same country sent by Mr. Pottinger, E. A.; a fine collection of specimens from the Malay Peninsula and Borneo was also forwarded by the Director of the Botanical Gardens, Singapore.

The principal Indian contributions were a large collection of botanical specimens received from Mr. R. Pantling in order to complete the authentic collection of orchids distributed last year; also a very valuable collection of botanical specimens made by Dr. T. L. Walker of the Geological Survey. This collection forms the subject of a special report by Dr. V. F. Brotherus, which is now being published in the *Records of the Botanical Survey of India*. Valuable contributions to the Herbarium were also made by Dr. A. C. Smith and Mr. T. F. Bourdillon from the Pulney Hills and Travancore; by Mr. M. Woodrow from Poona; by Captain C. J. Milne from the Nilgiris; by J. F. Duthie, Director of the Botanical Department, Northern India; by J. S. Gamble, Director of the Imperial Forest School, Dehra Dun, N.-W. Himalaya; by Mr. G. A. Gammie, from Sikkim. Interesting contributions were made by native collectors in Assam, Burma, the Andamans and Nicobars; while collections were also made during the year in Western India. Lieutenant Gage, and in the Andamans and the Nilgiris by myself. I am due to J. F. Seemann Esq. of Tinsukia, who has kindly supervised the work of a native collector in the Jaboka Naga Hills; to Lieutenant Cruddas, who rendered great assistance in the early part of the year to a native collector in the Kachin Hills, and to E. H. Man, Esq., C.I.E., who kindly directed the work of a native collector in the Andamans and Nicobars. Captain A. B. ...



The number of packets of seeds received during the year was 1,161, practically the same as last year. The number distributed was, however, considerably increased, (5,794 in place of 2,177). This satisfactory result is We\y <ke W\» \asmg V« pffi& \vU\te mt\Q wilectora to apiu visit the higher valleys of independent Sikkim in search of seeds of Alpine species, which are highly valued in Europe and America, but which it has been impossible to obtain since the time of the Sikkim Expedition.

7. *Lloyd Botanic Garden.*—The proposal to transfer a portion of the ground formerly known as the municipal vegetable garden to the Eden Sanitarium, mentioned in the last annual report, has been carried into effect, and the amended boundary line between this patch and the Eden Sanitarium grounds has been duly indicated by boundary pillars. Fencing for the patch has been provided and to a large extent erected, and the laying out of the ground, so as to bring it into conformity with the Lloyd Garden proper, is being actively proceeded with. The heavy snowfall which took place in the latter part of January 1899 did a considerable amount of damage to many of the exotic trees, their branches being broken by the weight of the snow. Fortunately, however, there are fewer actual deaths to record, as the result of the bitter weather, than might have been anticipated.

8. The budget allotments of money both for the Eoyal Botanic Garden and for the Lloyd Botanic Garden have been fully spent. The proceeds of sales of surplus plants and books, amounting to Rs. 805-10-6 for the Calcutta Garden and to Rs. 954-2 for the Lloyd Garden, were as usual paid into the Howrah and the Darjeeling treasuries respectively.

9. The post of Curator of the Herbarium, which was vacant at the commencement of the official year, was filled on 20th June by Lieutenant A. T. Gage, I.M.S., who on that date took over charge. Mr. Gage is an enthusiastic botanist, who has been excellently trained and has discharged the duties of his post efficiently. Mr. H. J. Davies, Assistant Curator of the Royal Botanic Garden, who was acting as Curator of the Garden at the commencement of the year was transferred to Allahabad on 6th August 1898, and his place as Acting Curator was taken by Mr. A. C. Hartless, third assistant, Government Cinchona Plantation, from that date till 9th November 1898, when Mr. G. T. Lane, who had been on furlough to Europe for eighty months, resumed charge of the post. On the transfer of Mr. Davies to the North-West Provinces the vacant post of Assistant Curator was filled by the appointment of Mr. G. H. Cave, fourth assistant, Government Cinchona Plantation. This transfer called for the immediate posting of the new probationer gardener, Mr. O. T. Hemsley, who reported his arrival on 13th October 1898 to the Government Cinchona Plantation as fourth assistant and necessitated the engagement of another probationer gardener in his place. The new probationer gardener, Mr. A. E. P. Griessen, reported his arrival on 11th January 1899. Besides Mr. Lane, who was, as above indicated, absent on furlough from the commencement of the official year till 9th November 1898, Mr. Cave availed himself of privilege leave from 10th March 1899 till 23rd March 1899, and I was myself absent on deputation from 6th January till 20th February. Mr. W. A. Kennedy has been in charge of the Lloyd Botanic Garden throughout the year. The office of the Botanic Garden has been under the charge of Babu G. C. Dutta.

10. The usual tabular statements (six in number) are appended.

APPENDIX I.

Statement showing plants received from 1st April 1898 to 31st March 1899.

FROM WHOM RECEIVED.	Ward- ian cases.	Boxes.	Number of plants.
1	2	3	4
Boyal Gardens, Kew, London	2	2	143
Botanic Gardens, Durban, Natal	1	22
Ditto, Singapore	12
Ditto, Darjeeling	23	1,441
Kushru Bagh, Allahabad	24
F. M. Bailey, Esq., Colonial Botanist, Brisbane, Queensland, Australia.	12
M. le Professor Maxime Cornu, Paris	1	4
H. B. Morse, Esq. (Pakhoé) Lungchow, China.	3
Messrs. F. Sander and Company, St. Albans, England.	1	...	29
Agri-Horticultural Society of India, Calcutta	1	115
Ditto ditto of Punjab, Lahore	1	16
Commander, S.S. <i>Purulia</i>	1	62
Government Museum, Madras	171
Lieut. Bayley, South Lushai Hills	"2	37
A. G. Bourne, Esq., D.S.C. F.R.S., Madras	2	48
J. L. Lister, Esq., Pashok	70
E. H. Man, Esq., C.I.E., Port Blair	12	5	1,236
C. Maries, Esq., Gwalior	5	606
W. F. Mitchell, Esq., Calcutta	35
E. Pantling, Esq., Mungpoo	5	581
G. McD.. Peché, Esq., Moulmein	5	1,070
Mr. J. C. Prazer, Kalewa, Burma	4	398
J. F. Severin, Esq., Tingali Bam, Assam	2	37
J. S. Slater, Esq., Engineering College, Shib- pur.	2
Dr. George Watt, M.B., C.I.E., Calcutta	1	139
Babu S. P. Chatterjee, Calcutta...	175
Dr. David Prain, M.B., I.M.S., collected in Dar- jeeling and Nilgirie.	30
Shaik Mokim, collected in Chittagong, Anda- mans, &c.	2	3	1,003
Munshi Abdul Hock, collected in Assam	4	275
Unknown donors	4	98
Total	17	72	7,894

APPENDIX II.

Statement showing plants sent out from 1st April 1898 to 31st March 1899.

To WHOM SENT.	Ward- ian cases.	Boxes.	Number of plants.
1	2	3	4
Eoyal Gardens, Kew, London	3	114
Eoyal Botanic Gardens, Edinburgh	1	184
Botanic Gardens, Cambridge	1	185
Ditto, Durban, Natal	2	50
Ditto, Hongkong	1	125
Ditto, Penang	1	139
Ditto, Singapore	2	223
Royal Botanic Gardens, Peradeniya, Ceylon	1	...	35
Batanic Gardens, Ootacamund	2	14
Ditto, Saharanpore	1	12
Ditto, Nagpur	1	183
Khusru Bagh, Allahabad	119
Lai! Bagh, Bangalore	1	25
Victoria Garden, Bombay	4	85
Memorial Garden, Cawnpore	1	50
Belvedere Garden, Alipore	2	71
Zoological Garden, Calcutta	854
Barrackpore Park	57
His Excellency the Viceroy's Body Guard, Ballygunge.	30
M. Wm. Barbey, Les Jordils, Chambézy, prés Genève, Switzerland.	...	1	180
Professor J. Briquet, Directeur, Jardin Bota- nique, Genève, Switzerland.	...	1	176
Sig. Thomas Hanbury, Palazzo Orengo, LaMortola, Ventimiglia, Italy.	...	1	181
S. T. Heard, Esq., Eossdohan, Tohilla, Kenmare E. S. O., Co, Kerry, Ireland.	...	1	28
Howard Fox, Esq., Eosehill, Falmouth	1	28
Herr Professor Dr. H. Schinz, Direktor, Botan. Gartens, Zurich, Switzerland.	...	1	182
Well. Ed. Iler Dr. M. Treub, Directeur, 'sLands Plantentuin, Buitenzorg, Java.	...	1	146
Dr. J. Urban, Königl. Botanisches Museum, Berlin.	1	...	16
Agri-Horticultural Society of India, Calcutta	2,018
Ditto ditto of Punjab, Lahore	...	19	248
Conservator of Forests, Dehra Dun.	...	1	12
Ditto, Central Provinces, Nag- pur.	...	4	50
Deputy Conservator of Forests, Sonthal Par- gaas, Dumka.	...	2	200
Magistrate, Burdwan	27	694
Ditto, Howrah	150
District Magistrate, Gaya	12	300
Subdivisional Officer, Feni	7	165
Ditto, Jamui, Monghyr	1	24
Ditto, Eajmahal	1	16
Chairman, Katwa Municipality	1	8
Ditto, Khulna Municipality	2	50
Ditto, District Board, Nadia	40	1,000
Ditto, Local Board, Hailakandi, Cachar	...	6	150
Vice-Chairman, Municipality, Silchar ^ ^	6	150
Executive Engineer, 2nd Calcutta Division, Calcutta.	220
Ditto, Public Works Department Calcutta.	500
Ditto, Chota Nagpur Division, Eanchi.	...	37	925

APPENDIX II—continued.

To WHOM SENT.	Ward- ian cases.	Boxes.	Number of plants.
1	2	3	4
District Engineer, Backergunge, Barisal	...	10	250
Ditto, Bhagalpur	...	14	350
Ditto, Bogra	...	22	550
Ditto, Dinajpur	...	50	1,250
Ditto, Howtak.	129
Ditto, Murshidabad...	...	20	500
Ditto, Noakhali	...	6	150
near, Port Commissioners (for Commissioners for the Port the office of of Calcutta).	300
Overseer, District VTM > STM Superintendent, Majesty's Common Bon bay.	...	6	150
...	...	2	50
...	...	7	162
...	400
...	100
TOto, Gunpowder Factory, Ichapur	48
Ditto, Government Printing, India, Calcutta.	25
Commandant, 8th Eegiment, M. L, Barrack- pur.	24
Ma>oHospital, Calcutta	130
Howrah Hospital	108
Calcutta	111
Howrah	395
Kidderpore	...	8	200
St. Vin School, Asansol	55
St. Pat s School, Calcutta	18
Church Mission Society, Calcutta	16
Little Sisters of the Poor, Calcutta	50
Loretto Conventally, Calcutta	150
Pratt Memorial ool, Calcutta	...	3	74
chool, Calcutta	1,300
shaw College, Cuttack	200
East Indian. Pwiy, ? fvrh	...	3	60
Howrah and Sheakhali i- amway	150
Eastern Bengal State Railway, gealdah	...	1	1
Indian Museum, Calcutt^	200
Government ivandrum	400
Anderson, Calcutta	...	2	69
olonel Banks, Kamptee	...	4	100
C. ffBayley, Esq., Barisal	1,590
Bevd. E. H^urn, Nadia	2
C. Buckland, Esq. c. I J j ^ utta	...	4	100
Eevd. A- Campbell, P> t j Fj Manbhum	...	4	100
B. Cornelius, Jamtara	2
N. J. Cox, Esq., vwrh	...	4	100
Revd. Dr. J. A. %er, Paoham ba, Giridib.	20
D. Elder, Esq., Buddertolla	6
Esq., Sibpur	...	2	38
Esq., Mungpoo	18
Dr. E.M- Gordon, Bilaspur	...	1	29
C. Gray, Esq., Oootoor, Nilgiris	225
...	1,165
W. Henderson, Esq., Caloutt^	...	4	100
... Hosking, Karm ator	...	1	15
hton, Esq., Madras	...	16	400
Revd. W. Kiefel, Ranchee	1
M. le Lieutenant Lalande, S.S. Dupleiz	1

APPENDIX II—concluded.

To WHOM SENT.	Ward- ian cases.	Boxes.	Number of plants.
1	2	3	4
Thomas Lee, Esq., Sibpur	90
W. H. Lewis, Esq., Cachar	1	30
J. L. Lister, Esq., Pashok, Ghoom	1	6
A. Macdonell, Esq., Engineering College, Sibpur.	7
Wm. McGlashan, Esq., Cossipore	28
W. T. Martin Macdonald, Esq., Siwan, Saran	1,000
E. H. Man, Esq., C.I.E., Port Blair ...	14	...	46 L
Mrs. Maxwell, Howrah	310
B. D. Mehta, Esq., Calcutta ^	21
B. H. Morton, Esq., Jalpaiguri...	1	212
Surgeon-Major Murphy, Calcutta	100
Bevd. W. S. Page, Barisal	4	100
„ G. V. Panes, Banka	8	200
B. Pantling, Esq., Mungpoo	20	546
G. McD. Peche, Esq., Moulmein	1	3
Bevd. F. Bowat, Mihijam	4	100
J. F. Severin, Esq., Tingali Bam, Assam	12	277
J. S. Slater, Esq., Engineering College, Sibpur	6
W. M. Smith, Esq., Madhupur	3	85
Bevd. B. W. H. Stuart, Dum-Dum	25
„ B. H. Tregellas, Khulna...	2	50
E. Upton, Esq., Calcutta	US
J. C. White, Esq., Guntok, Sikkim	22	..,000
Messrs. Octavius Steel & Co., Calcutta	12
„ Andrew Yule & Co., Bajgunge	100
„ F. Sander & Co., St. Albans, England	1	8
Nawab Khakhan Hossein, Cawnpore	8
Zamindar Bhagwan Bao, Etawah	1	8
„ Surj Deo Narayan Singh, Balgarh	2	65
Babu Bhaira Mull, Chandernagore	2,000
„ B. B. Boy, Calcutta	62
„ G. C. Datta, Sibpur	40
„ H. S. Boy, Calcutta	4
„ H. P. Datta, Sibpur	16
„ H. C. Mitter, Cossipore	6
„ P. C. Ghosh, Calcutta	2
„ B. B. Boy, Serampore	5
„ S. N. Boy, Dinajpur	1	2
Shaik Lall Mahamad, Calcutta	116
„ Goberdhun, Trishbiga	300
Total ...	23	476	31,867

▼
APPENDIX III.

*Statement showing seeds received from 1st April 1898 to 31st
March 1899.*

FROM WHOM RECEIVED.	Number of parcels or packets.
Sir William Thiselton-Dyer, K.C.M.G., F.R.S., C.I.E., Director, Royal Gardens, Kew, London ...	5
Director, Royal Botanic Garden, Peradeniya, Ceylon ...	20
Botanic Garden, Bangalore ...	1
Ditto, Buitenzorg ...	33
Ditto, Darjeeling ...	3
Ditto, Durban ...	39
Ditto, Grenada ...	2
Ditto, Hongkong ...	1
Ditto, Ootacamund ...	10
Ditto, Penang ...	1
Ditto, Saharanpur ...	26
Ditto, Saigon ...	1
Ditto, Singapore ...	2
Ditto, Sydney ...	48
Ditto, Trinidad ...	1
Assistant Botanist, University of California ...	12
Curator, Technological Museum, Sydney ...	4
Secretary, Agri-Horticultural Society of India, Calcutta	2
Superintendent, Government Horticultural Garden, Lahore ...	469
Ditto, Agri-Horticultural Society, Madras ...	5
Ditto, Government Agri-Horticultural Garden, Nagpur ...	2
Ditto, Memorial Garden, Cawnpore ...	3
Ditto, Gwalior State Gardens, Gwalior ...	1
Ditto, Sujjan Niwas Gardens, Oodeypore ...	1
Ditto, State Gardens, Baroda ...	3
Deputy Opium Agent, Maiwa, Indore ...	2
Senior Director, do Jardin botan Quito, Ecuador, South America ...	14
Senior Director, Santiago, Chille, South America ...	17
Herr Direktor, des Bot. Gartens, Berlin ...	1
Messrs. Easoner Brothers, Oneco, Florida, United States of America ...	5
Messrs. F. Sander & Co., St. Albans, England ...	15
„ Herb and Walle, Naples, Italy ...	30
Herr Prof. Engler, Berlin ...	10
M. le Prof. Maxime Cornu, Paris ...	19
Miss A. Eastwood, San Francisco, California ...	5
Dr. F. Franceschi, Santa Barbara, ditto ...	1
G. A. Gammie, Esq., Mungpoo ...	9
D. Hooper, Esq., Indian Museum, Calcutta...	5
W. Holland, Esq., Ichang, China ...	2
E. H. Man, Esq., C.I.E., Port Blair ...	8
C. S. Sargent, Esq., Arnold Arboretum, Jamaica Plain, Mass., U.S. A. ...	4
Major Prain ...	7
J. Parkes, Esq., Mungpoo ...	3
K. Pantling, Esq., Mungpoo ...	109
Prof. Claude Verne, Grenoble, Franco ...	1
George Watt, Esq., M.B., CM., C.I.E., Reporter on Economic Products to the Government of India, Indian Museum, Calcutta ...	3
Eai Kanye Lall Dey Bahadur, Calcutta ...	1
Abdul Hock, Plant Collector, Assam ...	128
Shaik Mokim, Plant Collector, Burma ...	57
Babullah, Plant Collector, Port Blair ...	10
Total ...	1,161

APPENDIX IV.

Statement showing seeds distributed from the Royal Botanic Garden during the year 1898-99.

To WHOM SENT.	Number of parcels or packets.
Sir William Thiselton-Dyer, K.C.M.G., F.R.S., C.I.E., Director,	334
Eoyal Gardens, Kew, London ...	65
Director, Botanic Garden, St. Petersburg, Eussia	3
Ditto, Tiflis, Eussia	37
Ditto, Peradeniya, Ceylon	1
Botanic Garden, Adelaide	1
Ditto, Auckland, New Zealand	13
Ditto, Bangalore	1
Ditto, Birmingham	65
Ditto, Bermuda	3
Ditto, Brisbane	44
Ditto, Buitenzorg	63
Ditto, Cambridge	1
Ditto, Cambridge, Massachusetts, T.J. S. A.	1
Ditto, Christ Church, New Zealand	80
Ditto, Copenhagen	1
Ditto, Cork	143
Ditto, Darjeeling	1
Ditto, Dunedin	1
Ditto, D'Urban, Natal	123
Ditto, Edinburgh	61
Ditto, Glasnevin	3
Ditto, George Town, Demerara	1
Ditto, Glasgow	3
Ditto, Ganeshkhind, Poona	1
Ditto, Graham's Town, Cape Colony	1
Ditto, Graf Eeinet, Cape Colony	4
Ditto, Grenada	1
Ditto, Hobart Town, Tasmania	1
Ditto, Hongkong	1
Ditto, King "William's Town, Cape Colony	1
Ditto, Liverpool	2
Ditto, Malta	1
Ditto, Manchester	3
Ditto, Melbourne	1
Ditto, Montreal, Canada	14
Ditto, Nagpur	1
Ditto, Napier, New Zealand	1
Ditto, Pietermaritzburg, Natal	1
Ditto, New York City	5
Ditto, Ootacamund	1
Ditto, Oxford	1
Ditto, Pampelmousse, Mauritius	1
Ditto, Eegent's Park, London	3
Ditto, Pondicheiry	47
Ditto, Saharanpur	20
Ditto, Saigon	31
Ditto, Singapore	2
Ditto, Sydney	4
Ditto, Trinidad	1
Ditto, Uitenhage, Cape Colony	5
Secretary, Agri-Horticultural Society of India, Calcutta	8
Ditto, ditto, Moulmein	15
Ditto, ditto, Eacgoon	22
Superintendent, Government Horticultural Garden, Lucknow	2
Ditto, Government Gardens, Allahabad	1
Ditto, Eoyal Horticultural Society's Garden, Chiswick, London,	
The Superintendent, Government Agri-Horticultural Garden,	10
Lahore	
Ditto, Agri-Horticultural Society,	21
Madras	6
Ditto, Victoria Garden, Bombay	4
Ditto, State Gardens, Baroda	15
Ditto, Gwalior State Gardens, Gwalior	

APPENDIX IV—continued.

To WHOM SENT.	Number of parcels or packets.
¹ Curator, Botanical Station, Antigua, West Indies	... 4
Ditto, ditto, Barbadoes, West Indies	... 4
Ditto, ditto, Dominica, West Indies	... 4
Ditto, ditto, Hawaii, Sandwich Islands	... 1
Ditto, ditto, Lagos, West Africa	... 4
Ditto, ditto, St. Kitts' Nevis, West Indies	... 10
Ditto, ditto, St. Lucia, West Indies	... 1
Ditto, ditto, St. Yincen, West Indies	... 3
Ditto, ditto, Sierra Leone, West Africa	... 65
Ditto, Botanic Garden, University of California, San Francisco, Tl. S. A.	... 24
Herrn Direktor des bot. Gartens, Agram, Austria-Hungary	1
Ditto ditto, Basel, Switzerland	... 1
Ditto ditto, Belgrade, Servia	... 1
Ditto ditto, Berne, Switzerland	... 23
Ditto ditto, Bonn, Germany	... 1
Ditto ditto, Braunschweig, Germany	... 1
Ditto ditto, Breslau, Germany	... 1
Ditto ditto, Buda-Pest, Austria-Hungary	... 23
Ditto ditto, Gartens, Darmstadt, Germany	... 1
Ditto ditto, Erlangen, Germany	... 1
Ditto ditto, Frankfurt a—M., Germany	... 1
Ditto ditto, Freiburg i. B., Germany	... 1
Ditto ditto, Giessen, Germany	... 1
Ditto ditto, Graz, Austria-Hungary	... 1
Ditto ditto, Hamburg, Germany	... 1
Ditto ditto, Heidelberg, Germany	... 1
Ditto ditto, Innsbruck, Austria-Hungary	... 138
Ditto ditto, Jena, Germany	... 1
Ditto ditto, Koenigsberg, Germany	... 1
Ditto ditto, Klagenfurt, Austria-Hungary	... 1
Ditto ditto, Kamerun, West Africa	... 1
Ditto ditto, Kolozsvar, Austria*Hungary	... 23
Ditto ditto, Krakau, Austria-Hungary	... 1
Ditto ditto, Leipzig, Germany	... 1
Ditto ditto, Lemberg, Austria-Hungary	... 1
Ditto ditto, Muenchen, Germany	... 1
Ditto ditto, Munster, Germany	... 1
Ditto ditto, am Polytechnikum, Dresden Germany	1
Ditto ditto, Prag, Austria-Hungary	... 2
Ditto ditto, Rostock, Germany	... 1
Ditto ditto, Strassburg i. E., Germany	... 1
Ditto ditto, Trieste, Austria-Hungary	... 5
Ditto ditto, Tübingen, Germany	... 1
Ditto ditto, Wageningen, Holland...	... 23
Ditto ditto, Wien, Austria-Hungary	... 1
Ditto ditto, Wurzburg, Germany	... 1
Ditto ditto, Potsdam, Germany	... 1
Ditto ditto, Zurich, Switzerland	... 109
Ditto ditto, Tl. Institui, Zurich, Switzerland ^	... 3
Herrn Inspektor des Botan. Gartens, Bucuresci, Eomania	... 1
Herrn Direktor d. landwirtschaftl. Yersuchsstation, Anhalt, Germany.	22
Ditto, der Samencontrolstation, Arendsee, Sachsen, Germany.	22
Ditto, d. Agriculture, botan. Versuchsstation, Breslau, Germany.	22
Ditto, k. k. Malarisch-Schlesische Gesellschaft für Beforderung d. Ackerbaues d. Natur—u. Landeskunde, Briinn, Austria-Hungary.	22
Ditto, landwirtschaftl. Versuchsstation, Braunschweig, Germany.	22
Ditto, d. landwirschaftl. Versuchsstation, Carlsruhe, Baden, Germany.	22
Ditto, de Therbier de la Ville, Genève	... 22

APPENDIX IV - *continued.*

To WHOM SENT.		Number of parcels or packets.
Herrn Direktor	d. Samen-controlstation, Gottingen, Germany.	22
Ditto,	d. bacolog. u. ondog. Versuchsstation, Graz, Austria-Hungary.	22
Ditto,	agrikulturchemischen Versuohsstation, Hildesheim, Hanover, Germany.	22
Ditto,	d. Landwirtschaftl. Versuohsstation, Halle a Saale, Germany.	22
Ditto,	d. Landwirtscli. Versuchsstation, Hohenheim, Germany.	22
Ditto,	Landbohojskolen, Kjobenhavn, Denmark	if
Ditto,	Vorstchd. landwirtschaftl. Versuchsstation, Konigsberg, Germany.	22
Ditto,	d. landwirtschaftl. Versuchsstation, Jena Germany.	**
Ditto,	d. landwirtseh. Versuchsstation, Mocker, Germany.	22
Ditto,	d. landwirtschaftl. Versuohsstation, Munster, Germany.	22
Ditto,	d. landwirtschaftl. Versuchsstation, Posen, Germany.	22
Ditto,	d. landwirtschaftl. Versuchsstation, Regenwalde, Germany.	22
Ditto,	d. landwirtsch. Versuchsstation, Ruffach, Germany.	22
Ditto,	Versuchsstation der landwirtschaftl. Akad., Stockholm, Sweden.	23
Ditto,	u. d. landwirtschaftl. Versuchsstation, Tharandt, Germany.	22
Herrn Professor,	d. landwirtschaftl. Station, Bernburg, Anhalt, Germany.	22
Ditto,	d. Bot. and Kgl. ungar. landwirtseh. Akad. Attenburg, Austria-Hungary.	22
Ditto,	d. Gartenbaues und landwirtschaftl. fechule zu Ferestren, Bucuresci, Romania.	22
Ditto,	d. iandwirtsch. Versuchsstation Rostook, Germany.	22
Ditto,	landwirtschaftl. Centrabschule, Weihenstepham, Germany.	22
Herrn Docent für landwirtschaft an d. Univers. Vorst.	d. landwirtsch. Ver9uchsstation, Kiel, Germany.	22
Herrn Vorstand der Samenoontrolstation,	Wien, Austria-Hungary.	22
Wohlgeboren Herrn Graf. Zu Schwerin	Windisch-Wilmersdorf, bei Ludwigsfelde, Germany	12
M. le Directeur du Jardin Botanique,	Amsterdam	1
Ditto	ditto, Angers, France	*
Ditto	ditto, Antibes, do.	*
Ditto	ditto, Anvers, Belgium	*
Ditto	ditto, Athens, Greece	^
Ditto	ditto, Bordeaux, Prance	*
Ditto	ditto, Bruxelles, Belgium...	2
Ditto	ditto, Oaen, France	*
Ditto	ditto, Cairo, Egypt	j
Ditto	ditto, Christiana, Norway...	*
Ditto	ditto, Gand, Belgium	l
Ditto	ditto, Genève, Switzerland	58
Ditto	ditto, Grönengen, Holland	1
Ditto	ditto, Kjobenhavn, Denmark	↓
Ditto	ditto, Kieff, Russia	*
Ditto	ditto, Leiden, Holland	*
Ditto	ditto, Liege, Belgium	***

APPENDIX IV—continued.

TO WHOM SENT.		Number of parcels or packets.
M. le Directeur du Jardin Botanique,	Louvain, Belgium	1
Ditto	Lund, Sweden	1
Ditto	Lyon, France	1
Ditto	Moskau, Eussia	1
Ditto	France	1
Ditto	France	5
Ditto	France	1
Ditto	Wanoy, do.	23
Ditto	StoS'olm, Sweden	1
Ditto	St. Denis, Reunion	1
Ditto	Upsala, Sweden	1
Ditto	Warschau, Eussia	1
Ditto	Medicale/Faculte de	1
Ditto	Medicine, Paris, France	1
M. le Directeur du Jardin	France	1
Ditto	do.	1
Ditto	er, do.	138
Ditto	do.	1
Ditto	do.	29
Ditto	Paris, do.	1
Ditto	Toulouse, t.	1
Ditto	Tours, t.	1
M. le Directeur du Jardin d'acclimatation	France	5
Ditto	Hamma, Algeria	3
Ditto	Orotava, Canary Islands	1
Ditto	de la station agronomique, Arras, France	22
Ditto	ditto, Clermont Ferrand, France	22
Ditto	ditto, France	22
Ditto	ditto, France	22
M. le Conservateur, Jardin botanique,	Switzerland	54
M. le President de la Commission du	Botanique,	1
Lille, France	...	...
M. l'Administrateur Directeur d'Horticulture Internationale,	Bruxelles,	13
Societe Anonyme, Parc Leopold,	...	...
M. le Directeur Général de l'enseignement agricole,	Paris,	23
M. JS5L* *' Ecole d'agriculture, Grignon,	ZZ	1
ditto, Grand-Jouan,	ZZ	22
M. le Professeur de botanique, Montpellier, France	...	1
Sig. Dir. dell'Orto Botanico, Bologna, Italy	...	1
Ditto, ditto, Catania, do.	...	1
Ditto, ditto, Caserta, do.	...	1
Ditto, ditto, Ferrara, do.	...	1
Ditto, ditto, Firenze, do.	...	27
Ditto, ditto, Genova, do.	...	1
Ditto, ditto, Milano, do.	...	23
Ditto, ditto, Modona, t.	...	1
Ditto, ditto, Napoli, t.	...	1
Ditto, ditto, Pavia, t.	...	1
Ditto, ditto, Parma, do.	...	1
Ditto, ditto, Palermo, do.	...	45
Ditto, ditto, Perugia, do.	...	1
Ditto, ditto, Pisa, do.	...	1
Ditto, ditto, Padova, do.	...	1
Ditto, ditto, Portici, do.	...	1
Ditto, ditto, Roma, do.	...	3
Ditto, ditto, Siena, do.	...	1
Ditto, ditto, Sicilia, do.	...	1
Ditto, ditto, Torino, do.	...	1
Ditto, ditto, de San Giobbe, Venezia,	...	1
Ditto, ditto, Italy	...	...
Ditto, della Scuola d'agricolt., Caltagirone,	Italy	22

APPENDIX IV—continued.

To WHOM SENT.	Number of parcels [^] packets.
Sig. Direttore deirOrto di Stazione agronomique, Udine, Veneto, Italy ...	22
Signor Direttore della Stazione agronomique, Caserta, Italy	^
Herrn Prof. Engler, Direktor Kgl. Bot. Garten, Berlin, Germany	17i
Senor Director, do Jardin Botan., Quito, South America	1
Ditto, ditto, Rio, Brazil, ditto ...	b
Ditto, ditto, Santiago, ditto ...	i
Sig. Director do Jardin bot. da Universidade, Coimbra, Portugal	6
Ditto de la Escuela de Medicina, Port au Prince, Haiti, West Indies ... ..	.
Ditto del Jardin botan., Madrid, Spain ...	* 2
Signor A. Todaro della Gallia, Consul-General de Perse, Palermo, Italy	1
Signor Alberto Lofgren, F.L.S., Chefeda Seccao Botanica da Commissao Geographica e Geologica, S. Paulo, Brazil, South America	* 4
Direktor, Bot. Gartens, Kriegschiff Hafen, Viktoria, Kame- run, West Africa	3
Director, do Jardin botan., Lima, South America ...	1
Ditto, Department of Public Gardens and Plantations, Jamaica	9
Ditto, Department of Land Records and Agriculture, Burma, Rangoon	3
Ditto, Colonial Botanio Garden, Wellington, Now Zealand	i
Ditto, Shaw Botanio Garden, St. Louis, Missouri, U< S.A.	28
Ditto, Tennessee Agricultural Experimental Station, Knoxville, U. S. A.	^ U
Ditto, Agricultural Experimental Station, Columbus, U.S.A.	^ g
Professor of Botany, University, Aberdeen, Scotland ...	1^
Ditto, ditto, Edinburgh, Sootland ...	*
Professor of Botany at the State Agricultural College, Bal- timore, U. S. A.	28
Ditto of Botany and Director, Botanic Garden, Univer- sity, Upsala, Sweden	* 7
Ditto at the State Agricultural College, Amherst, U.S.A.	^ 12
Ditto Dr. V. Wittrock, Director, Hortus Bergianns, Stockholm, Sweden	36
Ditto A.D.Romanoff, Institute of Communication, St. Petersburg	76
Director, Shaw School of Botany, St. Louis, U. S. A. ...	j 5
Ditto, New York Agricultural Experimental Station, Geneva, New York, U. S. A.	^ 2
Ditto, Botanic Garden and Publio Parks, Cape of Good Hope, South Africa	1
Honorary Secretary of the Acclimatization Society, Wanga- nui, New Zealand	22
M. T Administrates du Jardin des Plantes, Orleans, France	^
M. le Sec.-GenL de la Societe National d'acclimatation de France, Paris	g
M. le Jardinier en Chef Jardin Zoologique d'acclimata- tion, Bois de Boulogne, Paris, France ...	1
M. le Jardinier en Chef, Jardin du Luxembourg, Paris, France	1
M. le Jardinier en Chef du Chateau Fontainebleau, Seine-et- Marne, France	1
L'Horticole Internationale (Societe Anonyme) Paro Leo- pold, Belgium	^
Superintendent, Alipore Jail, Alipore	j
Ditto, Barasat J ail, Barasat	j
Ditto, Bhagalpur Jail, Bhagalpur ... ..	|

APPENDIX IV—*continued.*

To WHOM SENT.	Number of parcels or packets.
Superintendent, Bogra Intermediate Jail, Bogra	1
Ditto, Buxar Jail, Buxar	8
Ditto, Chittagong Jail, Chittagong	1
Ditto, Central Jail, Midnapore	1
Ditto, Central Jail, Raipur	1
Ditto, Comilla Jail, Comilla	1
Ditto, Dumka Jail, Dumka	1
Ditto, Hazaribagh Jail, Hazaribagh...	1
Ditto, Jessore Jail, Jessore	1
Ditto, Mymensingh Jail, Mymensingh	1
Ditto, Malda Jail, Malda	1
Ditto, Motihari Jail, Ifotihari	1
Ditto, Palamau Jail, Palamau	1
Ditto, Patna Jail, Bankipore	1
Ditto, Noakhali Jail, Noakhali	1
Ditto, Rajshahi Central Jail, Rampur Boalia	1
Ditto, Rangpur Jail, Rangpur	1
Ditto, Ranchi Jail, Ranchi	1
Ditto, Saran Jail, Saran	1
Executive Engineer, Manipur	1
Ditto, Myitkyina Division, Myitkyina	4
Assistant Engineer, Public Works Department, Ramnagar.	14
Conservator of Forests, Central Circle, Madras	3
Ditto, Port Blair, Andamans	11
Supervisor, Purulia Subdivision, Purulia	1
District Traffic Superintendent, Bombay, Baroda and Central India Railway* Cawnpore	1
Messrs. H. Low and Co., London	1
Do. F. Sander and Co., St. Albans, England	11
Do. Reasoner Brothers, Florida, U. S. A.	43
Do. Herb and Wulle, Naples, Italy	49
Do. Dammann and Co., San Giovanni a Teduccio, Napoli, Italy	36
Do. J. P. William and Brothers, Heneratgoda, Ceylon	1
Do. Octavius Steel and Co., Calcutta	2
Do. Stanley Price and Co., Calcutta	4
Do. Vishnoo Sadashive and Co., Poona	...
Government Botanist, Melbourne, Victoria, Australia	108
Colonial Botanist, Brisbane, Queensland	1
Assistant Botanist, University of California, Berkeley, United States of America	1
Administrator, Botanical Station, Gambia, West Africa	4
Secretary and Commissioner, Bureau of Agriculture and Forestry, Honolulu, Sandwich Islands	1
Principal, Royal Agricultural College, Cirencester, London	22
Sig. Conde de Ficalho, Director do Jardim bot. da Escola Polytechnica, Lisbon, Portugal	3
Director, Government Experimental Farms, Ottawa, Canada	22
Aoting Turkish Consul-General, Bombay	2
Commissariat Store and Shipping Officer, Baloo Ghat, Calcutta	2
Officiating Director of the Department of Revenue and Agriculture, Burma, Rangoon	4
Manager of Dhenkanal, Orissa	1
Superintendent, Cossipore Practical Institution, Cossipore	1
Proprietor of "Cheapest Dum-Dum Nursery," Dum-Dum	1
Right Hon'ble the Earl of Annesley, Castle Wellan, Co. Down, Ireland	35
A. W. O. Addis, Esq., Muesooree	6
M. W. Barbey, Les Jordils, Chambezy, près Genève, Switzerland	108
Col. R. H. Beddome, Sispara, Putney, London	1
Sir George Birdwood, K.C.S.I., India Office, London	36
A. B. Black, Esq., Adelaide, Australia	2
W. Bull, Esq., 536, King's Road, Chelsea, London	40
Mrs. Euby M. Brown, Garaul, Tirhut State Railway	1
R. P. Brunton, Esq., Municipal Office, Bombay	1

APPENDIX IV—*continued.*

To WHOM SENT.	Number of parcels or packets.
Arthur K. Bulley, Esq., West Kirby, Cheshire, England ...	102
Well. Ed. Heer M. Buysmann, Middelburg, Holland ...	96
M. Cas. de Candolle, Cour St. Pierre, 3, Geneve, Switzerland ...	1
Mrs. Campbell, Glenakil, Tarbert, Looh Fyne, Scotland ...	36
Henry J. Colbourn, Esq., Agricultural College, Ulverstone, Tasmania, Australia ...	87
Mrs. Colomb, Homesdale, Shillong ...	13
M. Maxime Cornu, Jardin des Plantes, d7 rue Cuvier, Paris ...	33
M. J. Linden, Eue do Chaume, Gand, Bruxelles ...	26
Herrn Gustav Mann, 24, Romanstrasse, Muenchen, Bavaria, Germany ...	1
E. H. Man, Esq., C.I.E., Port Blair ...	9
G. E. Miller, Esq., Sydney ...	2
Mr. M. B. Naidu, Dharwar ...	2
Major A. G. E. Newland, I.M.S., Civil Surgeon, Haka, Chin Hills, Burma ...	J4
Captain Novitsky, Calcutta ...	1
R. Pantling, Esq., Mungpoo ...	7
Dr. G. Post, Principal, Syrian Protestant College, Beirut, Syria ...	1
Chas. A. L. Power, Esq., Island of Madeira, Madeira ...	28
C. S. Sargent, Esq., Director of the Arnold Arboretum, Brookline, Massachusetts, U. S. A. ...	2
J. L. Schiller, Esq., Dealer in palm tree and shrub seeds, Rutherford, New Jersey, U. S. A. ...	5
W. Thompson, Esq., Haslemere, Ipswioh, England ...	28
Dr. J. W. H. Traill, F.R.S., Old Aberdeen, Aberdeen, Scotland ...	81
H. J. Veitoh, Esq., 544, King's Road, Chelsea, London ...	1
Prof. Dr. M. Vladescu, Director, Botanic Garden, University, Bucuresci, Romania ...	1
M. Aug.-de Villile, St. Denis, Reunion ...	18
H. A. Wadia, Esq., Rajkot ...	3
P. Wagstaff, Esq., Calcutta ...	2
Lieutenant H. W. Cruddas, Commandant, Military Police, Myitkyina, Burma ...	7
Dr. D. D. Cunningham, Torre Mount, Torquay, Devon ...	34
C. Curtis, Esq., Forest Department, Penang ...	17
Rev. E. Dickinson Price, Mandla, Central Provinces ...	14
M. Drake del Castillo, Rue Balzac, 2, Paris, France ...	1
H. S. Ferguson, Esq., Director, Government Museum and Public Gardens, Travancore ...	2
Professor M. Foster, F.R.S., Shelford, Cambridge, England ...	3
Dr. F. Franceschi, Santa Barbara, U. S. A. ...	3
G. A. Gammie, Esq., Mungpoo ...	6
J. B. Gauldin, Esq., Gauhati, Assam ...	1
C. Gray, Esq., Coonoor ...	79
# Sir J. D. Hooker, G.C.S.I., CJB., F.R.S., the Camp, Sunningdale, London ...	141
Marcus Hartog, Esq., D.SC, Professor of Biology, Queen's College, Cork, Ireland ...	13
T. Hanbury, Esq., La Mortola, Liguria, Italy ...	1
D. G. Head, Esq., Curator of Gardens, Crystal Palace, London ...	1
W. Holland, Esq., H. M. Consulate, Ichang, China ...	7
J. Harvard de Kinzy, Esq., University High School, Carlton, Melbourne, Victoria ...	8
Herrn Dr. W. Kinzel, Dahme, Mark, Brandenburg, Germany ...	46
D. Hooper, Esq., Indian Museum, Caioutta ...	24
D. H. Lewis, Esq., Barkhola, Caohar ...	1
Herrn Max Lichtlein, Baden-Baden, Germany ...	85
Thomas S. Ware, Esq., Hall Farm Nursery, Tottenham, London ...	1
G. Marshall Woodrow, Esq., College of Science, Poona ...	5

APPENDIX IV—concluded.

To WHOM SENT.	Number of parcels or packets.
D. R. Wallace, Esq. Howrah Nurseries and Floral	5
S. L. Watkins, Esq. California, U. S. A.	12
Gardens, Grizzly Ink, Weybridge, London	44
G. W. Wilson, Esq. Islands	54
Colonel Withered, Pu. Larut, Perak	14
L. Wray, Esq., Jr., State Museum, California, U. S. A.	1
Dr. L. G. Yates, Santa Barbara, California, U. S. A.	24
Babu Gopal Chandra Datta, Sibpur	1
Gopi Krishna Singha, Habibpur	1
" Kedar Nath Roy, Purulia	1
" Pasupati Nath Basu, Calcutta	2
" Prafulla Nath Ghosh, Hazaribagh	5
" Santosh Kumar Mitra, Sibpur	1
" Troylokya Nath Ghosh, Calcutta	1
Total distributed	594

APPENDIX V.

List of Herbarium Specimens received during the year 1898-99.

	Number.
Director, Royal Gardens, Kew	302
Do., Rijk's Herbarium, Leiden	64
Wellington; i"Seer M, Bu, y^8^ann, Hortus Plant., Diaphor, MiddeUburg, Holland	21
Government Botanist, National Museum, Melbourne	288
Professor J. Fowler, Queen's University, Kingston, Ontario	99
Curator of Botany, United States National Museum, Washington	188
E. o. Wootton, Esq., Herbarium Columbia University, A --^ e * Y our k City > United States, America	485
A. H. Curtiss, Esq. (Plants of South United States, America)	211
C. G. Pringle, Esq. (Plants of Mexico)	313
J. Medley Wood, Esq., A.L.S., Durban, Natal	149
Herr. Professor Dr. Hans Schinz, Zurich	137
Herr. Rud. Schlechter, Royal Botanic Museum, Berlin	88
M. le. Directeur, Musee Cantonal, Fribourg	533
Dr. A. Henry, Mengtze, China (Plants of China)	2,511
Captain Pottinger, R.A. (ditto)	234
Director, Botanical Department, Singapore	#1 ²
Major D. Prain, I.M.S., Superintendent, Royal Botanic Garden, Calcutta	190
Lieut A. T. Gage, I.M.S., Curator of the Herbarium, Royal Botanic Garden, Calcutta	169
R. Pantling, Esq., Deputy Superintendent, "Government Cinchona Plantation, Mungpoo	985
J. L. Walker, Esq., Indian Museum, Calcutta*	347
Dr. A. G. Bourne, F.R.S., Madras	202
T. P. Bourdillon, Esq., Conservator of Forests* Quilon, Travancore	83
College of Science, Poona	J... 192
Captain C. J. Milne, Ali Masjid' "	C* 152
Director, botanical Department, Northern India; Saharan- pur	\$-< # 100
Director, Forest School, Dehra Dun	349
G. A. Gammie, Esq, Mungpoo	187
Major H. H. Johnston, M.D., R.A.M.C.	6
Edgar Thurston, Esq., Government Central Museum, Madras	9
Secretary, Agri.-Horticultural Society of India, Metcalfe Hall, Calcutta	8
W. A. Kennedy, Esq.; Curator, Lloyd Botanical Garden; Darjeeling	6 29
Dr. Grant, Dalhousie	702
Babu N. B. Datta, Ultadanga, Calcutta	495
Murishi Abdul Huk, Plant Collector, Assam	20
Shaik Mokim, Plant Collector	20
p? contributions	*
Total	<u>10,672</u>

APPENDIX VI.

List of Herbarium Specimens distributed during the year 1898-99.

	Number.
Herbarium, Boyal Gardens, Eew	6
Ditto, British Museum, London	116
Ditto, Harvard University, Cambridge, Massachu- setts, United States of America	45
Ditto, Smithsonian Institution, Washington, United States of America	109
Ditto, Edinburgh	440
Ditto, Florence, Italy	67
Ditto, Utrecht University, Holland	319
Ditto, Cambridge University	326
Ditto, Eoyal Gardens, Berlin	101
Ditto, Vienna Botanic Garden, Austria-Hungary	333
Ditto, Vienna Hofmuseum, Austria-Hungary	77
^ Ditto, Paris (Jardin des Plantes), France	64
XQitto, A berdeen University	237
Ditto, Melbourne University, Australia	309
Ditto, Leiden, Holland	103
Ditto, Owen's College, Victoria University, Manchester	301
Ditto, Queen's College, Cork	292
JDitto, Natural History Survey, Minnesota, United States of America	326
Ditto, Fribourg, Switzerland	88
Ditto, Brussels, Belgium	23
Ditto, Boissier, Chambézy, Switzerland	405
Ditto, Queen's University, KIdgston, Ontario	296
Ditto, St. Petersburg, Eussia	83
Ditto, Upsala University, Sweden	97
Ditto, Buitenzorg, Java	50
Ditto, Perak Museum, Straits Settlements	76
Ditto, Eoyal^JBotanic Garden, Peradeniya, Ceylon	194
Ditto, Munich University, Bavaria	139
Herrn Eud. Schlechter, Eoyal Botanic Museum, Berlin	208
C. S. Sargent, Esq., Director of the Arnold Arboretum, Massachusetts, United States of America	177
J. Medley Wood, Esq., F.L.S., Durban, Natal	351
^ Birecteur de V Herbiere Delessert et du Jardin Botanique, Geneve, Switzerland	2
Sir Dietrich Brandis, 27, ITaiserstrasse, Bonn, Germany...	245
Sir J. D. Hooker, the Camp, Sunningdale, Berks	101
Prof. Dr. Hans Schinz, Zurich, Switzerland	120
M. C. de Candolle, Geneve, Switzerland	105
Harry Bolus, Esq., F.L.S., Sherwood, Kenilwork, near Cape Town, Cape Colony	55
Herrn Prof. Dr. L. Eadlkofer, Direktor des Bot. Gartens, Muenchen, Germany	32
C. Curtis, Esq., Forest Department, Penang	63
Government Central Museum, Madras	96
Director, Botanical Department, Singapore	64
College of Science, Poona	74
J. S. Gamble, Esq., Director, Forest School, Dehra Dun	4
M. E. Drake del Castillo, Paris	163
Mr. Scott Elliott, Dumfries, North Britain	231
Eeporter on Economic Products to the Government of India, Calcutta	e
J. C. Prebble, Esq., Bombay	5
Dr. A. E. Hoernle, Simla	1
G. A. Gammie, Esq., Mungpoo	1
J. L. Walker, Esq., Indian Museum, Calcutta	1
Director, Botanical DepartmeDt, Northern India, Saharan- pur	56
Total	7,185

DAVID PEAIN,

Superintendent, Eoyal Botanic Garden, Calcutta,

MISCELLANEOUS.

DARJEELING, THE 1ST JULY 1899.

RESOLUTION—No. 3854Mis.

HEAD—

The "Report of the Royal Botanic Garden, Calcutta, for the year 1898-99.

Read again—

The Report of the Royal Botanic Garden, Calcutta, for the year 1897-98, with the Resolution recorded thereon.

THE weather during the year was more normal than that of the preceding two years. The show of orchids regained its old splendour, though, owing to the reduction in the stock caused by the unfavourable weather of several successive seasons of drought, and the increasing difficulty in replacing losses from forests which have lately been too thoroughly exploited, the actual number of plants in the conservatories was considerably smaller than in past years. During the year the gardens were improved by extensive repairs to the river bank and repairs to the Roxburgh Avenue were also in hand.

2. Especial attention was, as usual, given to the cultivation and distribution of plants of economic value. In connection with the question of rubber and guttapereha, it has been ascertained, after examination of the milky juice of species of *Sideroxylon* belonging to the natural family Sapotacea?, that, though these species do not yield a true rubber, the material obtained from them might prove capable of being utilized for the various purposes for which guttapereha India rubber is now employed. An interesting introduction to India during the year was *Polygala butyracea*, an African species, which yields an excellent vegetable oil. The cultivation and the identification of living plants yielding Indian products of hitherto doubtful origin, to which subject a reference was made in the last year's Resolution, were continued during the year with good results.

3. The collection in the Herbarium was increased by 10,672 specimens, the chief donors being Sir W. Thiselton Dyer, Director of the Royal Gardens, Kew; the Director, Rijk's Herbarium, Leiden; Mr. Heer Buysmann, of Middleburg, Holland; Mr. Medley Wood, Natal; Professor Schinz, of Zurich; and Mr. Herr Schlechter, Berlin. Collections of Australian and Swiss plants were received respectively from the Government Botanist, Melbourne, and the Director of the Cantonal Museum, Fribourg; while collections of plants from the Eastern and Southern United States and from Mexico were acquired by purchase. A very fine collection of Chinese plants was contributed by Dr A. Henry and another fine collection of specimens from the Malay Peninsula and Borneo was forwarded by the Director of the Botanical Gardens, Singapore. From India, valuable contributions were made by Dr. A. G. Bourne, Madras; Mr. T. F. Bourdillou, Travancore; Mr. G. M. Woodrow, Poona; Captain C. J. Milne, Ali Masjid; Mr. Duthie, Director of the Botanical Department, Northern India; and Mr. J. S. Gamble, Director of the Imperial Forest School, Dehra Dun. Mr. R. Pantling contributed to the Herbarium a large collection of Sikkim orchids, and a very valuable collection of mosses from Coorg was obtained from Dr. T. L. Walker, of the Geological Survey. Interesting collections were made by native collectors in Assam, Burma, the Andamans and the Nicobars; while collections were also made during the year in Western Bengal by Lieutenant Gage, and in the Andamans and the Nilgiris by Mr. J. S. Gamble. The number of specimens distributed to other Herbaria was 7,332.

The decrease in the number of plants distributed is due to the laV
demand of two years ago for these plants having now been satisfied, and the
satisfactory increase in the number of [^] distributed is due to the fact that
has lately become possible to obtain collections from Sikkim of seeds of Alp³⁶
species which were till recently unobtainable.

The Lloyd Botanic Garden at **DarjeeKng**, which was in d j ^ f
Mr. W. A. Kennedy, suffered greatly from the heavy snowfall which took place
in the latter part of January 1899. Considerable damage was done to many of
the exotic trees, but the actual deaths were fortunately very few. A portion of
the ground which was formerly known as the Municipal vegetable garden,
was transferred to the Eden Sanitorium, and has been included in the grounds
of the Lloyd Botanic Garden.

6. The thanks of the Lieutenant-Governor are due to Major Prain for
the constant and zealous care he has given to the Gardens.

By ord^r of the Lieutenant-Governor of Bengal,

E. W. COLLIN,
Offg. Secy. to the Govt. of Bengal.

No. 3855Mis.

Copy forwarded to the Superintendent, **Royal Botanic Garden, Calcutta,**
for information.

By order of the Lieutenant-Governor of Bengal,

8. SHEEL SHANKS,
Under-Secy. to the Govt. of Bengal.

DAHJBELING;
FINANCIAL & EPT.—Miscellaneous,
The 1st July 1899.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR
THE YEAR 1899-1900.

No. 11Q-, dated Govt. Cinchona Plantation, Sureil, Kurseong, the 8th May 1900.

From—MAJOR D. PRAIN, MB., F.B.S.E., F.L.S., I.M.S., Superintendent, Royal
Botanic Garden, Calcutta,

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

I HAVE the honour to submit herewith the 113th Annual Report of the
Royal Botanic Garden, Calcutta, for the year 1899-1900.

ANNUAL BEPOKT OF THE ROYAL BOTANIC GAEDEN, CALCUTTA, FOE
THE YEAE 1899-1900.

THE weather during the year under review was marked by a heavier rain-
fall than usual. This had no bad effects on the garden: few casualties have to
be reported, and the show of foliage plants, ferns, and orchids in the conserva-
tories has been this season particularly fine. The chief outdoor improvement
effected during the year has been the completion of the heavy task of repairing
the "Roxburgh Avenue." The necessary earthwork was practically completed
at the commencement of the year. During the rains of 1899 the roadway was
signed and metalled, while the work of completing the slopes on either side
was successfully carried out during the past cold weather.

2. *Economic Plants*.—Close attention has, as usual, been given by the
Garden staff throughout the year to the propagation and distribution of plants
of economic importance. A good deal of public interest has lately been dis-
played in plants likely to supply good fibre. There has been again an increase
in the demand for plants of rhea. A machine for extracting rhea fibre, which
is said to fulfil all requirements, and which certainly meets the needs of rhea-
growers better than any of the machines hitherto offered, has at last been put
upon the market: its advent seems to be likely to give a fresh impetus to rhea
cultivation. The number of parties now possessed of smaller or larger stocks
of the plant is considerable, and the cultivation of rhea on an extensive scale
ought now, if trade prospects prove sufficiently inviting, to be easily undertaken
in suitable localities. Great interest is also being shown by many people in
the fibres obtainable from *Fourcroya*, or "Mauritius Hemp;" from *Sansevieria*, or
"Bowstring Hemp;" and particularly from some of the species of *Agave* under
cultivation in India. It is worthy of remark that the interest of cultivators is
by no means confined to the particular *Agave* known as "Sisal Hemp" (*Agave*
rigida, var. *Shalana*) the introduction of which, on a large scale, was recorded in
the Annual Reports of this Garden for 1892 and for 1893, but extends to the
plant known familiarly as the "American Aloe"—"not a happy designation, seeing
that the plant is not an *aloe* but an *agave*, and that, moreover, it is not *Agave*
americana. Every assistance is being afforded to those interested in this matter;
but, as with rhea, the great difficulty is not the absence of a supply of plants,
but the need for a machine capable of separating their fibre cheaply
and satisfactorily.

The Director of Land Records and Agriculture has desired that further
investigation should be made into the diseases to which sugarcane is subject in
Bengal. To this end he has supplied much fresh material for examination.
The investigation is being conducted by Lieutenant Gage, Curator of the Herba-
rium, whose report will be submitted after a complete series of specimens shall
have been received and examined.

Enquiries into the *identity* of the sources of economic products of obscure
or doubtful origin has gone on as usual, and has continued to yield interesting
and valuable results. The farther that work of this kind is carried, the more
apparent the need for its systematic prosecution becomes. Thanks are again
due to the Reporter on Economic Products with the Government of India for
much help in conducting these enquiries,

The Inspector-General of Forests has co-operated during the year obtaining a series of specimens intended to settle definitely the source of important timber known as padouk, which is at present obscure: all certainly known is that this timber is not yielded by *Pterocarpus indicus*, species to which it has usually been attributed.

At the instance of the Right Honorable the Secretary of State in compliance with a request made by the Colonial Office, a representative collection of the various mangoes cultivated throughout Northern India and Burma has been brought together on behalf of the Government of Trinidad.

3. *Herbarium*.—The work of this department has been carried on as during the year. The number of named specimens distributed to herbaria reached 11,129. The details of this distribution are given in Appendix VI to this report. The number of specimens acquired during the year reached 13,728. The most valuable of the collections obtained through the Garden were a fine general collection made personally by Lieutenant Curator of the Herbarium, in the South Lushai Hills, a tract hitherto botanically; and an excellent collection of orchids, chiefly from the Jaintia Hills, made by trained Lepcha collectors working under the supervision of Mr. Pantling, Deputy Director of the Government Cinchona much help in connection with this work was also received from Mr. Assistant Commissioner of Jowai. Valuable collections were also made in Jaboca Naga Hills, another previously unexplored tract, by a native collector whose work was again kindly supervised by Mr. Severin, of Tingali Bam in the Kachin country by another native collector, of whom Lieutenant commanding the Battalion of Military Police at Myitkyina, kindly took

Many of the contributed collections were also of great interest and Sir W. T. Thiselton-Dyer, K.C.M.G., Director of the Royal Gardens, presented 1,296 specimens; Dr. Treub, Director of 'S lands Plantentuin at t zorg, Java, contributed 417; the Director of the Vienna Botanic Garden, 680; while 646 and 275 were sent from Washington by the United States Museum and the United States Department of Agriculture respectively. Particularly valuable collection of South African orchids was Mr. H. Bolus of Cape Town; while the Directors of the Botanic Garden Singapore and Sydney presented 430 and 300 specimens respectively. Valuable collections were also acquired by purchase.

The chief Indian contributors during the year have been the Botanical Department of Northern India, who has sent 191 specimens of especial value and interest; Messrs. Lace, Haines, and Heinig, of the Department, who have respectively presented 409, 117, and 25 specimens; and Dr. Walker of the Geological Survey, who has contributed 206.

Sir George King, K.C.I.E., has been engaged at Kew during the year in elaborating the material of the natural family *Melastomacce*. Thanks to him not only for accurately naming the specimens belonging to the Herbarium, but for kindly assisting in the distribution of duplicates belonging to this family.

4. *Botanical publications*.—During the year the eleventh part of King's *Materials for a Flora of the Malayan Peninsula*, based on collections contained in the Calcutta Herbarium, has been preparation and is now passing through the press. An *Agricultural Bulletin* on *Sisalana*, reviewing the attempts made by Government to introduce this plant into India and giving a *precis* of the experience of gentlemen who have consignments of the sisal plants thus introduced, was prepared for the Department of Land Records and Agriculture. Thanks are due to Mr. Bolton, c.s.i., Chief Secretary to Government, for assistance in the information embodied in this *Bulletin*.

5. *Library*.—The usual periodicals were added and a number obtained, partly by purchase, partly in exchange. A commencement has been made with the task of rearranging the books in the Library: this has been rendered necessary owing to the steady increase in the size of the collection and the congested state of many of the cabinets.

6. *Interchange of Seeds and Plants*.—The receipts and issues of plants are fully detailed in Appendices I—IV. The number of plants received was 63,514. The considerable increase as compared with last year

large extent due however, the number of

Exclusive of rhea, a total for last year received reached 16,568.

comparative to be accounted for by the unfortunate visit of the pest-ticks, who are employed

1899, caused numerous landslips, it impossible for the Lepcha collector to visit the higher valleys of Independent of Alpine-Himalayan seeds.

graph, which is out the station of Darjeeling, This fortunate Curator, Mr.

the storm alluded to in the preceding paragraph, September 1899 caused great damage through- out the station of Darjeeling, did comparatively little harm to the Lloyd Garden.

and in the construction of the drains and thus caused these to

in the preceding paragraph, the water, but because two landslips of the drains and thus caused these to obstruct the paths. A

Garden may be said to have been destroyed, Lloyd Garden is

the use of the recently-arrived vegetable garden, as the houses had been swept away by the storm.

remains an unexpended saving, since this money would, under ordinary circumstances, have been applied if only the services of such could have been obtained from the Calcutta Garden of

Rs. 953 11-3 and from the treasuries during my absence, Gage, I.M.S., in addition to his own duties, was absent on privilege leave, Mr. G. T. ... Mr. ... & vacancy the 27th Sep

from the date on which he left the post office has been appointed

APPENDIX I.

Statement showing Plants received from 1st April 1899 to 31st March 1900.

From whom received.	Ward-ian cases.	Boxes.	Number of plants.
1	2	3	4
Royal Gardens, Kew, London ...	2	1	115
Botanic Garden, Darjeeling	16	721
Ditto, Saharanpur	2	14
Khusru Bagh, Allahabad	350
Government House Garden, Calcutta	1
Barrackpore Park	40
Messrs. Hugh Low and Company, Clapton Nursery, London.	...	1	30
Messrs. F. Sander and Company, St. Albans, England.	1	2	101
Agri-Horticultural Society of India, Calcutta.	20
Agri-Horticultural Society of Punjab, Lahore	10	121
Agri-Horticultural Society, Lucknow	29
Commissioner of Settlements and Agriculture, Central Provinces, Nagpur	2
Civil Surgeon, Howrah	334
Director of Land Records and Agriculture, Bengal.	30
Art School, Calcutta	1
Mrs. Apar, Calcutta	2
G. A. Gammie, Esq.,	95
Hon'ble Mr. H. E. M. James, Mahabaleshwar.	...	4	32
E. H. Man, Esq., C.I.E., Port Blair ...	11	11	3,637
C. Maries, Esq., Gwalior	3	418
R. Pantling, Esq., Mungpoo	1,831
G. Me. D. Peche, Esq., Moulmein	9	2,264
Dr. George Watt, M.B., C.I.E., Calcutta	515
G. Marshall Woodrow, Esq., Poona	15
S. P. Chatterjee, Esq., Calcutta	134
Babu H. C. Mitter, Cossipore	12
Major D. Prain, I.M.S.—Collected in Darjeeling.	885
Lieut. A. T. Gage, I.M.S.—Collected in Lushai.	53
Munshie Abdool Hock—Collected in Assam	...	6	175
Shaik Mokim—Collected in Kachin Hills, Upper Burma.	...	19	3,765
Shaik Shader Mallie—Collected locally	35
Jonerdon Nusker—Collected in Sundarbans	3
Bought from Babu T. C. Nundy, Assam	3	788
Total ...	14	87	16,568

APPENDIX II.

Statement showing Plants sent out from 1st April 1899 to 31st
March 1900.

To whom sent.	Ward-ian cases.	Boxes.	Number of plants.
1	2	3	4
Eoyal Gardens, Kew, London	3	768
Royal Botanic Gardens, Edinburgh	...	1	218
Ditto, Berlin	...	1	150
Botanic Gardens, Singapore	1	1
Ditto, Darjeeling	1	7
Ditto, Bangalore	...	1	20
.Khusru Bagh, Allahabad	19	355
Victoria Garden, Bombay	2	27
State Garden, Gwalior	2	195
Government Heuse Garden, Calcutta.	2,906
Zoological Garden, Calcutta	104
Barrackpore Park	437
Monsieur M. Achard, Directeur de V Agri- culture, Saigon, Cochin-Chine Fra [^] aise.	...	1	2
Dr. Battiscombe, Sandlings, St. Mary Cray, Kent.	...	1	138
„ D. D. Cunningham, F.R.S., C.I.E., Torre- mount, Torquay, Devon.	...	1	147
Imperial and Eoyal Au&tro-Hungarian Consul for Austrian Eiviera.	...	1	140
A. E. Wallace, Esq., F.R.S., Parkstone, Dorset	...	1	145
Gr. F. Wilson, Esq., F. R. S., Heatherbank, Weybridge, London.	...	1	101
A gri-Horticultural Society of India, Calcutta	6
Ditto ditto of Punjab, Lahore.	...	16	185
Ditto ditto, Madras	3	100
Ditto ditto, Luoknow	1	6
Assistant Commissioner, Chittagong Hill Traots, Eangamati.	...	1	22
Deputy Commissioner, Bhamo, Upper Burma	...	1	8
Chief Commissariat Officer, Puolio Works Department, Calcutta.	24
Commandant, Police Battalion, Myitkyina, Upper Burma.	...	1	24
Collector of Chittagong	1	25
Ditto ofMalda	2	40
Deputy Conservator of Forests, Sonthal Par- ganas, Durnka.	...	11	270
Magistrate, Hooghly	50
Distriot Magistrate, Gay a	1	30
Cantonment Magistrate, Jubulpore	2	44
Subdivisional Officer, Bihar	40	969
Ditto, Jamalpur	6	145
Ditto, Jamtara „	...	10	250
Chairman, Katwa Municipality	2	60
•Ditto, Kishoreganj Municipality	2	43
Ditto, Krishnagar	20	500
Ditto, Local Board, Hailakandi, Cachar	10	250
Vice-Chairman, Silchar Municipality	10	250
Executive Engineer, Arrah Division, Arrah	...	2	50
Ditto, Canal do., Bhangore	300
Ditto, 2nd Calcutta Division,	100
Ditto, Chota Nagpur Division, Eanchi.	...	36	900
Ditto, Upper Eajshahi Division, Saidpur.	...	4	100

To WHOM SENT.	Ward-ian cases.	Boxes.	Number of plants.
1	2	3	4
District Engineer, Balasore	16	400
Ditto, Backergunge, Barisal	7	175
Ditto, Bhagalpur	9	225
Ditto, Bogra	54	1,350
Ditto, Dacca	2	50
Ditto, Dinajpur	10	250
Ditto, Dinapur	28	789
Ditto, Jenapur	12	710
Ditto, Jessore	8	300
Ditto, Noakhali	6	200
Ditto, Bajshahi	6	150
Sanitary Engineer, Calcutta	14	223
Sub-overseer, Hili	350
Overseer, Alipur Municipality	500
Superintendent, Presidency Jail, Calcutta	8	1,006
Pabna Jail	4	200
Ditto,	4	100
Ditto, Small Arms Ammunition	100
Ditto, Factory, Dum-Dum	42
Ditto, Gun Powder Factory, Ichapur	100
Ditto, Civil Veterinary Department, Bengal, Calcutta	42
Ditto, Government Printing, Government	100
Ditto, Soldiers' Gardens, Fort William	200
Ditto, Medical College Hospital, Calcutta	2
Ditto, Lady Dufferin's Victoria Hospital, Calcutta	200
Ditto, Howrah Hospital	2	1,700
Ditto, Pilgrims Hospital, Gaya	50
Ditto, Church Mission Society, Calcutta	50
Ditto, Little Sisters of the Poor, Calcutta	1
Ditto, Art School, Calcutta	50
Ditto, Madrasah College, Calcutta	22	916
Ditto, Patna College, Bankipore	546
Ditto, East Indian Railway, Howrah	1,300
Ditto, Eastern Bengal State Railway, Sealdah	100
Ditto, Indian M ^A T, Calcutta	2
Ditto, Department of Land Records and Agriculture, Calcutta	1,012
Ditto, Experimental	51
Ditto,	2	1,022
Ditto,	2	15,000
Ditto,	2
Ditto,	1	27
Ditto,	1	16
Ditto,	2	24
Ditto,	500
Ditto,	1
Ditto,	16
Ditto,	2	26
Ditto,	40
Ditto,	7
Ditto,	1
Ditto,	8	200
Ditto,	1,000
Ditto,	1
Ditto,	30
Ditto,	1	50

APPENDIX II—concluded.

To whom Bent.	Ward- ian cases.	Boxes.	Number of plants.
1	2	3	4
Captain Jackson, Kidderpore	12
Eevd. W. Kief el, Gobindpur	4	36
G. T. Lane, Esq.	63
Thomas Lee, Esq., Sibpur	1	550
J. H. Lewis, Esq., Calcutta	9
Major H. Littledale, Eawalpindi	1	4
A. Macdonell, Esq., Engineering College, Sibpur.	1,016
K. L. Mackenzie, Esq., Champaran	1	12
Mrs. D. Mackinnon, Garden Reach	2,000
Eevd. J. M. Macphail, M.D., Simultolla	12	300
E. H. Man, Esq., C.I.H., Port Blair ...	9	...	288
Mrs. Maxwell, Howrah	1,017
W. H. Miles, Esq., Calcutta	8	200
R. H. Morton, Esq., Jalpaiguri	200
Eevd. G. W. Panes, Banka	2	50
E. Pantling, Esq., Mungpoo	7	49
F. Pearce, Esq., Calcutta	40
J. Porton, Esq., Howrah	1,220
Major D. Prain, I.M.S., Mungpoo	1	10
A. Prevost, Esq., Bombay	1	19
Mrs. Shaw, Civil Engineering College, Sibpur	566
William Smith, Esq., Madhupur	3	70
H. T. Thomson, Esq., Garden Reach	1,000
E. A. Watson, Esq., Calcutta	3
John Watt, Esq., Calcutta	53
W. H. White, Esq., Sylhet	1	26
Messrs. McLeod & Co., Calcutta	8	1,000
„ Me Neil & Co., Calcutta	200
„ F. Sander & Co., St. Albans, England	1	80
Prince Linben, Calcutta	2
Mrs. C. N. Banerjee, Howrah	500
S. P. Chatterjee, Esq., Calcutta	263
Zamindar Surj Deo Narayan Sigg, Balgarh	1	2
Babu A. C. Sen, Sibpur	2
„ B. P. Banerjee, Sibpur	2
„ D. Burmun, Calcutta	4
„ G. C. Datta, Sibpur	100
„ H. C. Mitter, Cossipore	38
„ J. C. Ghosh, Calcutta	12
S. Josoda Sen, Port Blair	6
Shaik Mahamad Yasin, Samastipur	1	4
„ Mahamad Bhai & Co., Calcutta	60
Total ...	9	495	53,514

▼

APPENDIX III.

Statement showing Seeds received from 1st April 1899 to 8th March 1900.

From whom received.	Number of parcels or packets.
Sir W. T. Thiselton-Dyer, K.C.M.G., F.R.S., C.I.E., Director, Eoyal Gardens, Kew, London ...	5
Director, Eoyal Botanic Garden, Peradeniya, Ceylon	1
Botanic Garden, Adelaide	80
Ditto, Bangalore	1
Ditto, Buitenzorg	8
Ditto, Darfeeling	112
Ditto, Durban	42
Ditto, Ganeshkhind	1
Ditto, Georgetown, British Guiana	1
Ditto, Hongkong	11
Ditto, Ootacamund	111
Ditto, Saharanpur	25
Ditto, Saigon	1
Ditto, Singapore	1
Ditto, Sydney	20
Ditto, Trinidad	2
Curator, Botanical Station, Sierra Leone ...	2
Government Botanist, Melbourne	2
Colonial Botanist, Brisbane	26
Secretary, A gri- Horticultural Society of India, Calcutta	2
Superintendent, Government Horticultural Garden Lahore	220
Superintendent, Agri-Horticultural Society, Madras	5
Ditto, Government Agri-Horticultural, Garden, Nagpur	2
Ditto, Gwalior State Gardens, Gwalior ...	13
Ditto, Sujjan Newas Gardens, Oodeypore ..	1
Opium Agent, Bihar, Bankipore	10
Ditto, Ghazipur	2
Sub-Deputy Opium Agent, Sitapur	1
Deputy Commissioner, A ngul	2
Conservator of Forests, Puri Division	1
Ditto, Quilon, Travancore	1
Ditto, Southern Oirole, Upper Burma ...	1
0% . Conservator of Forests, Tenasserim ...	2
Deputy Conservator of Forests, Chanda ...	1
Forest Officer, Dehra-Dun	1
Forest Eanger, Vizagapatam	1
Subdivisional Officer, Jahanabad	4
Offg. Overseer, Dumraon Farm, Dumraon ...	1
Messrs. Damman & Co, Naples, Italy	53
„ Herb & Wulle, Naples, Italy	2
„ Eeasoner Brothers, Oneco, Florida, U.S.A. ...	3
Herrn Prof. Engler, Berlin	12
M. le. Prof. Max Cornu, Paris	1
M. A. Godefroy-Leboeuf, Montmartre, Paris ...	1
Major A. W. Alock, Indian Museum, Calcutta ...	78
G. H. Cave, Esq., Darjeeling	8
Lieut. A. T. Gage, Lushai Hills, Assam	31
G. A. Gammie, Esq., Labdah	3
Gr. T. Lane, Esq., Barrackpore Garden	2
J. L. Lister, Esq., Pashok	15
E. H. Man, Esq., C.I.E., Port Blair ^	7
Captain E. Pottinger, B.A., Shanghai	50
Major D. Prain, Darjeeling	4
C. S. Sargent, Esq., Director, Arnold Arboretum, Brooklyn, Mass., U.S.A.	1
W. Thompson, Esq, Haslemere, Ipswioh, England ...	1
George Watt, Esq., M.B., C.I.E., Eeporter on Economic Products to the Government of India, Indian Museum, Calcutta	17
Col. Wethered, Puerto, Orotava, Tenenff e, Canary Islands	2
Rai Kanye Lall Dey, Bahadur, C.I.E., Calcutta ...	1
Babu Jonardun Nusker, Sundarbans	40
Shaik Mokim, Plant-collector, Andamans	1
Total	1,056

APPENDIX IV.

Statement showing Seeds distributed from the Royal Botanic Garden during the year 1899-1900.

To whom sent.	Number of parcels or packets.
Sir W. T. Thiselton-Dyer, K.C.M.G., F.R.S., C.I.E., Director, Royal Gardens, Kew, London...	280
Director, Botanic Garden, St. Petersburg, Eussia	2
Ditto, Tiflis, Eussia	2
Ditto, Peradeniya, Ceylon	24
Botanic Garden, Bangalore	15
Ditto, Birmingham	1
Ditto, Brisbane	2
Ditto, Buitenzorg	90
Ditto, Cambridge	20
Ditto, Copenhagen	4
Ditto, Cork	2
Ditto, Darjeeling	184
Ditto, Durban	18
Ditto, Edinburgh	14
Ditto, Florence	2
Ditto, George Town, Demerara	14
Ditto, Glasgow	2
Ditto, Glasnevin, Dublin	5
Ditto, Ganeshkhind, Poona	8
Ditto, Grenada	6
Ditto, Hongkong	7
Ditto, Kingston, Jamaica	10
Ditto, Kriegschiff HaieD, Vitoria	2
Ditto, Liverpool	1
Ditto, Malta	65
Ditto, Manchester	1
Ditto, Nagpur	9
Ditto, Ootacamund	64
Ditto, Oxford	1
Ditto, Pampelmousse, Mauritius	4
Ditto, Penang	9
Ditto, Pondicherry	5
Ditto, Saharanpur	9
Ditto, Saigon	266
Ditto, Singapore	14
Ditto, Sydney	37
Ditto, St. Anns, Trinidad	2
Ditto, Port of Spain, Trinidad	11
Ditto, Trinidad	4
Secretary, Agri-Horticultural Society of India, Calcutta	3
Ditto, ditto, Moulemin	3
Ditto, ditto, Eangoon	3
Superintendent, Government Horticultural Garden, Lueknow.	17
Ditto, Government Gardens, Allahabad	3
Ditto, Royal Horticultural Society's Garden, Chiswick, London.	1
Ditto, Government Agri-Horticultural Garden, Lahore.	7
Ditto, Agri-Horticultural Society, Madras	34
Ditto, Victoria Garden, Bombay	25
Ditto, State Gardens, Baroda	3
Ditto, Gwalior State Gardens, Gwalior	15
Curator, Botanical Station, Antigua, West Indies	2
Do., ditto, Barbadoes, ditto	2
Do., ditto, Dominica, ditto	2
Do., ditto, Lagos, West Africa	12
Do., ditto, St. Kitt's-Nevis, West Indies	14
Do., ditto, St. Lucia, West Indies	12
Do., ditto, St. Yinoent, ditto	2
Do., Botanio Garden, University of Californ- nia, San Francisco, U.S.A.	6
Administrator, Botanical Station, Gambia	2

APPENDIX IV—*continued.*

To whom sent.		Number of parcels or packets.
Herrn Direktor des bot. Gartens,	A gram, Austria-Hungary	1
Ditto ditto,	Buda-Pesth, Austria-Hungary	1
Ditto ditto,	Graz, Austria-Hungary	1
Ditto ditto,	Kamerun, West Africa	10
Ditto ditto,	Munster, Germany	1
Ditto ditto,	Zurich, Switzerland	25
Ditto ditto,	Innsbruck, Austria-Hungary	13
<i>Ditto do</i>	Kgl. Landesbaumsehule, Alt-Gelow, Germany	1
Wohlgeb. Graf zu Schwerin Windisch-Wilmersdorf, bei Ludwigsfelde, Germany	...	3
Wohlgeb. Graf zu Solms Laubach, Prof. der Botanik, Universität Strassburg, Germany	...	15
M. le Directeur du Jardin Botanique,	Amsterdam	2
Ditto ditto,	Athens, Greece	72
Ditto ditto,	Cairo, Egypt	2
Ditto ditto,	Christiana, Norway	1
Ditto ditto,	Geneve, Switzerland	3
Ditto ditto,	Groningen, Holland	1
Ditto ditto,	Leiden, Holland	1
Ditto ditto,	Louvain, Belgium	1
Ditto ditto,	Marseille, France	4
Ditto ditto,	Stockholm, Sweden	1
<i>Ditto ditto,</i>	St. Denis, Réunion	16
Ditto ditto,	Upsala, Sweden	2
Ditto ditto	Medicale, Faculty de Medicine, Paris	2
M. le Directeur du Jardin des Plantes,	Antibes, Var, France	2
Ditto ditto,	Montpellier, do.	2
Ditto ditto,	Paris	6
M. le Directeur du Jardin d'acclimatation, Cannes, Alpes Maritimes, France		2
Ditto ditto,	Hamma, Algeria	10
Ditto ditto,	Orotava, Canary Islands	7
M. le Conservateur, Jardin botanique, Genève, Switzerland		17
M. le Sec.-Genl. de la Société Nationale d'acclimatation de France, Paris	...	217
Sig. Direttore deir Orto Botanico, Napoli, Italy	...	2
Ditto ditto,	Palermo, do.	6
Ditto ditto,	Portici, do.	2
Herrn Prof. Engler, Direktor, Kgl. Bot. Garten, Berlin, Germany	...	85
Senôr Director do Jardin Botan., Rio de Janeiro, Brazil, South America	...	17
Sen Director do Jardin bot. da Universidade, Coimbra, Portugal	...	20
Sen Conde de Fialho, Director do Jardin bot. da Escola polytechnica, Lisboa, Portugal	...	4
Signor A. Todaro della Gallia, Consul-General de Perse, Palermo, Italy	...	43
Director, Shaw School of Botany, St. Louis, Missouri, U.S.A.	...	18
Professor of Botany and Director of Botanic Garden, University, Upsala, Sweden	...	3
Surveyor-General, Agricultural Department, Salisbury, South Africa	...	20
Superintendent, Alipore Jail, Alipore	...	1
Ditto, Barasat Jail, Barasat	...	1
Ditto, Bhagalpur Jail, Bhagalpur	...	2
Ditto, Chittagong Jail, Chittagong	...	1

APPENDIX IV—*continued.*

To whom sent.	Number of parcels or packets.
Superintendent, Central Jail, Midnapore	1
Ditto, Omillah Jail, Comillah	3
Ditto, Hazaribagh Jail, Hazaribagh	2
Ditto, Jessore Jail, Jessore	2
Ditto, Mymensingh Jail, Mymensingh	2
Ditto, Motihari Jail, Motihari	1
Ditto, Palamau Jail, Palamau	1
Ditto, Patna Jail, Bankipore	1
Ditto, Noakhali Jail, Noakhali	1
Ditto, Rampur Boaliah Central Jail, Rampur Boaliah	2
• Ditto, Ranohi Jail, Ranchi	1
Ditto, Rangpur Jail, Rang pur	2
Ditto, Sarun Jail, Chapra	1
District Engineer, Dacca	2
Ditto, Rangpur	2
Executive Engineer, Public Works Department, Bankipore	3
Ditto, Cossye Division, Midnapore	6
Assistant Engineer, Public Works Department, Ramnagar, Behea	4
Conservator of Forests, Central Circle, Madras	1
Ditto, Bengal, Darjeeling	3
Extra Assistant Conservator of Forests, Tehri, Garhwal ...	1
Offg. Director of the Department of Land Records and Agriculture, Burma, Rangoon	1
Messrs. H. Low & Co., London	6
„ F. Sander & Co., St. Albans, England	11
„ Reasoner Brothers, Florida, U. S. A,	75
„ Herb & Wulle, Naples, Italy	113
„ Damman & Co., San Giovanni a Teduccio, Napoli, Italy	59
„ Vilmorin, Andrieux & Cie., Paris	8
„ Octavius Steel & Co., Calcutta	2
„ Labiri & Co., Calcutta	4
Colonial Botanist, Brisbane, Queensland	29
Consul-General for France, Calcutta	4
Consulate-General of the United States of America, Calcutta	2
Chief Secretary to Government, Cyprus	1
Secretary, Indian Gardening Association, Calcutta	42
Battalion Commandant, Myitkyina, Burma	15
1st Assistant to the Agent to the Governor-General in Central India, Indore	1
Cantonment Magistrate, Jubbulpore	8
Vice-Chairman, Purnea Municipality, Purnea	28
Subdivisional Officer, Alipur Duars	14
Postmaster, Diamond Harbour	20
Khas Tahsildar, Sadar Chittagong	28
Proprietor of the Cheapest Dum-Dum Nursery, Dum-Dum M. A chard, Saigon	1
Major A. W. Alcock, Indian Museum, Calcutta	4
Captain A. R. S. Anderson, I.M.S., Chittagong	46
M. Binot, Petropolis, Brazil, South America	10
W. Bull, Esq., Chelsea, London	2
Arthur K. Bulley, Esq., West Kirby, Cheshire, England ...	11
C. Bivar, Esq., Bokaghat, Assam	1
Herrn Dr. A. Burgestein, Wien	2
Well Ed. Heer M. Buysmann, Middelburg, Holland	89
A. B. Black, Esq., Arohitect and Engineer, Grenfell Street, Adelaide, South Africa	4
John B. Burnett, Esq., Tellicherry, Madras	1
William Pentzke, Esq., Madhupur	2
Mrs. Campbell, Glenakil, Loch Fyne, Scotland	2
Mons. J. Chiffot, Lyon, France	4
B. Coventry, Esq., Tirhut	6
Dr. D. D. Cunningham, Torre Mount, Torquay, Devon, United Kingdom	14

APPENDIX IV-concluded.

To whom sent,	Number of parcels or packets.
Henry Mowbray Cadell, Esq., Grange, Boness, United Kingdom	15
M. Ch. Despland, Moo-Chan, China	5
M. L. Duval, Versailles, France	6
M. G. Desprez, Pharmacien Ire Classe, Membre de la Socièté Chemique de Paris, Paris, France	8
Prof. Arthur M. Edwards, M.D., F.L.S., 333, Belleville Avenue, Newark, New Jersey, U. S. A.	3
Lieut. FarquharsoD, R. E.; Eanchi	2
Dr. F. Franceschi, Santa Barbara, California, U. S. A.	12
W. Fawoett, Esq., Kingston, Jamaica	11
Edmund J. Garwood, United University Club, Pall Mall, London	22
Mons. A. Goris, Preparateur au laboratoire de Matière Medicalo, Ecole Superieure de Pharmacie, Paris	8
C. Gray, Esq., Coonor	10
B. L. Heinig, Esq., Port Blair	5
E. B. Havell, Esq., Government School of Art, Caloutta	1
M. le Prof. JHeckel, Marseilles, France	30
M. A. Godefroy-Leboeuf, Monfmartre, Paris	24
8. T. Heard, Esq., Kosdohan, Tahilla Co., Kerry, Ireland	1
Lawrence A Libert, Esq., Port of Spain, Trinidad	1
M. J. Linden, Gand, Belgium	16
Mrs. Lewin, Parkhurst, Abinger Common, near Dorking, Surrey	22
H. J. McLaughlin, Esq., Forest Eanger, Vizagapatam	1
Herrn Gus^av Mann, Muenchen, Germany	1
K. W. S. Mitchell, Esq., C.M.G., Calcutta	1
E. H. Man, Esq., C.I.B., Port Blair	10
G. M. Pechf, Esq., Moulmein, Burma	2
Chas. O. L. Power, Esq., Island of Madeira	3
Col. G. T. Pearson, Kingston, Herefordshire, England	1
Lt.-Col. J. H. Sadler, H. B. M.'s Consul-General, Somali Coast Protectorate, Berbera, Somali Coast	6
J. L. Schiller, Esq., Eatherford, New Jersey, Tj. S. A.	2
Big. Ermimo Bella, Biella, Italy	19
Dr. O. Stapf, F.L.S., Hanover House, The Green, Kew, London	1
A. D. Selby, Esq., Botanist, Ohio Experimental Station, Wooster, O., U. S. A.	17
Dr. J. W. H. Traill, F.R.S., Old Aberdeen, Scotland	25
Mrs. Annie Thorp, Motihari	2
George Watt, Esq., M.B., CM., C.I.B., Indian Museum, Calcutta	1
Col. Wethered, Teneriffe, Canary Islands	2
L. Wray, Esq., Jr, Larut, Perak	8
H. Walker, Esq., Sandakan, North Borneo	2
S. L. Wilkins, Esq., Grizzly Flats, California, U. S. A.	2
G. Marshall Woodrow, Esq., Poona	1
Dr. L. G. Yates, Santa Barbara, California, U. S. A.	2
Babu Abinash Chandra Sen, Sibpur	7
„ Atul Behary Moitra, Santipur	1
„ Bany Kantha Mookerjee, Sibpur	1
„ Girish Chandra Chattejee, Jhirighat, Cachar, Assam	1
„ Gopal Chandra Datta, Sibpur	25
„ J. Eoy, Bajitpur, Mymensingh	1
„ Kunja Behari Basak, Calcutta	13
„ P. C. De, Caloutta	1
„ S. P. Chatterjee, Victoria Nursery, Caloutta	1
Total	3,126

APPENDIX V.

Lid of Herbarium Specimens received during 1899-1900.

	No.
Director, Royal Gardens, Kew	1,296
Ditto, Botanic Garden, Vienna	680
Ditto, Hof-Museum, Vienna	107
Dr. A. de Degen, Buda-Pesth	152
Heer M. Buysmann, Middleburg, Holland	20
Dr. W. Kinzel, Dahme, Germany	7
XL S. National Museum, Washington, U. S. A.	646
Department of Agriculture, Washington, U. S. A.	275
Geo. Hansen, Esq., California	998
H. Bolus, Esq., Kenilworth, Cape Colony	227
T. Cooper, Esq. (Plants of South Africa)	629
Director, Botanic Gardens, Sydney	300
M. Koch, Esq., Mt. Lyndhurst, South Australia	220
Director's Lands Plantentuin, Buitenzorg, Java	417
Director, Botanical Gardens, Singapore	430
Dr. A. Henry, Mengtze, China	2,85J
Captain E. Pottinger, R. A. (Plants of Central China)	942
Director, Botanical Department, Northern India, Saharanpur	191
J. H. Lace, Esq., Deputy Conservator of Forests, Chamba, Punjab	409
H. H. Haines, Esq., Deputy Conservator of Forests, Singhbhum	H 7
R. L. Heinig, Esq., Deputy Conservator of Forests, Andamans	Λ 5
Dr. T. L. Walker, Geological Survey of India	206
R. Pantling, Esq., Mungpoo (Orchids of the Sikkim Himalaya and of the Kimsia and Jaintia Hills)	620
Lieut. A. T. Gage, i. M. S. (Plants of South Lushai Hills)	540
Mr. G. H. Cave, Mungpoo (Plants of Sikkim)	8*
Major D. Prain, IMS. (Plants of British Bhutan)	82
Abdul Huq, Plant-collector (Plants of the Jaboca Naga Hills)	584
Shaik Mokim, Plant-collector (Plants of the Kachin Hills)	514
N. C. Bose, Plant-collector ^Plants of Orissa)	50
Petty contributions	103
Total	<u>13,728</u>

APPENDIX VI.

List of Herbarium Specimens distributed during 1899-1900.

Herbarium, Royal Gardens, Kew	...	...	323
Ditto, British Museum, London	...	...	385
Ditto, Cambridge University	...	...	183
Ditto, Owen's College, Manchester	...	...	197
Ditto, Edinburgh University	...	...	229
Ditto, Aberdeen	...	...	201
Ditto, Science and Art Museum, Dublin	...	...	158
Ditto, Queen's College, Cork	...	...	166
Ditto, Jardin des Plantos, Paris	..	...	409
Ditto, Jardin Botanique de l'Etat, Brussels	...	...	23
Ditto, Eijks, Leiden, Holland	...	...	328
Ditto, Botanic Garden, Utreoht, Holland	...	...	181
Ditto, Royal Botanical Museum, Berlin	...	...	423
Ditto, Botanical Museum, Hamburg	...	...	324
Ditto, University of Munich	...	...	242
Ditto, Botanic Garden, Vienna	...	...	183
Ditto, Hof-Museum, Vienna	...	...	208
Ditto, Boissier, Chambezy, Switzerland,..	...	...	299
Ditto, Musée Cantonal, Fribourg, Switzerland	...	...	206
Ditto, Botanic Garden, Geneva	..	...	176
Ditto, Eoyal Botanical Museum, Florence, Italy	...	...	234
Ditto, Imperial Botanic Gardens, St. Petersburg,			
Russia	...	...	334
Ditto, Upsala University, Sweden	...	...	259
Ditto, Arnold Arboretum, Mass. U. S. A.	...	...	512
Ditto, Harvard University, U. S. A.	...	...	51
Ditto, Minnesota Natural History Survey, Tj. S. A....	...	...	187
Ditto, Montana State College of Agriculture, U. S. A.	...	...	316
Ditto, Smithsonian Institution, Washington, U. S. A.	...	...	195
Ditto, Queen's College, Kingston, Ontario, Canada	...	...	16
Ditto, Melbourne University, Australia	...	...	198
Ditto, Botanic Gardens, Sydney, Australia	...*	...	51
Ditto, Ditto, Durban, South Africa	...*	...	187
Ditto, Ditto, Buitenzorg, Java	...	...	202
Ditto, Gardens and Forest Department, Penang	r,	...	140
Ditto, Perak Museum	...	tt,	179
Ditto, Forest Department, Singapore	...	...	135
Ditto, Royal Botanic Garden, Peradeniya, Ceylon	...	...	254
Ditto, Forest School, Dehra Dun	...	...	190
Ditto, Government Central Museum, Madras	...	...	155
Ditto, College of Science, Poona	...	...	290
Ditto, Botanical Department, Northern India, Saha-			
ranpur	...	...	330
Ditto of Reporter on Economic Produots to the			
Government of India, Calcutta	...	...	245
Sir Dietrich Brandis, K. C. I. E., Kew	...	.*	141
G. F. Scott-Elliott, Esq., Dumfries, Scotland	...	...	148
Mons. Barthelemy Boff, Doubs, France	..»	...	20
Mons. Drake del Castillo, Paris	...	...	217
Mons. M. Gandoger, Villefranohe, France	...	...	402
Mons. T. Jadin, Montpellier, France	.4	...	15
Mons. Cas. de Candolle, Geneva, Switzerland	...	...	306
Dr. Hans Sohinz, Zurich, Switzerland	...	...	229
Signor Beocari, Florence, Italy	...	...	100
W. A. Talbot, Esq., Deputy Conservator of Forests,			
Bombay	...	...	47
Total	...	...	11,129

DAVID PRAIN, M.B.,

MAJOTI, I.M.S.,

Superintendent, Royal Botanic Gaid:n), Calcutta.

immediately after the storm, but, while a small percentage have died off completely, the majority have survived, though it was not till early March that they showed signs of recovery. It is of practical interest, moreover, to note that, while this has also been the case with some plots of indigo of the Indian kind (*Indigofera tinctoria*) and with a plot of Guatemala indigo (*Indigofera oligosperma*) two plots of *Indigofera* raised from Natal and from Java seed respectively, came by no harm. Another practical point may also be noted. It is generally understood that the sisal hemp plant (*Agave rigida* var. *Sisal*) is at a disadvantage as compared with the *Agave* commonly planted along Indian roadsides, in that the former does not endure being flooded, while the latter is unaffected by inundation. In the present instance both species were equally unaffected by the inundation.

While, however, many species succumbed immediately, it was not that nearly as many, though fortunately not so many individuals of each, did not die at once, but did so ultimately. These were mainly trees—and mainly Indian or Burmese ones—natives of naturally drier regions than Bengal. Within this group, moreover, an interesting difference has been observed in the behaviour of evergreen as compared with deciduous species. The former, when they have died, showed signs of distress with the advent of the cool season, their leaves wilting gradually, and in a fortnight or so becoming stiff and yellow. With deciduous trees on the other hand, there was nothing to show that the roots had been damaged by the floods. The leaves remain on the trees till the natural time for their being shed, and it has only been on examination, induced by the fact that no flowers or new leaves have appeared that the individual was found to have died. The chief outdoor improvement of the last 6 years have been the re-planting of the Northern or "Amherstia" section of Thomson avenue and the realignment of the Kurz avenue. A commencement has also been made with the task of continuing the Kurz avenue in the direction of the Banyan tree. This much needed improvement will complete the road system in the northern section of the Garden.

2. *Economic Plants.*—The usual attention has been given by the staff to the propagation and distribution of useful plants throughout the year. In view of the interest that is being manifested in fibre-yielding plants especially in the *Agaves*, steps have been taken to increase the stock available for distribution. Particular attention was paid to the bena Indian under cultivation of certain non-Indian *Intigofcras* as compared with the Indian Indigo plant, *Indigofera tinctoria*. A representative collection of Indian yams was brought together by the Department of the Report on Economic Products; the plants were cultivated in the Garden and as far as possible determined. A complete report on this interesting subject cannot be submitted as several of the kinds, and particularly those most commonly under cultivation, did not flower and so could not be definitely identified. Their cultivation will be continued till this happens. A question has arisen as to the source of the seeds known as "Chaulmoogra" largely in native medicine and now attracting considerable attention in Europe. Endeavour was made to settle the point. The seeds in question have usually been attributed to the species known as *Gynocardia odorata*. Having tied himself that this opinion is erroneous, the Superintendent invoked the assistance of Dr. Watt, Reporter on Economic Products, to clear up the matter. Thanks to Dr. Watt's exertions, the matter has now been definitely settled. The seeds known as Chaulmoogra are not those of the tree known by that name, but of the species known as *Taraktgenos Kurzii*. Thanks to the assistance afforded by the Inspector-General of Forests, it has been possible also to settle the obscure question as to the source of the timber known as Padouk. This timber has been generally supposed to be yielded by *Pterocarpus indicus*. It now transpires that *Pterocarpus indicus* is not an indigenous tree within the limits of the Indian Empire. The true or Burma Padouk is the *Pterocarpus macrocarpus*, a species that occurs only in Burma. Andaman or Andaman Red-wood is the timber of *Pterocarpus dalbergioides*, a species of which is found in a wild state only in the Andamans. The use as a fodder-grass of *Paspalum dilatatum*, a native of America, which has proved very valuable in Australia owing to its drought-resisting qualities, has led to its introduction in India on as large a scale as possible. Finding that very little seed could be spared by Australian correspondents of the Garden, the assistance of

shortly after the close of the year under review. This part consists of *Descriptions of a Second Century of new and rare Indian plants* and has been prepared conjointly by Sir George King, K.C.I.E., F.R.S., Mr. J. F. Duthie, F.L.S., Director of the Botanical Department, Northern India, and the Superintendent.

6. *Interchange of seeds and plants.*—The receipts and issues of plants and seeds are fully detailed in Appendices I—IV. The number of plants distributed was 39,300, a reversion to what may be looked on as the normal distribution. The demand for rhea, which led to the greatly increased figures of last year, has fallen off; these interests in the cultivation of this plant having now in most cases become provided with an ample stock of plants. The number of plants received was 14,454. The number of packets of seeds imported reached 1,618, a considerable increase as compared with 1899-1900. The number of packets distributed was 5,670.

7. *Lloyd Botanic Garden.*—Great progress has been made with the laying out of the piece of ground which formerly constituted the municipal vegetable garden. The scheme underlying the arrangement of the new portion is to make its contents as representative as possible of the indigenous flora of the Himalayas at and about the level at which Darjeeling is situated, leaving the original garden as far as possible, as it at present stands, a place in which exotic species capable of thriving at the altitude can be grown. During the year two hailstorms, one of exceptional severity, passed over the station at Darjeeling and did much damage to the Lloyd Garden; most of it, however, was fortunately of a temporary nature. The revetment work rendered necessary by the great storm of September 1899 has practically been completed, to the satisfaction of the authorities entrusted with the care of slope and hillsides within the municipality.

8. The money allotted for contingencies for the Royal Botanic Garden has been spent in full. A saving of Rs. 827-6-4 has been effected under the allotment for establishment. The corresponding allotments for the West Botanic Garden have been spent almost in full, the unspent balance amounting only to Rs. 10-5-5. The revenues from the Royal Botanic Garden to Rs. 489-4 and from the Lloyd Botanic Garden Rs. 880 have been paid to the treasuries at Calcutta and Darjeeling respectively.

9. During the year the gardens have been visited, among other distinguished strangers, by M. P. de Homme, Director of the Agricultural Department, Madagascar, and by Dr. F. Stuhlmann, Director of the corresponding Department, German East Africa. One consequence of these visits has been that arrangements have been made for the establishment of exchanges calculated to benefit this Institution as well as the Colonies on whose behalf these officers were deputed to visit it. The gardens were also visited by Prof. W. Ramsay, F.R.S., on behalf of the scheme for the establishment of a Research University in India, on the advisability of which Prof. Ramsay had been invited to report. The importance of providing this Institution with a well-equipped laboratory for research does not require to be insisted on, and the subject has accordingly been already brought to the notice of the Government.

10. The Superintendent was in charge of his post throughout the year. Mr. Gage, the Curator of the Herbarium, has worked very enthusiastically throughout the year, and in addition to the unremitting attention he has devoted to his proper duties has devoted much of his spare time to an investigation of the diseases affecting sugarcane in Bengal on which he has submitted a full and valuable report to the Director of Land Records and Agriculture. Mr. G. T. Lane, Curator of the Garden, has also worked very well. When the year opened the posts of Assistant Curator and of Probationer Gardener were both vacant, the former owing to the deputation of the Assistant Curator at the Cinchona Plantation, the latter owing to the appointment of the Probationer Gardener, who was acting as Assistant Curator, to be Superintendent of Public Gardens at Agra. Mr. N. Gill, selected by the Hon'ble the Secretary of State as Probationer Gardener, and who reported his arrival from England on 2nd April 1900, was therefore appointed Assistant Curator with effect from 3rd April 1900. Mr. H. F. Green, Probationer Gardener by the Secretary of State in succession to Mr. N. Gill reported his arrival in India on 18th May 1900, and was posted on 22nd May 1900 to the Cinchona Plantation to fill a temporary vacancy on the staff assistants there.

APPENDIX I.

Statement showing Plants received from 1st April 1900 to 31st March 1901.

From whom received.	Wardian cases.	Boxes.	Number of plants.
1	2	3	4
Royal Gardens, Kew, London ...	1	...	35
Botanic Garden, Bangalore	1	300
Ditto, Daijeehng ...	3	10	454
Ditto, Saharanpur	1
Jardindes Places, Pans	20
Khusru Bagh, Allahabad	25
Taj Garden, Agra	1	6
Rifto Garden, Gwalior	5	1,343
Government Garden, Cawnpore	1	1
Victoria Garden, Bombay	2	1,002
Government House Garden, Calcutta	40
Barrackpore Park	50
Monsieur A. Godefroy-Lebeuf, Paris ...	1	...	106
Agri-Horticultural Society of India, Calcutta	1	312
Ditto Madras	1	24
... sioner, Burma, Mandalay	6
Records and Agriculture,	1
Be	2
IndiaSeum, Calcutta	30
Experimental Farm, Sibpur	2
... outta	147
G. H. Cave, Esq., ... gpoo	1	500
B. Coventry, Esq., Dalsing-Sarai, Tirhoot	14
Edward George, Esq., Bahamas	120
H. H. Hayden, Esq., Nilgiris	1	10
... tagong	2	188
A. E. Lamb, Esq., Mam Cr Blair ...	10	9	825
E. H. Man, Esq., ... halimar	243
G. A. ... Moulmein	7	2,483
G. Me ... from Nicobars	1	12
H. H. ... Watt, M.B., C.I.E., Calcutta	89
Dr. Ge ... Watt, M.B., C.I.E., Calcutta	2	2,469
S. P. Oh. ttri, Esq., Calcutta	115
Major D. Prain, I.M.S. Collected in Sikkim	1	190
Norman ... Collected in Assam	3	137
Mr. J. O. Prazer-Collected in lavoy	2	556
Shaik Mokim-Collected in	1	30
Bevd. L. Cardon, S.J., Bassia, Kancni	15
W. A. Talbot, Esq., Belgaum	2	408
Bought from Babu T. O. Nundy, Assam
Total ...	15	53	14,454

APPENDIX II.

Statement showing Plants sent out from 1st April 1900 to 31st
March 1901.

To whom sent.	Ward- ian cases.	Boxes.	Number of plants.
1	2	3	4
Royal Gardens, Kew, London ...	4	1	216
Royal Botanic Gardens, Glasnevin, Dublin ¹	1	180
Ditto, Bavaria *	...	1	183
Ditto, Berlin	...	1	28
Botanic Gardens, Paris	2	212
Ditto, Trinidad ...	19	...	7&
Ditto, Bangalore	4	80
Ditto, Ootacamund	1	2
Ditto, Darjeeling	7	289
Ditto, Egypt	1	39
State Garden, Gwalior	5	436
Government House Garden, Calcutta	971
Zoological Garden, Calcutta	966
Belvedere Garden, Calcutta	6
Taj Garden, Agra	14	343
Barrackpore Park	1,713
His Majesty The King of Siam ...	4	...	200
His Highness The Sultan of Johore	1	25
Monsieur le Directeur du Jardin colonial de Nogent, France.	1	...	30
M. A. Godefroy-Lebeuf, Paris ...	8	...	129
Lord William Beresford, Deepdene, Surrey	1	182
Dr. D. D. Cunningham, F.R.S., C.I.E., Torre- mount, Torquay, Devon.	...	1	179
Mrs. Firth, Retford, England	1	58
Professor J. W. H. Trail, F.R.S., Old Aberdeen	1	182
Agri-Horticultural Society of India, Calcutta	4
Ditto ditto, of Punjab, Lahore	1	18
Ditto ditto, Lucknow	1	100
Offg. Deputy Commissioner, Dumka, Sonthal Parganas.	...	9	225
Magistrate, Howrah	55
Ditto, Comilla	1	19
Cantonment Magistrate, Barrackpore	100
Ditto, Jubbulpore	1	25
Subdivisional Officer, Tumluk	170
Inspector of Forests, Maurbhanj State	65
Ytee-Chairman, Dinajpur Municipality	8	200
Chairman, Ahmedabad Municipality	100
Ditto, Local Board, Supaul	9	230
Supervisor, Gaya Municipality	8	200
Executive Engineer, 2nd Calcutta Division, Calcutta.	1,430
Executive Engineer, Chota Nagpur Division, Ranchi.	...	24	600
Executive Engineer, No. 15 Division, A. B. Railway.	...	4	100
Executive Engineer, No. 15 Division, Calcutta Section, Sealdah.	30
Executive Engineer, Upper Rajshahi Division, Saidpur.	...	2	50
District Engineer, Backergunge, Barisal	5	120
Ditto, Bhagalpur	9	220
Ditto, Bogra	60	1,500
Ditto, Dinajpur	17	425
Ditto, Hazaribagh	3	65
Ditto, Howrah	50

APPENDIX II--continued.

To whom sent.	Ward- ian oases	Boxes.	Number of plants.
1	2	3	4
Dietriot Engineer, Jalpaiguri	12	393
Ditto, Nadia »	36	900
Ditto, Suran	6	150
Ditto, Tippera	4	100
Khasmahal Officer, Bhagalpur	4	100
Manager, Hathwa Raj	1	12
Superintendent, Alma House, Calcutta	480
Ditto, Central Jail, Alipore	000
Ditto, ComLUa Jail	3	75
Ditto, Mymensingk Jail	20	500
Ditto, Silehar Jail	4	100
Ditto, Government Printing in India, Calcutta.	55
Postmaster, Diamond Harbour	100
Sergeant-Instructor, Engineer Company, Calcutta Port Defence Volunteers.	108
Soldiers' Garden, Fort William	1,200
Campbell Medical Hospital, Calcutta	200
Churoh Mission Society, Calcutta	200
Free Church of Scotland, Calcutta	200
Christian MUsion, Bilaspur	1	12
G. E. L. Mission, Caakradbarpur	8	199
Mission House, Atihijara	10	250
St. Joseph's High School, Calcutta	162
Art School, Calcutta	12
Boys' Orphanage and Industrial School, Dam oh.	18	404
Civil Engineering College, Sibpur	69
Patna College, Bankipore	4	86
Alipore Observatory	50
Gunpowder Factory, Ishapore	150
Gun Foundry, Coseipore	2
East Indian Railway, Calcutta	2,300
Police-station, Sibpur	200
A. Anderson, Esq., HoWTah	400
Mrs. A. Banson, Shalimar	80
Dr. A. Q\ Bourue, Madras	3	118
Honourable J. Buckingham, Calcutta	1	24
Major R. H. Charles, Calcutta	2
Ilevd. Cliares Clarke, Calcutta	200
A. Cooke, Ei^q., Calcutta	1	9
B. Coventry, Eiq.f Ualaing-Sarai, Tirhoot	1	6
G. irellatLy, Esq., Catoutta	26
W. GTaham, Esq., Calcutta	38
G. Barton-Grovos, Esq., Mount Abu	4
Mrs. L. Hood, Garden Reach	400
Major Hudson, Andamans	2	50
W. W. Johnson, Esq., Hyathpur	2	555
Mrs. Kirkaian, Kidilerpore	5
G. T. Lane, Esq., Sibpur	55
L. Lee, Esq., iSibpur	1,076
Sir A. S. Luthbridge, Mnnbhum	2	170
Eovd. O. tl. Lockiss, Raj'gungepur	8	200
J. A. Manning, Esq.	18
E. H. Man, Esq., o.i K., Port Blair ...	10	...	295
Mrs. H. At A Morgan, Calcutta	39
J. E. Needam, Esq., Calcutta	1,114
Miss N. ole, Calcutta	120
Mrs. E. Ormond, Calcutta	4

APPENDIX II—concluded.

To whom sent.	Ward- ian cases.	Boxes.	Number of plants.
1	2	3	4
R. Pantling, Esq., Mungpoo	1	1
Revd. B. W. Panes, Jeypur	3	75
G. MoD.Peché, Esq., Moulmein	0	8
Mrs. Phelpe, Calcutta	600
Mrs. Prain, Sureil	"*3	55
F. Wright, Esq., Ichapur	1	60
L. P. Shirres, Esq., Bhagalpur	12	800
H. E. Short, Esq., Sewan	5,000
T. E. Spiers, Esq., Calcutta	•••	2
Messrs F. Sander & Co., St. Albans, England	...	6	3,850
G. M. Vincent, Esq., Bhagalpur	3	67
F. A. Wearing, Esq., Darjeeling	1	24
Maharajah Soorjya Kumar Acharjya Chowdhury, Mymensingh.	...	4	24
S. P. Chatterjee, Esq., Calcutta	•*•	1,374
Babu A. C. Sen, Sibpur	12
„ D. N. Singh, Howrah	8
„ G. O. Datta, Sibpur	••	70
„ H. C. Milter, Cossipore	36
„ K. C. Acharjya, Calcutta	1
„ K. N. Soor, Garden Keach	»••	3
„ T. C. Eoy, Kalighat	2
„ Kanaye Lall, Allahabad	1	9
Phallaram Malie, Calcutta	1
Gopal Chandra Samonta, Mallie, Calcutta	3
Gopal Chandra Sanati, Mallie, Calcutta	7
Shaik Rohoman Bux, Calcutta	•••	1
Abdool Hock, Calcutta	•*•	1
Total ...	46	393	39,300

APPENDIX III.

Statement showing seeds received from 1st April 1900 to 31st March 1901.

From whom received.	Number of parcels or packets.
Sir W. T. Thirelton-Dyer, K.C.M.G.L., F.R.S., C.I.B., Director, Royal Gardens, Kew, London ...	75
Director, Royal Botanic Garden, Peradeniya, Ceylon ...	14
Botanic Garden, Bangalore ...	1
Ditto, Brisbane ...	1
Ditto, Darjeeling ...	53
Ditto, Durban ...	43
Ditto, George town, British Guiana ...	1
Ditto, Gold Coast ...	15
Ditto, SSaharaupur ...	31
Ditto, Sydney ...	8
Colonial Botanist, Brisbane ...	1
Ditto, Melbourne ...	4
Superintendent, Government Agri-Horticultural Garden, Lahore ...	284
Superintendent, Agri-Horticultural Society, Madras ...	8
Ditto, Horticultural Garden, Nagpur ...	1
Ditto, Gwalior State Garden, Gwalior ...	4
Ditto, State Gardens, Baroda ...	50

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APPENDIX H I — . * * *

From whom received.	Number of parcels or packets.
Conservator of Forests, Bengal, G... ..	5
Ditto, Hyderabad Districts ...	1
Ditto, Tenasserim Circle, Rangoon ...	6
Acting Conservator of Forests, Coimbatore ...	1
Deputy Conservator of Forests, Pilibhit Division, Bareilly	8
Ditto, Mercara, Coorg ...	1
Ditto, Atrani Division, Moulmein ...	5
Ditto, Depot and Agency Division, Rangoon ...	1
District Forest Officer, North Malabar, Manantoddy ...	1
Ditto, Tinnevely ...	1
Acting District Forest Officer, Camp, Sultan's Battery,	1
Ditto, Forest Officer, Sorih, West. m Provinces ...	1
Director, Botanical Department, Kingston, Jamaica ...	9
Assistant Director, Department of Land	1
Ditto, Forests and Agriculture, North-	1
Western Provinces and Oudh, Cawnpore ...	1
Subdivisional, ... n, Rajshahi ...	5
Directeur de l' ... nanarive, Madagascar ...	1
Experimental Indigo Farm, Dalsingarai ...	30
Messrs. Herb and Wulle, Naples, Italy ...	3
" J. H. William and Brothers, Heneratgoda, Ceylon	43
" Reasoner Brothers, Oneco, Florida, United States,	12
... o., St. Albans, England ...	1
... and Sons, Richmond, U. S. A. ...	1
Herrn Prof. Engler, Berlin ...	2
Le Directeur, du Museo National, San Jose, Costa Rica ...	4
Professor Max Cornu, Paris ...	2
M. A. Godefroy-Lebeuf, Paris ...	454
G. H. Cave, Esq., Mungpoo, Tasmania, Australia ...	17
... ..	1
... ..	22
... ..	193
... ..	1
... ..	3
Sir George King, K.C.I.E., Barrackpore Garden, ...	3
G. T. Lale, Esq., Barrackpore Garden, ...	6
Laurence A. Lambert, Esq., ...	21
J. L. Lister, Esq., ...	12
E. H. Man, Esq., ...	21
E. Pantling, Esq., ...	1
Maor D. Prain, Darjeeling ...	44
W. F. Pentzke, Esq., ...	1
J. G. Smith, Esq., ...	1
T. J. Spooner, Esq., Uganda ...	17
... Reporter on Economic	22
... t of India, Indian Museum,	1
Calcutta ...	2
S. L. Watkins, Esq., Lotus, California ...	34
N. G. Mukherjee, Esq., Civil Engineering College, Sibpur ...	34
Babu ...	34
Shaik Mokim, Tavoy ...	1,618
Total ...	1,618

APPENDIX IV.

Statement showing seeds distributed from the Royal Botanic Garden during the year 1900-1901.

To whom sent.	Number of parcels or packets.
Sir W. T. Thiselton-Dyer, K.C.M.G., F.R.S., C.I.E., Director	
Royal Gardens, Kew, London ...	280
Director, Botanic Garden, St. Petersburg, Russia	70
Ditto, Tiflis, Bussia	2
Ditto, Peradeniya, Ceylon	79
Botanic Garden, Bangalore ... *	19
Ditto, Buitenzorg	55
Ditto, Cambridge	8
Ditto, Cork	12
Ditto, Costa Rica	59
Ditto, Darjeeling	208
Ditto, Durban	83
Ditto, Edinburgh	86
Ditto, George Town, Demerara	4
Ditto, Glasgow	2
Ditto, Glasnevin, Dublin	8
Ditto, Goneshkhind, Poona	1
Ditto, Hongkong	68
Ditto, Malta	16
Ditto, New York City, U. S. A.	270
Ditto, Ootacamund	14
Ditto, Penang	3
Ditto, Port Darwin, Australia	8
Ditto, Saharanpur	43
Ditto, Saigon	65
Ditto, Singapore	12
Ditto, St. Anns, Trinidad	4
Ditto, Sydney	3
Secretary, Agri-Horticultural Society of India, Calcutta	33
Ditto, ditto Moulmein	4
Ditto, ditto Rangoon	6
Ditto, Indian Gardening Association, Calcutta	14
Superintendent, Government Gardens, Allahabad	8
Ditto, Government Horticultural Garden, Lucknow	14
Ditto, Victoria Garden, Bombay	4
Ditto, Government Agri-Horticultural Garden, Lahore	7
Ditto, Agri-Horticultural Society, Madras	21
Ditto, Government Garden, Nagpur	4
Ditto, Memorial Garden, Cawnpore	4
Ditto, State Gardens, Baroda	6
Ditto, Taj Garden, Agra	4
Ditto, Empress Botanic Garden, Poona	26
Ditto, Government Cattle Farm, Hissar	5
Ditto, Berry White School, Dibrugarh	1
Ditto, Small Arms Ammunition Factory, Dum*	
Dura	23
Ditto, Gwalior State Gardens, Gwalior	11
Ditto, Cassipore Practical Institution of Horti- Flori-Agriculture, Cassipore	1
Curator, Botanical Station, Barbadoes	1
Do.,* ditto, Belize, British Honduras	2
Do., ditto, Lagos	2
Do., ditto, St. Kitte, Nevis	4
Do., ditto, Sierra Leone	1
Do., Botanic Garden, University of California, San Francisco	125
Herrn Director des bot. Gartens, Innsbruck, Austria- Hungary	87
Ditto ditto, Munich, Germany	1
Ditto ditto, Strassburg Germany	1
Ditto ditto, Universitat, Wien, Austria-Hungary	1

APPENDIX IV—*continued.*

To whom sent.	Number of parcels or paoket.
Herrn Director des bot. Gartens, Zurich, Switzerland ...	132
Wohlgeb. Graf zu Schwerin Windisch Wiltnersdorf, bei Ludwigsfelde, Germany ...	4 2
M. le Directeur du Jardin Botanique Athens, Greece ...	1
Ditto ditto, Cairo, Egypt ...	101
Ditto ditto, Geneva, Switzerland ...	6
Ditto ditto, Marseilles, France ...	4
Ditto ditto, Bouches-du-Rhone, France ...	2
M. le Directeur, Jardin Botanique, de l'Etat, Pondicherry ...	6
M. le Directeur, du Jardin des Plantes, Dijon, France ...	2
Ditto ditto Montpellier, France ...	202
Ditto ditto Paris ...	1
Ditto ditto Villa Thuret, Antibes, France ...	58
M. le Directeur, Museo, Nacional, San Jose, Costa Rica, Central America ...	75
M. le Sec.-Genl. de la Société Nationale d'acclimatation de France Paris ...	7
M. le Directeur, Jardin d'acclimatation, Hamma, Alger, Algeria ...	1
Ditto ditto, Cannes, Alpes Maritimes, France ...	1
Ditto ditto, Orotava, Canary Islands ...	16
M. le Prof. E. Heckel, Directeur, Musee Coloniale, Mar- seilles, France ...	6 43
Sig. Direttore dell'Orto Botanico, Bologna, Italy ...	8
Ditto ditto, Palermo, do. ...	6
Ditto ditto, Firenze, do. ...	1
Ditto ditto, E. Universita, Roma, Italy ...	6
Ditto ditto, Pisa, Italy ...	6
Senor Sig. Conde de Ficalbo Director do Jardin bot. da Escola Polytechnica, Lisboa, Portugal ...	51
Senor Director do Jardin Botan. Rio de Janeiro* Brazil, South America ...	23
Senor Director do Jardin bot. da Universidade, Coimbra, Portugal ...	1
Senor Director del Jardin Botan Madrid, Spain ...	138
Herrn Prof Engler, Direktor Kgl. Bot. Garten, Berlin, Germany ...	2
Signor A. Todaro della Gallia Consul-General de Perse, Palermo, Italy ...	74
Professor of Botany and Director of Botanic Garden, University, Upsala, Sweden ...	51
Kultur station Kwai, West Usambara, German East Africa ...	1
Superintendent, Alipore Jail, Alipore ...	1
Ditto, Bansal Jail, Bansal ...	1
Ditto, Barisal Jail, Barisal ...	1
Ditto, Bhagalpur Jail, Bhagalpur ...	1
Ditto, Boffra Intermediate Jail, Bogra ...	1
Ditto, Chittagong Jail, Chittagong ...	1
Ditto, Comilla Jail, Comilla ...	2
Ditto, Central Jail, Dacca ...	1
Ditto, Midnapore Jail, Midnapore ...	1
Ditto, Raipur Jail, Raipur ...	1
Ditto, Rajpura Jail, Rajpura ...	3
Ditto, Darbhanga Jail, Darbhanga ...	1
Ditto, Dumka Jail, Dumka ...	1
Ditto, Hazaribagh Jail, Hazaribagh ...	1
Ditto, Jalpaiguri Jail, Jalpaiguri ...	1
Ditto, Jessore Jail* Jessore ...	2
Ditto, Malda Jail, Malda ...	1
Ditto, Motihari Jail, Motihari ...	1
Ditto, Mymensingh Jail, Mymensingh ...	1
Ditto, Noakhali Jail, Noakhali ...	1
Ditto, Palamau Jail, Palamau ...	1
Ditto, Patna Jail, Bankipore ...	1
Ditto, Ranchi Jail, Ranchi ...	2
Ditto, Rangpur Jail, Rangpur ...	2

APPENDIX IV—continued.

To whom sent.	Number of parcels or packets.
Superintendent, Saran Jail, Chapra ...	1
District Engineer, Backergunge, Barisal ...	1
Ditto, Bhagalpur ...	34
Ditto, Manipur, Assam ...	2
Ditto, Roorkee, North-Western Provinces ...	6
Conservator of Forests, Central Circle, Madras ...	2
Ditto, Quilon, Travancore ...	6
Deputy Conservator of Forests, Belgaum, Bombay ...	1
Director, Government Museum and Public Gardens, Travancore Government, Trivandrum ...	109
Government Botanist and Superintendent, Botanic Garden, British Guiana ...	6.
Government Botanist, Melbourne, Australia ...	90
Chief Secretary to the Government of Cyprus ...	^
Commissioner of Revenue Settlement, Land Records and Agriculture, Madras ...	1
Commissioner of Agriculture for the West Indies, Barbadoes ...	H
Commissioner of Settlements and Agriculture, Nagpur ...	*
Deputy Commissioner, Thongwa district, Manbin ...	^
Survey Commissioner and Director, Land Records and Agriculture, Bombay, Poona ...	1
Director of the Department of Land Records and Agriculture, Bengal, Calcutta ...	22
Director of Land Records and Agriculture, North-Western Provinces and Oudh, Cawnpore ...	1
Director of Land Records and Agriculture, Lahore ...	1
Ditto ditto, Lucknow ...	1
Ditto ditto, Rangoon ...	1
Ditto ditto, Poona ...	1
Director, Department of Forests and Botanic Gardens, Pampelmousse. Mauritius ...	1
Director, State Museum, Costa Rica, Central America ...	14
JJo. of Farms, Punjab Command, Umballa ...	1
Do. Department of Public Gardens and Plantations, Hope Gardens, Kingston, Jamaica ...	17
Secretary and Commissioner, Bureau of Agriculture and Forestry, Honolulu, Sandwich Islands ...	1
Principal Medical Officer and Sanitary Commissioner, Shiliong ...	—
Colonization Officer, Jamrood Canal, Thar and Parkar ...	2
Range Forest Officer, Khardi, Great Indian Peninsula Railway ...	*
Director, Shaw School of Botany, St. Louis, Mo., U. S. A. ...	1
Consul-General for France, Calcutta ...	4
Ditto for United States of America, Calcutta ...	1
Vice-Consul for Spain, Calcutta ...	1
His Excellency the Governor, German East Africa, Dar-Ls-Salaam... ..	70
Surveyor-General, Agricultural Department, Surveyor-General's Office, Salisbury, British South Africa ...	G<3
Inspector of Forests, Mourbhanj State, Bahalda ...	f
Government Emigration Aeren for Natal, Calcutta ...	*-
Ordnance Officer, in charge~Gunpowder Factory, Ishapur ...	1°
M.Em. Prud'homme, Inspecteur Chief du Service, de T Agriculture, Tananarive, Madagascar ...	32
Postmaster, Cuttack ...	j~
Ditto, Diamond Harbour ...	*o
Khas Tahsildar, Sadar, Chittagong ...	l
Manager, Baraoora Tea Company, Ltd., Baraooro, Sylhet ...	G
Messrs. J.L Low & Co., London ...	1
" F. Sander & Co., St. Albans, England ...	154
" Reasoner Brothers, Florida, U. S. A. ...	118
" Herb and Wulle, Naples, Italy ...	
" Dammann & Co., San.Giovanni a Teduccio, Napoli, Italy ...	64
" Vilmorin Andrieux & Co., Paris ...	1^
" J. P. William and Brothers, Heneratgoda, Ceylon ...	1

APPENDIX IV—concluded.

To whom sent.	Number of parcels or packets,
C. G. Eogers, Esq., Darjeeling	1
C. S. Sargent, Esq., Arnold Arboretum Cambridge, Mass., U. S. A.	1
J. L. Schiller, Esq., Eutherford, New Jersey, U. S. A. ...	10
J. G. Smith, Esq., Assistant in charge United States Department of Agriculture, Washington	68
H. T. Stanes, Esq., Kullakamby, Nilgiris	1
W. Thomson, Esq., Haslemere, Ipswich, England	8a
Dr. J. W. H. Traill, F.R.S., Aberdeen, Scotland	81
Norman P. Troup, Esq., Almora, N.-W. P.	81
S. L. Watkins, Esq., Lotus, California, U. S. A.	54
H. Walker, Esq., Commissioner of Lands, Sandakan, North Borneo	1
S. N. Walker, Esq., Palamau	1
J. C. White, Esq., C.E., Darjeeling	32
George Watt, Esq., M.B., CM., CLE., Indian Museum, Calcutta	1
Dr. H. G. Waters, District Medical Officer, E. I. Railway, Tundla^	22
W. Woolliscroft, Esq., Savanah-la-mar, George's Plain, Westmoreland, Jamaica	12
Dr. L. G. Yates, Santa Barbara, California, U. S. A.	23
Eaja Gfish Chunder Eoy Bahadur, Eatabari, Sylhet	1
Babu B. M. Chongdar, Sibpur	9
„ Bama Charan Bhattacharji, Giridih	12
„ Bhuban Chandra Kur, Duin-Dum	1
„ G. C. Datta, Sibpur	1
„ G. C. Chatterjee, Supervisor, Purulia	24
„ Hara Lall Set, Calcutta	1
„ Haridas Mitra, Cossipore	7
„ Jogendra Nath Mukherjee, Saffala, Pabna	1
„ Kanhya Lai, Gossain Tola, Allahabad	1
„ Kunja Behari Basak, Calcutta	15
„ J. M. Nallaswami Pillai, Nandyal, Kurnool	7
„ Netto Gopal Chatterjee, Calcutta	4
„ S. P. Chatterjee, Calcutta	1
„ Upendra Nath Eoy Chowdhury, Eupdia, Jessore	11
Total	7
	5,670

APPENDIX V.

List of Herbarium Specimens received during 1900-1901.

	No.
Director, Eoyal Gardens, Kew	136
Well. Ed. Heer M. Buysmann, Hortus Plant Diaphor, Middleburg, Holland	20
Conservator, Herbie Boissier, Les Jordils, Chambezy, Geneva	186
M. le Prof. M. Musy, Musee Cantonal, Fribourg, Switzerland	318
Director, Hof. Museum, Vienna	205
Ditto Kgl. Bot. Museum, Berlin, Germany	1,056
Herrn. Prof. of Botany, University, Munich	296
Herbarium, Harvard University, Cambridge, Mass^U. b. A.	240
Prof. A. Nelson, University of Wyoming Laramie Wyoming	875
O. F. Baker Esq., High School, St. Louis Mo., U. b. A.	675
A. H. Curtiss, Esq., Jacksonville, Florida, U. S. A.	193
C. G. Pringle, Esq., Charlotte, Vermont	260
H. Bolus, Esq., Kenilworth, Cape Colony, South Africa	160
J. Medley Wood, Esq., A.L.S., Curator, Durban Botanic Garden, Natal	108
Director's Lands Plantentuin, Buitenzorg, Java	24
„ Botanic Gardens, Singapur.	885
C. Curtis, Esq., F.L.S., Penang	50
M. Emile Deschaëps, Singapur	662
Mr. J. C. Prazer, Kalewa, Burma	87

APPENDIX V—concluded.

	No.
B. H. Man, » *, Deputy Superintendent, Port Blair, Andamans	1,161
R. L. Heinig, Esq., Deputy Conservator of Forests, And.	435
T. F. S. O. Esq., Quilon, Madras	56
W. A. Talbot, Esq., Deputy Conservator of Forests, BomW	13
G. M. Ryan, Esq., Deputy Conservator of Forests, Bombay	57
Director, Botanical Department, Northern India, Saharanpur	1,052
J. Punjab	13
C. State Gardens, Gwalior, C. I.	113
H. H. Haimes, Esq., Deputy Conservator of Forests, Chaibassa, Singhbhum	54
Maior David Prain, I.M.S.	311
Sienant A. T. Gage, X.M.S.	90
Mr. G. H. Cave, Mungpoo	20
Babu A. O. Ohatterjee (As Bam graces)	254
Shaik Mokim, Plant-coUector	200
Petty contributions	398
	77
Total	10,740

APPENDIX VI.

List of Herbarium * — distr * — during 1900-1901.

	No.
Herbarium, Royal Gardens, Kew	444
Ditto, British Museum, London	534
Ditto, Oxford	51
Ditto, Cambridge University	206
Ditto, Owen's College, Manchester	85
Ditto, Edinburgh University	219
Ditto, n, Dublin	230
Ditto, Queen's College, Co. ...	186
Ditto, Rijks, Holland	112
* Ditto, Botani 3 n, Utrecht, Holland	177
Ditto, Jardin 3 que de l'Etat, Brussels	163
Ditto, Jardin des Plantes, Paris	36
Ditto, Boissier, Chambezy, Switzerland	417
Ditto, Musée Cantonal, Fribourg, Switzerland	157
Ditto, Botanic Garden, Geneva	90
Ditto, Botanic Garden, Zurich	138
Ditto, Royal Botanical Museum Florence, Italy	460
Ditto, Botanic Garden, Vienna	312
Ditto, -Museum, Vienna	164,
Ditto, al Botanical Museum, Berlin	197
Ditto, Botanical Museum, Hamburg	613
Ditto, University of Munich	208
Ditto, Copenhagen Botanic Garden, Denmark	312
Ditto, Botanic Gardens, Christiania, Norway	30
Ditto, University of Upsala, Sweden	28
Ditto, Imperial Botanic Gardens, St. Petersburg, Russia	247
Ditto, Smithsonian Institution, Washington, U. S. A.	360
Ditto, U. S. Department of Agrostology, Washington,	158
Ditto, NYWYotk Botanic ^rden, U.S. A.	396
Ditto, Harvard University, U. S. A.	124
Ditto, Arnold Arboretum, Mass "U. S. A.	304
Ditto, S T ^ f S U S e P Anculture, U.S. A.	115
Ditto, Missouri Botanic Garden, U. S. A.	133
Ditto, California University, U. S. A.	92
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Dr., J. H. Sandberg, 501, Central Avenue, Minneapolis, Minnesota, U. S. A....	35
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W. A. Talbot, Esq., Deputy Conservator of Forests, Bombay	51
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Petty distributions ...	40
Total ...	11,903

SPECIAL APPENDIX.

*List of Plants that died in the floods of September 1900 and during
the cold weather of 1900-1901 from the effects of the floods.*

Magnolia fuscata.	Ipomoea biloba.
Michelia champaca.	Solanum macranthum.
Monodora grandiflora.	Saintpaulia ionaniha.
Cananga odorata.	Teooma velutina.
fcterculia colorata.	Bignonia spp.
" foetida	Dsedalacanthus nervosus.
" pallens,	" pulchellus.
Helicteres Isora.	Sanchezia spectabilis.
Murraya exotica.	Strobilanthus Dyerianus.
Citrus decumana.	" scaber.
" medica.	" scaudans.
Spathelia simplex.	Barleria coerulea.
Swietenia Mahogani.	Eranthemum discolor.
Soy mid a febrifuga,	Aphelandra fulgens.
Cedrela Toona.	Seriographis Ghiesbreghtii.
Spondias axillaris.	Lantana bellowiana.
Brya Ebenus.	Clerodendron odoratum.
Indigofera oligosperma.	Premna spp.
" tinctoria.	Myristica 8pp.
Lonchoarpus Sp.	Bridelia amcena.
Dalbergia Sissoo.	" glauc.
Schotia brachypetala.	Croton Klotzschianum.
" latifolia.	Acalypha macrophylla.
Cassia trachypus.	" marginata
Acacia arabica.	" tricolor.
Enterolobiam Saman.	Manihot Glaziovii.
Aralia Veitchii.	Boehmeria nivea.
Exostemma caribaeum.	Ficus Eoxburghii.
Ageiatum conyzoides.	Phalaenopsis Schilleriana.
Chrysanthemum sp.	Cypripedium Spicerianum.
Canthium glabrum.	" venustum.
Linociera malabarica.	Dioscorea sp.
Buddleia madagascariensis.	Thysanolaena acarifera.
Heliotropium ep.	

DAVID PEAIN, M.B., *Major, I.M.S.,*
Superintendent, Royal Botanic Garden, Calcutta.

FINANCIAL DEPARTMENT.

MISCELLANEOUS.

, No. 609T.-F.

DARJEELING, THE 19TH JUNE 1901.

FROM E. N. BAKEE, ESQ., C.S.I.,

Secretary to the Government of Bengal,

TO THE SECRETARY TO THE GOVERNMENT OF INDIA,

REVENUE AND AGRICULTURAL DEPARTMENT.

SIR,

I AM directed to submit, for the information of the Government of India, a copy of the Report on the Royal Botanic Garden, Calcutta, for the year 1900-1901, and to express the Lieutenant-Governor's satisfaction at the good work done by Major D. Prain, I.M.S., and his subordinates during the year.

I have the honour to be,

SIR,

Your most obedient servant,

E. N. BAKER,

Secretary to the Govt. of Bengal.

No. 610 T.—F.

COPY of the above forwarded to the Superintendent, Royal Botanic Garden, Calcutta, for information.

By order of the Lieutenant-Governor of Bengal,

S. R. HIGNELL,

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

DARJEELING;
The 19th June 1901.



[Maximum limit, 3 pages.]

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE YEAR 1901-1902.

No. 250., dated 15th May 1902. Sibpur, the 15th May 1902. F.R.S.E., I.M.S., Superintendent, Boya,

From— D. Botanic Garden, Sibpur. To—The Secretary to the Government of Bengal financial Department.

I HAVE the honour to submit herewith the 115th Annual Report of the Royal Botanic Garden, Calcutta, for the year 1901-1902.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE YEAR 1901-1902.

The chief outdoor improvement recorded for the year 1901-1902 is the completion of the new road, alluded to in last Report, from the point of junction of the Kurz and Thomson avenues to the Great Banyan. This road throws open to inspection a portion of the garden that has hitherto been somewhat inaccessible. The flooring of the girder bridge in the Kyd avenue which consisted of wooden beams, having become so decayed as to be a source of public danger, has been replaced by a concrete floor of a permanent character. The interior of the Orchid House has been partially, and the small conservatory has been completely, replanted and rearranged during the year.

A severe storm visited us on the 26th November 1901 and did much damage by uprooting many trees and disfiguring many that were not completely destroyed. Unfavorable weather during the year was of a normal character. Investigation of the dye-yielding Indigofera noticed in an annual report has advanced considerably during the past year. The opportunity afforded by a visit to Europe in South Eastern Asia to compare the examples of the Indigofera of London and Geneva. The results have been material preserved in a series of notes that at the time of the early intercourse in some cases unexpected. The Indigofera of India, if not of cultivation, has been firmly established. One of the Indigofera ariculata, which still grown was a form of the Indigofera in the Y.P. notably in the side and Rajputana where even now this plant alone receives the name "Nil," which is used in Tirhut and Bengal to quite a different species. The other central Indigofera, Indigofera tinctoria, Coast where the indigo was first produced in less esteem than the produce of which was even in these early times held in less esteem than Surat Indigo. There is no doubt that the cultivation of the Surat, or Egyptian Indigo extended gradually eastward, reaching its way later to Patna, Orissa the time of Akbar, and apparently also to the Malabar third Indigo, Bengal proper, which is derived from Eastern Malaya, came into use Indigofera sumairana, apparently derived from Eastern Malaya, either there. This particular plant seems to have been introduced to Bengal, either from Malabar or directly from Malaya a century and a half ago, and proving a more valuable plant than either the Egyptian or the Indian kinds, has spread widely throughout the Punjab and more completely, and in the second almost completely, driving out the Indigofera tinctoria and the Indian Indigos respectively. From the first it was taken to the West Indies, however, in turn by first one and again a second native American kind, which latter has, in virtue of its superior qualities spread from America to Africa on the one hand and to Polynesia, S. China, Malaya

and Indo-China on the other; in Upper Burma, for example, this Indian Indigo is the only species to be met with. Either from the Indies or directly from Heilgal, the plant now grown so largely in the Ganges plain, was also taken to Sonpal and Angola where it is still largely side by side with West Indian Indigo, under the name "Indijj of Benga". The importance of the knowledge thus obtained lies in the fact that *Indigofera*, East African Indigo, *Indigofera arrenia* has become so favourably known under the name of "Natal Indigo" in the Dutch Indies, that it seems to be displacing the various Asiatic and American kinds, and is being cultivated there. It has been used as an argument against the proposal to introduce this East African *Indigofera* extensively into India that it can possibly succeed so well as the kind now grown in India and that it will be difficult to overcome the prejudices of the cultivators in favour of the kind now grown. The answer to this is that the *Indigofera* now grown in India is not, as is usually supposed, *Indigofera tinctoria*, or Indian Indigo, at all, but really as much an exotic in Upper India as the East African kind. Further, from the fact that *Indigofera tinctoria* or the Indian Indigo, is still known occasionally in a wild state in Ilajutana, the hills to the south of Agony and Ohota Nagpur, it may be inferred that Egyptian Indigo had in Upper India, long ago displaced Indian Indigo. At any rate it is certain that historically, and very recent historical times, Malayan Indigo, which is generally grown in the Gangetic plain displaced Egyptian Indigo, being the case there is no reason why East African Indigo should not in due time displace the Malayan kind. It was recorded in the last annual report during the excessive floods of September 1900 this East African Indigo caused no harm when all the Indian and American kinds were practically destroyed. It has now to be recorded that in 1901 the experimental plots were attacked by insect blight which destroyed all save a few plants of every Asiatic and American *Indigofera* under cultivation without affecting in the least the African species.

Among other economic operations for the year it may be noted that efforts to extend the cultivation of *Paspalum dilatatum* have been continued. The difficulties attending its cultivation in Bengal have been successfully overcome. These difficulties have not yet been surmounted in other provinces and the reports that have been received from correspondents are somewhat conflicting. In Southern India it is found that the drought-resisting qualities claimed for this grass in Australia have not been over-estimated, but in Western and Northern India it is stated that though an excellent fodder grass where irrigation is available, it is as a drought-resisting species distinctly inferior to some well-known native grasses. On behalf of the Department of Agriculture, Western Australia, arrangements have been made to introduce to that Colony the different varieties of Indian Oranges. The kinds known as Sylhet, from Khuia Hills; Nagporo, from Central India; and Suntolah, from Nepal, have been successfully transmitted; the despatch of other kinds will be effected in due time.

3. Zitrubi-HMw.—The collections made during the year in Assam were chiefly from the Brahmaputra Valley where an endeavour was made to bring together a representative collection of the crops cultivated in the province. In Burma native collectors have made large and valuable contributions in the Tavoy and Mergui districts. Some small but valuable contributions have also been received from officers of the Forest Department in Lower Burma. In Bengal collections have been made chiefly in districts as known to be inadequately explored.

The number of named specimens distributed to other Botanical Establishments has been 8,500. The number of specimens received has been 8,749; the chief contributors being the Director, Royal Gardens, Kew (1,051 specimens); and the Director, Royal Gardens, Berlin, 1,134 specimens. Smaller but valuable contributions have to be acknowledged from the Director, Botanical Garden, Buitouzorg; the Botanical Department, Northern India; Botanical Gardens, Sydney; Hof museum, Vienna; British Museum, London; College of Agriculture, Montana; Botanical Garden, Penang; Royal Botanic Garden, Peradeniya; Botanical Gardens, Zurich; Government Botanical Garden, Madras. Among private contributors to whom thanks are due for collections of Indian

plants, are Mrs. A. S. Bell, Band¹, 1,160 specimens; C. G. Rogers, Esq., Forest Department, Andamans, 501 specimens; J. H. Lace, Esq., Forest Department, 299 specimens. Smaller, but in most cases, very interesting collections, have been received from Dr. A. G. Bourne, Madras; T. H. Holland, Esq., Geological Survey; G. M. Ryan, Esq., Forest Department, Bombay; W. H. _____, Esq., Forest Department, Burma, &c. Some specimens were also purchase.

King has continued at Kew the elaboration of the Malayan foodmens belonging to this institution and has now dealt with the whole of the friyiflora order..

The task of the institution or has been making steady progress. The task of cataloguing and arranging the _____ of the _____ at the commencement of the year under review. During the year the twelfth part of Sir George King's *Flora of the Malaya* was published and Part X was sent to _____ by the Superintendent in the _____, *Not on J. digo. Ura*, by the Superintendent and Mr. E. O. Baker of _____, *British Museum*, in the *Journal of Botany*; and *Botanical Tour in the Soul* by _____

The number of plants during the year was _____ with the usual figure, the demand for _____ having been very small. The number of _____ of which are _____ include some very interesting _____ of _____ from the Director Royal _____ Uganda, presented by _____ collections of a very _____ by Kev. U Carbon, S.J., _____ *Chflta* _____ *l'homme and Inking Lr* _____ *from Dar-e-Salaam*, _____ *1200*

The whole of the _____ municipal vegetable garden has now been laid out in conformity with the _____ of the garden. A road that will admit of rickshaws entering _____ a want that was greatly felt. A _____ the garden.

agencies for the Royal Botanic Garden _____ been a saving under the _____ chiefly to the absence for six _____ deputation of the _____ Probationer Gardener _____ had been a saving _____ for Travelling allowance. _____ the Royal Botanic Garden a saving of Rs. 212-12 _____ and a saving of Rs. 161 under the _____ In an the Royal Botanic _____ The revenues _____ Garden of Rs. 895 have _____ auf Darfeeliug respectively.

The Superintendent was absent on special leave, on _____ on _____ from 20th June till 19th _____ combined with privilege leave for six _____ months from 20th June till 19th _____ During his absence Captain _____ A. T. Gage, Curator of the _____ Herbarium officiated _____ in addition to his own duties, _____ leave for six weeks from 4th January _____ Captain Gage availed _____ Lane, Curator of the Garden, was _____ till 20th March 1902 on which day _____ he proceeded to Europe on leave for nine _____ months on medical certificate _____ Mr. N. Gill Assistant Curator, having been _____ appointed Superintendent of the Memorial _____ Garden on 7th February 1902; _____ to the Royal Botanic _____ Government Cinchona Plantation, was _____ but at the time _____

appointed Assistant Curator in succession to Mr. Gill. Mr. A. C. Hartless, Third Assistant, Government Cinchona Plantation having been selected to act as Curator during the absence of Mr. Lane, was deputed to Calcutta to act as Assistant Curator during the interval between Mr. Gill's transfer and Mr. Lane's departure, Mr. Green being left at the Plantation to fill the vacancy caused by Mr. Hartless' deputation. The probationer Gardener who throughout the year been on deputation at the Government Cinchona Plantation, Babu A. K. Bose, eighth clerk, who has been in the service of Government for 17 years, died on 11th November of Malaria. The deceased was a conscientious and hard-working man, and his death is greatly to be regretted. At the Lloyd Botanic Garden, Mr. A. C. Hartless acted as Curator till October 10th, 1901 on which date the Curator, Mr. W. A. Kennedy resumed his duties on his return from furlough for 18 months, of which he had availed himself on 11th April 1900.

(Maximum limit, 3 pages)

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, THE YEAR 1902-1903. P O E

No. 721, dated Royal Botanic Garden, Sibpur, the 2nd March 1903, Sibpur, Prom-MAJOR D. Piumr, M.B. I. Superintendent, Royal Department. To-The Secretary to the H6th Annual Report of the I HAVE the honour to submit herewith the 102-1903. Royal Botanic Garden, Calcutta, for the year

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE YEAR 1902-1903.

THE principal outdoor and western garden boundary, widening of the trench lying inside the northern area and to improve the surface. The opportunity has been taken along with this work and to fill up unnecessary drainage of the adjacent Veden has thus been considerably increased. The which had become dilapidated, increased. The nursery, the year has been overhauled and re-arranged particularly good, was favourable to vegetation, and the snow of orchids was particularly good.

2. Economic. The garden staff has been almost exclusively devoted to the propagation in public interest has been of plants of economic interest and assistance has been freely given to shown in plants that yield fibre, and An enquirers for the fibres variously important question has been by cultivating and identifying the InLn Hemp; this can only be identified by the Hemp and its various plants. It appears that *Crotalaria juncea*; in their vernacular name, *Zizania* designated throughout India. It seems that this *Zizania* difficulties; an attempt is being made to ascertain the actual facts and these difficulties. Among other the food plants the Indian Yams have received close attention during the year. The

enquiry into this difficult subject, in which the Reporter on Economic Products are engaged, has advanced considerably. Having regard to the fact that the Indian Yams have been introduced and are being largely overcome, samples beset the propagation of *Ipecacuanha* having medicinal report to the Storekeeper to Government, fluctuating character of the Ipecacuanha market renders it desirable that, provided the drug is otherwise equally suitable, India should be supplied in part, on local supplies, An intelligent *Jaacocinea*, var. *Bandhuca*, arrangements have been made to propagate it and supply it freely to enquirers. During the year an attempt has been made to propagate some of the finer kinds of American pine-apples, the *Mantonia* during the year, Japanese tion. An interesting method employed by the inhabitants of the Province bamboo known as *V. w. X* the production of this bamboo, of Chiba in B. J. J. the assistance of Dr. Tokutaro Ito.

the garden is indebted to the explorations made during the year have • included *S. T. by Supt. SU* to the Sundribuns; a botanical tour by

the Assistant Curator of the Garden in the North Lushai Hills and a systematic survey of the vegetation of Minbu, a district typical of the desert zone in Burma, by the Curator of the Herbarium. The Superintendent's tour has been possible owing to the help of J. H. Lace, Esq., Conservator of Forests, Bengal; the Lushai tour was arranged with the kind assistance of Major Shakespear, C. I. E.; the work in Burma, which was still in progress at the close of the year, was greatly facilitated by the aid of the local officers and particularly of Mr. Aubert, Superintendent of Land Records, Minbu. The Superintendent has for some years been engaged in preparing a review of the plants of Bengal, and their interest in the work has led to much valuable assistance being given by Mr. Lace, who has made and presented to the Herbarium a valuable collection of plants from Orissa; by Air. H. H. Haines, Deputy Conservator of Forests, who has sent further collections from Singhbhum; and by Mr. F. A. Slacice, Commissioner of Chota Nagpur, who while on tour has very kindly supervised the work of a native collector in the Tributary States. The number of specimens distributed to other Herbaria has been 10,888. The number received has been 14,920. The chief contributor for the year has been the University of Upsala, whence 2,758 specimens, mainly South American, and of great value, have been received. Fine collections have been received from Professor C. P. Baker, Stanford University, California, 873 specimens; E. Mouillefarine, Paris, 600 specimens; Lands Plantentuin, Buitenzorg, Java, 323 specimens. Smaller but very interesting collections have been contributed by the Director, Royal Gardens, Kew; Mons. Barbey, Geneva; Canito, Museum, Fribourg; Hof-museum, Vienna; College of Agriculture, Montevideo; Botanic Gardens, Zurich; Botanic Gardens, Penang; Botanic Gardens, Singapore. Among Indian contributors have been Mrs. A. S. Bell, 578 specimens; J. H. Lace, Esq., 481 specimens; H. H. Haines, Esq., 190 specimens; Reporter on Economic Products, 190 specimens. Smaller collections have been contributed by the Conservator of Forests, Rangpur; Deputy Conservator, Port Blair; Lieutenant-Colonel J. J. Wood, Forest Survey Department; Government Botanist, Madras; and others, and some specimens were also acquired by purchase.

4. *Library.*—A considerable number of additions have been made to the Library by exchange, presentation and purchase. The collection has been completely re-arranged and the scientific card catalogue giving both an author and a subject-index has been about half completed. Another large case has been acquired during the year; this has partially relieved the congestion due to the growth of the collection, but other similar cases will require to be added for several years to come.

5. *Interchange of seeds and plants.*—The number of plants distributed during 1902-1903 was 37,368; the number received was 8,203. Among the plants received were some authentically named *Agaves* from Sir. Hanbury, K.C.V.O., of La Mortola, Ventimiglia; a set of West Indian plants from R. W. S. Mitchell, Esq., C.M.G.; a series of Travancore Yams from T. F. Bourdillon, Esq., F. L. S., Quilon; two interesting and valuable sets of Rhea roots from Mons. J. Karpelès, of the kinds grown in Algeria. Donations of orchids of much interest were made by Mr. Wood, R.E., from Burma; J. H. Lace, Esq., from the Sundribans; W. Esq., from the Duars. During the year 897 packets of seeds were received and 5,270 packets were distributed. Among the seeds received were those of some very interesting species from German East Africa and from Madagascar, transmitted by the Agricultural Departments of these Colonies, also a number of extremely interesting species from Mexico, presented by J. C. Harvey, Esq., and from Ecuador, presented by Herr A. Rimbach.

In connection with this work of interchange assistance has been given to the Governments of Western Australia, Jamaica, Trinidad, British Guiana and Ceylon, and to the British Protectorates in West Africa, in procuring the representative collections of plants or seeds of staple Indian products. The Government of Siam has also been similarly aided.

6. *Lloyd Botanic Garden.*—This garden has been in a satisfactory condition throughout the year. In connection with the collection of seeds which forms a very important feature of the work of the garden, the Lura

JL Penally to visit the higher levels at the proper season, greatly to the

n.
 for contingencies for the Royal Botanic Garden,
 There was a slight saving of Rs. 39-9-11 under
 es, and a saving of Rs. 234-3-6 under the allotment for travel-
 allowance I°-1^ corresponding allotments for the L...d Botanic Garden
 Se was a saving under contingencies o M f -10. y^ esta blishment
 of Rs. 1900-9-2 and ^ ^ ^ ^ S ^ t that the present Curator is junior
 under establishment is explained by the fact t_n a p revenue for the
 in the graded list of Garden e r s t ^ J ^ ^ U o y i Botanic Garden of
 i M m S ^ b f * v & p » * treasuries at Calcutta, Dar elin
 respectively.

8. The Superintendent was in c ^ ^ r i u m was deputed by the Govern-
 Oaptain A. T. Gage, Curator o ^ the Herbari ^ ^ P 02 ^ in yertigate
 Captain A. T. Gage, Curator o ^ the Her ^ ^ ^ t Q u e e n w o r k s a t e
 ment of Bengal between 1 T t h A p r t a n ^ ^ i n U p e r ^ , A g e 0 x e c p the
 along with Mr. H. M. Leake, Biologist to in India B t for
 Z S J a n d nature of the 1 ^ ^ ^ H e & m w a T in c a r g e t , o f a n i s , p o s s
 this interruption the Cantor d ^ the f H e ^ ^ n , M r > L
 throughout the year. The Cantor ^ e a r ^ ^ ^ ^ medical certificate,
 absent at the commencement o t e y . 03 . u r i n g ^ a b s e n c e M r A C .
 He returned to duty on 20 t h L M a r c h ^ ^ F . G r e e n , A s s i s t a n t c u r a t o r f ^ e
 Hartless, 3rd Assistant, Govmment i n e ^ ^ o n a P l a n t a t i o n , a c t e d a s C u r a t o r .
 With effect from 20th June 190 J i c ' C i n c h o n a P l a n t a t i o n , a n d M r . O . T .
 Garden, was appointed 4 f t J « J t p o t a t i o n , w a s a p p o i n t e d A s s i s t a n t C u r a t o r ,
 Hemsley, 4th Assistant, Cinchona m n t u t a t ^ ^ H e ^ 1 ^ c o n n e c t i o n w i t h the
 and from the same date was posted g i t t e d ^ o n t i n u e d o n d e p u t a t i o n t i l l 14 t h
 Coronation Durbar Camp. M r ^ J ^ 16 ^ e g e l e a v e u n d e r m e d i c a l a d v i c e
 August 1903 * h f h * T M V n 1 s t O c t o b e r 1903, M r . H e m s l e y ' s s e r v i c e s
 till 30th September 1903. On 1 s t ^ c e r n m e n t o f t h e P u n j a b . M r . J . E .
 were placed at the disposa of ^ e F ^ n d a n d j o i n e d h i s a p p o i n t m e n t a s
 S i e P r o b a t i o n e r G a r d e n e r ^ A ^ I S t o c a r a t o r , i n s u c c e s s i o n t o M r . H e m s l e y ,
 and was subsequently appointed Assista ^ e . L o n g , e n e w
 transferred, with effect from 1 s t ^ c t o b e r 1902. M r . L o n g , e n e w
 Probationer Gardener, reported h « a m r r r i v a l f r o m E n g l a n d a n d j o i n e d h i s
 Probationer Gardener, reported h « a m r r r i v a l f r o m E n g l a n d a n d j o i n e d h i s

app
Cin

Cinchona Department en in

charge of his post throughout the year.

attention. It is too soon yet to say how many different *Agaves* have been naturally; by what characters they may be most certainly distinguished; or which of them are best for fibre-producing purposes, but sufficient information has already been obtained to show that considerable caution must be exercised by those desirous of laying down extensive plantations of local *Agaves*, and all the information so far available has been freely afforded to numerous enquirers during the year. A similar but less marked caution prevails with regard to the species of *Furcraea* or "Mauritius hemp" which certainly two, and probably three kinds have so far become established in India. Steady progress has been made with the investigation referred to in last year's report into the sources of "Indian hemp". Seeds received from gentlemen interested in this trade from parts of India so remote as Coondal Lower Bengal, Central India, and the United Provinces have been grown experimentally with the result of proving that fibres which in the trade vary in value, according to locality of origin, from £ 9 to £ 18 per ton derived from the same plant, *Crotalaria juncea*. What is still more interesting is the result that when the plants in question are grown side by side, under identical conditions, and their fibre is extracted in the same way, as difference in value almost disappears. The greatest variation experienced was of £ 2 per ton only, and it was reported that all the fibres submitted for sale could have been sold under the same mark. These experiments are to be repeated during the ensuing year on a more comprehensive scale so as to put the results on a wider and firmer basis. The work of cultivating the tubers or bulbs and of growing seeds for the purpose of identifying the sources of economic articles on behalf of the Reporter on Economic Products has gone on as usual during the year, as has also the preparation of grants of fruit-trees and the raising of stock of trees for planting by Government officers on roadsides and elsewhere. At the request of the Director of Records and Agriculture the Superintendent paid three visits to Bihar to inspect various centres of experimental cotton cultivation; he also paid a visit to Burdwan in connection with the experimental cultivation of jute by the Agricultural Department.

3. *Herbarium*—The botanical explorations made during the year included a visit by the Superintendent to Independent Sikkim and the journey was undertaken by the invitation of Colonel Younghusband and with the consent of Government, in order to organise a survey and with the consent of Government, in order to organise a survey operations in Tibet in connection with the frontier mission* the results of the visit were very satisfactory. Captain Gage, Curator of the Herbarium, was deputed to Assam in order to make a systematic survey of the district of Cachar with the object of linking up the results obtained in the course of the investigations already made in the Lushai country. The visit gave very satisfactory results, but some time must be spent on more exploration work must be undertaken before it is possible to give a connected account of the botanical features of the country lying between the valleys of the Barak and the Irawaddy. Collections by means of native collectors were made in Lower Burma. The number of named specimens distributed to other Herbaria during the year has been 16, 110. The number received has been 20,976. These include collections presented by the Director, Royal Gardens, Kew, 128 specimens; Botanic Garden, Zurich, 161 specimens; Imperial Museum, Vienna, 110 specimens; Botanic Garden, Berlin, 544 specimens; Botanic Garden, Durban, 108 specimens; also by the following private contributors, C. ii. Clarke, Esq., London, 300 specimen; Mons. E. Mouillefaix, 1,002 specimens; S. A. Prince Roland Bonaparte, 391 specimens; J. & Esq., Denmark, 44 specimens; C F. Baker, Esq., California, 628 specimens; G. Pringle, Esq, Vermont, U. S. A., 280 specimens; H. H. Smith, JMq., Edinburgh, U. S. A., 1,890 specimens. In India the chief donors have been Rogers, Esq., Port Blair, 203 specimens; B. B. Osmaston, Esq., 1*8 specimens; C E. C. Fischer, Esq., 93 specimens; F. B. Manson, Esq., 82 specimens; H. H. Haines, Esq., 76 specimens; T. F. Boudillon, Esq., 32 specimens; J. S. Slater, Esq, 195 specimens; P. Briihl, Esq., 190 specimens; J. Marten, Esq, 162 specimens; J. L. Lister, Esq., 72 specimens. The thanks of the Government are due to all of these institutions and individuals for their valuable contributions. Some specimens were also acquired by purchase and those

levels in connection with the collection of Alpine seeds, with once more very satisfactory results. During the year a consignment of Valerian roots was collected on behalf of the Agricultural Chemist to Government in connection with investigations regarding the preparation of an insecticide.

8. The money allotted for contingencies for the Royal Botanic Garden, Calcutta, was spent in full. There was a saving of Rs. 371-14-9 under the allotment for establishment charges and of Rs. 462-14-6 under *thfat* for travelling allowance. In the corresponding allotments for the Lloyd Botanic Garden there were savings under contingencies of Rs. 92-8-6 and under establishment of Rs. 149-7-9. The revenues for the Royal Botanic Garden of Rs. 935-11, and for the Lloyd Botanic Garden of Rs. 857-10-6 have been paid into the treasuries at Calcutta and Darjeeling respectively.

9. Except during the period occupied by his visit to the Tibet Frontier, between 10th September and 19th October 1903, when the Curator of the Herbarium carried on the current duties of the department, the Superintendent held charge of his post throughout the year. Mr. J. S. Leslie, Assistant Curator of the Royal Botanic Garden, was on deputation at Kotah between 7th January 1904 and 11th February 1904, his services having been temporarily placed by Government at the disposal of the Kotah State. Mr. G. H. Cave, Curator of the Lloyd Botanic Garden, Darjeeling, availed himself of privilege leave for six weeks from 22nd December 1903 to 1st February 1904. During this period Mr. E. Long, Probationer Gardener attached to the Royal Botanic Garden, Calcutta, acted for Mr. Cave. Subsequently the services of Mr. Cave were placed temporarily by Government at the disposal of the Government of Madras. In connection with his transfer, Mr. Cave was placed on special duty at the Royal Botanic Garden, from 22nd February 1904 to 3rd March 1904, and was deputed to Madras for 8 months from 4th March 1904. Mr. A. C. Hailes, Third Assistant, Government Chinchona Plantation, acted, as Curator, Lloyd Botanic Garden *vice* Mr. Cave, with effect from 22nd February 1904. The Curator of the Herbarium attached to the Royal Botanic Garden and the Curator of the Garden were in charge of their respective posts throughout the year.

David Prain

Superintendent, Royal Botanic Garden, Calcutta.

AMONGST the chief ^^^ dne ^ the flower garden with the several of ti* tanks, the raising-of <<> d the ^ construction of the soil left over afor filling up the office, tak, an Jn improved plan and Palmyra avenue. The nursery has been a d Jn improved plan and several of the plant-houses in ^, " ^ have been ^^^ The weather during the greater part of ^ the yea --- ^ 1905, but appears temperature existed during part of on ^ he / garden. A severe storm on the to have left no permanent TU-^TM conll. B

9th April 1904 overthrew about torty treeb. species of Agaves found I Economic e ^ - The mvestigati? £ J ^ and concluded in India, referred to in last 7TM **>%*)££ and Mr. J. R. Drummond, i.ds. during the year by Lieutenant-Colonel ^raw ^ £Q the presg> Ia Their results, which promise to De oi great alue, ^ ^ gav ^ grown in the connection with this investigation, a co^pige Director the Migsouri Botanic Calcutta Garden has been sent to 'tne the experiments with 'sunn' hemp Garden, who is an authority on Agaves. r. a-rea ^ that the time of sowing is (Crotalaria juncèa) are being continuea. xi ^ ears to take place considerably not the same in all parts of the ^ f ^ ^ and Cocona^a than in Bengal, earlier in the year at f h ? ^ X re a s the fibre from Cawnpore, Coconada, This accounts for the fact that whereas me ^ October-November> the and some other local ^ ^ f B ^ or Belgachia brand-does not come into best kind of 'sunn' ^ ^ ^ L ide i ble attention was given to the the market untj l ^ l e ^ S and varieties of cotton-supplied by the growing of the different specaea d. Economic Products-cultivated Agricultural Department and the Reporter on ^ plots ^ ^ ^ ^ for or attempted to be cultivated ^ i ^ * X e experiment was practically botanioaf identification, but m f ^ ^ ^ ^ J j in the garden report a repetition of the TM *>%^ J factory results. The economic work for that year, and TM h M f ^ " ^ > TM ident / ying them for the Reporter on nd : ts an Government of India has been carried on as usual

during the year, T u m s t y e a r has been a notable one in the history of 3. B**anm*-Ttop* ^ J TM report for 1889-90 Dr# n d (w Sir George) the Herbarium. *V he ^ TM 'ted port collection was removed from the old King writes that when the mount* i lect ^ r . In 1890 the building into the present one, it w^S << fe of 8 specimens was estimated at collection fiUed 18tt cabinets and the num^r. has ^0**** so prodigiously over half a million. Since 1890 ^ h e ^ ^ has an many thousands of that until this year the cabinets were ov ^ r an ^ B & Q ^ The gpecial ^ specimens had to be P ^ ^ J ^ 8 ^ L on e ^ The gpecial ^ allotted to the gardentang * £ / << £ , ? £ * be entirely reorganised . All the Herbarium in the gallery rfttoj^a ur << r o u p s of niQe have been replaeed by old cabinets which waixanged in g. it in four sect ions so as to allow of large handsome double-sided, << a ^ e t s , ^ n o m o r e floor space than nine easy handling, each new cabinet occupying as eat a a ia ftS the niQe old ones . old ones, but having a c a P J j g ^ the ^ generfl Herbarium with a total There are now thirty-two cabinets in 5 TM * . ^ to rep i ace the old cabinets capacity of about a million specimens. It i sing. J ^ herbari a and still remaining on the ground floor a nd co ng. When ^ ^ have been unclassified col lections during the mi col ay ^ i . ^ extent. done the capacity of the P TM > n ^ bu lonff he present improved accommodation It would be rash to J ^ J ^ S e of development of the institute, will suffice; but in he natooj ^ g ^ ^ ^ have to be re evej but h h p congestion is bound to recur, a I . : satisfactory to be able to chronicle by Enlarging the building itsef. t u ^ o * f M o J m e o t has enabled the sch a great 2 ^ A ^ £ T a l l i : << t o ^ It wou d however, officers responsible for the TM J * b u e t o state that the scientific staff have been still more * * ^ % £ Z £ £ so, with the development of the TM * ^ ^ ^ & ^ W t o ' B * r i eadum Lhay hae Herb

increased at least fivefold. The scientific staff of the Herbarium still consists of only one man, exactly as it did half a century ago. In the annual report for 1889-90 already quoted, Sir George King, referring to the work of the Herbarium, states that then the work was getting very heavy and that it might be necessary before long to apply for the services of yet another botanist. Fifteen years ago the work of the Herbarium justified Sir George King's remarks, still more does the great increase in the collection which has gone on steadily during those years render imperative a re-statement of them. The re-arrangement of nearly a million specimens in the new cabinets entailed a great amount of extra work during the year, and this, coupled with the absence of the Curator of the Herbarium for six months, made it impossible to depute any European officer to collect specimens. Native collectors, however, were sent to Tenasserim and to Sylhet; and towards the end of the year, by the kindness of Mr. Merk, Chief Commissioner for the Andamans, a collector was sent to the Nicobar Islands. Collections have also been made by Lepcha collectors in the Chumbi valley, working under the supervision of Mr. Searight, the officer in charge of the road survey there. The number of specimens received in the Herbarium amounted to almost 7,000. Specimens distributed are considerably less than the usual number owing to the interruption caused by the re-arranging of the general Herbarium. They number about 4,000 sheets.

4. *Laboratory and Museum.*—In the year 1876, Sir Richard Temple, Lieutenant-Governor of Bengal, wrote two Minutes bearing on the science of Botany. One, dated 9th September 1876, had for its subject the Herbarium at the Botanic Garden, Calcutta; the other, dated 14th September 1876, entitled "Inquiries and Experiments in the Physiological Branch of Botany." The recommendations in the first Minute concerned with the Herbarium have to a certain extent been carried out or are being carried out. The recommendations in the second Minute have remained unacted upon for practically thirty years. It is true that in 1901 the newly appointed Cryptogam Botanist to the Government of India was stationed in the Royal Botanic Garden. He, however, was soon afterwards transferred to another department and the Garden relapsed into its former condition of being without laboratory and without an officer, who had both the time and the knowledge to study physiological and histological problems. During the year, however, a beginning has been made to provide at least the tools for carrying out the physiological and histological investigations referred to in Sir Richard Temple's second Minute. A room above the Cinchona Office with accommodation for four workers has been fairly well equipped with the most modern appliances, such as are used in the foremost English laboratories, which the Curator of the Herbarium visited, while on leave, for the purpose of selecting the best equipment. A dark room with all the appliances for photographic and photo-micrographic work has also been erected. This laboratory, although small, should be of great use to any botanist desiring to study tropical vegetation from a physiological or histological standpoint. Until, however, a permanent additional appointment is created for such investigations, the amount of work turned out from the Laboratory will depend to a large extent on volunteer workers. Until such an appointment has been made as well as an additional one for the Herbarium, the scientific staff of the Calcutta Garden can be described only as very inadequate for the amount of work that waits to be done. Although a fairly good beginning has been made it must not be supposed that the Laboratory is complete in every supply of electricity—so necessary for certain physiological investigations—lacking. In connection with the Laboratory a part of the south veranda of the seed-house has been transformed into a small museum, which has been fitted up with excellent show-cases. As a beginning for a larger and better museum in the future it should promise well.

5. *Library.*—During the year the Library has undergone as complete a reorganisation as the Herbarium. The old clumsy book-cases have been replaced by twelve fine new double-faced cases with sliding doors, each case giving nearly twice as much space as four of the old ones, and in addition providing ample room for the thousands of valuable drawings executed in the Garden during the last hundred years. The work of transferring the Doo-

From the old to the new cases, naturally the extra-catalogue, which should now. During the year a large number of our illustrious botanists were presented

put a temporary stoppage to work on however, go on with greater rapidity, and were added and several portraits of

6. *Publications*.—During the numbers of the Records of the Botanical Survey of India:— were issued the following

Volume III, No. 1.—*The Vegetation of the district of Minbu*, by Captain A. T. Gage, Curator of the Herbarium.

Volume III, No. 2.—*The Vegetation of the districts of Hughli-Howrah and the 24 Parganas*, by Lieutenant-Colonel D. Prain, Superintendent of the Garden.

Volume IV, No. 1.—*An Epitome of the British Indian Species of Impatiens, Part I*, by Sir J. D. Hooker.

Colonel Prain also published a paper "On the Morphology, Teratology, and Diclinism of the flowers of Cannabis," forming No. 12 of the Scientific Memoir by Officers of the Medical and Sanitary Departments of the Government of India, as well as *Noviciae Indicae*, Nos. XXIV and XXV, contributed to the Journal of the Asiatic Society of Bengal, Volume LXXIII, Part

year also Sir George King and Mr. Gamble have published Part XV J?th Materials for a Flora of the Malayan Peninsula.

Leda were distributed in 1,674 packets of 368 packets of seeds and plants. The latter included 111 from the Botanic Garden, Sydney; the Botanic Garden, Sapporo, Japan; the Bureau of Forestry, Manila; Reasoner Brothers, Florida; Middleburg, Holland; Sir Thomas Hanbury, M, Herb and M. Sprenger, Italy; and Mr. J. C. Hamy, Mexico, as well as gifts from the chief Botanic Gardens in England and the Continent. Large collections were contributed by the Reporter at Ootacamund, and by the Lepcha collectors in the Chumbi valley, under Mr. Searight. The number of plants distributed was 40,898. There were included a collection of Pomeloes sent to the Bureau of Plant Industry, Washington. 1 Hemp plants to various parts of Uganda and several thousands of Sisal was 4 584. These included several India. The number of plants received Mr. C A. Barber of Madras; Dr. E. J. hundreds of Agaves contributed by Butler; Mr. Cameron of Bangalore, and several others, primarily to aid the investigation into Agaves by Colonel Prain and Mr. Drummond. Mr. T. J. Spooner of Bangalore presented over 300 plants. For the Reporter on Economic Products over 500 plants and tubers were cultivated.

8. *Lloyd Botanic Garden*.—This Garden suffered somewhat from the severe cold in January and February. Plants representing about twenty different genera and as many exotic species were killed. Otherwise the condition of the Garden was normal throughout the year. The usual collections of Japanese seeds were made for distribution.

The allotment of contingencies for the Royal Botanic Garden and the reorganisation of the Botanic Garden and Museum were under establishment charges and full. There was a saving of Rs. 1,781-3 under the allotments for the Lloyd Botanic Garden were Rs. 331-4 were added to the Lloyd Botanic Garden of Rs. 331-4 were added to the existing treasuries, respectively.

Colonel Prain, I.M.S., held charge of the post of Superintendent from until 1st November 1904, when he went on leave for 6 months' combined leave from when he went on leave for 6 months' combined leave 1904. Curator of the Herbarium, Superintendent of the Government Herbarium, 27th April. He was appointed to the duties of the Curator of the Herbarium by special arrangement, Mr. J. H. Drummond, I.M.S., was in charge of the duties of the Curator of the Herbarium from November 1904 to the 24th October 1904, until the 15th April 1904.

10. *Herbarium*.—The Herbarium was under the management of Mr. J. H. Drummond, I.M.S., until the 15th April 1904, when he went on leave for 6 months' combined leave from when he went on leave for 6 months' combined leave 1904. Curator of the Herbarium, Superintendent of the Government Herbarium, 27th April. He was appointed to the duties of the Curator of the Herbarium by special arrangement, Mr. J. H. Drummond, I.M.S., was in charge of the duties of the Curator of the Herbarium from November 1904 to the 24th October 1904, until the 15th April 1904.

Dr. Archer Irvine-Fortescue acted as Curator of the Herbarium. Mr. G. ^m• Lane held his post of Curator of the Garden throughout the year. Mr. J. E. Leslie was Assistant Curator from 1st April 1904 to 30th September 1904; on deputation to the CinchoDa Plantation, Mungpoo, from 9th August to 30th September 1904; and transferred to Nagpur as Superintendent of the Public Gardens, with effect from 1st October 1904. Mr. Ernest Leng, probationer Gardener, was on deputation to the Botanic Garder/«t Saharanpur, from 26th May to 31st August 1904; acted as Curator of the Lloyd Botanic Garden from 6th to 30th September 1904 ; and was transferred to Fyzabad as Superintendent of the Gardens there, on 1st October 1904. Mr. K. H. Locke arrived from England as probationer Gardener on 22nd October and was appointed Assistant Curator of the Garden from 25th October. He was deputed on 1st December* 1904 to act as 'Superintendent of the Memorial Gardens at Cawnpore, where he still is. Mr. J. T. Johnson arrived from England as probationer Gardener on 1st December 1904, and has been appointed to act as Assistant Curator of the Garden from that date. Mr. G. H. <>av^e, Curator of the Lloyd Botanic Garden, was on deputation to Ootacamund up to 21st February 1905. Mr. A. C. Hartless acted as Curator of the Lloyd Garden from 1st April to 5th September 1904, Mr. E. Long from 6th to 30th September 1904, and Mr. W. A. Kennedy from 1st October 1904 to 21st February 1905. Mr. G. H. Cave resumed charge of the Curatorship on 2^{2nd} February 1905.

A. T. GAGE; *Captain, I.M.S.*
Acting Supdt., Royal Botanic Garden, Calcutta.

(Maximum limit 3 pages.)

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE YEAR 1906-06.

Do** the year... rainfall in February 1906, which, however, did not improve the garden. The principal outdoor works were the re-making of the avenue to the Banyan avenue; the erection of a bridge on the Jacquemont Path, to replace the fallen into a ruinous condition, and the renovation of the bridge and the Banyan avenue; the renewal of the Department of the two shelter-pavilions, and the improvement of the garden, and the erection of a...

2. ... where it was again cultivated in small plots. It was the end of October, better results were obtained. As it turned out the result was...

all the plants began to flower... As far as yield of fibre...

upon could be obtained from plants which Drove of very considerable the cultivation of 'bunn.'... some definite results are...

the distribution of economic plants by... and in their introduction into other... In this report permits mention of...

Camphor-seed has been supplied to... been distributed to certain... in Bengal. Seeds of...

last year-for attempted... supplied to the Tran... ment of German New Guinea; seed... United States Agricultural Department, in the... the Dutch Agricultural... de la Reunion; tea-seed was sent to the... of Sicily. The... collection of gra... Estacion Agronomica of Havana.

3. *Herbarium*.—Since July 1905, owing to unavoidable circumstances, there has been no Curator of the Herbarium. Consequently work has suffered to a considerable extent, as the multifarious duties of the Officiating Superintendent during the past year have allowed him exceedingly little time for botanical work. However a decided improvement has been effected by the completion of the scheme of renewal of the cabinets on the ground floor of the building, referred to in last year's report, and the facilities for consulting the collection are now vastly superior to what they were two years ago. During a considerable part of the year the Herbarium was utilised by, and all was accorded to, Mr. A. Meebold, a German botanist, in studying his large collection of specimens gathered on behalf of the University of Breslau during a tour through India and Burma. The same gentleman made a tour on behalf of the Botanical Survey up the Bramahputra valley and across the central mountain mass of Assam *via* Kohima and Manipur, thence down the Surma to Silchar. In Burma as there was no European botanist available, a collector was sent to the district of Pakokku, in order to extend the survey which had been done in the district of Minbu just to the south. In Bengal collections of specimens of special orders continued to be made by the men working under the Revd. Father Cardon, S.J., in Chota Nagpur. A collector was sent to Pusa by permission of the Director of the Agricultural Research Institute there, to collect the interesting flora of the still wild parts of the estate. The Officiating Superintendent collected on the Government Kichona Plantation and the surrounding district, with the view of beginning the formation of two representative herbaria of the flora of the Darjeeling district, one to be placed in the Llyod Botanic Garden, Darjeeling, where the present collection is by no means satisfactory, the other in the Superintendent's house on the Cinchona Plantation where it would be available for consultation by official or other visitors to the plantation. The number of specimens received in the Herbarium from India and from other countries amounted to 6,382. The specimens distributed to other Herbaria were about 7,000. A beginning has been made with the formation of a card-index of orders, genera, and species in the Herbarium numbered according to Bentham and Hooker's *Genera Plantarum* and Hooker's *Flora of British India* to facilitate reference to the Herbarium shelves.

4. *Laboratory and Museum*.—With the scientific staff of the Garden for the greater part of the year reduced to one officer, whose time was very much taken up with purely administrative work, there naturally could be but little done in either Laboratory or Museum. However, a considerable number of specimens for the Museum have been collected for mounting when time was available. A commencement also has been made with a photographic survey of the Garden. It is proposed to systematically photograph the whole (or specially interesting individual trees, and to register the actual area in by, and the point of view of, every photograph on skeleton maps of the Garden, divided up into lettered and numbered squares,

5. *Library*.—Owing to the Curatorship of the Herbarium being vacant for the greater part of the year, not so much progress as would be desirable has been made in Library work. It has not stood still however. The number of accessions was registered. The Index of new species of which is published monthly by the *Herbier Boissier* in Switzerland, in form of small oblong slips has been converted into an excellent card-catalogue by pasting the slips as published on to the regular size of cards and arranging the latter in specially made cabinets.

6. *Publications*.—During the year there were issued:—Annals of the Royal Botanical Garden, Calcutta, Vol. X, Part II, *The Aconites of India* Monograph with 27 plates by Dr. O. Stapf, of the Kew Herbarium.

Records of the Botanical Survey of India, Vol. IV, No. 2, *An Account of the British Indian Species of Impatiens*, Part II, by Sir J. D. Hooker.

Non-official publications include:—*Materials for the Flora of the Indian Peninsula*, Parts XVI, XVII, XVIII, by Sir George King and Mr. J. S. C.I.E. in the *Journal of the Asiatic Society of Bengal*; *Mansomce*, a Tribe of the Natural Order *Slerculiaceae*, by Lieut.-Colonel Prain, contributed to the *Journal of the Linnean Society*. The Officiating Superintendent has contributed several short papers descriptive of new species to the *Journal of the Asiatic Society* and the *Indian Forester*.

1906. The probationers during the year were Mr. J. T. Johnson from 1st April to 2nd August 1905; Mr. A. E. Brown from 3rd November 1905 to 23rd January 1906; Mr. E. Little from 15th to 23rd January 1906; Mr. P. T. Russell from 9th to 31st March 1906. Mr. W. R. Mustoe, special probationer for Upper India, served in the Garden from 24th December 1905 to 31st March 1906. From July to November 1905 the effective Garden staff was reduced to the Acting Superintendent and the Curator of the Garden, and, the changes in the gardening staff were so numerous that for the greater and worst part of the year the Curator of the Garden was practically single-handed. All the greater credit therefore attaches to Mr. Lane for his efficient and ungrudging performance of double duties especially when a great deal of extra work in connection with the improvement of the open spaces in and about Calcutta was also laid upon him. Mr. G. H. Cave held his post of Curator of the Lloyd Botanic Garden, Darjeeling, throughout the year, and gave every satisfaction in the discharge of his duties.

A. T. GAGE, M.B., CAPTAIN, I.M.S.,

Acting Superintendent, Royal Botanic Garden, Calcutta.

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 ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE YEAR 1911

In the Royal Botanic Garden, Calcutta, the most important outdoor work has been the commencement during the latter part of the year and partial carrying out of a survey of the Garden on an adequate scale as a preliminary to the preparation of a proper catalogue and the institution of an accurate system of records of the plants cultivated in it. Beyond this no specially large work was carried out, but various minor improvements were accomplished initiated. A considerable clearance was made in the north-west to allow the 'Gold-Mohur' trees, which eastward of the main avenue, to recover themselves.

Soil and Water. The soil in the main avenue of Royal Palms between the Water-gate and the main entrance was relaid with several tons of gravel and a bank, which is very unsightly in several places, has been raised to the level of the main avenue. The quantity of stone-ballast to be deposited near the main nursery was completed during the year, and it is hoped that the coming year will see a distinctly better effect on the general house were demolished. The centre beds of the orchid-house were kept in repair, but the advent of the motor-car will throw more effect on the water-gate.

and this time with great appearance of the fibre were no valuation, but proposed to continue this one during the coming days when the Calcutta Botanic for experimental economic work. various local agricultural land and laboratories for the staff of the Calcutta Botanic of pure botanical research-on more satisfactory conditions elsewhere speaking no necessity for the Garden to be implied that it is to cease to be a field of usefulness still remains importance between India and quite a considerable part of the year consignments of *Bambusa Tulda*, sent to the United States, Africa for experimental cultivation obtained through the Imperial

The fibre was sent to London for valuation, but proposed to continue this one during the coming days when the Calcutta Botanic for experimental economic work. various local agricultural land and laboratories for the staff of the Calcutta Botanic of pure botanical research-on more satisfactory conditions elsewhere speaking no necessity for the Garden to be implied that it is to cease to be a field of usefulness still remains importance between India and quite a considerable part of the year consignments of *Bambusa Tulda*, sent to the United States, Africa for experimental cultivation obtained through the Imperial

plants or seeds India were *Apocynum Venetum* a fibre yielding plant from the Botanic Garden

of Tiflis; varieties of *Sorghum* from the Bureau of Agriculture of the Philippine Islands; *Funtumia elastica*, a rubber-yielding plant—from the Botanical Department of Trinidad, *Canhamo brasiliensis*, the so-called Brazilian Yds of timber and other useful trees were distributed very widely.

3. *Herbarium.*—The Curatorship of the Herbarium has been vacant throughout the year. As soon as the post became permanently vacant proposals for its filling up were submitted to Government, but so far no office has been appointed. A Herbarium without a Curator is like a set of tools without a workman to use them, and it is not surprising that botanical work in the Herbarium has been more or less at a standstill. During the year, now ever, over 12,000 specimens were added to the Herbarium, comprising nearly 100,000 others about 1,500 collected by the Calcutta and Lloyd Botanic Garden the collectors in Bengal, Assam, Burma and Sikkim; about 600 specimens from the Coimbatore district presented by Mr. C. E. C. Fischer, Deputy Conservator of Forests; over 2,000 from the Bureau of Science of the Philippine Islands; over 2,000 European plants from Mr. A. Meebold of Heidenheim, Germany; 800 from the University of Pennsylvania, U. S. A.; over 300 from Mr. R. White, c. i. E., of Gacgtok, Sikkim; over 200 Indian plants from Mr. J. B. Tucker of the Imperial Revenue and Agricultural Department, and a valuable collection of N.-W. Frontier plants from Mr. James Marten of the Survey Department. The number of specimens distributed is only about 100 owing to there being no Curator, this work has had to remain in abeyance.

Although botanical work in the Herbarium itself has been an inoperative era the collections have not lain entirely useless, for certain orders and genera of plants have been freely loaned for research work outside India to institutions like those of Berlin and Buitenzorg.

4. *Laboratory and Museum.*—These still await the officer who will be put to use, and there is nothing to add to or qualify the last two annual reports regarding them.

5. *Library.*—About the usual number of accessions, by purchase and exchange was registered. Most of the books apart from periodicals and individualists as regards colour and material of binding, but now in a new and in rebinding old books some uniformity is being introduced.

6. *Publications.*—Part II of Volume IX of the Annals of the Garden, *The Orchidaceae of the North-Western Himalaya*, by Mr. J. F. Duthie, B. A., formerly Director of the Botanical Department of Northern India, was issued after a very long delay in the Press. This monograph gives descriptions of orchids known to occur in the Western Himalaya, with plates of many not already figured. Volume XI, constituting a huge monograph on *Calamus* of climbing palms by Signor Beccari of Florence, with plates and Part II of Volume VI, being descriptions of Burmese algae by Mr. West and G. S. West, have been in the Press for a long time, but are now practically all in type, so that their early appearance is anticipated.

Of the records of the Botanical Survey of India, No. 3 of Volume IV has been published, being the third and concluding part of *Epitome of the British Indian species of Impatiens*. Number 6 of Volume IV of the same publication, embodying descriptions of new species of *map* by Professor L. Radlkofer of Munich is in the Press and should issue very soon. The Superintendent has contributed several botanical papers to official and unofficial periodicals, and has written a sketch of the herbaceous vegetation of Burma for Sir George Scott's handbook to that country.

7. *Interchange of seeds and plants.*—Over a thousand packets of seeds from all parts of the world were received and 1,680 packets distributed. Over 45,000 plants were distributed and over 2,000 received. The distribution list has of late been considerably increased with correspondence benefit to the Garden in the way of exchange.

8. *Arboriculture.*—In connection with the scheme for the development of arboriculture in Bengal, arrangements have been made for the University of the Garden to give practical instruction in the planting and care of trees to Overseers, Sub-Overseers and Road Sarkars, who are to be sent to various batches during August to October for that purpose.

9. Lloyd Botanic Garden. The Curator reports that extensive damage was done by storms on three occasions. Alpine plants are gradually being replaced on the Indigenous Rookery. The Garden workshops were rebuilt and a new glass protecting house and a nursery erected in the Nursery. A second cloak-room and a 'shelter' were also built, and the boundary extended along the north of the Garden to prevent irregular entrance on that side. So far as labour was available, the gradients and alignments of some of the paths and the rougher bang were improved. The statistics supplied by the Curator show that the work during the past year.

10. Financial.—The allotments for continuing the Royal Botanic Garden, Calcutta, and the Lloyd Botanic Garden, Darjeeling, and the travelling allowance of the former were spent in full. There was a saving of Rs. 68-8 on the travelling allowance of the Lloyd Botanic Garden. In the Royal Botanic Garden account, owing to the Herbarium Curatorship being vacant throughout the year, the readjustment of the Superintendent's pay, the deputation of the Assistant Curator of the Garden and other minor causes, there was a saving of Rs. 11,556-13-10 under salaries. The revenue from the Royal Botanic Garden was Rs. 457-1, paid into the Calcutta Treasury. Owing to the fact that the Lloyd Botanic Garden has ceased to compete with the private nursery enterprise that has recently developed in Darjeeling, that Garden's revenue has dropped to almost nil. The total for the year was Rs. 19-2, paid into the Darjeeling Treasury.

July 1906, since which date he has officiated as Superintendent of the Curatorship of the Botanic Garden throughout the year. Lane has charge of his post of Superintendent of the Garden up to 1906, Mr. E. Little was Assistant Curator of the Garden, Bombay. Mr. W. K. Mustoe, probationer for tipper, was in the Garden on 1st April 1906.

October 1906. He has year. Mr. R. Badgery, Mungpoo, since 12th May 1906, arrived in the Boya. Garden on 8th November 1906, from which ant Curator of the Garden. Mr. G. H. Cave was C Gardener, throughout the year.

All the officers and the clerical staff under the Superintendent have given every satisfaction to him in the discharge of their duties.

A. T. GAGE, M.B., CAPTAIN, I.M.B.,

Superintendent, Royal Botanic Garden, Calcutta,
and Lloyd Botanic Garden Darjeeling.

importance, such as rice of various varieties, *B as si a latifolia*, *Phragmites Kar/çi*, *Bambusa arundinacea*, Indian varieties of Soybean and Cowpea. Amongst tree introductions into India during the year have been Manicoba rubber plants, a species of Manihot received from the Royal Botanic Gardens, Kew; sugarcane from Barbados on behalf of the Agricultural Department of Eastern Bengal and Assam; a fine collection of South Sea palms from the Commissioner of Agriculture, Honolulu, Hawaii; a collection of navel seedless branges from the United States Department of Agriculture on behalf of Eastern Bengal and Assam Agricultural Department, &c. &c.

3. *Herbarium*.—During the year over 7,000 sheets were added to the Herbarium. The chief contributions were over a thousand specimens of Tibetan plants from Captain F. H. Stewart, I.M.S.; over 1,600 specimens of Mr. I. H. Burkill, M.A., Reporter on Economic Products to the Government of India from Baluchistan, Eastern Himalaya and Burma; over 300 specimens of North-West Frontier plants from Sir H. A. Deane, K.C.S.I., Chief Commissioner, North-West Frontier Province; about the same number of plants from Southern India from Mr. C. E. C. Fischer, Deputy Conservator of Forests, Malabar; over 500 Eastern Himalaya plants from the collectors attached to the Lloyd Botanical Garden, Darjeeling. In addition to Indian plants Indian plants are represented by collections from the Philippine Islands from Siam, sent by Mr. W. F. Lloyd, Conservator of Forests there; Russia, Austria, Switzerland, and Australia. Several orders and genera have been sent out on loan for study by Botanists in various parts of Europe, number of specimens distributed amounts to nearly a thousand. During the year the usual quadrennial repairs of the building were carried out by the Department of Public Works.

4. *Library*.—About the usual number of accessions by purchase and exchange was registered.

5. *Publications*.—As regards the Annals of the Garden, Part 2 of Volume VI comprising "A Memoir of Burmese Algae" by Mr. W. and G. S. West, has been in the Press throughout the year, but final printing orders have not been passed some considerable time ago, so that its appearance should not be longer delayed. Signor Beccari's "Monograph on the Genus Calamus," referred to in last year's report, is now practically completed and should also soon be published. Of the Records of the Botanical Survey of India, 2 parts have appeared, Nos. 3 and 4 of Volume III, the first being entitled "Sapindaceae Novae Indice et Malaicise" by Professor Radlkofer of Munich; the second "A Revision of the Genus Cedrela" by M. Casimir de Candolle of Geneva. The Superintendent has contributed several botanical papers as usual in various periodicals.

6. *Interchange of seeds and plants*.—Over a thousand packets or boxes were received from all parts of the world and nearly 3,000 packets or boxes. Over 40,000 plants were distributed and nearly 4,000 received, most of which plants and seeds distributed being of economic importance, such as bamboo, timber trees, fibre plants, and so forth. During the year the means of interchange with distribution of seeds have been improved by the acquisition of several special cabinets for storing and sorting of seeds.

7. *Arboriculture*.—During August and September practical instruction in the planting and care of trees was given by the Curator of the Garden to District Overseers and Road Sirkars, who were sent to the Botanical Garden from the various districts in Bengal. It is hoped, as time goes on, that the course will undergo development.

8. *Lloyd Botanic Garden*.—Attention has been given during the year to the garden paths, many of which have been taken up and widened. The large plant house was provided with a cement floor. A number of plants have been supplied for planting the ground in and around the Cantonment at Lebong, while Conifers and other forest trees, bamboo, and shrubs have been supplied to public places and vacant spots in and around Darjeeling.

9. *Calcutta Gardens*.—Towards the end of 1907 the various gardens in and about Calcutta comprising the Eden Gardens, Dalhousie Square, Government House Gardens, at Barrackpore and Calcutta, Hastings House were placed under the administration of the Superintendent of the Royal Botanic Garden and an Assistant Curator placed in executive charge. These Gardens have been too recently taken over to permit any improvements being taken in and in time to be mentioned in

[Maximum limit, 3 pages-]

8 JUN 1909

ANNUAL REPORT N ^ ,

OF THE

ROYAL BOTANIC GARDEN AND OTHER GARDENS IN CALCUTTA,
AND OF THE LLOID BOTANIC GARDEN, DARJEELING,

FOR THE YEAR

1908-1909-

ROYAL BOTANIC GARDEN.

General—The abnormal high temperature and drought that characterised the first and last few months of the year under review affected the garden to a certain extent. The garden ponds sank to an extremely low level with which the garden pumping-engine, now almost at the end of its usefulness, had difficulty in coping, while latterly the small portable steam pump—a recent and most useful acquisition—had to be kept at work every day watering the trees and shrubs all over the garden. The survey of the garden was completed early in the year, and during the cold weather the task of ticketing the trees and shrubs was carried through. Over 13,300 trees and shrubs were carefully numbered with reference to the co-ordinated squares on the map previously prepared, and were provisionally named in a rough list. As only one number was given in cases where there were several specimens of the same species forming a group or part of an avenue, the actual number of individual trees and shrubs cultivated in the garden falls probably little short of 15,000. Considerable progress has already been made in checking the provisional identifications, but it will take some time to complete such an enormous number. This, however, must be done before a complete and accurate catalogue can be published. Continued attention has been given to combat the undermining effect of the river on certain parts of its bank and a new plan of defence, which it is hoped will prove more permanently effective than the system of driving piles, has been devised and put into execution. Towards the end of the year a beginning was made with the opening up of the Palmetura, most of the palm groups in this part of the garden having become extremely congested of late years. So far the result has been a decided enhancement of the landscape effect. A beginning has been made with the substitution of imperishable labels with raised lettering for the present painted zinc plant-labels, which readily become illegible after exposure to the weather and require constant repainting.

2. **Economic**.—The usual amount of work in the way of exchange of plants and seeds of economic importance with other countries has been done, but space does not permit of a detailed account. The introduction probably of the most economic importance during the year has been that of two new species of rubber-yielding trees. Last year the introduction through the Director of Kew of a new species of *Manihot* was chronicled, the name of which had not then been definitely ascertained. This year, however, a large consignment of seeds of two named species *Manihot dichotoma* Ule and *Manihot piauhyensis* Ule was received from the Director of the Royal Gardens, Kew. The only rubber-yielding species of *Manihot* hitherto cultivated in India is *Manihot Glaziovii*, the Ceara rubber tree. The two new species are natives of North East Brazil, as is the Ceara rubber tree and come from the neighbouring provinces of Bahia and Piauhy respectively. The importance of the present

introduction lies in the much superior yield of rubber claimed for the new species. They are said to have a less hard bark, to be less liable to injury by wind or careless tapping and to give a much higher yield of good quality rubber than the Ceara rubber tree. Further, they are said to adapt themselves to cultivation in dry and comparatively unfertile areas readily than the latter. *Manihot dichotoma* or Jequie Manigoba as it is called from the town of Jequie, which serves as the centre for the trade in its rubber, is a tree about 16—40 feet high, with a more compact crown and a thinner and paler bark than the Ceara tree possesses. *Manihot piauhyensis* is said to be a low tree (6—16 feet) with a broad and densely leafy crown. *Manihot dichotoma* is said to be the best for a firm loamy soil, while *Manihot piauhyensis* prefers a light sandy soil. *Manihot piauhyensis* is said to be ready for tapping from its third year of growth and *Manihot dichotoma* from its fourth year. In Brazil the trees are planted out about 1,000 to the acre. The annual yield of rubber per tree is said to be about 3.5—7 ounces for *Manihot dichotoma* with present methods, and lib.- 2lbs. for *Manihot piauhyensis* or roughly half of a ton per acre for the latter. Further details regarding those species are to be found in the Kew Bulletin of Miscellaneous Information No. 2 of 1908, from which the statements above are culled. All the available seed has now been distributed to various parts of India, but a good deal has been sown in the Garden, and next year and the following it is hoped there will be a considerable number of well-established plants available for distribution.

3. **Herbarium and Library.**—between seventeen and eighteen thousand specimens were added to the Herbarium during the year. Of Indian plants the most important contribution was made by Mr. A. Meebold, who brought all nearly 9,000 specimens, chiefly from Assam, Southern India and the North-western Himalaya. Mr. W. W. Smith, Curator of the Herbarium, collected about 3,000 specimens from the Eastern Himalaya, chiefly from the lower elevations. Mr. W. G. Craib, while officiating as Curator of the Herbarium, collected and subsequently named over 1,300 specimens from the North Cachar hills. The late Sir Harold Deane, K.C.S.L., forwarded what unhappily was his last collection of some hundred specimens from the North Western Frontier. The accessions from outside India by gift or purchase comprise collections from Eastern Tibet and Yunnan, Java, the Philippine Islands, Australia, South Africa, North Africa, Persia, Europe and America. 5,000 sheets, chiefly Malayan and Himalayan specimens, have been distributed to other herbaria in and outside of India. Materials for the monographing of various natural orders and genera have been lent to botanists in India, Great Britain, Hungary and Germany. Much of the Curator's time has been occupied in overtaking the arrears which accumulated during the long period the post was vacant. During the rains Herbarium work was entirely organised for about two months owing to serious leakage in the Herbarium roof, necessitating extensive repairs by the Department of Public Works. Library work has been of a normal routine character, calling for no special remarks.

4. **Publications.**—During the year Part 2 of Volume VI and Volume 7 of the Annals of the Garden were issued from the press. The first comprises a Memoir by Professor G. S. and Mr. W. West, of 85 pages with 7 plates of Algae from Burma, and forms a valuable contribution to the botany of the East. The second is a magnificent monograph on the palms of the genus *Calamus*, of over 500 pages with 238 double plates, by Odoardo Beccari, the distinguished Italian botanist, explorer and author upon Palms. It forms one of the most important contributions to systematics of Botany that have appeared of late years. The third volume of the Botanical Survey of India was finished during the year, Mr. W. W. Smith, Curator of the Herbarium contributing the index to the whole volume.

5. **Interchange of seeds and plants.**—Over 1,100 packets of seeds of many various species were received from institutions and individuals in various parts of the world. Over 3,000 packets of seeds of tropical, semi-tropical and temperate plants, the last from the high altitudes of the Eastern Himalaya, were issued all over the world. Seeds of economic plants as usual formed a large proportion of the distribution. Over 9,000 plants were received during the year, the principal contributors being the Director of the Koy

of Agriculture, Dutch Indies, M. Buysman of Department, Ovf 33,000 plants were attributed, mostly within India, and consisting chiefly of trees for road-side arboriculture, the improvement of stations generally and such like.

CALCUTTA GARDENS.

6 In connection with these gardens excellent work has been done by Mr J. T. Johnson the Assistant Curator, under somewhat disadvantageous circumstances. In the old formal flower garden has been remodelled, but the garden in the neighbourhood of the Dalhousie Square Garden the experience of the last few years

for better effect than at present in the treatment of the borders, and of the lawn, along which had been directed during the coming year something will be done in the way of remodelling and have been effected in the beds of the replanting the former rather than under the disadvantageous conditions there of the Swans' quarters, or for the proper Squares, a room at his disposal for ordinary clerical work.

LLOYD BOTANIC GARDEN, DABJEELING.

7 This garden has been maintained in good condition throughout the year. Several of the sloping lawns have been remade, and the nursery accommodation increased by the addition of three terraces. A good deal of trouble has been caused by the presence of the cockchafer grub, an old enemy of the garden, but means have been taken to restrict its ravages. During the year the bamboo *Arundinaria hookeriana* flowered throughout the station and died, with the result that some handsome clumps of it in the garden have

disappeared. The allotments for all the gardens referred to in this Report have been spent in full, with the exception that there was a saving under salaries and establishment of Rs. 9,40-12-4 in the Royal Botanic Garden.

The revenues of Rs. 380-4 from the Royal Botanic Garden, of Rs. 152 from Hastings House, and of Rs. 240 from the Dalhousie Square Garden were paid into the Calcutta Treasury. The revenue of Rs. 38 from the Lloyd Botanic Garden was paid into the Darjeeling Treasury.

Q. It is with deep regret that there has to be recorded the death of Sir George King, K.C.B., formerly Superintendent of the Royal Botanic Garden, who practically raised it from a wilderness to its present beautiful form, and raised it to the rank of the botanical gardens of the world, a most estimable man. He died on 5th August 1908. An excellent and zealous worker and servant of Government in the person of Sheikh Shadir, who had been connected with the Garden for over 40 years, died on 5th August 1908. During his absence Mr. W. W. Smith, M.A., Curator, officiated while Mr. W. G. Craib, MA officiated for Mr. Smith. Mr. G. T. Eane Curator of the Garden, was on furlough and Mr. R. Badgery, Assistant Curator of the Garden, on deputation to the Chichona Plantation throughout the year. Mr. F. R. Butcher, probationer, officiated as Curator and Assistant Curator of the Garden from 1st April to 19th

being deputed to the Governraent Garden at Ootacamund. Mr. G. H. Cave officiated aa Curator of the Garden from 20th May 1908 to the end of the year. Mr. J. T. Johnson and Mr. W. A. Kennedy held charge respectively ot. trie Gardens in Calcutta and of the Lloyd Botanic Garden, Darjeeling, throughout the year. The Superintendent is glad to express his appreciation of the woi^{al} done by the officers under him and by the clerical staff both.iu the gener^{al} Garden Office and in the Herbarium.

A. T. GAGE, CAPTAIN, I.M.S.,
*Supdt. of the Rfiyal Botanic Garden, Calcutta,
and Lloyd Botanic Garden, Darjeeling.*

[Maximum limit, 3 pages.]

ANNUAL REPORT

OF THE

ROYAL BOTANIC GARDEN AND OTHER GARDENS IN CALCUTTA, AND OF THE LLOYD BOTANIC GARDEN, DARJEELING,

FOR THE YEAR

1909-1910.

ROYAL BOTANIC GARDEN.

General.—Weather conditions were practically normal throughout the year and weather th

undisirable condition that is cei The chief out
to replace the worn-out pumping engine by a ne^w garden, ^ development
worfe were the thinning o ^ ^ ^ ^ S p r J i - e n t of the nursery and
of vistas along suitable l mes the con mu F ^ ^ Solidificatioh of the
the uteans of dealing with P\ ant TMA: butted ar ^ ^
the river bank which TM***J^J,&^rTrosion is to push out buttresses bu:lt
U h o d now adopted in checking the nver
up of disused bricks held together in » undles br wire-netting and then to
connect the buttresses at several levels along g the ba ^ v ^ wall 3 S i n l a r l y
built up. The result has been ^ to check the destruct scour of th e tides and
to allow silt to be ^ P ^ 0 8 1 ^ ? ^ 6 ^ n the buttresses a Q d t h e i r c o n n e c t i n g w a l l s ,
this m ^ ^ a ^ ^ ^ P p I h a K was repaired during the year
done undej the old. lue lai^e pai . . . much of itg contents renewed.

and repainted while the orchid house also nau. The show of orchids was about up to the average. Arboricultural instruction was given to selected overseers from Bengal and from Eastern Bengal and Assam during the rains, and a report thereon furnished to the Director of Agriculture of each Province. The preparation of a new guide to the Garden was commenced during the year.

2. Economic—Interchange of Seeds and Plants.—A large number of seeds or plants of economic importance have been received from many botanical, agricultural and forestry departments throughout the world as well as from privat, ^ / " f : ^ " S g some o/.he source, of supply such as the Garden may be got oy mTM,,8,,0 J the Botanic Gardens of Penang, J « , Ma^Üus, ^ ^ - ^ K J S t - S t of Hondulu f Pomona

Departme n the other hand has distributed a
College, of general economic importance and
great vari
seeds and plants of such special things as rubber and fibre-yielding plants, cinchona, ipecacuanha, tea, etc., to such departments States Agricultural Department, the Java l t u r a l

department, the Hawaian "ands, ti Fiji Islands, the A r i c De-
partment of Formosa, Japan, Uganda, etc. ^As usual the Oardlu has afforded
L i t i e s for the economic experiments of th Reporter on Economic Products
to the Government of India. Nearly 1,500 packets of seed were received
and oVG 4,700 packets distributed during the year. Over a,000 plants were

received from various sources and nearly 44,000 were distributed. Not included amongst the latter were about 15,000 plants of *Azolla* sent to various parts of India for experiment as a preventive of mosquito larvae in tanks. The bulk of the plants distributed were roadside trees, shrubs and flowering plants. Nearly 800 plants of maniocoba rubber were sent out.

3. **Herbarium and Library.**—Over 20,000 specimens were received in and over 10,000 distributed from the herbarium. Most of the specimens received are Indian and include, from Burma collections by Messrs. J. H. Lace, G. E. S. Gubitt, H. W. A. Watson, A. Rodger and E. M. Buchanan of the Forest Department and Captain R. W. MacGregor, i. M. S. ; from the Burmo-Chinese Frontier collections by Mr. G. Forrest ; from the Eastern Himalaya collections made by Mr. W. W. Smith, M. A., and Mr. G. H. Cave in the extreme north-west corner of Sikkim, and by Mr. R. E. Cooper and the late Mr. R. Pantling on the lower outer hills; from the Central Himalaya (Nepal) by Mr. I. H. Burkill, M.A., P.L.S.; from the North-West Himalaya by Mr. N. Gill, F.L.B. and Mr. A. R. Tucker; from Southern India by Mr. C. E. C. Fischer of the Forest Department. The foreign contributions include Chinese and Cœchin-Chinese collections from the Museum d'Historie Naturelle, Paris; Malayai collections from the British Museum and the Singapore Botanic Garden; Philippine plants from the Bureau of Science, Manila; plants of Persia from Asia Minor from Mr. J. Bornmuller; European collections from Professor Breslau; African plants from M. Pitard of Tours and from the Botanical Garden of Zurich. The duplicates were distributed to the chief botanic gardens and herbaria throughout the world, and material of various orders and genera for study by specialists was sent out on loan as usual.

Library work has been of a routine character throughout the year. Through the kindness of Mr. Meebold, an artistic book-plate has been designed with the Kyd monument and the Avenue of Royal Palms for its motif.

4. **Publications.**—No publication has appeared during the year, but volume XII of the Garden Annals—being an illustrated monograph of the genus *Damionorops* of climbing palms by Signor Beccari—and Mr. Pantling's account of the botanical results of his visit to Nepal and the first fasciculus of the Garden Catalogue—forming parts of the Records of the Botanical Garden are in the press. Mr. W. W. Smith's account of his tour in North-West India made in conjunction with Mr. G. H. Cave during the year under review and Mr. Meebold's account of his tour in Assam and Burma are also about ready for the press.

5. **Financial.**—The allotment of Rs 35,850 for contingencies expended in full. Under salaries and establishment there was a saving of Rs. 2,422-2-5 and under travelling allowances and compensation for and of provisions a saving of Rs. 348-12-6. The revenue of Rs. 581-7-9 was Rs. 218-9 short of the sanctioned estimated receipts, was paid into the Bengal Bank.

6. **Staff.**—Major A. T. Gage, I.M.S., and Mr. W. W. Smith, M.A., were respectively Superintendent and Curator of the Herbarium throughout the year. Mr. G. H. Cave officiated as Curator of the Garden from the 1st to the 18th April, thereafter Mr. G. T. Lane on return from leave was Curator to the end of the year. Mr. R. Budgery, Assistant Curator of the Garden, was on deputation to the Cinchona Plantation from the 1st to the 27th April 1909, and thereafter was on deputation to Cawnpore for the rest of the year. Mr. Alexander Hardie, probationer-gardener for Upper India joined on the 1st April 1909 and acted as Assistant Curator throughout the year except during the period that Mr. Budgery was in the Garden and from the 31st August to the 31st August 1909, when he held charge of the Lloyd Botanic Garden at Darjeeling. during the absence of the Curator of that Garden on a collecting tour in Sikkim. Mr. F. H. Butcher, probationer for Lower India was on deputation to Ootacarnupd throughout the year. The Garden has sustained a heavy loss in the death of Shaik Diwan Nusker, the head Indian gardener in charge of outdoor work, which occurred on 8th March 1910, at the age of 60 years. He had faithfully served in the Garden for very many years. and Shaik Shadir, whose death was reported last year, were men of

stamp whom it is practically impossible to replace. The staff of the Herbarium, Garden and office have worked well during the year.

CALCUTTA GARDENS.

7. >These comprise the Eden Gardens, Dalhousie Square Garden, Curzon Garden and Hastings House grounds* The work in connection with these is almost entirely horticultural and to a great extent of a routine character calling for little remark. Mr. J. T. Johnson has been in charge throughout the year and has been assiduous in attention to his duties. The continuous improvement of the appearance of all the gardens has been aimed at though the results may not be instantly visible. A number of flower-beds have been laid out on the Esplanade corner adjoining the Curzon Garden and planted up temporarily. Horticultural work there, however, is not likely to show to advantage until the general plan of improvement—which is in other hands—has been completed. The total revenue, as far as the horticultural side of these gardens is concerned, paid into the Bank of Bengal, amounted to Rs. 326-8, being Rs. 118-8 from Dalhousie Square Garden and Rs. 118-8 from Hastings House,

LLOYD BOTANIC GARDEN, DAEJEELING,

8. Mr. W. A. Kennedy officiated as Curator from the 1st to the 22nd April 1909, thereafter Mr. G. H. Cave was Curator until the end of the year. The latter has furnished a full account of the work done during the year that Reserves more space than the exigencies of this report allow. Following the method adopted in the Calcutta Botanic Garden and referred to in previous reports for the accurate cataloguing of its contents, Mr. Cave has mapped out the Lloyd Botanic Garden into squares of 100 feet side and up to the end of the year has numbered with stamped tickets about half the non-herbaceous plants in the Garden. It is hoped hereafter to publish a catalogue for the information of visitors and for the purposes of facilitating exchange with gardens in temperate regions of the world. The regularising of the slopes has been continued and most of them and of the lawns have been renewed. The collection of living plants has as usual been increased, amongst the year's additions a set of willows from M. Dode of Paris deserving special mention. The Irish collection is increasing in size and number of species and some surprising result as regards tolerance on the part of different species of Darjeeling climatic conditions have been gained. The direct road from the main entrance has been improved in gradient and made passable to rickshaws, while about 500 feet of the wooden boundary fence that had become rotten was replaced by the municipal pattern of iron fencing. The paths of the smaller public conservatory have been concreted and a new propagating house fitted with heating appliances has been erected in the nursery. Over 5,000 pot plants and over 2,700 dozens of annual seedlings were distributed to Government institutions and more than 1,000 packets of seeds were distributed, mostly abroad. The herbarium—restricted to Eastern Himalayan species—and Library and the means of dealing with high level seeds for distribution have been greatly improved, but it is much to be regretted that a more suitable building than a watchman's disused hut could not be provided for the accommodation of the specimens and books. The number of visitors to the Garden during the year was almost 50,000. The restriction as regards sale of Garden produce necessarily *limits the revenue to a negligible quantity and only* **Rs. 42-2-9 were paid into the Darjeeling Treasury during the year. In addition** to his charge of the garden Mr. Cave has done good work in connection with the Darjeeling Improvement Fund, the Municipality and Government House estate.

, A. T. GAGE, MAJOR, I.M.S.,

*Supdt. of the Royal Botanic Garden, Calcutta,
and Lloyd Botanic Garden, Darjeeling.*

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ANNUAL REPORT

OF THE

ROYAL BOTANIC GARDEN AND OTHER GARDENS IN CALCUTTA,
AND OF THE LLOYD-BOTANIC GARDEN, DARJEELING,

FOR THE YEAR

1910-1911.

ROYAL BOTANIC GARDEN.

Summary.—Although there was a somewhat exceptional absence of rain during the latter half of the year, the Garden suffered but little. In addition to the routine work of the Garden proper the following special works were undertaken during the year. A stagnant pond in the south-west corner of the Garden was filled up with soil obtained by deepening part of the neighbouring large lake and by cutting away a portion of the island therein. The revetment of the river bank has been continued as far as opportunities and finances permitted by the method described in the last year's report. Nursery No. 1 that lies behind the quarters of the Curator of the Garden was completely fenced in, while continued attention was given to the development of the methods of work. The most important out-door improvement, however, was the installation of a new pumping plant for keeping up the level of the Garden lakes during the cold and hot seasons. Opportunity was taken to remove the intake from its old site which was too restricted to permit of a spacious enough timber yard being formed, and being too close to the main riverside avenue of the Garden was somewhat of an eyesore, to a new site further along the river bank in the extreme south-west private corner of the Garden where there is abundance of space for a fuel yard and the addition of a saw bench, a dynamo or other machinery as necessity arises. The difficulties due to the new site being considerably farther away than the old one from the first of the chain of Garden lakes, and therefore necessitating longer channels being cut and syphon arrangements being made for the conveyance of the water underground, were successfully overcome by Mr. Lane, the Curator of the Garden. As a result of the new arrangement the eastern and western lakes of the Garden are now fed by independent channels—an improvement also due to Mr. Lane. A new coloured map of the Garden on the scale of 250 feet to the inch has been published, and copies are now available for sale at 4 annas at the Curator's office. A copy of the map has been posted at the Garden jetty, and it is intended to post several other copies in various parts of the Garden for the information of visitors who sometimes experience difficulty in finding their way about. Attention was given throughout the year to the general improvement of the appearance of the Garden by thinning of overcrowded groups, removing unsightly trees, and so forth. As usual, arboricultural instruction was given to selected overseers from Bengal and from Eastern Bengal and Assam during the rains, and reports furnished to the Directors of Agriculture of those provinces. Owing to the annoyance caused by the furious driving of some inconsiderate motorists, who appear to look upon the Garden avenues as racing tracks, it has been found necessary to erect large notices at each of the road entrances to the Garden warning motorists to drive slowly in the Garden. It is to be hoped these notices will have effect, but if not, the enforcement of more drastic measures will require to be considered.

2. Interchange Of seeds and plants—Interchange of seeds and plants with other Botanical, Agricultural and Forestry Departments throughout the world has been well up to the average. Contributions were received amongst others from the Botanical Gardens of Rio de Janeiro, British Guiana, Catamarca (Argentine Republic), Jamaica, Durban, Formosa, Singapore, Ceylon, Sydney, Entebbe (Uganda), from the Capo Town Public Garden from the Industrial Bureau and from the Agricultural Experimental Station in Formosa, from the Experimental Gardens, Ogasawara islands, Japan, from the Colonial Botanist, Brisbane, and from correspondents in California, in Java, in Tonkin and various places in Europe. Altogether 5,700 plants and over 1,600 packets of seeds were received. About forty species of economic and ornamental shrubs and trees hitherto unrepresented in the garden collection were introduced during the year. Nearly 40,700 plants including about 6,000 plants of *Azolla* and over 5,200 packets of seeds were distributed. Most of the plants sent out were for Government Stations, Civil Stations, Cantonments, District Boards, Railways and such Public Plants and seeds of economic or ornamental importance were distributed to numerous foreign Botanical and Agricultural establishments throughout the world.

3. Herbarium and Library.—Over 16,000 specimens were added to the Herbarium by collection exchange or purchase. From Travancore a valuable named collection of over 2,000 specimens, including rare plants and new species, was contributed by Mr. A. Meebold. From Coimbatore Mr. C. Fischer, Deputy Conservator of Forests, sent over 1,000 sheets excellently preserved. Dr. C. A. Barber, M.A., B.C.D., Madras Government, contributed over 850 sheets, and Mr. W. Burns, B.Sc., Economic Botany, the Government of Bombay, presented a small but interesting collection. From the North-West Himalaya Mr. N. Gill, Superintendent of the Botanic Gardens, Kumaon, contributed about 4,000 sheets of West Frontier. Lieutenant S. M. Toppin presented about 1,000 very rich Malayan specimens. From the south-east corner of Sikkim a collection, comprising about 6,000 sheets, was made by Mr. M. A. Curator of the Herbarium. This collection has added to the material for the ultimate elaboration of a Flora of the Eastern Shan States of Burma. Captain R. W. MacGregor, I.M.S., has sent about 1,600 specimens, forming a very interesting collection containing several novelties. Mr. A. Rodger, Deputy Conservator of Forests, contributed 400 specimens from Mogok. Mr. G. S. Cubitt, Deputy Conservator of Forests, has sent over 200 sheets from the Bhamo Division, while Mr. P. R. S., Conservator of Forests, and Mr. H. W. A. Watson, Deputy Conservator of Forests, have contributed smaller but valuable collections. The garden is much indebted to all those officers for valuable additions. Mr. I. H. Burkill, M.A., has sent from various parts of India and Burma, which include about 700 Siberian species from the Botanic Garden of St. Petersburg, and specimens from the Botanic Garden of Malaya from the Director of the Botanic Garden, Singapore, about 140 Chinese specimens from Dr. Bonati, of Lyons, France, about 170 New Guinea specimens from Dr. Schlechter, Berlin, and 160 African specimens from the Director of the Botanical Gardens, Zurich. The total number of duplicates distributed was nearly 12,000, chiefly Eastern Himalayan and Malayan species. They were sent to about fifty different Botanical Institutions throughout the World.

Owing to the necessity of reducing the library grant during the year the additions to the library were fewer than usual.

4. Publications—Part I of Volume XII of the Annals of the Garden has been in press throughout the year, but is now ready for issue. Of the Records of the Botanical Survey there have been published—No. 4 of Volume IV (8* pages) entitled *A Short Account of a Journey to Nepal*, by Mr. I. H. Burkill, M.A., F.L.S., Reporter on Economic Products to the Government of India. This

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Slood of Niakot A list of the plants observed and a rough map

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logue of the non-herbaceous plants cultivated in the Royal Botanic Garden, Calcutta,
by the Superintendent of the Garden, has been published. This gives an
explanation of the system adopted in cataloguing the shrubs and trees of the
Garden and a list of identifications as far as possible of the first 4,000 numbers.
A coloured map of the Garden on the scale of 250 feet to the inch showing
the co-ordinated squares accompanies this number of the records. No. 2 of
Volume V of the Records, being a continuation of the same numerical and
6 000. is in the press.

expended in full. Rs. 2,191-3-3, and under travelling and compensation for dearness
Rs. 436-11-0 being
II provis of related receipts was paid into the Bank of
236.1.6 in

Bengal. The Superintendent of the Garden, the Curator of the Herbar.
6. Staff of the Garden were in charge of their respective posts
ium and the Curator of the Garden
throughout
from the 29th

ber 1
Prob of the Garden, from the 1st to
the 2 to Lahore. Mr. E. S. Dodd
was Probationer Gardener from the 1st April to the 14th September 1910. He
acted as Assistant Curator of the Garden from the 26th April to 28th July 1910
and was confirmed in the latter post on 15th September 1910, vice Mr. A. E.
Brown. Messrs. Harry and Mr. Thomas were Probationer Gardeners,
arrived on 15th March 1911. Mr. Thomas was posted to
the Cinchona Garden in the stead of an overseer was given
Garden. The new arrangement has given satisfaction. Mr. A. G.
effect to during the absence of Mr. Lawrence. Mr. Lawrence was appointed to the 16th October 1910. The Curator of
on medical leave from the 16th October 1910. The Curator of the Garden officers have

also worked well.

CALCUTTA GARDENS.

As regards these ... the prolongation of the rains until
about the end of October of flowers seemed unavoidable,
annual seeds, and failure of the usual result was quite satisfactory. In the Eden
Fortunately although late, the raising and redraming of the
Gardens the principal work of the Garden that was formerly liable to
whole of the ... the remaking and enlargement of the section
flooding during the rainy season, which a large number of new
of the Garden for the cultivation of which was added to the Garden. The general
and perpetual ennervation is distinctly pleasing. The lawns and foot-
effect of this section of the Garden in Dalhousie Square Garden the
paths generally were improved, designed, proved inadequate to
alteration of footpaths, which has been carried on with as little
accommodate the ... The general appearance of this
alteration to the original Curzon Garden the lavish display of
Garden is gradually ... a great amount of labour that however
beds of flowering annuals in the temporary beds within the
yielded very successful results from the depredations of
tramway ...

cattle ; and as the surroundings, which include a rubbish tip, are as unaesthetic as ever, the general effect is not as satisfactory as it might be. The total horticultural revenue amounted to Rs. 313, being Bs. 114 from Dalhousie Square and Rs. 197 from Hastings House. Mr. J. T. Johnson was Assistant Curator in charge throughout the year, and has done very good work. Babu Satyendra-nath Basu was appointed Overseer on probation on 1st April 1910. He has shown commendable attention to his duties throughout.

LLOYD BOTANIC GARDEN, DAKJEELITO.

The Garden generally has been kept in order throughout the year. Continued efforts that are now beginning to show good results have been made to clear the lawns of the moss that shows a disfiguring effect during the cold weather. The upper—indigenous—division of the garden, formerly the municipal vegetable garden, has taken on an even appearance. Here a few tomoria trees that overhung the entrance road, rendering the latter very damp and gloomy, were removed and the banks sloped. Over 140 trees and shrubs were planted out in the Garden. A good deal of damage was caused by borer giubs, the presence of which is usually manifested after they caused a considerable amount of damage. The survey of the referred to in last year's Report was completed by Mr. Cave, the Curator the year, and a list of non-herbaceous plants made out with information as to the life history of each specimen so far as available. Except since written records exist, so that for the older plants in the Garden had to depend on information supplied by the older *mah's* of the For the future with quite an ordinary amount of care in working the now introduced there should be no difficulty in registering information ing the life history of all the newer plants. A revised map of the contours of which have considerably altered of late years, and sketch of each 100 feet X 100 feet square on which the position of each marked for future reference, were prepared. Exclusive of additions of horticultural character, 368 plants and 166 packets of seeds were received over 6,500 plants, over 4,700 dozens of seedlings and over 370 packets were distributed, the last mostly abroad. During the year seed collections were made along the western side of Cho-La range which separates Me Chum from the Teesta valley. Amongst these the collections of Rhododendrons and Primulas were exceptionally good. In addition to the general special collections in response to particular requests from scientific institutions abroad were made on various occasions. Over 53,300 people visited the Garden during the year. An increasing number of visitors consulted the herbarium which, if only suitable accommodation were available, could be of much more use to teachers and students and others interested in the vegetation of the district than it possibly can be at present. The sum of Rs. 84 was received as revenue and paid into the Darjeeling Treasury. Mr. was Curator throughout the year and has worked with his usual zeal for the improvement of his charge,

A. T. GAGE, MAJOR, I.M.S.,

*Supdt. of the Royal Botanic Garden, Calcutta,
and Lloyd Botanic Garden, Darjeeling.*

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