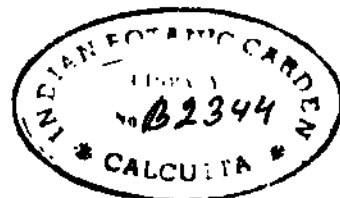
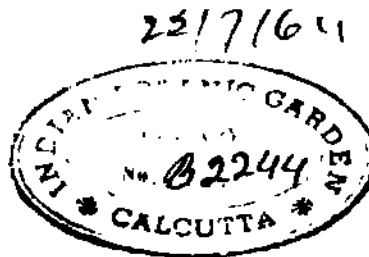


BK. No. ~~18~~
6-4

REPORT OF
The Royal BOTANIC
GARDEN, CALCUTTA
YEAR.
1894-95.
by
GEORGE KING.





ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA,
FOR THE YEAR 1894-95.

No. 16G., of 1895, dated Darjeeling, the 13th May 1895.

From—GEORGE KING, ESQ., 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 108th Annual Report of the Royal Botanic Garden, Calcutta.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA,
FOR THE YEAR 1894-95.

THE weather during the year presented no feature of note, except that the rainfall was rather below the average. The growth of the plants in the garden, both in the conservatories and in the open ground, was satisfactory; and very little damage was done by the storms of wind which are so frequent during the hot season. The chief improvements effected in the garden during the year were the remodelling of the intermediate conservatory, and the repair and alteration of the road which runs along the river-bank from the engine-house to the College gate. The conservatory just mentioned is the one standing between that in which the orchids are exhibited during their season and the Palm-house. It is intermediate not only in situation, but also in area, size, and height; being shorter and higher than the Orchid conservatory and smaller in extent and lower in the roof than the Palm-house. This intermediate conservatory, not having been interfered with for some years past, had become rather choked with overgrown plants. Occasion was therefore taken during the rainy season to clear it of its entire contents; and, this having been done, the Curator, Mr. R. L. Proudlock, laid it out on a new plan, far more artistic than the former one. All the choicest plants in the nurseries having been planted out in this house by the Assistant Curator, Mr. H. J. Davies, under Sir. Proudlock's direction, the result (after the plants have had a little time to establish themselves) should, I anticipate, be very satisfactory. In the whole of this large house there is not a single plant growing in a pot, everything being planted in the ground; the results of ground culture having, in the other conservatories, proved so much more satisfactory than those of pot culture. Hanging from the roof are a number of baskets containing plants, and its sides and also (in part) its roof are covered by creeping plants*. The changes effected on the river bank road to which allusion has been made above consisted in bringing the whole to, as nearly as possible, a uniform level; widening it; in removing the trees which formed an avenue on its northern side; and in improving the grassy slopes on each side of it. As the road is nearly a mile long, the labour involved in carrying out all these improvements was considerable. The earth required for raising its level and for widening it was taken mostly from the bed of the river, so that it was not necessary either to enlarge any of the ponds already existing in the garden or to excavate any new ones. The removal of the trees which formed the avenue along the northern edge of the road is a great improvement, as many new vistas have been opened up into the interior of the garden. And, by the addition of much soil from the river bed, long gentle slopes have been made leading down to the portions of the garden on each side which are, for the most part, on a lower level than the road. The roads in the part of the garden to the east of the river entrance* are now in excellent condition; but much remains still to be done for the improvement of those to the west of that entrance, many of these being still in an unsatisfactory condition in several respects. Towards the end of the year, a good deal was done in the way of thinning and clearing shrubs and trees in the eastern half of the garden. During the current season this process will be continued in the western half. Amongst the buildings erected

during the year by garden labour, and out of the garden budget allotment were a lodge for durwans near the river entrance, some godowns, a carpenter's and blacksmith's shed near the Curator's house, and a glass-roofed house in the nursery for the growth of such kinds of orchids as cannot stand the heavy rainfall 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 completion of the road leading from Calcutta to the garden *via* the Shalimar point and 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 to the garden would be useful, I prepared, during the year, a little book of this sort which Government were pleased to print, and of which copies are now to be had by purchase at the garden gates. In order to make this Guide Book intelligible, it became necessary to name the various roads in the garden, the names chosen being in all cases those of Indian Botanists, or of Botanists to whom the garden or Herbarium are especially indebted. The Guide Book is furnished with a map, and, besides a description of the garden, it contains a brief sketch of its history since its foundation in 1786.

2. *Economic plants.*—Although no plant of economic interest attracted or received special attention during the year, there was, as usual, a considerable distribution of useful plants. Many hundreds of fruit trees were given to various applicants, mostly for public purposes; and applications for rhea plants (in the cultivation of which there has recently been a slightly revived 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 botanists in India and in other parts of the world, and from collectors sent out from the garden. The chief donor was, as usual, the Director of the Royal Garden, Kew, who presented no fewer than 2,198 specimens. Dr. A. Henry, 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. Rialey, 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. 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, Deputy Conservator of Forests, Jalpaiguri, presented 56 specimens from the Bhutan Duars and Sikkim Terai. From Mr. M. Lawson, Government Botanist, Madras, there were received 356 specimens of Travancore plants. This was a particularly acceptable contribution, as the flora of Travancore was previously but poorly represented in the Herbarium. The veteran Botanist Baron Von Miiller presented 237 Australian species. Of American plants there were received 603 plants from the Smithsonian Bureau of National Exchanges, Washington; 440 species from Mr. A. A. Heller, Louisville, South Texas; and 253 from Mr. C. G. Pringle, Mexico. Mr. Gustav Mann, for many years well known as Conservator of Forests in Assam, sent from Munich (where he has now settled) 251 specimens of orchids collected by him some years ago in the Assam Forests. From Mr. Medley-Wood, Superintendent of the Botanic Garden, Natal, there were received 328 plants, and from Mr. Duthie, Director of the Botanical Survey of Northern India, 128; while Dr. Ptain, Curator of the Herbarium, sent 121 plants collected by him in Switzerland during his furlough. The collections made by the direct agency of the establishment were considerable, Mr. G. A. Gammio, Officiating Curator of the Herbarium, having collected 1,434 specimens; while Mr. E. H. Man, C.I.E., to whom this garden is indebted for most efficient help spread over 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) 150 specimens. In the neighbourhood of Gaya 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 2,041 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. Do 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 Gnatong 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 3,059 were also issued, while 1,243 were received. Full details of these transactions will be found in the appendices to this report.

7. *Lloyd Botanic Garden, Darjeeling.*—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 sal 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 Darjeeling gardens were spent in full. The revenue derived from the sale of surplus plants and seeds amounted for the Calcutta garden to Rs. 1,274-5-0, and for the Darjeeling garden to Rs. 880, both of which sums were credited to Government revenue.

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 furlough 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. Ganimie, of the Cinchona Department. Mr. R. L. Proudlock, Curator of the 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 outdoor operations until November, when he was appointed to act as Superintendent of the Government gardens at Allahabad, in place of Mr. Phillips, who went on furlough. Mr. Lane worked cheerfully and well. Mr. H. J. Davies, 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 Chandra Datta, and the other members of the office staff, have also worked to my satisfaction.

10. In the six appendices which accompany this report will be found full details of the receipts and issues of seeds and of living and dried plants.

B 2344
* CALCUTTA

APPENDIX No. I.

Statement showing plants received from 1st April 1894 to 31st March 1895.

FROM WHOM RECEIVED.	Wardian cases.	Boxes.	Number of plants.
1	2	3	4
Boyal 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
Agri-Horticultural Society of India, Calcutta	901
Ditto Garden, Eangoon	2
Ditto ditto, Lahore	104
Ditto ditto, Lucknow	151
La Martinière School, Calcutta	1
Conservator of Forests, Tavoy	1	...	10
Ditto, DehraDun	3	241
Deputy Conservator of Forests, Sunderbans...	2
W. Alston, Esq., Jalpaiguri	4	186
H. G. Batten, Esq., Tavoy	1	2	633
Hon'ble J. Buckingham, C.I.E., Assam	1	30
W. Boxall, Esq., Eangoon	10
Dr. D. D. Cunningham, C.I.E., F.R.S., Calcutta	4
J. A. Gammie, Esq., Mungpoo	6	489
A. C. Hartless, Esq., "	50
E. H. Man, Esq., C.I.E., Port Blair	6	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., Ealimpong	3	1,208
G. MoD. Peohe, Esq., Moulmein	10	1,169
W. Penny, Esq., Assam	7
Mr. J. Prazer, Burmah	204
E. Eose, Esq., Allahabad	2
J. S. Slater, Esq., Engineering College	11
H. Sharman, Esq., Rajputana	1	2
C. H. Swindon, Esq., Calcutta	2
Dr. George Watt, C.I.E., M.D., Calcutta	6
Baba Soorjoo Deo Narayan Sing, Balesgarh...	1	5
" J. C. Biswas, Calcutta	9
" S. P. Ohammerjee, Calcutta...	1,012
George A. Gammie, Esq., collected in Sunderbans	49
E. L. Proudlock, Esq., collected in Sikkim	1	553
Abdool Kholil, collected in Burmah	3	6,012
Shaik Sader Mallic, thana Makosah	51
Unknown donors	2	560
G. Marshall Woodrow, Esq., College of Science, Poona	1,340
The Superintendent, Victoria Garden, Bombay	1,000
Ditto, Mysore Government Bot- tanio 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
Royal Gardens, Kew, London ...	2	8	948
Botanic Garden, Penang ...	1	1	62
Ditto, Saharanpur	9	246
Memorial Garden, Cawnpore	3	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 Captain J. G. Turner, His Excellency the Viceroy's Body Guard	48	1,210
The Right Hon'ble the Earl of Annesley, Ireland	1	67
Professor R. O. Cunningham, Belfast	1	66
J. Earle Drax, Esq., Dorsetshire ...	1	...	27
Li. Ducasse, Esq., Natal ...	2	...	69
His Excellency Sir Arthur Havelock, G.C.M.G., &c, Colombo ...	1	...	30
Mrs. Tattou, Moorcroft, Surrey, England	1	103
" Robertson, 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	105
Ditto ditto, Lucknow	14	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	ft
Sub-divisional Officer, Si wan, Saran	1	10
Ditto, Managhat	7	150
Subordinate in charge, Purulia sub-division...	...	2	50
Secretary to the Howrah Municipality	30
Chairman, District Road Cess Com mitt oe, Lohardaga	3	80
Chairman, Municipality, Khulna	8	160
Ditto, Local Board, Samastipur	1	20
District Engineer, Bhagalpur	41	1,000
Ditto, Birbhum	13	327
Ditto, Burdwan	15	334
Ditto, B.-N. Railway, Chakra- dharpur	120	3,000
Ditto, Dinajpur	24	600
Ditto, Hazuribngh	4	66
Ditto, Hilli, Bogra district	4	100
Ditto, Hooghly	17	400
Ditto, Kaliaganj	4	100
Ditto, Nawabgunj	8	200
Ditto, Noakmli	8	210
Ditto, Sinjhilum	0	101
Ditto, 24-rangnas	965
Executive Engineer, Arrah Division, Arrnh..	...	1	25

APPENDIX II—continued.

To WHOM SENT.	War-dian cases.	Boxes.	Number of plants.
1	2	3	4
Executive Engineer, Chota Nagpur Division, Chakradharpur	16	400
Executive Engineer, Siwan	4	80
Superintending Engineer, Chinsurah	1	20
District Superintendent of Police, Arrah	4	80
Ditto ditto, Karidpur	4	100
Superintendent of Presidency Jail, Calcutta...	3,063
Ditto of Jail, Jessore	i	40
Ditto do., Jubbulpore	4	73
Ditto of Government School of Arts, Calcutta	126
Superintendent of the Civil Veterinary De- partment, Bengal, Calcutta	300
Superintendent of Horticultural, &c, Institu- tion, Cossipore	0
Manager, Indian Husbandry Co., Ltd., Calcutta	2,000
Ditto, Sanctoria Colliery, Giridih	3	26
Soldiers' Gardens, Fort William	1,020
Medical College Hospital, Calcutta07
Eden Hospital, Calcutta	00
Howrah Hospital	62
Station Hospital, Dum-Dum	24
Medical Depot, Calcutta	24
Civil Surgeon, Chapra	6	125
Chaplain of Howrah	303
St. Agnes' School, Howrah	100
St. John's Church, Calcutta	118
St. Vincent's Homo, Kidderporo	50
La Martiniere School, Calcutta	56
Church Mission Society, Calcutta	200
London Missionary Society, Bhawanipur	14
Bishop of Lucknow, Allahabad...	1	G
Thomason College, Ifcoorkeo	53J
Eastern Bengal Stato Railway	2	50
Bengal-Nagpur } ail way	4	61
Indian Museum, Calcutta	214
Loyal Indian Marino Dockyard, Kiddorporo	100
It. V. Aguilar, Esq., Shibpur	3
G. L. Anderson, Esq., Calcutta	20
Mrs. Barr, Kesidency, Indore	2	86
H. C. Beunertz, Esq., Calcutta	10	2,251)
Mrs. Betts, Calcutta	2
A. Brownlow, Ksq., Chittagong...	1	100
Kevd. W. O. Connor, Purulia	2	23
Dr. D. I). Cunningham, M.D., F.R.B., Calcutta	122
H. J. Davis, Ksq.	383
H. L. Floury, Ksq., Asansol	8	200
G. A. Gammio, Ksq.	199
George Gellatly, Ksq., Calcutta...	20
J. Graham, Ksq., Seramporo	121
G. A. Gricrson, Ksq., Howrah	10
A. C. Hartleys, Esq., Mungpoo	J1	306
Mrs. A. A. Ilcdrick, Bauda	4	100
Dr. Houdley, CM.K., Joyporo	1	40
JO. Herbert, Ksq., Cachar	10	200
Illovd. J. Jackson, (Calcutta	"2	1
W. W. Johueton, Ksq., Malda	3	50
G. II Load-r, Ksq, Jalpaiguri	76
Mrs. Lyall, Calcutta	430
Lady XlucDonnell, Calcutta	150

APPENDIX II—concluded.

To WHOM SENT.	War- dian cases.	Boxes.	Number of plants.
1	2	3	4
Mrs. Mackinnon, Calcutta	188
Revd. N. Madden	6	100
E. H. Man, Esq., C.I.E., Port Blair	2	aaa	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
Revd. Gk H. Parsons, C.M.S., Nadia	100
F. E. Patteson, Esq., Calcutta	200
Gr. McD. Peche, Esq., Moulmein	...	1	2
Gr. W. Place, Esq., Chapra	1	2%
J. Pratt, Esq., Midnapore	2	24
R. L. Proudlock, Esq.	5
Mrs. Ityland, 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. Swaries, Esq., Howrah	24
Revd. H. Uffman, Purulia	12	265
E. V. Westmacott, Esq., Calcutta	78
Mrs. Williamson, Calcutta	350
A. Gr. 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
„ GK C. Roy Chowdhury, Calcutta	10
„ G. Li. Mulliok, Calcutta	2
„ H. N. Dass, Garden Reach	5
„ H. Lall, Sutna	1	17
„ J. Chakravarti, Msgura	4	1,210
„ J. C. Biswas, Calcutta	1
„ J. G. Law, Calcutta	1
„ J. N. Chatterjee, Krishnagar	...	1	6
„ M. L. Saxnunta, Ooloobaria	100
„ P. B. Dutta, Calcutta	7
„ P. C. Goeh, Calcutta	8
„ P. C. Shaha, Calcutta	60
„ R. J. Vurma, Kunderki	1	7
„ S. N. Pall Chowdhury, Krishnagore	...	1	0
„ S. P. Chatterjee, Calcutta	82
„ T. C. Chowdhury, Sibpur	1
Sayed Abdool Aziz, Motiabruz	3
Mier Mahamad Sahib, Murshidabad
Munshi Golam Nubbce Khan, Bbita
„ Syed Abdool Ilayee, Birbhum	...	1	...
Faizullah Bhoyo, Calcutta	100
Total ...	15	568	42,188

APPENDIX III.

Statement of Joicing seeds received from 1st April 1894 to 31st March 1895.

FROM WHOM RECEIVED.	Number of parcels or packets.
W. T. Thiselton Dyor, Esq., F.R.S., C.M.G., Gardens, Kow, London	9
Directeur du Jardin Botanique, Saigon	27
Director, Imperial Botanic Garden, St. Petersburg, Russia	52
Director, Royal Botanic Garden, Peradeniya, Ceylon ...	23
„ of Land Records 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 Muller, K.C.M.G., F.R.B., Uni- versity, Albourne	58
Superintendent, Agri-Horticultural Society's Gardens, Madras	4
Superintendent, Agri-Horticultural Society's Gardens, Lahore	69
Superintendent, Zoological Gardens, Alipore	1
Secretary, Agri-Horticultural Society of India, Calcutta	1
Herbarium of the University of California	108
Conservator of Forests, Eastern Circle, Mandalay ...	1
District Forest Officer, Cuddnapak	1
Extra Assistant Conservator of Forests, Sunderbans Division	2
Messrs. Damman & Co., Italy	33
„ Heasoner Brothers, Royal Palm Nurseries, „ Oneco, Floria, United States of America	48
Messrs. J. P. William Brothers, Ueneratgoda, Ceylon	1
„ Tlegg Dunlop & Co., Calcutta	1
Army and Navy Auxiliary Co-operative Supply Com- pany, London	1
Captain Currie, Belvedere	1
C. Curtis, Esq., Assistant Superintendent, Forest Department, Peuang	12
Dr. F. Francesohi Santa Barbara, California	10
J. Sykes Gamble, Esq., Dehra Dun	42
G. A. Gammie, Esq., Sikkim	1
H. C. Hill, Esq., Oifg. Inspector-General of Forests to the Government of India, Calcutta	1
Dr. A. F. It. Ucornle, PH.D., Principal, Calcutta Madrassa	1
J. L. Lister, Esq., Pashok	:*
B. H. Man, Esq., c.i.B., Port Blair	60
M. le Professor Max Oornu, Paris	1
J. ParkeB, Esq., Nimbong	/;>
K. Fantling, Esq., Mungpoo	1
R. L. Proudloek, Esq., Sibpur	1
E. S. Rogers, Esq., Ruby Mines, Burma	2
Georgo Watt, Esq., M.H., CM., C.I.K., Reporter on Econo- mic Products to the Government of India, Calcutta	113
G. Marshall Woodrow, Esq., College of Science, Poona	2
Miss Adanie, La Martiuiure College, Calcutta	1
Babu B. Ghosc, Lahore	2
Shaik Mokim, Plant Collector	2
Total	1,243

APPENDIX IV.

Statement showing seeds distributed from the Royal Botanic Garden during the year 1894-96.

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 ...	282
Directeur du Jardin Botanique, Saigon ...	23
Director, Botanic Garden, (St Petersburg), Russia ...	86
„ Royal, Botanic Garden, Peradeniya, Oeylon	18
Botanic 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, Innsbruck, Germany ...	76
Ditto, Oxford ...	1
Ditto, Sabaranpur ...	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, Rangoon ...	10
Assistant Secretary, Board of Revenue, Madras ...	1
Superintendent, Agri-Horticultural Gardens, Lahore ...	14
Ditto, ditto, Madras...	1
Ditto, Government Horticultural Gardens, Lucknow ...	25
Ditto, Municipal Gardens, Karachi ...	8
Ditto, H. II. the Nizam's Public Gardens, Hyderabad ...	8
Ditto, 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, Pabua ...	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, Mussoorie ...	6
Ditto, Shwebo Division, Shwebo, Burma	1
Resident Engineer, B. G. I. p. Railway, Dhola, Kathiawar ...	9
Assistant Engineer, B.-N. Railway, Jharsagra ...	*
Ditto, No. 2 Sub-division, Samostipur ...	1
Overseer, Public Works Department, Uanchi ...	1
Sub-Overseer, Burhee, Chota Nagpur ...	9
Ditto, District Board, Siraj ganj ...	5
Supervisor, Hazaribagh ...	5
Subordinate, Public Works Department, in charge Kendra Sub-division, Kxndra, (Jobindpur ...	12
M. le Conservateur, Jurdin 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, Kish organ j	1
Ditto, Manickganj	1
Ditto, Jamalpur, Mymensingh	1
Ditto, Madaripore	1
Ditto, Munshiganj	1
Ditto, Netrokona	1
Ditto, Narainganj, Dacoa	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, Decoan	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 Nureery, 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 Müller, 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, Jodhpnr House, Abu	10
Miss Adams, La Martinière, College, Calcutta	1
M. J. Bharwada, Esq., Gondal, Kathiawar	13
Dr. Bower, Glasgow	31
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. Sykefl Gamble, Esq., Dehra Dun	6
G. A. Gammio, Esq., Sibpur... ..	47
J. Gamniie, 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., Yentimiglia, Italy	3
W. W. Johnson, Esq., Hayatpur	2
G. T. Lane, Esq., Allahabad	126
H. Ledgard, Esq., Cawnpore... ..	1
Revd. A. Liogsdail, 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. II. Man, Esq., C.I.E., Port Blair	1
J. B. Menzies, Esq., Kalaigaon, Mangaidai	23
W. T. Marshall, Esq., J. P. Patterdale Hall, England	79
C. Noble, Esq., Sunningdale, London	6
M. le Naudia, Antibes, France	1
A. Perry, Esq., Winchmore Hill, London	34
R. Pantlingr, Esq., Mungpoo	62
S. Robson, Esq., Bankipore	3
R. Rose, 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., Apra	1
Surgeon-Lieutenant-Colonel R. N. Stoker, Dharmsala	16
F. W. K. Von Vyburg, Esq., Bombay	2
W. M. Thorburn, Esq., as., Kurnool	3
George Watt, Esq., M.R., CM., C.I.E., Reporter on Economic Products to the Government of India, Calcutta	4
G. W. Wilson, Esq., Heatherhank, London	03
G. Marshall Woodrow, Esq., Poona	12
Miss Wharton, Allahabad	1
Colonel II. Wylie, c.s.i., Katmandu, Nepal	2
Arthur Young, Esq., Cyprus	5
Rajah of Khaira, Moughyr	1
Pundit Mohur Singh, Dehra Dun	1
Krishnarao Jeshwant Jog, Tasgaon	1
Sahibzada Nooroodeen Khan, Russapagla	8
Manickji Moherwanji, Bilimoria, Esq., Bombay	4
Babu Devendranath Basu, Sibpur	20
„ Gopal Chandra Datta, Sibpur	26
„ Hem Chandra Bunerjee, Sibpur	3
„ Jadub Chandra Biswas, Calcutta	3
„ Jatta Dhary Ghosh, Sibpur	20
„ Kanti Bhusan Banerjee, Motihari	1
„ Pulin Behary Dutt, Calcutta	10
„ Satcowri Deb, Calcutta	1
„ Upoudra Nath Mitter, Andul	4
Total	5,059

APPENDIX V.

List of Herbarium *specimen* received during the //w 1W>40.'>.

	Number.
The Diroctor, Royal Garden, Kew	1
Dr. A. Henry, Formosa	1
J. Sykes Gamblo, Esq., Dehra Dun	1
K. L. Heinig, Esq., Sun<lerbans	1
II. II. Uaines, Esq., Jalpaiguri	1
J. F. Duthie, Esq., Director, Botanical Survey, N. InilVn	1
Homp Drugs Commission	1
S. Robson, Esq., Mussoorio	1
Dr. Brazier-Creaph, Karachi	1
J. Davios, Ehq., Kuram Valloy	1
Major Burn-Mur<lo(;h, K.K., Shillong	1
H. Uoso, Kstj., All.'ihaWl	1
8. Frasor, Esq., Darj*M'ling	1

APPENDIX V—concluded.

	Number.
W. C. Taylor, Esq., Orissa	1
A. Smythies, 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. Koor- ders, Conservator of Forests	706
J. D. Haviland, Esq., Borneo	272
H. N. Ridley, 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, U.S.A.	603
Mr. C. G. Pringle, Mexico	253
Mr. A. A. Holler, S. Texas	440
<i>Collected JO departmentally.</i>	
G. Gammie, Esq., in Assam	1,434
E. H. Man, Esq., C.I.E., in the Andamans	847
It. Pantling, Esq., in Sikkim... ..	546
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 Lushkor 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	1,709
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.*

	Numb
J. Sykes Gamble, Esq., Dehra Dun ...	128
W. A. Talbot, Esq., Kanara ...	105
Botanio Garden, Natal ...	269
Herbarium, Queen's College, Cork ...	122
Natural History Survey, Minnesota, U.S.A. ...	17
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 ...	10
Professor Reefs, Botanischer Garten, Erlangen, Germany ... * ...	8
C. Ford, Esq., Botanio Garden, Hongkong ...	2
Dr. T. Cooke, Imperial Institute, London ...	57
A. C. Qartless, Esq., Labdah, Mungpoo ...	1
Total	15,530

GK KING, M.B., *Brigade-Surgeon-Lieut.-Col.*,
Superintendent, Royal Botanic Garden, Calcutta.

FINANCIAL DEPARTMENT.

MISCELLANEOUS.

DARJEELING, THE 14TH JUNE 1895.

RESOLUTION.—No. 156T.-F.

READ—

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 map, 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. T. F. Dyer, Dr. Prain, the Smithsonian Bureau of National Exchanges, Mr. Heller, Mr. Pringlo, Mr. Wray (junior), Mr. Ridley, Mr. Curtis, Dr. Haviland, Dr. Henry, Baron von Müller, Mr. Medley-Wood, Mr. Guistav Mann, Mr. Duthic, 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 Sikkiin 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 or nothing 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,

11. II. RISLEY,

Secretary to the Government of Bengal.

I 2)

No. 157T.—F.

COPY forwarded to the Superintendent, Royal Botanic Garden, for information.

By order of the Lieutenant-Governor of Bengal,

H. H. KISLEY.

Secretary to the Government of Bengal.

DARJEELING,
The 14th June 1895.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR
THE YEAR 1895-96.

No. 16GK, dated Royal Botanic Garden, Sibpur, the 12th May 1896.

From—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 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 spared. 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 by 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 supersession of the former cemented ones. No buildings were erected in the Garden during the year. I had hoped to have been able to build a new plant-house in the Nursery, but funds were not sufficient. Such a house ought to be put in hand as soon as possible. A glass-roofed house for the display of ferns is still also one of the desiderata of the Garden. Few ferns thrive well in the grass-roofed conservatories which have proved so perfectly suitable for orchids, palms, and other plants. In consequence of there not being a glazed conservatory, the public never see the Garden fern collection, which has 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 area planted 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 a rooted cutting of the sacred *Bo* tree of the temple at Budh Gaya, under a predecessor of which Sakya Muni, the founder of the Buddhistic faith, lived and taught. This interesting historic and religious relic was presented by Mr. G. A. Grierson, PH.D., lately Magistrate of Howrah. It has been planted on an island in the large lake near the big Banyan, from which, when it grows up, 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 Products to the Government of India, patches of two species of *SMa* were cultivated in the Garden, with the view of testing the value of their fibres for weaving and cordage. The crops grown on these patches were made over to the officer just mentioned. At his request also quantities of young plants of *Adhaioda Vasica* were prepared in the nurseries for issue to tea-planters, a decoction of the leaves of this plant having a popular reputation as a powerful insecticide. A few experiments were made in the nurseries by the Curator, Mr. R. L. Proudlock, with the view of testing the merits of this decoction. The results, however, were of a somewhat doubtful nature. The demands for *rheca* plants were less numerous than in former years, and the distribution during the year was proportionately small. Many hundreds of fruit and 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 desirous of obtaining a botanical report on the various races of wheat grown in Bengal, and being unable to supply adequate material for a study of the subject, it was suggested that a portion of the Sibpur Experimental Farm should be devoted ~~during the cold weather of 1899-00 to raising wheat from samples of seed supplied from the various wheat-growing districts. This suggestion was acceded to by Mr. Macpherson, and Dr. Prain has during the cold season~~ made observations on the samples of wheat grown in the plot of ground thus placed at his disposal. His report on the races grown, and on their relationship 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 1,099 carefully-named specimens of Indian plants were issued to various scientific institutions all over the world. The chief donors to the Herbarium were the Director of the Royal Garden, Kew, who contributed 1,974 specimens, and the Keeper of the Botanical Department of the Natural History Museum, London, who transmitted 1,129 duplicate specimens not required by that institution. From Dr. Fockler, Conservator of the Royal Herbarium, Berlin, were received 200 specimens, and from the authorities of the Botanical Museum of the University of Vienna 1,000. Dr. Hans Schinz, Director of the Botanic Garden at Zurich, contributed 658; and the veteran Baron Von Mueller, Government Botanist in Melbourne, augmented his former munificent donations by 106 specimens during the past year. From American botanists large contributions were received; the Smithsonian Institution at Washington having sent 1,134 specimens, while Messrs. Pringle contributed 431 Mexican specimens, Mr. Heller 344, and Mr. Nash (of Columbia College, New York) 703 specimens. The Government of the Straits collected 850 specimens, collected chiefly in Malacca; and Mr. H. H. Man, to whom for many previous years, Among officers of the Indian Forest Department who made presentation*,

there have to be mentioned Mr. J. Sykes Gamble, an old and valued contributor, who last year sent 456 specimens from Dehra Dun; Mr. W. A. Talbot, who sent 29 from Canara; Mr. R. L. Heinig, who sent 8 from the Sundarbans; and Mr. J. H. Lace, who sent 180 from the extreme North-West Himalaya. From Mr. J. A. Gammie, of the Government Cinchona Plantation, 172 specimens were received; while his son, Mr. G. A. Gammie, having made a tour in the Sundarbans with the Forest Officer of that Division, brought back 609 specimens jointly collected by Mr. Heinig and himself. To the Director of the Botanical Survey of Northern India (Mr. J. F. Duthie) the Herbarium is indebted for 669 specimens contributed during the year; while the late Mr. M. A. Lawson, Director of the Botanical Survey of Madras, sent 300 species from Travancore; and Mr. Marshall Woodrow, Director of the Bombay Botanical Survey, sent 34 species collected in the Deccan. A large number of specimens numbering 3,06[^] were brought in by native collectors working under the supervision of Mr. R. Pantling, of the Cinchona Plantation; while 578 were got from Abdul Kholil, a native collector working in the Shan Hills. The chief recipients of the named plants issued from the Herbarium during the year were 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, Leiden, Upsala, and Melbourne; the Directors of the Botanic Gardens at Buitenzorg (in Java), Singapore, Peradeniya (Ceylon); M. C. De Candolle, Geneva; the Director of the Museum of the Jardin des Plantes, Paris; the Committee of the Smithsonian Institution, Washington; the Directors of the Botanical Survey of Northern India and of the Government Museum at Perak, of the College of Science, Poona, and of the Museum at Madras. Full lists of both receipts and issues will be found in Appendices V and VI of this report.

4. *Botanical publications.*—During the year the first part of the fifth volume of the *Annals of the Garden* was published. This part is occupied by detailed descriptions and figures of a hundred species of new and little known Indian orchids by the illustrious and veteran botanist, Sir Joseph D. Hooker. Sir Joseph has been engaged, as Government are aware, for the past five and twenty years on the preparation of a *Flora of British India*. In the course of his elaboration of the family of *Orchidaceae* for that monumental work, he had at his disposal the whole of the materials of the Calcutta Herbarium, including the coloured drawings made by the Garden artists. These drawings, which have been accumulating since nearly the beginning of the century, were found by Sir Joseph so useful that he recommended the publication of a selection of them, and generously undertook to supply the descriptions himself. The result is his *Century of Indian Orchids*[^] which forms the first part of the fifth volume of our *Annals*. Towards the end of the year there was also published the first part of the sixth volume of these *Annals*. This part is occupied by an account of a very important research in vegetable physiology by Dr. D. D. Cunningham, Professor of Physiology in the Medical College, Calcutta. Dr. Cunningham devoted much of his leisure time during a period of several years to making observations of, and experiments connected with, the phenomena popularly known as *sleep* and *sensitivity* in plants. The results of these researches go to prove that the great majority, if not all, of the transient spontaneous movements of the higher vegetable organisms are dependent on purely physical processes. The memoir is a most exhaustive one, and is illustrated by drawings from Dr. Cunningham's own pencil. In the same part of the *Annals* is also included an account, by the same author, of a destructive vegetable blight. Dr. Prain, Curator of the Herbarium, contributed the following papers to various scientific journals:—*On Milula, a new genus of Liliaceae, from the Eastern Himalaya* (in *Scientific Memoirs by Medical Officers of the Army of India*); *An account of the genus Argenione* (in the *Journal of Botany*); *A Revision of the genus Chelidonium* (in the *Bulletin de V Herbarier Boissier*); *Le genre Microtoena* (in the *Bulletin de la Societe Botanique de France*); *Noviciee Indicee, IX and X, some additional Papaveraceae and some additional Fumariaceae* (in the *Journal of the Asiatic Society of Bengal*); as well as some minor teratological and morphological communications to the same Society. Finally, in the *Journal of the Asiatic Society of Bengal*, I published the eighth portion of my *Materials for a Flora of the Malay Peninsula*; and in the same

journal appeared descriptions of thirty-three new species of Sikkim orchids, by Mr. R. Ppntling, of the Cinchona Plantation, and myself.

5. *Library*.—A few books were added to the library, both by purchase and in exchange for copies of the *Garden Annals*.

6. *Interchange of plants and seeds*.—F\detailed details of the issues and receipts of these will be found in Appendices I, II, III, and IV; the total issues having been 30,898 plants and 2,384 packets of seeds, and the receipts 14,442 plants and 1,177 packets of seeds. Amongst the collections of living plants received during the year the most interesting, from a botanical point of view, was that made in Assam by Dr. G. Watt, C.I.K., during a tour which he made in that province in connection with his researches into tea blights. Dr. Watt's collection consisted of no less than 1,215 plants, many of them of much interest

7. *Lloyd Botanic Garden, Darjeeling*.—This Garden was worked during the whole year by the Curator, Mr. W. A. Kennedy, who, besides his duties in the Garden, has charge of the Shrubbery grounds and of the trees planted in various parts of the station. During the year Mr. Kennedy carried out various improvements on the roads and conservatories within the Garden. A very remarkable plant was added to the Darjeeling garden during the year, namely, a gigantic specimen of the beautiful Australian fern, *Todea barbara*. This plant was the personal gift of the distinguished botanist, Baron Ferdinand Von Müller, 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 Müller has in past times presented many valuable plants to the Calcutta Garden, but this, his latest gift, outrivals all his previous contributions. The *Todea* which now adorns the Darjeeling Garden was removed by the Huron, 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 plants and seeds, amounting to Rs. 1,107-1-6 for the Calcutta Garden and to Us. 1,014-8 for the Darjeeling Garden, were paid into the Government treasuries as usual.

9. Dr. Prain (who had been on furlough to Europe) returned to duty in June, and since then he has been in charge of the Herbarium. On 1st July Dr. Prain was appointed Professor of Botany in the Calcutta Medical College in place of myself, Government having allowed me to retire from that appointment. During Dr. Prain's absence the Herbarium work was carried on by Mr. G. A. Gamrnie (of the Cinchona Plantation), who on Dr. Prain's return reverted to his own appointment at Munjrpoo. For the first eleven months of the year Mr. R. L. Proudlock held the appointment of Curator of the Calcutta Garden. Towards the end of January he was transferred to the Curatorship of the 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 the staff of 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 for India, Mr. Proudlock's advancement to the Ootacamund Garden thus gave the means of giving well-merited promotion to Messrs. Lane and Davies, whose work during the year has been very satisfactory. The offices both of the Botanic 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 (HIX 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	190
Botanic Gardens, Durban, Natal ...	1	...	31
Ditto, Rockhampton, Australia	1	162
Ditto, Singapore	1	24
Ditto, Saharanpur	1	49
Ditto, Darjeeling	5	321
Ditto, Bangalore	20
Memorial Garden, Cawnporo	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, Oaloutta.	6
Deputy Magistrate, 24-Parganas, Calcutta	4
H. J. Batten, Esq., Tavoy ...	1	2	464
J. Browu, Esq., Bally	6
Dr. Burton Brown, Kohima	2
C. Curtis, Esq., Penang ...	2	...	50
Giesslerie, Esq.	134
G. A. Grierson, Esq., Howrah	1
G. Barton Groves, Esq., Abu, Rajputana	1	18
C. A. J ames, Esq , Skillong	1	20
A. Y. Kelson, Esq., Khidderporo	10
G. T. Lane, Esq., Allahabad	12
E. H. Man, Esq., C.L.K., Port Blair ...	2	...	282
C. Maries, Esq., Gwalior	1	15
J. Martin, Esq., Raipur	3	80
R. Pantling, Esq , Mungpoo	1	1,368
J. Parkes, Esq., Nimboug	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, Nipal	83
Babu B. K. Gidfc, 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.n., c.M., LL.D., F.U.S., C.I.E., collected in Assam.	..	19	1,215
Dr. David Prain, M.A., M.B., collected at Jub- bulpore, &c.	28
R. L. Proudlock, Esq., collected in North- Wtst, Himalayas, &o	359
H. J. Davies, Esq., collected in Mungpoo, &o.	...	1	83

APPENDIX I—concluded.

To WHOM SENT.	War- dian cases.	Boxes, 1 1	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.

Royal Gardens, Kew, London ...	3	2	385
Botanic Garden, Ootacamund ...	...	3	70
Ditto, Darjeeling ...	...	3	52
Victoria Garden, Bombay ...	...	1	6
Belvedere Garden, Calcutta ...	...	...	8
Zoological Garden, Calcutta ...	...	...	276
Public Garden, Benares ...	...	...	150
Government Gardens, Nagpur ...	...	1	58
His Excellency the Viceroy's Bodyguard, Ballygunge.	...	...	600
Henry Bald, Esq., Goulburn Valley, Australia	1	...	24
The Right Hon'ble Sir Mountstuart Grant Duff, York House, Twickenham.	...	1	88
Herr Hermann Dietel, Graz, Germany ...	2	...	71
R. Hindmarsh, Esq., Killingworth House, Northumberland.	...	1	86
Messrs. Hugh Low & Son, Clapton Nursery, j London.	...	14	1,320
Agri-Horticultural Society of India, Calcutta i	...	...	40
Ditto ditto Garden, Lahore j	...	7	73
Ditto ditto ditto, Lucknow	...	2	11
Chief Commissioner, Andamans ... ;	1	...	40
Deputy Commissioner, Dacca ...	...	...	208
Ditto, Tavoy ...	1	1	20
Ditto, Tezpur ...	...	0	152
Chief Commissariat Officer, Presidency Command, Calcutta.	...	...	1,000
Deputy Magistrate, 24-Parganas, Oaloutta ...	...	...	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 ...	...	10	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, Rangpur ...	...	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, Chota 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 OranL</i>	14
Government Experimental Farm, Sibpur	25
Revd. T. H. Barnett, Howrah	15
Colonel Barr, c.s.i., Residency, Indore	...	1	6
Miss Bradshaw, 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, Raj put ana	...	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
O. Little, Esq., Calcutta	161
Mrs. R. Lyall, Calcutta	210
J. Maophail, Esq., Simultola	...	8	200
Revd. N. Madsenf, Pakur	...	5	100
E. H. Man, Esq., C.I.B., Port Blair	...	1	40
A. C. Manuk, 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
H. Pantling, Esq., Mungpoo	...	30	1,464
Revd. C. J. Palmer, Calcutta	6
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	131
Mrs. Herbert J. Smith, Barla Factory	...	"2	26
W. M. Smith, Esq., Madhupur	5	106
J. T. Sinclair, Esq., Calcutta	1	10
The Hon'ble O. C. Stevens, c.s.i., Calcutta	2
Mrs. Sykes, Caloutta	12
„ Thomas, Calcutta	2
W. Trotter, Esq., Chalsa, Duars	...	8	200
C. H. Turner, Esq., Calcutta	58
Bevd. H. Uffman, Purulia	11	245
S. E. Voifft, Esq., Ballygunge	20
C. Wallich, Esq., Chalauni tea estate, Mai	...	"8	200
<i>JD&ZCLT.</i>			
Colonel J. Waterhouse, Caloutta	152
E. V. Westmacott, Esq., Calcutta	60
Bevd. Peachy T. Wilson, Sitapur	...	1	12
John Wise, Esq., Jessore	G	560
Messrs. Bird & Co., Caloutta	400
„ Kilburn & Co., Calcutta	550
„ Mackillicaa & Co., Calcutta	...	" G	150
„ Stanley Price & Co., Caloutta	80
„ Clark, Young & Co., Colombo	...	4	400
„ F. Sander & Co., Nurserymen, St. Albans, England.	...	4	2,800
„ James Veitch & Sons, Boyal Exotic Nursery.	...	2	500
Prince Linbin, Calcutta	1
Babu Narayan Dass, Basra	"7	167
„ Soorjoo Deo Narayan Sing, Balegarh...	...	2	33
„ M. A. Kabir, Barabigha	150
„ B. B. Ghosh, Taki	4
„ B. L. Ghosh, Uazaribagh...	...	"2	9
„ B. G. Lall, Silitfuri	2	29
„ U. N. Bose, Calcutta	48
„ C. C. Bhadra, Calcutta	1
„ F. C. Pandit, Nazirgani	1
„ G. C. Datta, Sibpur	12
„ U. C. Shaha, Mogul Hat	...	2	8
„ H. N. Dass, Garden Reach	4
„ H. P. Datta, Sibpur	2
„ H. S. Boy, Caloutta	8
„ J. C. Biswas, Caloutta	200
„ J. N. Mulliok, Calcutta	41
„ K. C. Dass, Chinsurah	7
„ K. K. Mundal, Tollygunge	2
„ P. C. Ghosh, Calcutta	4
„ B. B. Boy, tSerampore	6
„ B. C. Mookerjee, Calcutta...	0
„ S. P. Chatterjee, Caloutta	0
„ 8. P. Chowdhury, Caloutta	0
„ 8. P. Boy, Siliguri	1	10
Munshi FaziuUa Bhoy, Caloutta	...	1	4
Shaik Peer Bux, Matiabruj	12
Shama Charan Samunto, Manioktolla	9
Total	9	637	30,812

APPENDIX III.

Statement sluicing Seeds received from 1st April 1895 to 81st March 1896.

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 ...	6
Directeur du Jardin Botanique, Saigon ...	1
Director, Royal Botanic Garden, Peradeniya, Ceylon Botanic Garden, Bangalore ...	3 2
Ditto, Brisbane ...	46
Ditto, Buitenzorg ...	38
Ditto, Darjeeling ...	8
Ditto, Grenada ..	8
Ditto, British Guiana ...	1
Ditto, Jamaica ...	5
Ditto, Rockhampton ...	2
Ditto, Saharanpur .	19
Ditto, Singapore ...	10
Ditto, Trinidad ...	1
Baron Sir Ferdinand Von Müller, K.C.M.O., F.U.S., Uni- versity, Melbourne ...	4
Secretary, Agri-Horticultural Society of India, Calcutta	3
Superintendent, Government Horticultural Garden, Lahore ...	590
Superintendent, Government Horticultural Garden, Luoknow ...	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 Califor- nia, Berkeley, United States of America ...	11
Curator of Department of Public Instruction, Technioal 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, Manbhumi	1
Dr. D. D. Cunningham, Calcutta ...	1
Dr. F. Franceschi, California ...	19
G. A. Gammie, Esq. ..	2
J. Gammie, Esq., Mungpoo ...	11
J. Sykes Gamble, Esq., Dehra-Dun ...	38
G. Barton Groves, Esq., Abu, Rajputana...	1
M. le Docteur Edouard Hectel, Paris ...	1
J. L. Lister, Esq., Pashok ...	2
K. H. Man, Esq., C.I.B., Port Blair ...	29
R. Pantling, Esq., Mungpoo ...	3
J. Parkes, Esq., Nimbong ...	5
S. E. Rita, Esq., Jowai ...	1
J. J. Sinclair, Esq., Calcutta ..	1
W. A. Talbot, Esq., Kanara ...	3
A. G. Tytler, Esq., Sewan ...	1
George Watt, Esq., M.B., CM., C.I.E., Reporter on Econo- mic Products to the Government of India, Calcutta	10
Total ...	1,177

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.R.S., C.M.G., C.I.E., 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 ...	4
Superintendent, Government Gardens, Allahabad ...	8
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, IVbna ...	7
Ditto, Talarnau, Daltonganj ...	9
Ditto, Singhbhum ...	2
Executive Engineer, Itahasore Division, Balasore ...	1
Ditto, Chota Nagpur Division, Ranohi ...	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, Sorajganj ...	2
Subordinate in charge, Chakradharpur subdivision, Singhbhum ...	6
Subordinate in charge, Chota Nagpur Division, Burhi Ditto, Hazaribagh subdivision, Hazaribagh ...	1
Ditto, Kendra subdivision, Kendra, Gobindpur ...	2
Garrison Quarter-master, Fort William, Calcutta ...	13
M. le Conservateur, Jardin Botanique, Geneve, Swit- zerland ...	41
Conservator of Forests, Central Circle, Madras ...	9
Officiating Deputy Conservator of Forests, Palamau, Daltonganj ...	3
	34

APPENDIX IV—*continued.*

To WHOM: BENT.	Number of parcels or packets.
Superintendent, Central Jail, Kaipur	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
" H. Low & Co., Clapton Nursery, London ..•	5
" Kilburn & Co., Calcutta	1
" F. Sander & Co., St. Albans, [England	5
" 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 Yon Müller, K.C.M.G., F.R.S., Melbourne	97
Field Marshall Sir Donald Stewart, O.C.B., &C, Chelsea Hospital, London	1
Professor Dr. E. Huth, Frankfort, Brandenburg, Germany ... ^	9
Herr Graf zu Schwerin, Germany	18
Sir A. J. Arbuthnot, K.C.S.T., 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. U. 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. Sjkcs Gamble, Esq., Dehra-Dun	2
J. Gammie, Esq., Mungpoo	80
J. B. iiauldin, Esq., Gauhati	1
F. Han bury. Esq., Liguria, Italy	1
F. C. Hnrrison, Esq., Madras	2
R. L. Ilfinig, Esq., Khulna	29
W. G. Head, Esq., London	2
H. Hildfbrand, Esq., Shan Hills, Burma	4
A. O. Hartless, Esq., Mungpoo	21
W. T. Hamilton HolmeP, Esq., Madras	1
James Lawrie, Esq., Manoomukh, Sylhet	1
T. Longmuir, Esq., Denork, St. Andrews	50
Revd. A. Logsdail, Chaibassa	6
Lieutenant E. I. Lugard, Shillong	1
C. Maonaughten, Esq., Rajkot	103
O. Maries, Esq., Gwalior	15
Revd. M. Macnicol, Mahanadi	6
Dr. McKendrick, F.R.S., Glasgow	1
W. T. Marshall, Esq., J.P., Fatterdale Hall, near Peiirith, England	9
M. Naudin, Antibes, France	1
O. Noble, Esq., Sunningdale, London	9
R. Pantling, Esq., Muugpoo	34
Mrs. O. H. Pope, Jiaganj, Murshidabad	6

APPENDIX IV—concluded.

TO WHOM BENT.	Number of parcels or packets.
David Prain, Esq., Fettercairn, Scotland	9
Dr. Hans Schinz, Zurich, Switzerland	9
Colonel Scott, E. A., Calcutta	74
M. Scawen, Esq., Fort, Colombo	1
Surgeon-Major A. E. W. Sedgefield, Ghazipur	7
Mrs. T. A. Stewart, Aberdeen	1
W. M. Thorborn, Esq., as., Kumool	3
J. T. Tyson, Esq., Pana Basti, Jalpaiguri	1
Dr. J. W. H. Trail, F.R.S., Aberdeen, Scotland	9
G. T. Wilson, Esq., London	0
M. E. Webb, Esq., Hindugalla, Ceylon	5
C. G. Welldon, Esq., Norwood, Ceylon	1
G. Marshall Woodrow, Esq., Poona	9
Mr. Byranji Edulji, Dharamtul, Assam	1
„ Manickji Mehrwanji, Hyderabad, Sind	1
„ Muncbershah Matabhoy, Bombay	1
Pandit Jahar Parshad, Lahore	1
Faizel Eubhoy, Calcutta	1
Maung Po Hla, Pantanar, Burma	1
Munshi Ali Amjat Khau, Hingajiya, Sylhet	48
„ M. A. Alii, Sitapur	10
Sahibzada Nooroodoen Khan, Eassapagla	6
Babu Dovendranath Basu, Sibpur	20
„ Gopal Chandra Cuatterjee, Hazaribagh	1
„ Jadub Chandra Biswas, Calcutta	5
„ Jadunath Gossain, Calcutta	2
„ N. B. Dutta, Cossipore	1
„ Sasee Shakhcr Datta, Calcutta	1
„ T. Kanaram, D.A., Tellicherry	1
Total distributed	2,384

APPENDIX V.

List of Herbarium Specimens received during tfo year 1895-96.

	Number
The Dirootor, Royal Garden, Kew	1,974
Dr. A. Engler, Konigl. Hotanisohe Museum, Berlin	512
J. Sykes Gamble, Esq., Dehra Dun	450
R. L. Heinig, Esq., Suii'krbans	8
J. R Duthie, Esq., Dine: or, Botanical Survey, N. India	6(W
W. A. Talliot, E<q., Forest Department, Kanara	29
M. A. Lawson, Esq., Director, Uotanioal Survey, Madras	300
Surgoou-Captain D. Hmin, Curator of the Herbarium	303
Baron Von Mueller, Melbourne	106
J. Medley-Wood, Esq., Natal	124
Mr. C. G. Pringlo, Moxico	431
Mr. A. A. Heller, U. S. A.	344
G. M. Woodiow, E>q., College of Science, Poona	34
Botanische Abthoilmig Naturliiistorisohen des K. K. Hofimnsoums (K. K. Botanischw llofoabinet). Vienna	100
Geq. V. Nash, Esq., Columbia College, New York, U. S. L	703
Smithsoniun Institution, U.S., National MuMum, Washington	1^34
Director, Botanic Gardon, Buitensorg, Java	' 17
A. Colbourn, Esq., Woolhampton	1,774
Dr. Grant, Dalhousio	39
Botanical Museum, Vienna Uniyewity	1,000
Dr. Hans Schinz, Direktor d. Botanischen (Hrdeni, Zurich	5P>8
E. do Crosigny, Esq., M D., Crowoombe, Bcckenham, Kent, Eiigland...	^ |j
Royal Botanical Museum, Berlin	!! 1

APPENDIX V—concluded.

	Number.
Messrs. Kiiburo & Co., Fairlio Place, Calcutta ...	5
The Director, Botanical Department, British Museum, London ...	1,129
J. D. Henderson, Esq., Doonagireo Toa Plantation, Ranikhot, N.-W.P. ...	18
Bajaba Balajee None, Medical Practitioner, Dolkuraleo, Poona City ...	12
J. H. Lace, Esq., Forost Department ...	180
Government, Straits Settlements, Malacca ...	850

Collected Departmentally.

E. H. Man, Esq., C.I.E., in the Andamans ...	257	
G. A. Gammio, Esq., Sunderbans ...	509	
J. A. Gammio, Esq., Sikkim ...	172	
R. Pantling, Esq., do. ...	3,063	
S. E. Rita, Esq., Jowai, Assam ...	3	
Abdul Kholil, Upper Burmah ...	578	4,582
Total received ...	...	<u>17,403</u>

APPENDIX VI.

List of Herbarium Specimens distributed during the year 1895-96.

	Number.
Herbarium, Royal Gardon, Kew ...	313
Ditto, Imperial Garden, St. Potereburgh ...	290
Ditto, University, Edinburgh ...	245
Ditto, ditto, Florence ...	249
Ditto, Madras ...	122
Ditto, University, Utrecht ...	94
Ditto, ditto, Upsala ...	330
Ditto, ditto, Cambridge ...	234
Ditto, Smithsonian Institution, Washington, United States of America ...	410
Ditto, Singapore ...	445
Ditto, Royal Museum, Berlin ...	679
Ditto, Botanic Garden, Vionna ...	200
Ditto, Imperial Museum, Vienna ...	332
Ditto, Botanio Garden, Poradcniny, Ceylon ...	157
Ditto, Jardin des Plantes, Paris ...	678
Ditto, Perak ...	304
Ditto, Botanical Survey of Northern India ...	630
Ditto, Penang ...	248
Ditto, University, Aberdeen ...	124
Ditto, Melbourne, Australia ...	213
Ditto, University, Leiden ...	383
Ditto, M. C. deCandolle, Goncva ...	462
Ditto, British Museum, London ...	455
Ditto, Minneapolis, Minnesota, U.S.A. ...	105
Ditto, Botanic Garden, Buitenzorg, Java ...	217
Ditto, Owen's College, Manchester ...	114
Ditto, College of Science, Poona ...	182
Ditto, Priburg ...	359
J. Sykes Gamble, Esq., Dohra Dun ...	137
W. A. Talbot, Esq., Kanara ...	95
Botanio Garden, Natal ...	14ft
Herbarium, Queen's College, Cork ...	153
Natural History Survey, Minnesota, U.S.A. ...	246
Dr. Hans Schinz, University, Zurich ...	510
M. Drake de Castello, Paris ...	7^7
Professor Sargent, U.S.A. ...	209
G. Soott Elliott, Esq. ...	82
G. Mann, Esq., Muonchon ...	125
Mr. G. Watt, Calcutta ...	21
Total distributed ...	<u>11,093</u>

G. KING, M.H., *Dryade-Surgeon-Lieut.-Cut.*,*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 Jb'am 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 Koyal Garden, Kew, and the Keeper of the Botanic 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. Gammic (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, Zürich, 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.

5. 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 phenomena known as sleep and sensitivity in plants, most of which he traces to purely physical processes. Both Dr. King and Dr. Prain also contributed valuable papers on botanical subjects to various scientific journals.

6. The Lloyd Botanic Garden at Darjeeling was in charge of Mr. Kennedy, who carried out various improvements in the roads and conservatories of the Garden. A gigantic specimen of the beautiful Australian fern *Todea Barbara*, weighing upwards of half a ton, was presented to the Garden by the distinguished botanist Baron Von Mueller, K.C.M.G., F.K.S. The attention of Dr. King is called to paragraph 3 of the Resolution on last year's report.

7. The thanks of the Lieutenant-Governor are again due to Dr. King, the Superintendent, and Dr. Prain, the Curator of the Herbarium, for their 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.

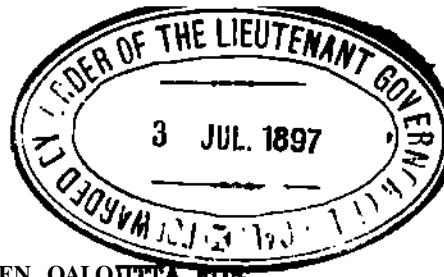
COPY forwarded to the Superintendent of the Royal Botanic Garden, Calcutta, for information.

By order of the Lieutenant-Governor of Bengal,

B. FOLEY,

Under-Secretary to the Govt. of Bengal.

CALCUTTA,
The 17th June 1896.



ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR
THE YEAR 1896-07.

No. 14GK, dated Government Cinchona Plantation, Mungpoo, the 12th May 1897.

From—BRIGADB-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 110th Annual Report of the Royal Botanic Garden, Calcutta.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE
YEAR 1896-97.

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 contained, 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 showery; but the supply of moisture, welcome although it 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 great 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 Clarke 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 cool lines are, however, urgently wanted; a fern conservatory is still a desideratum; and another glazed plant-house is wanted for the nursery. These may, it is hoped, be provided when 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 great attraction to people on wheels.

2. *Economic plants.*—During the cold season patches of the various kinds of mustard cultivated in Bengal were grown in the Sibpur Experimental Farm adjoining the garden. This was done so that Dr. Prain might have samples of these crops under observation, with the view of furnishing the Agricultural Department with accurate information as to the races and varieties to which they belong. The results, which go to establish the accuracy of the conclusions arrived at 90 years ago by Dr. Roxburgh (the second Superintendent of the garden), are of great interest both botanically and economically. A similar series of observations on the races of wheat cultivated in Bengal was conducted by Dr. Prain on the same farm during the cold season of 1895-96, and Dr. Prain was then fortunately able to discover the host of the form of rust which too frequently works such havoc with the wheat crops of the Gangetic plain and of the Central Provinces. The results of the series of observation on "wheats" have just been issued, while those on "mustards" are shortly to be published, by the Department of Land Records and Agriculture of Bengal. There was during the year a revival of the interest in rhea cultivation, and large numbers of plants were consequently applied for by planters and others. These indents were met as far as possible; and, in view of a continuation of the demand, the rhea field, which has for years occupied a corner of the garden, has been thoroughly cultivated and manured. As was the case during all previous revivals of interest in rhea, various processes for extracting the 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 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. The usual issues of fruit trees and of trees for planting avenues within municipalities and cantonments have been made during the year. Details of these will be found in the 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 carefully named plants were distributed to the chief Herbaria in Europe, America, and Asia. The chief donor to the Herbarium was Mr. Duthie, Director of the Botanical Survey of Northern India, who contributed 2,066 specimens, and the next was Mr. Thiselton Dyer, Director of the Royal Garden, Kew, who sent 1,757. Mr. Ridley, Director of the Botanic Garden, Singapore, and M. Batalin, Director of the Imperial Herbarium, St. Petersburg, contributed respectively 993 and 847 specimens. An extremely interesting collection of 629 Tibetan plants was contributed by M. E. Drake del Castillo of Paris. From M. Musy, Custodian of the Musée Cantonal of Fribourg, was received a most interesting collection numbering 550 species of plants collected fifty years ago in Southern India by the Swiss Botanist, Perottot. In exchange for these plants of Perottot a large named collection of plants of Northern 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. To Mr. K. L. Heinig, Deputy Conservator of Forests in the Andaman Islands, the Herbarium is indebted for 627 specimens. Mr. Heinig is an old and valued 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. W. A. Talbot, Deputy Conservator of Forests, Kanara, and Mr. H. H. Haines, Deputy Conservator of Forests in Bengal, who sent respectively 77, 339, and 212 specimens, from the late Baron Ton Mueller, one of the most liberal contributors to the Calcutta collection in years past, there was received, just before his lamented death, a most interesting collection of 801 critical species, chiefly from New Guinea. From Dr. Engler of the Imperial Herbarium, Berlin, I have to acknowledge the receipt of 283 specimens. From America were received 557 plants from Mr. G. V. Nash of Columbia College, New York; 100 from Mr. A. H. Curtis of Jacksonville, Florida; and 455 from Mr. A. A. Heller, Hawaiian Island*. Surgeon-Captain P. C. Majnard contributed some very interesting plants collected by him during the delimitation of the Beluch-Afghan

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. Radlkofer of the Royal Herbarium, Munich, sent 197 most interesting species. Other donors were Mr. R. T. Baker of the Technological Museum, Sydney, Dr. G. tint her Beck of Vienna, Mr. C. W. Hope of Dehra Dun, and Mr. Bourdillon, Conservator 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. B. Anderson, Officiating Superintendent of the Indian Museum, who made as shooting recursion 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 Candollean 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, Eanara, 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. Briihl 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*:—*Novicie 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, « note on *Indimn wheat-rusts*, and in conjunction with Dr. Maynard a note on the *Botany of the Bihuh-Afghan Boundary Commission*. He has also written a note on the *Races of wheat cultivated in Bengal* for the publication* of the Department of

Land Records and Agriculture, Bengal, and a *Supplementary Report on Ganja* for the Board of Revenue, Lower Provinces, besides contributing minor notes to the *Indian Forester*, *Bulletin de PHerbier Boissier*, &c. To the *Journal of the Asiatic Society of Bengal*, I contributed the ninth part of my *Materials for a Flora of the Malayan Peninsula*. In the preparation of this part I received great assistance from Dr. Prain, who elaborated for it the account of the important and difficult family of Leguminosae.

5. *Library*.—The usual periodicals and a few books were added to the library during the year. Some of these were received in exchange for volumes of the garden Annals, the others were purchased.

6. *Interchange of living plants and seeds*.—The appendices I to IV contain full details of the receipts and issues of plants and seeds during the year. The issue of plants was unusually large, and amounted to 54,874. Of this total, about 20,000 were rhea plants given gratuitously to various persons desirous of trying rhea cultivation on a large scale. The plants received numbered 17,981. Amongst these was a fine lot of very interesting things, numbering over 2,000, collected by Dr. Q. Watt, C.I.E., during a tour made by him in Assam in his capacity of Reporter on Economic Products to the Government of India. Interesting collections, chiefly of orchids, were also received from Messrs. Gammie, Pantling, and Parkes of the Cinchona Plantation; from Mr. Davies, Assistant Curator of the garden; and from Mr. Pech6, Moulmein. Mr. Spooner, C.E., Eathiawar, and Mr. Ridley of Lucknow contributed liberally. Messrs. Sander & Co. and Messrs. Low & Son, nurserymen, London, also made handsome contributions, as did Mr. P. Lancaster, Secretary to the Agri-Horticultural Society of India, and Mr. S. P. Chatterjee, nurseryman, Calcutta. Lastly, a most interesting collection was received from the Royal Garden, Kew. Of seeds, 1,043 packets were received during the year, and 2,234 packets were distributed.

7. *Lloyd Botanic Garden, Darjeeling*.—The history of this garden during the year was one of misfortune. During the early months the drought was most trying, and when the rainy season at last began it was ushered in by heavy downpours of rain which caused many small landslips all over the grounds. And, towards the end of July, there occurred a violent storm of rain and wind which lasted for about two hours, and by which many of the larger trees were either uprooted or broken to pieces. The fall of these trees of course injured many of the shrubs and herbaceous plants growing beneath them; and the day after the storm the garden presented a miserable appearance. The repair of the damage, as far as it was capable of repair, absorbed much money which otherwise would have been spent on improvements. The lease of the patch of ground which for the past ten years has been worked by the Curator as a vegetable garden expired in June. The Municipality declined to renew the lease, and intimated their intention of building on the land. The building project, however, was abandoned, and an arrangement was made with Government by which this piece of land is to be made over to the Botanic Garden in perpetuity. These arrangements have not yet, however, been officially completed, and the patch of land has not as yet been formally made 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 ghrabbery grounds and of the various trees planted along roadsides within the Juntoo of the Municipality. Mr. Kennedy has as usual worked steadily and

The budget allotments of money both for the Calcutta and Lloyd Botanic Gardens have been fully spent, with the exception of some trivial m n g s on account of exchange compensation allowance. " The proceed* of the •ale, of mplurnlanta, amounting foPihe Calcutta warden to l£ 7B3ead for 2£ Daneeing garden to Ra. 1,060, were paid into ^ G weniment trewnSa M usual.

9. No one connected with the garden went on furlough during the year. Dr. I ^ wa . a 8 i i ^ m charge of, the Herbarin in and Library fiUw ^ are usually too well known to Government to r n by ma. During the year his devotion to economic botani sious in connection with his researches forms of wheat and mustard and with his investigation into the » : ^ of the plains, the latter having

been conducted conjointly with Dr. D. D. Cunningham, F.R.S. Mr. G. T. Lane and H. J. Davies filled respectively the posts of Curator and Assistant Curator of the* garden during the entire year, and both worked admirably. During the year Mr. G. H. Cave joined the garden as a probationer under the recently sanctioned graded scheme. Mr. Cave was selected by the Director of Kew from the staff of that institution and came to India with an excellent reputation, which I have little doubt he will maintain. The offices both of the Botanic Garden and of the Cinchona Plantation have been under the charge of Babu Gopal Chandra Datta, whose continued good service merits recognition.

10. The usual tabular returns, six in number, are appended.

APPENDIX I.

*Statement showing plants received from 1st April 1896 to 31st
March 1897.*

FROM WHOM RECEIVED.	War- dian cases.	Boxes.	Number of plants.
1	2	3	4
Boyal Gardens, Kew, London	3	..	107
Botanic Gardens, Ootaoamund	1	3	129
Ditto, Bangalore	4
Ditto, Darjeeling	15	518
Government Museum and Public Gardens, Trivandrum.	1	...	38
Memorial Garden, Oawnpore	1	13
Khusru Bach, Allahabad	41
Zoological Garden, Oaloutta.	50
Eden Garden, Caloutta	3
W. G. Head, Esq., Crystal Palace, London...	...	1	415
Messrs. H. Low & Son, Clapton Nursery,	...	3	107
F. Sander & Co., St. Albans, England	2	2	155
Searl & Sons, Sydney	2
Agri-Horticultural Society of India, Oaloutta	183
Ditto ditto Rangoon	10
Ditto ditto Madras	1	...	24
Ditto ditto Lahore	4	27
Ditto ditto Luoknow	1	562
Deputy Conservator of Forests, Andamans...	...	1	15
H. G. Batten, Esq., Tavoy	318
P. Braine, Esq., Paragoda, Ceylon	6	6
J. Gammie, Esq., Mungpoo	6	605
J. Giesseliere, Esq., Oaloutta	391
Dr. G. Griffiths, Allahabad	265
Dr. Hallier, Hamburg	12
J. Martin, Esq., Baipur	2	246
Bev. H. Mould, Rajputana	1	18
B. Pantling, Esq., Mungpoo	3	169
J. Parkes, Jksq, Nimbong	2	1,099
G. MoD. Peche, Esq., Moulmein	18	2,616
P. Playfair, Esq., Calcutta	60
N. B. Banade, Poona	84
G. O. Banger, Esq., Ballygange	1
S. E. Bita, Esq., Khasia Hills, Assam	1	42
Dr. B. O. Sanders, M.D., Calcutta	14
T. J. Spooner, Esq., Kathiawax...	8	4,863
Dr. George Watt, M.B., CM., K.R.S., C.I.E.,	...	4	2,328
The Mir Nnwab Anhhmullah Khan Bahadur, Daraa.	65
Babu S. P. Oatterjee, Oaloutta	1	806
Dr. George King, M.B., IX.D., F.B.BJ, C.I.K., collected at Sureil.	51
Dr. David Prain, M.A., M.B., collected in Banohi and South India.	107
H. J. Davies, Esq., collected in Mussooree ftn4. Aniiifun^nit.	219
Shaik Mokim, collected in Bhutan	269
Abdul Kholil, collected at Fort Stedman	1
Unknown donors	88
Total	7	74	17,981

APPENDIX II.

Statement showing plants Bent out from 1st April 1896 to 31st March 1897.

To WHOM SENT.	Wardian cases.	Boxes.	Number of plants.
1	2	3	4
Royal Gardens, Kew, London	2	1	153
Botanic Garden, Ootaoamund	6	268
Ditto, Saharanpur	1	4
Ditto, Darjeeling	12
Victoria Garden, Bombay	7	10
Memorial Garden, Cawnpore	65
Raj Garden, Darbbanga	2	52
State Garden, Baroda	4	87
Government House Garden, Calcutta	94
Eden Garden, Calcutta	23
Zoological Garden, Calcutta	319
Maopherson Park, Allahabad	2	50
His Exoellency the Viceroy's Body-guard, Ballygunge.	120
David Anderson, Esq., Monifieth, Dundee	1	120
Col. Lord W. Beresford, v.c., C.I.E., Carlton House Terrace, London.	1	200
Dr. Molntyre, 8.8. Umbazi	1	...	49
W. Barclay Sandeman, Esq., Sussex, England	1	195
Lord Wantage, v.c., K.C.B., Herts, England...	1	200
Messrs. F. Sander & Co., St. Albans, England...	12	5,170
Agri-Horticultural Society of India, Calcutta	2,021
Ditto ditto Nagpur	5	63
Ditto ditto Madras	1	...	35
Ditto ditto Lahore	12	130
Commissioner, Burdwan	2	60
Ditto, Dacca	1	20
Ditto of Police, Caloutta	34
Deputy Commissioner, Tezpur	*7	132
Conservator of Forests, Pegu Circle, Rangoon	10,200
Deputy Conservator of Forests, Sonthal Par- ganas, Dumka.	5	116
Magistrate, Burdwan	1,212
Ditto, 24-Parganas, Caloutta	41	1,004
Cantonment Magistrate, Jubbulpore	3	105
Officiating Magistrate, Noakhali	4	60
Subdivisional Offioer, Ranigan j	16	400
Ditto, Feni	3	55
Secretary, Byculla Club, Bombay	1
Ditto, Government Museum and Public Gardens, Trevandrum.	1	...	42
Vioe-Chairnmi, Municipality, Dinajpur	4	100
Chairman, District Board, Monghyr	4	100
Ditto, Teipur Municipality, Assam	1	24
District Engineer, Backergonge, Barisal	10	250
Ditto, Bhagalpur	30	750
Ditto, Faridpur	100
Ditto, Singhbhum	470
Ditto, Bengal-Nagpur Railway, Midnapore.	120	3,000
Ditto, Mymensingh	80	2,000
Ditto, Noakhali*	9	206
Ditto, Pumea	12	300
Ditto, Bangpur	56	1,400
Exaquitiye Engineer, Calcutta Workshop Division, Sibpur.	120
Executive Engineer, East Bone Diviwon, Bankipore.	12	300
Executive Engineer, Ohota Nagpur Division, Kanchi.	30	635

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	200*
St. Agnes' School, Howrah	100
St. Vincent's Home, Edderpore	100
little Sisters of the Poor, Calcutta	6
Catholic Orphanage, Calcutta	300
Reformatory School, Alipore	500
Mrs. Findon, East Indian Railway, Howrah	2
Indian Museum, Calcutta	147
Experimental Farm, Sibpur	400
Managing Agents and Secretaries, Strand Bank Press Company, Limited, Calcutta.	250
Tolly gunge Club	1,018
President, Outram Institute, Dum-Dum ...*	100
H. Bahr, Esq., Sonthal Colony, Taznarhaut, Assam.	...	9	212
T. Beck, Esq., Aligarh	...	2	24
Mrs. B. A. Betas, Calcutta	62
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, Ghittagong	13
„ Havelock Charles, Calcutta	621
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.B., Calcutta	15
„ Forsyth, Calcutta	20
A. M. Gasper, Esq., Moradabad	...	1	2
Mrs. G. 'E. FitsGibbon, Howrah	875
„ Gillespie, Howrah	18
O. H. Gordon, Esq., Segowlie	...	9	600
Dr. B. G. Griffith, Allahabad	...	12	800
A. L. Human, Esq., Segowlie	...	2	600
Col. King-Harman, Calcutta	4
Bev. W. B. Heani, Karmator	...	*8	200
Geo. W. Hodgkinson, Esq., Cawnpore	...	3	154
Mrs. HcBrnle, Calcutta	325
O. A. Kraal, Esq., Calcutta	4
A. Laoe, Esq., Calcutta	200
T. Lee, Esq., Sibpur	3
J. E. Ister, Esq., Jamalpur	6
D. Low, Esq. ABrindin	...	1	40
Mm B> Lyall, Calcutta	1,336
Mrs. Mackinnon, Gfexden Beach	5
J. Martin, Esq., Baipur	...	1	4
J. Mayer, Esq., Allahabad	...	3	62
Surgn.-Oapt. F. Maynard^ Ranohi	...	1	12
Bey. A Meurioe, Ranchi	...	2	60
Dr. D. M. Moir, Calcutta, far General Hospital	70
E. Newton, Esq., Meerut	...	1	114
Mr. Osgood, Cossipore	3
B. Pantling, Esq., Mungpoo	...	22	602
F Palmer, Esq., Arrah	...	8	260
G. Mod. Peohé, Esq., Moulmein	1	2	84

APPENDIX II—concluded.

TO WHOM SENT.	War- dian oases.	Boxes.	Number of plants.
1	2	3	4
J. Peter, Esq., Monoomookh	2	50
W. Raitt, Esq., Ranigunge	11	260
G. O. Banger, Esq., Ballygunge	2
S. E. Rita, Esq., Shillong, Assam	1	2
A. Roger, Esq., Garden Reach	48
F. Bowat, Esq., Mihijam	4	100
Dr. B. C. Sanders, Caloutta	30
J. S. Slater, Esq., Engineering College, Sibpur	676
Dr. W. J. Simpson, Caloutta	4
T. J. Spooner, Esq., Bombay	4	91
J. A. Thompson, Esq., Calcutta	1,000
E. Thorpe, Esq., Segowlie	2	500
H. Thorpe, Esq., Hurdeah, Segowlie	4	2,512
Col. J. Waterhouse, Calcutta	410
Messrs. Burn & Co., Howrah	15
„ Hoare, Miller & Co., Calcutta	36
Rivers Steam Navigation Company, Limited, Garden Beach.	100
The Hon'ble Nawab Ashanulla Khan Ba- hadur, C.I.B., Daoca.	...	5	40
Nawab Sayed Abdool Sovan Chowdhury, Caloutta.	33
Raja Mohima Bunjun Rai Chowdhury, Bangpur.	...	8	50,
Babu Soorj Deo Narayan Sing, Baligarh	2	62
dhury, Nator.	...	3	21
Babu B. B. Ghosh, Taki	30
„ C. C. Bhadra, Caloutta	2
„ D. N. Banerjee, Coesipore	1
„ G. C. Datta, Sibpur	198
„ G. C. Haldar, Serampore...	2
„ H. C. Mookerjee, Sibpur	9
„ J. N. Mittra, Ajhapur	60
„ J. N. Singha, Bakaara	2
„ M. M. Buxi, Coooh Behar	1	12
„ M. S. Dass, Midnapore	5	30
„ N. G. Bhaduri, Knshnagan j	2	9
„ N. C. Baral, Calcutta	200
„ N. N. Boy Chowdhury, Sibpur	1
„ P. C. Ghosh, Calcutta	15
„ P. N. Boee, Bhawanipur...	3
„ R. O. Boy, Banchi	1	4
„ S. P. Ohammerjee, Caloutta	22
„ S. C. Bhattaoherjee, BhaWipur	4
„ S. O. Ghosh, Ulubaria	38
„ S. N. Dass, Caloutta	200
„ T. N. Banerjee, Caloutta...	12
„ W. M. Thakpr, Calcutta	6	160
Munshi Abdool Aas, Dhoolo* oriah	4
BamNath	1
Total	...	7	682
			54,874

APPENDIX III.

Statement showing seeds received from 1st April 1896 to 31st
March 1897.

FBOM WHOM RECEIVED.	Number of parcels or packets.
W. T. Thiselton Dyer, Esq., F.R.S., O.M.G., C.I.E., Director, Royal Gardens, Kew, London ...	14
Director, Department of Agriculture, Smithsonian Institution, Washington ...	121
Director, Royal Botanic Garden, Peradeniya, Oeylon	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, Bobkhanpton ...	1
Ditto, Saharanpur ...	151
Ditto, Sydney ...	1
Government Garden, Oawnpore ...	5
Ditto, # Ootaoamund ...	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, Bhagalpnr ...	1
Ditto, Gwalior State Gardens, Gwalior ...	1
Ditto, State Garden*; Morvi ...	1
Ditto, Sujjan Niwas Gardens, Oodey- pore ...	2
Ditto, Technological Museum, Sydney	6
Messrs. H. Bull & Son, Giabome ...	4
,, Reasoner Brothers, Royal Palm Nurseries, Oneoo, Florida, United States of America	21
,, F. Sander & Co., St. Albany England ...	11
Percy Braine, Esq., Wenda, Oeylon ...	2
Oolonel Sir Henry Ooltett, K.C.B., South Kensington, London ...	1
Dr. D. D. Cunningham, Calcutta ...	1
Dr. F. Francesbhi, California ...	5
J. Gammie, Esq., Mungpoo ...	1
J. Sykes Gamble, Esq., Dehra Dun ...	7
Mrs. Martin, Baipor ...	1
Dr. D. Brain, Boyal Botanio Garden, Sibpur ...	1
J. Parkes, Esq., Nimbong ..	3
A- Ferry, Esq., Winkmore Hill, London ...	12
George Watt, Esq. M.B., CM., O.X.X., Eeporter on Eoonomio Products to the Government of India, Indian Museum, Calcutta ...	4
Rai Dr. Kanye Lall Dey, Bahadur, ai.s., Calcutta	2
Abdul Kholil, Plant Collector, Fort Stedman ...	1
Total ...	1,048

APPENDIX IV.

Statement showing needs distributed from the Royal Botanic Garden during the year 1896-97.

To WHOM SENT.	Number of parcels or packets.
W. T. Thiselton Dyer, Bsq [^] F.B.S., O.M.G., C.I.B., Director, Eoyal Gardens, Kew, London	132
Director, Botanio Gardens, St. Petersburg, Russia, Do., Royal Botanio Garden, Peradeniya, Ceylon	21 8
Botanio Garden, Bangalore	8
Ditto, Berlin	9
Ditto, Brisbane	4
Ditto, Buitenzorg, Java	4
Ditto, Cambridge	1
Ditto, Darjeeling	133
Ditto, Edinburgh	59
Ditto, Palermo [^] Sioily	163
Ditto, Saharanpur	30
Ditto, Singapore	3
Secretary, Agri-Hortioulcultural Society of India, Calcutta	5
Ditto, ditto Moulmein	3
Ditto, ditto Rangoon	10
Superintendent, Government Gardens, Allahabad	4
Ditto, ditto, ditto, Ootaoamund	166
Ditto, ditto Agri-Hortioulcultural Gardens, Lahore	10
Ditto, ditto Horticultural Garden, Luoknow	7
Ditto, Agri-Hortioulcultural Society, Madras	24
Ditto, Victoria Garden, Bombay	10
Ditto, Baj Garden, Baroda	2
Ditto, H. H. the Niiam'a Public Gardens, Hyderabad, Deoan	2
Ditto, State Gardens, Gwalior	34
Ditto, Agri-Hortioulcultural Department, Gondal, Kathiawar	1
Ditto, Berhampore Jail, Berhampore, Mur- fihidAD&d	1
Ditto, Mymensingh Jail , Mymensingh	1
Ditto, Subsidiary Jail, Kiahorganj	1
Ditto, Oospore Praotioal Institution of Horti-flori and Agrioulcure, Oossipore	2
Ditto, Temple Medical School, Fatna, Bankipore	8
Ditto of Surveys, Vankaner, Kathiawar	2
Curator, Agricultural and Botanioal Department, Siem Leone, Africa	164
De Administrate der Deli Mnat [^] happij, Madan , Sumatra	40
District B ingor Patna	11
Ditto, Eut Indian Bailiray, Dinapore	11
Exeoutiv* Engineer, Southern Shan States Divimoo, Fort fltedman, Bonn*	4
Northern Dutriot OffBoer, Port Blair	2
Supervisor in charge, Chakradharpur subdiTision, Chakradhanmr. Simrhhblum	13
Sub-overseer	8
Ditto, QobindpTir .obdiTMion, Qobindpur	6
Ditto, .B«nl«ibditiaion, BuThi [^]	4
fuboidiquate in ohaig* Kaadis rabdivimion	2
impanal German Oonml, Oaloatte	4
Sigpor A. Todmro delU Galia, Oooral-General da Peñe, PaJ«iiiio, 8Wljr	17
M S [^] ar M *««*» G«««»I * ^ Sodete National [^] d'Aoatimatation da Frmm», Paru	4
II. le Oonwrvataur, Jardin BotaoiqiM, (tawre, Switstrland	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, ... Jerrack, Karaohi ...	2
Collector of Puri ...	2
Forest Officer, Ulwar State, tTlwar ...	47
Imperial and Boyal 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
„ Beasoner Brothers, Oneco, Florida ...	7
Government Botanist, Melbourne, Victoria ...	83
President, Municipal and District Board and Deputy Commissioner, Kohat ...	1
Manager, Burdwan Raj Estate, Burdwan ...	1
Manager of Dhenkapal ...	2
The Most Noble the Marquis of Lansdowne, K. O., Bowood ...	20
The Right Hon'ble the Earl of Annedey, Castle Wellaix ...	46
Vice-Chairman, Bangpur Municipality ...	6
Post Master, Diamond Harbour ...	11
Professor £)r. E. Huth, Frankfurt, Brandenburg, Germany ...	6
Sir A. JT Arbuthnot, X.C.B.T., London ...	15
A. L. Alexander, Esq., Seaforth, Nilgiri Hills ...	1
Arthur K. Bulley, Esq., Ohappel Street, Liverpool ...	20
J. Braine, Esq., Dibrugarh ...	1
Dr. O. Biurohand, Hamburg ...	8
Mr. Brien, Beech Cottage, Roxburghshire ...	8
„ Cooveijee Bomonjee, Calcutta ...	1
Percy Braine, Esq., Wenda, Ceylon ...	4
J. F. Church, Esq., Jalpaiguxi ...	3
O. Curtis, Esq., Penang ...	3
Surgn.-lieut. Isao MoDennott, Bangalore ...	2
Dr. F. Frajioeschi, California ...	3
J. Gaxmie, Esq., Kungpoo ...	2
Norman Grey, Esq., KuUakambay, Nilgiri Hills ...	1
Bev. A. H. Hildesly, M.A., Sanawar ...	6
G. Leverett, Esq., Maaolipatam ...	6
„ Mr&Lyal, OooohBehar ...	1
W. K. Morrison, Esq., Devonsoire, B6Rmdi (dudbi) ...	143
Bev. P. Noydfors, Saugor ...	8
M. C. Naudin, Antibes, Franoe ...	1
Bev. O. M. Paokenham, Orumlin, Ireland ...	1
A. Perry, Esqu, Winkmore Hill, London ...	4
David Fraán, Esq., Fetteroárñ, Sootland ...	8
Colonel J. E. Sandeman, Calcutta ...	20
„ SijQioox, Qiabome, 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. SoSller, Esq., New Jersey, U.S.A. ...	3
Mr. C. E. Srinivasaohar, Goniopal, Coorg ...	4
Dr. J. W. H. Trail, F.B.S., Aberdeen, Scotland ...	19
5. L. Watkins, Esq., California, T.J.SA. ...	3
George Watt, Esq., X.B., CM., Cl.B., Calcutta ...	3
M. E. Webb, Esq., Peradeniya, Ceylon ...	1
G. W. Wilson, Esq., Weybnidge, London ...	17
6. Marshall Woodrow, Esq^Poona ...	6
Lala Mohun Singh, Dehra Dun ...	1
Motilal Tribhovandas Fosdar, Esq., Bombay ...	7
„ Babu Bata Krishna Datta, Banaglit ...	1
„ Bihumbhur Ghose, Taki ...	1
„ Banku Bebaxi Sin^b, Rannghtt ...	25

APPENDIX IV—concluded.

To WHOM BBNT.	Number of parcels or packets.
Babu Dwarka Nath Boy, Bankipore ...	179
„ Heerulal, Ajaigarli ...	1
„ Jadab Chandra Biswas, Caloutta...	2
„ P. Mookerjee, Bettiah ...	1
„ Prosaonno Coomar Chatterjee, Serampore ...	1
„ Panohanana Bhattaoharjee, 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 Specimen* received during the year 1896-97.

	Number.
The Director, Royal Garden, Kew ...	1,757
J. Sykes Gamble, Esq., Dehra Dun ...	77
J. F. Duthie, Esq., Director, Botanical Survey, Northern India ...	2,066
W. A. Talbot, Esq., Forest Department, Eanara ...	339
H. H. Haines, Esq., Conservator of Forests, Bengal	212
Geo. V. Nash, Esq., Columbia College, New York, United States, America ...	557
The late Baron Ferd. von Mueller, F.B.8., K.C.M.G., Melbourne ...	301
O. M. Ryan, Esq., Karachi ...	48
C. Curtis, Esq., Penang ...	215
H. N. Ridley, Esq., Singapore ...	993
A. H. Curtiss, Esq., Jacksonville, Florida, United States, America ...	200
A. A. Heller, Esq., Hawaiian Islands ...	435
N. B. Ranade, Poona ...	25
T. F. Bourdillon, Esq., Travanoore ...	62
O. W. Hope, Esq., Dehra Dun ...	74
Surgn.-Capt. F. P. Maynard, Beluoh-Afghan Bound- ary Commission ...	58
C. G. Pringle, Esq., Mexio ...	212
M. Em. Drake del Castillo, Rue Balzac 2, Paris ...	629
C. R. Dun, Esq., Chin Hills, Upper Burma ...	140
Dr. A. Batalin, Herbarium, St. Petersburg ...	847
Prof. A. Engler, Herbarium, Berlin ...	283
Director, botanio Garden, Buitensorg ...	215
Superintendent, Botanio Garden, Palermo ...	24
Dr. Bitter von Mennagetta Gunther Beck, Vienna	103
M. le Prof. M. Musy, Musfe Cantonal, Fribourg ...	650
Prof. Radlkofer, Botanio Institute, Muenohen ...	197
R. L. Ileinig, Esq., Andamane ...	<127
Abdul Kholfi, Botanical Collector, Upper Burma ...	530
R. Pantlinff, Esq., Sikkim ...	1,794
Shaik Mokim, Botanical Collector, BhoUn, 4a ...	205
R. T. Baker, Ew. Technological Museum, Sydney, New South Wales ...	187
J. H. Hart, Esq., Trinidad... ...	1
M. W. Ridley, Esq., Lncbiow ...	1
8. E. Rita, Esq., Shillong ...	6
£ ^ 5 ° * ^ ^ ' ' t t y ' ' • - - -	1
H. J. Cox, ESQ., Bettiah, North Bihar ...	1
Dr. G. Watt, Caloutta ...	3
J. W. Oliver, Esq., Katha district ...	1
M. Cas. de Candolle, Geneva ...	1
W. A. Kennedy, Esq., Darjeeliug ...	1
B. W. HulMt, Esq., Singapore ...	1

APPENDIX V—concluded.

	Number.
Dr. Hare, Fort Atjal, Lushai Hills ...	1
R. L. Proudlook, Esq., Ootaoamund ...	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 1896-37.

	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. O. deCandolle, Geneva ...	583
Ditto, Minneapolis, Minnesota, United States of America ...	137
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., Kanara ...	127
Botanic Garden, Natal ...	162
Herbarium, Queen's College, Cork ...	176
Natural History Survey, Minnesota, United States of America ...	263
Dr. Haus Sohinz, University, Zurich ...	514
M. Drake deCastillo, Paris ...	470
Professor Sargent, United States of America Munich University ...	291
G. F. Sooty-Ellib, Esq. ...	77
G. F. Sooty-Ellib, Esq. ...	214
Sir Dietrich Brandis, K.C.I.B., 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 ...	80
Arthur Bennett, Esq., V.L.S., England ...	10
E. M. Holmes, Esq., F.L.B., London ...	9
Dr. G. Watt, C.I.B., Calcutta ...	8
Prof. KV ^{***} , Berlin ...	7
Dr. K. Goebel, Muenchen ...	6
B. Fantling, 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 ...	3
G. M. Ryan, Esq., Karachi ...	1
Total distributed ...	12,197

G. KING, M.B., *Bgde.-Surgn.-Lt.-CoL,*
Supdt., Royal Botanic Garden, Calcutta.

FINANCIAL DEPARTMENT.

MISCELLANEOUS.

DARJBEUNG, THIS 29TH JUNE 1897.

RESOLUTION—No. 3607Mis.

READ—

The Report of die 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. Günther 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. Haine, Deputy Conservator of Forests, Bengal, and Mr. Bourdillon, Conservator of Forests, Travanoore. 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 its uses. It also contains a lithograph of each species with careful analyses of the parts of the flower, and thus supplies a long felt want, since, owing to the infrequency of their flowering, the bamboos have hitherto been little understood, and the different species have been very imperfectly recognised. 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. 3608Mie.

COPT forwarded to the Superintendent of the Royal Botanic Garden, Calcutta, for information.

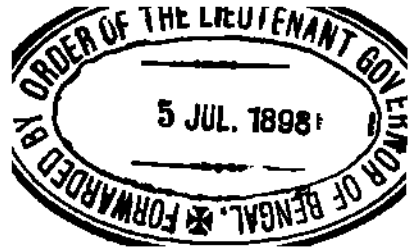
By order of the Lieutenant-Governor of Bengal,

B. FOLEY,

Under-Secy. to the Govt. of Bengal.

CALCUTTA,

The 29th June 1897.



ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR
THE YEAR 1897-98.

No. 25G., dated Royal Botanic Garden, Sibpur, the 10th May 1898.
From—SUBGOVERNOR MAJOR D. PRIN, M.B., F.R.G.B., 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 11th Annual Report of the
Royal Botanic Garden, Calcutta, for the year 1897-98.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE
YEARS 1897-98.

THE effects of the scanty rainfall of two successive seasons, detailed in the opening paragraph of the Annual Report for 1896-97, were, if possible, more marked in the months of April and May 1897 than they had been in the corresponding months of the two preceding years; and though at the end of the last rainy season the conditions were more nearly normal than they had been at anytime during a period of twenty months, the effects on the vegetation have not even yet disappeared. These effects have been, as usual, most marked in the case of delicate plants, and especially in the case of the orchids which have been more unsatisfactory even than last year; most of the kinds have come into flower abnormally early, the blossoms bring unusually scanty and evanescent. On the other hand, a number of exotic plants that do not as a rule flower freely have found the abnormal conditions suitable, and many American species in particular, that usually produce leaves only, have been in full flower. The profuse flowering of a large *Aristolochia* (*A. gigas*) has been one of the features of the season, and the show of *Brownias* and *Amhantias* in the Thomson avenue was particularly fine. This avenue, along with the Clarke avenue, was, as mentioned in the last annual report, taken in hand just before the commencement of the year, and, in spite of much sickness among the garden 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, as must the much-needed fern conservatory and the almost equally urgently called-for glazed plant-house. The increased number of visitors to the Garden and the difficulty of dealing with cases of violation of the garden rules, has made it necessary to address Government, asking for sanction to certain 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 pulses and other leguminous crops cultivated in Bengal, samples of which were procured by the Director of Land Records and Agriculture, and sown in the Feibpur Experimental Farm adjoining the garden. This study may, when completed, lead to the preparation of a note similar in nature to the notes already prepared on the wheats and the mustards of Bengal. Being, however, a larger subject than those, it has been impossible to complete the study of the pulses in a single season. A series of experiments in the cultivation of rhea-seed was undertaken by the Curator of the Garden; the results were not conclusive, but they went to show 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., Uhandernagore. 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 plants of economic interest were received during the year from the Reporter on Economic Products in order to be cultivated and, when they had flowered and fruited, determined. In this way the sources of a considerable number of economic products that were hitherto of unknown or doubtful origin have been definitely ascertained. Many of the results have been quite unexpected, and by mutual arrangement between the Garden, on the one hand, and the Department of the Reporter on Economic Products with the Government of India, and the Indigenous Drugs Committee on the other, this branch of study will be considerably developed, and promises to be of the greatest interest and utility.

3. *Herbarium*.—The work in the Herbarium was carried on in the usual manner, although the severe illness both of the Superintendent of the Garden and of the Curator of the Herbarium during the months of August, September and October interfered very considerably with its efficiency. Nevertheless 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 orchids of Sikkim figured in the eighth volume of the *Annals of the Royal Botanic Garden*. During the year 9,475 specimens were added to the collection. The chief donors to the Herbarium were Mr. W. T. Thiselton-Dyer, Director of the Royal Garden, Kew, who gave 957 specimens; Mr. J. F. Duthie, Director of the Botanical Department, Northern India, who contributed 1,207; Dr. G. Watt, Reporter on Economic Products to the Government of India, who added 1,158; Dr. M. Treub, Director of the Botanical Garden at Buitenzorg in Java, who gave 579; and Mr. G. R. M. Murray, Keeper of the Botanical Department, British Museum, who contributed 575. An interesting collection of plants from Algeria was presented by Sir H. Collett, and one from Natal by Mr. Medley Wood; collections of plants from Mexico and from Florida were acquired by purchase; Dr. Gunther Beck von Mannagetta contributed a third instalment of Cryptogamic specimens from the Vienna Hofmuseum. Small but interesting collections of North-West Frontier plants were received from Surgeon-Major H. H. Johnston and Surgeon-Captain J. J. Milne, and of plants of Western India from Mr. G. M. Woodrow and the Hon. H. E. M. James. Mr. Lace of the Forest Department contributed a very excellent collection from the Punjab Himalaya, and Mr. C. Maries a small collection from the neighbourhood of Naini Tal. A valuable collection of bamboos and of economic leguminous plants was made in Sikkim during the year, and presented to the Herbarium by Mr. G. A. Gammie. Sir George King on his departure presented to the Herbarium a small but very interesting collection of European mosses. One of the features of the year has been the receipt of a collection made in the hitherto unexplored Kachin Hills by Lieutenant E. Pottinger, I.A.S., and by a botanical collector whom, thanks to the exertions of Lieutenant Pottinger and the kindness of Lieutenant Cruddas, s.c., Commandant of the Battalion of Military Police at Myitkyina it has been possible to depute to this very rich and interesting region. The result of a year's work in this area have been made the subject of a joint note by Lieutenant Pottinger and myself, which is about to appear in the *Journal of the Botanical Survey of India*.

4. *Botanical Publication*.—The great work of the year has been the completion of an account of the *Orchid flora 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 in and near the Cinchona plantations, and, being strongly recommended thereto by Sir George King, ultimately systematised his efforts into a project for providing a life-sized figure of the plant, accompanied by analyses of the parts of the flower on an enlarged scale, of every orchid found within the limits of Sikkim from the Tern to the mows, 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 Messrs. G. S. Ghose and Co. at the Government School of Art. A series of these lithographs, printed more lightly than the rest, have been specially coloured, under the careful supervision of Mr. Pantling, by the Messrs. Ghose and Co. The work constitutes one of the most magnificent and valuable contributions to systematic and regional botany that

has recently appeared. Sir George King has likewise published, in conjunction with Mr. Pantling, a paper in the *Journal of the Asiatic Society of Bengal*, entitled *Some New Indo-Malayan Orchid*; this deals with hitherto undescribed species, chiefly from Burma and from Malaya, met with in the course of their comparative study of the Sikkim species. In the same journal Sir George King has also published the tenth part of his *Materials for a Flora of the Malayan Peninsula*. During the year I published, as Curator of the Herbarium, the following papers:—*JSfovicitB Indices XV, XVI (some additional Leguminosae; more additional species of Labiales)* in the *Journal of the Asiatic Society of Bengal*; *A New Curcuma from the Deccan*, in the *Journal of the Bombay Natural History Society*. For the Department of Land Records and Agriculture, Bengal, *A Note on the mustards cultivated in Bengal* was prepared, and a *Precis of the Literature of the Australian Wheat-rust Conferences, 1890-96*, was drawn up for the Government of India in the Department of Revenue and Agriculture.

5. *Library*.—The usual periodicals were added, and a number of books were obtained, partly by purchase and partly in exchange for the Annals of the Garden.

6. *Interchange of plants and seeds*.—The details of the receipts and issues of plants and seeds during the year are fully given in Appendices I—IV. The smaller total of issues as compared with 1896-97 (36,885 in place of 54,874) is due to a smaller demand for plants of Rhea, the greater number of those interested in the cultivation of thi&crop having apparently obtained in former years as many plants as they require. The plants received numbered 15,212, and included some very interesting and valuable species from Kew, with a fine collection of rarities from Hongkong, Singapore and Penang, communicated by Mr. Lane, and a few rare plants from Colombo obtained by myself.

In connection with the researches of Sir George King into the orchid flora of India at large, considerable collections of the smaller and less showy species, overlooked by the regular "orchid-hunter," but quite as interesting botanically as the handsomer commercial kinds, have been received from various friendly contributors in Burma and elsewhere*. One-half of each such contribution is always despatched to the Cinchona Plantation, to be attended to by Mr. Pantling, since the more temperate conditions that prevail there often ensure success in flowering species that fail to survive at Calcutta. Of seeds, 1,116 packets were received, and 2,177 were distributed during the year.

7. The earthquake that occurred on 12th June 1897 did considerable 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 its valuable contents. The officers of the Department of Public Works, though overwhelmed with similar work, at once realized that, while the building was structurally quite safe, the effects of roof leakage on the priceless collection it contains might be disastrous, and promptly took steps to render it comparatively water-tight. The quarters of the Superintendent suffered greater structural damage, and the repairs that were necessary occupied several months. The only other building in the Garden that suffered severely was the cupola that protects Dr. Roxburgh's monument.

8. *Lloyd Botanic Garden*—There is nothing of outstanding interest to record in connection with this garden for the year under review. The patch of ground referred to in the last annual report as about to be added to the Garden has been made over to the Superintendent of the Botanical Garden by the Municipality, but the Commissioner of the Rajshahi Division, while admitting 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; the Superintendent, the Curator of the Herbarium, the Curator of the garden and the Assistant Curator being all incapacitated by malarial fever at one and the same time, the only officer to escape being the Probationer Gardener who joined the garden staff during the preceding year. The most untoward result of this severe and prolonged sickness was that Sir George King, the Superintendent of the Garden, acting under medical advice, was compelled to ask for permission to retire from the service of Government, with effect from the 28th February 1898, on which date he made over charge of the gardens of which he has had control since 10th July 1871, and which he has practically made what they are. By reason of sickness I was, as Curator of the Herbarium, absent on privilege leave for 23 days from 6th to 27th November, and the Curator of the garden, Mr. G. T. Lane, had to proceed on sick leave to Europe for eight months on 7th March 1898. Mr. Lane's duties are being performed by Mr. H. J. Davies, Assistant Curator, while Mr. G. H. Cave, 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. C. Hartless, third Assistant, Cinchona Plantation, in addition to his own. The office of the Botanic Garden has been under the charge of Babu 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	3	156
Ditto, Ootacamund	30
Ditto, Darjeeling	17	569
Memorial Garden, Cawnpore	50.
Baj Garden, Darbhanga	2	6
Government House Garden, Calcutta	648
Zoological Garden, Calcutta	3
Messrs. F. Sander and Company, St. Albans, England.	2	3	123
Agri-Horticultural Society of India, CalouUa	145
Ditto, ditto of Burma, Rangoon	1	...	19
Ditto, ditto of Punjab, Lahore	6	105
W*Ourrie, Esq., Calcutta	1
W. J. Irvine, Esq., Ohot 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	686
J. Martin, Esq., Raipur	7
Dr. J. B. Menzies, Mangaldai, Assam	i	36
R. Pantling, Esq., Mungpoo	ii	976
J. Parkes, Esq., Nimbong	1,680
G. Mod. Peohe, Esq., Moulmein	9	1,854
Mrs. J. C. Prazer, Burma	10
S. E. Rita, Esq., Shillong	1	2
J. S. Slater, Esq., Engineering College, Sibpur.	10
T. J. Spooner, Esq., Kathiawar...	1	3,800
Dr. George Watt, M.B., C.I.B., Galoiitta	5	702
Mrs. H. Wylie, Nepal	39
Babu B. M. Boy, Alipore	2
" S. P. Chatterjee, Calcutta	275
Sir George King, M.B., LL.D., F.R.S., K.C.I.B., collected at Suriel.	70
Dr. David Prain, oolleoted in Ceylon	2	49
G. T. Lane, Esq., colleoted in Singapore	2	1,204
H. J. Davies, Esq., colleoted in Mungpoo	32
Shaik Mokim, oolleoted in Burma	7	1,718
Bam Nath, Blacksmith, Baxarah	1
Bought from Colonel Baird's sale	12
"Unknown donors	2	24
Total	9	86	16,212

APPENDIX II.

Statement showing plants sent cut from 1st April 1897 to 31st March 1898.

To WHOM SENT.	Ward-ian cases.	Boxes	Number of plants.
1	2	3	4
Boyal 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
Baj Garden, Darbhanga	1
State Garden, Gwalior	...	2	54
Government House Garden, Calcutta	50
Zoological Garden, Calcutta	1,008
Barraokpore Park	1
His Majesty the Shah of Persia	4	...	42
Sirs. John Dempster, Park Lea, Mauohester	1	150
Messrs. Hugh Low and Company, Clapton Nursery, London.	...	3	500
Messrs. F. Sander and Company, Nurserymen, St. Albans, England.	...	6	3,605
Agri-Horticultural Society of India, Calcutta	5,016
Ditto ditto, Rangoon	1	...	25
Ditto ditto, Lahore	...	10	195
Commissioner, Bankipore	...	1	300
Deputy Commissioner, Tezpur	...	12	274
Ditto, Seoni	...	1	5
Ditto, Dumka *	...	18	450
Revenue Commissioner, Idar, Bombay	100
Deputy Conservator of Forests, Bengal, Dooars	12
Magistrate, Burdwan	...	19	462
Officiating Magistrate, Noakhali...	...	8	160
Subdivisional Officer, Ulubaria	36
Secretary, Talliganj Club	2
Ditto, Municipal Board, Gaya	...	1	2
District Engineer, Backergunge, Barisal	...	5	125
Ditto, Bhagalpur	...	31	780
Ditto, Dinajpur	...	62	800
Ditto, Faridpur	...	8	200
Ditto, Howrah	150
Ditto, Malda	...	3	68
Ditto, Noakhali	...	4	90
Executive Engineer, 2nd Calcutta Division, Calcutta.	150
Ditto, Nadia Bivers Division, Berhampore.	...	IC	400
Ditto, Eastern Bone Division, Bankipore.	50
^a Superintendent, Presidency Jail, Calcutta	562
Ditto of Jail, Arrah	100
Ditto ditto, Barisal	...	1	in
Ditto, Foundry and Shell Factory, Cossipore.	600
Ditto of Horticultural Socy, Institu- tion, Cossipore	91
Soldier; Garden* Fort Warrang
« Jft, Barraokpore	461
ST " College Hospital, Calcutta	HO
«an Hospital, Calcutta	6J3
Uowrah Hospital	a
6t. Thomas' Church, Howrah	1,412
			600

APPENDIX U—continued.

To WHOM SENT.	Ward- ian cases.	Boxes.	Number of plants.
1	2	3	4
St. Vincent's Home, Kidderpore...	200
La Martinière School, Calcutta	300
Normal School, Calcutta	200
Indian Museum, Calcutta	2
University, Calcutta...	300
Experimental Farm, Sibpur	50
T. C. Ambler, Esq., Purulia	500
Colonel T. P. G. Augelo, Eae Bareli, Oudh	2	52
Colonel Thomas, 7, Passeggio, Leghorn (Livorno), Italy	50
Surgeon-Colonel Banks, Calcutta	1	53
J. W. Boilard, Esq., Bankipore	1,000
Dr. J. S. Brooke, Asansol	8	200
B. Brunfeld, Esq., Alipore	250
Mrs. Burleigh, Calcutta	30
G. H. Cane, Esq.	30
E. C. Chisholm, Esq., Travancore	100
Bevd. E. Cornelius, Jamtara	7	150
W. Currie, Esq., Calcutta	2
Dr. Dickie, Calcutta	4
E. H. Elder, Esq., Cossipore	10
F. B. Elphinstone, Esq., Purulia...	...	1	1,700
A. Falconer, Esq., Raj gunge	48
A. Forbes, Esq., Banohi	1	25
Q. Barton Groves, Esq., Abu, Bajputana	1	17
Bevd. W. A. Hamilton, Boorkee	4	100
E. B. Havell, Esq., Calcutta	102
G. Henderson, Esq., Calcutta	850
H. E. Houghton, Esq., Madras	2	30
Miss James, Calcutta	6
A. H. James, Esq., Bungliot	1	8
Colonel Jarrott	50
J. Lamb, Esq., Shillong	1	1
W. C. E. Lane, Esq., Golagokurun Nath	600
W. J. Lewis, Esq., Barkhola, Cachar	1	12
Thomas Lee, Esq., Sibpur	790
C. Little, Esq., Alipore	12
Mrs. Macdonell, Engineering College, Sibpur	431
Surgeon-Major J. W. Macnamara, Tezpur, Assam...	...	2	11
Bevd. J. M. Macphail, Simultola	13	800
E. H. Man, Esq., C.I.E., Port Blair ...	5	...	191
C. Curtis, Esq., Forest Department, Penang...	...	1	100
J. B. Morton, Esq., Mourbhunj	12
Mrs. Maxwell, Howrah	200
Dr. J. B. Menzies, Mangaldai, Assam	4	56
Surgeon-Major B. H. Moore, M.D., A.M.S., Calcutta	200
Mrs. Neill, Calcutta...	100
R. Pantling, Esq., Mungpoo	15	471
Bevd. G. A. Panes, Banka, Deoghur	9	200
Major J. N. Patsy, Calcutta	200
H. A. Pearson, Esq., Patna	500
G. McD. Peohe, Esq., Moulmein	1	6
T. Ponton, Esq., Howrah	30
W. Baitt, Esq., Raniganj	12	300
Bevd. F. Bowatt, Mihijam	4	100
Mrs. Sanders, Alipur	2
B. W. F. Shaw, Esq., Engineering College, Sibpur	635
Mrs. Gordon Sims, Beguserai	7	185

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. B. H. Tregellas, Khulna	2	50
Captain T. Welluschug, Austrian Lloyd's Agent	6
W. Weston, Esq., Meherpur	1	25
Messrs. Melville, Henry and Company, Ban- kipore	500
„ Kilburn and Company, Calcutta ...	1	...	5
„ J. Maokillican and Company, Caloutta	150
„ F. Buthven and Company, Purulia	I	1,000
„ Andrew Yule and Company, Calcutta.	1	...	35
Oil Company, Limited, Shalimar	103
Maharaj Dhiraj Kumar Tara Lall Sing, Baghunathpur	2	12
Kumar Bameshwar Malliah, Howrah	30
Prince Iinben, Caloutta	2
Nawab Abdool Sovan Chowdhury, Bagura	4
Bai Screndra Nath Mitra Bahadur, Caloutta.	50
Babu B. M. Roy, Alipore	28
„ G. D. Chatterjee, Howrah...	2
„ H. C. Boy, Calcutta	5
„ H. C. Shaha, Cooch Eehar	1	5
„ J. N. Chowdhery, Sibpur	80
„ J. N. Mitra, Memari	60
„ K. N. Boy, Subamapur	2	8
„ N. B. Ghose, Sibpur	30
„ P. C. Chatterjee, Chanditalla	24
„ P. C. Ghosh, Caloutta	4
„ P. N. Bhattacharjee, Caloutta	200
„ B. K. Bhattacharjee, Calcutta	500
„ S. P. Chatterjee, Caloutta	799
„ T. J. N. Mitra, Sibpur	2
Monohershaw Motabhoy, Guzrat	600
Nimye Chandra Shaxnanta, Maniktalla	6
Bam Nath Blacksmith, Baokoara	1
Shaik Wahid Bux, Caloutta	50
Total ...	12	306	36,885

APPENDIX in.

*Statement showing seeds received from 1st April 1897 to 31st March
1898.*

FAOM WHOM RECEIVED.	Number of parcels or packets.
W. T. Thiselton Dyer, Esq., F.R.S., C.M.G., C.U.L, Director, Royal Gardens, Kew, London...	?
Botanic Garden, Bangalore ...	1
Ditto, British Guiana ...	2
Ditto, Brisbane ...	69
Ditto, Buitenzorg ...	1
Ditto, Cape Town ...	3
Ditto, Darjeeling ...	96
Ditto, Durban ...	2
Ditto, Graaff, Cape Colony ...	3
Ditto, Marseilles ...	2
Ditto, Melbourne ...	35
Ditto, Saharanpur ...	23
Ditto, Saigon ...	12
Ditto, Singapore ...	1
Ditto, Trinidad ...	11
Government Botanist, Melbourne ...	39
Colonial Botanist, Department of Agriculture, Brisbane ...	11
Acting Colonial Secretary, Lagos ...	1
Deputy Conservator of Forests, Kurseong Division, Sukna ...	1
Secretary, Agri-Horticultural Society of India, Calcutta ...	1
Superintendent, Government Horticultural Garden, Lahore ...	662
Ditto, ditto, Nagpur ...	1
Superintendent, Agri-Horticultural Society, Madras ...	4
Ditto, Gwalior State Gardens, Gwalior ...	2
Ditto, JSujjan Niwas Gardens, Oodeypore ...	1
Opium Agent, Bihar, Bankipore ...	1
Deputy Opium Agent, Malwa Opium Agency, Indore ...	1
Messrs. Dammann and Company, San Giovanni a Teduccio, Provinioia di Napoli, Italy ...	42
„ Herb and Wulle, Naples, Italy ...	16
„ F. Sander and Company, St. Albans, England ...	9
Eight HonTrte the Earl of Annesiey, Castle Wellan, Co. Down, Ireland ...	1
G. A. Gammie, ESQ., Mungpoo ...	41
J. Gammie, Esq., Mungpoo ...	3
Spooner Hart, Esq., Calcutta ...	1
A. H. James, Esq., Poomong ...	1
H. Laoe, Esq., Camp, vid Dalhousie ...	1
E. H. Man, Esq., C.I.B., Port Blair ...	4
J. Parkes, Esq., Nimbong ...	4
J. L. Sohiller, Esq., 404, E. 34th Street, New York, XI S. A. ...	3
Ashington Thomson, Esq. Ohandernagore ...	1
Prank Walker, Esq., Tasmania ...	36
George Watt, Esq., M.B., CM., C.I.B., Eeporter on Economic Products to the Government of India, Indian Museum, Caloutta ...	5
G. Marshall Woodrow, Esq., Foona ...	4
Carlos Wrek^ Esq., San Jos* (Costa Rioja), Central Amerioa ...	2
Dr. L. G. Tates, fcanta Barbara, California ...	4
Bai Dr. Kanyelall Dey Bahadur, Oaloutta ...	3
Mokim Plant Collector, Myitkyina ...	2
Total ...	1,116

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 Direr, Esq., F.R.S., C.M.G., C.I.B., Director, Boyal Gardens, Kew, London ...	116
Director, Botanio Gardens, St. Petersburg, Russia ...	33
Do., Eoyal Botanio Garden, Peradeniya, Oeylon ...	10
Botanio Garden, Adelaide ...	2
Ditto, Bangalore ...	10
Ditto, Brisbane ...	2
Ditto, Buitenang ...	7
Ditto, Birmingham ...	2
Ditto, Cambridge ...	6
Ditto, Christ Church, New Zealand ...	2
Ditto, Darjeeling ...	129
Ditto, Dunedin, New Zealand ...	2
Ditto, DTlrbn, Natal ...	2
Ditto, Edinburgh ...	27
Ditto, Glasnevin ...	9
Ditto, George Town, Demerara ...	2
Ditto, Goneshkind, Poona ...	5
Ditto, Graaf Beinet, 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 ...	2
Ditto, Malta ...	3
Ditto, Manchester ...	2
Ditto, Massachusetts, United States, America ...	2
Ditto, Melbourne, Australia ...	1
Ditto, Montreal, Canada ...	2
Ditto, Nagpur, Central Provinces... ..	5
Ditto, Napier, New Zealand ...	2
Ditto, Natal ...	9
Ditto, New York City... ..	2
Ditto, Ootaoamund ...	11
Ditto, Oxford ...	2
Ditto, Pampelmoubse, Mauritius ...	5
Ditto, Sahaxanpur ...	29
Ditto, Singapore ...	5
Ditto, Sydney jr, New South Wales ...	2
Ditto, Trinidad , West Indies ...	2
Ditto, Uitenhage, South Afrioa ...	2
Ditto, Wellington, New Zealand ...	2
Secretary, Agri-Horticultural Society of India, Calcutta ...	8
Ditto ditto, Madras ...	19
Ditto ditto, Moulmein ...	8
Ditto ditto, Btagoon... ..	11
Secretary, Indian Gardening Association, Calcutta ...	67
Ditto, Boyal Botanio Garden, Begent's Park, VLondon	2
Superintendent, Government Garden, Allahabad ...	8
Ditto, Botanical Station, Barbadoes, West Indies	2
Ditto, Boyal Horticultural Society's Garden, Chis- wiok, London ...	2
Ditto, Boyal Horticultural Society's Garden, Lahore ...	16
Ditto* GOTL Horticultural Garden, Looknow !!!	28
Ditto, Victoria Garden, Bombay ...	8
Ditto, at Guel, Baroda ...	3
Ditto, &SS ...	19
Ditto, Gwalior State Garden, Gwalior ...	2
Curator, Botanical & Medical School, Patna, Bankipow ...	2
Ditto, ditto, Dominica, ditto ...	9
Ditto, ditto, Hawaii, Sandwich Island ...	2
Ditto, ditto, Lagoa, West Africa ...	2
Ditto, ditto, sT^itta' Neris, West Indiet... ..	2
Ditto, ditto, St. LucrU, West Indies ...	a

APPENDIX IV—continued.

To WHOM SENT.			Number of parcels or packets.
Herm Direktordes	bot Gartens,	Agram, Austria-Hungary	2
Ditto	ditto,	Basel, Switzerland ...	1
Ditto	ditto,	Bern, Switzerland ...	1
Ditto	ditto,	Belgrad, Servia ...	3
Ditto	ditto,	Bonn, Germany ...	2
Ditto	ditto,	Branschweig, Germany...	8
Ditto	ditto,	Breslau, Germany ...	2
Ditto	ditto,	Buda-Pest, Austria-Hun- gary ...	2
Ditto	ditto,	Erlangen, Germany ...	2
Ditto	ditto,	Frankfurt, Germany ...	2
Ditto	ditto,	Freiburg im B., Germany	2
Ditto	ditto,	Giessen, Germany ...	2
Ditto	ditto,	Graz, Austria-Hungary	2
Ditto	ditto,	Hamburg, Germany ...	2
Ditto	ditto,	Heidelberg, Germany ...	2
Ditto	ditto,	Innsbruck, Austria-Hun- gary ...	2
Ditto	ditto,	Jena, Germany ...	2
Ditto	ditto,	Klagenfurt, Austria-Hun- gary ...	2
Ditto	ditto,	Kamerun, West Africa...	2
Ditto	ditto,	Koenigsberg, Germany...	2
Ditto	ditto,	Kolozsvar, Austria-Hun- gary ...	2
Ditto	ditto,	Erakau, Austria-Hungary	2
Ditto	ditto,	Laibaoh, Austria-Hun- gary ...	2
Ditto	ditto,	Leipzig, Germany ...	2
Ditto	ditto,	Lemberg, Austna-Hun- gary ...	2
Ditto	ditto,	Muenchen, Germany ...	2
Ditto	ditto,	Munster, Germany ...	2
Ditto	ditto,	Polyteohnikum. Dresden, Germany ...	2
Ditto	ditto,	Rostock, Germany ...	2
Ditto	ditto,	Strassburg, Germany ..	2
Ditto	ditto,	Trieste, Austria-Hungary	2
Ditto	ditto,	Tuebingen, Germany ...	2
Ditto	ditto,	Universitat, Wien, Aus- tria-Hungary . . .	4
Ditto	ditto,	Wurzburg, Germany ...	2
Ditto	ditto,	Zurich, Switzerland ...	9
Herm Direktor,	Czeohisohe Universitat,	Prag, Bohemia, Austria-Hungary ...	2
Ditto,	Deutsche Universitat,	Prag, Boh^aia, Aus- tria-Hungary ...	2
Ditto,	dee Groseherzoglioh bot. Gartens,	Darm- stadt Germany ..	2
Ditto,	Eoëniqlioh Botanisdhen Garden,	Dresden, ^Germany ...	1
Ditto,	Landetbaumsöhule,	Ait Gelow, Germany ...	2
Herm Inspektor,	dee hot. Gartens,	Buouresoi, Romania ...	8
M. le Direoteur,	dn Jardin BottaniQue,	A. fnnt^nfaiii ...	3
Ditto,	ditto,	Augers, Franoe ...	2
Ditto,	ditto,	Antibes, Franoe ...	1
Ditto,	ditto,	Anvers, Belgium ...	1
Ditto,	ditto,	Athens, Greece ...	6
Ditto,	ditto,	Bordeaux, France ...	3
Ditto,	ditto,	Bruxellee, Belgium	1
Ditto,	ditto,	Caen, France ...	3
Ditto,	ditto,	Cairo, Egypt ...	2,
Ditto,	ditto,	Chnstiania, Norway	3
Ditto,	ditto,	Gaud, Uelgium ...	1
Ditto,	ditto,	Genève ...	27

APPENDIX IV—*continued.*

To WHOM BBNT.			Number of parcels or packets.
M. le Directeur, du Jardin Botanique,	Groningen,	Holland	2
Ditto,	ditto,	Kjobennaven, Den- mark ...	2
Ditto,	ditto,	Kieji, Euesia ...	2
Ditto,	ditto,	Leiden, Holland ...	2
Ditto,	ditto,	Leige, Belgium ...	1
Ditto,	ditto,	Lou vaine, Belgium	2
Ditto,	ditto,	Lund, Sweden ...	2
Ditto,	ditto,	Lyon, Franoe ...	1
Ditto,	ditto,	Moskau, Bussia ...	2
Ditto,	ditto,	Odessa, Russia ...	2
Ditto,	ditto,	Rouen, Franoe ...	2
Ditto,	ditto,	Saigon ...	3
Ditto,	ditto,	Stookholm, Sweden	2
Ditto,	ditto,	St. Denis, Reunion	2
Ditto,	ditto,	Upsala, Sweden ...	2
Ditto,	ditto,	Warschau, Bussia...	2
Ditto,	Jardin de la Ville,	Nanoy, Franoe ...	1
Ditto,	Do., Medicale, Facultede	Medioine, Rue Cuvier, 12, Paris ...	2
Ditto,	du Jardin d'aoolimatation,	Cannes, Franoe	2
Ditto,	Ditto	Hammi, Al- geria.	9
Ditto,	Ditto	OroUva, Canary Islands.	2
Ditto,	du Jardin des Plantes,	Clermont-Ferraud France.	2
Ditto,	ditto,	Dijon, Franoe ...	2
Ditto,	ditto,	Grenoble, Franoe	2
Ditto,	ditto,	Montpellier, France.	1
Ditto,	ditto,	Nantes, Franoe...	1
Ditto,	ditto,	Paris ...	4
Ditto,	ditto,	Toulouse, Franoe	2
Ditto,	ditto,	Tours, Franoe ...	2
M. le President do la	Commission du Jardin Botanique,	Lille, Nord, Franoe.	2
11. Demote, President du Jardin d'aoolimatation,	Cannes,	Franoe.	48
Big. Direttore, 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. ...	6
Ditto,	ditto,	Genova, do. ...	1
Ditto,	ditto,	Modena do. ...	2
Ditto,	ditto,	Padova, do. ...	2
Ditto,	ditto,	Pavia, do. ...	2
Ditto,	ditto,	Parma, do. ...	2
Ditto,	ditto,	Pisa, do. ...	2
Ditto,	ditto,	Portioi, do. ...	4 [#]
Ditto,	ditto,	Siena, do. ...	2
Ditto,	ditto,	Torino, do. ...	2
Ditto,	ditto,	R.Univendta.Boma, ...	1
Ditto,	ditto,	deSanGiobbe, Venetia,	2
Sig. Director, de la Es	Haiti West Indies.		
Herr g^ & Engler, Dwktor	KfL bot Garte^	Btrlin,	9
M. r. Administrateur, du Jartind	« Plants Ork	au Lomt,	2
M. le Jardinier en	Marne, Franoe.		

APPENDIX IV—*continued.*

To WHOM 6BNT.		Number of
		packets.
		2
		2
Kg Dlf«*or do J.t«D *<*	toUBTOTil^, OoimlM,	3
		2
TM te	Jardin botan, Madrid, Spain ...	2
8SJ	ditto, Iama, South America ...	2
SS°*	ditto: Quito, South Amenca...	2
Sifr	ditto, Santiago, South Ame-	2
Ditto.	ri^	2
TM TA	Italy. ditto, Bio, BrazU, South America	38
Sig Sretto	re, dell Orto Botonico di Brera, Mdano, Lorn-	2
Director,	Department of Public Gardens	2
Director,	Shaw School of Botany, St. Louis, Mo., United	1
Director of the United	States Tropical Nursery, Dabordie,	1
Director, Botanic Gardens	and Publio Parks, Cape Town,	2
Professor Drude,	Director of Botanical Gardens, Dresden,	6
Ditto, Dr. E. Warming,	Director, Botanio Garden,	1
Ranger, Botanic Garden,	Auckland, New Zealand ...	2
Superintendent,	Alipore Jail, Alipore ...	1
Ditto,	Berhampore Jail, Berhampore, Murahidabad ...	3
Ditto,	Bhagalpur Jail, Bhagalpur ...	2
Ditto,	Bogra Intermediate Jail, Bogra ...	2
Ditto,	Central Jail, Midnapore ...	2
Ditto,	Central Jail, Raipur ...	2
Ditto,	Chittagong Jail, Chittagong ...	2
Ditto,	Comilla Jail, Comilla ...	2
Ditto,	Dumka Jail, Dumka ...	2
Ditto,	Hazaribagh Jail, Hazaribagh ...	2
Ditto,	Jessore Jail, Jessore ...	2
Ditto,	Maldah Jail, Maldah ...	2
Ditto,	Motihari Jail, Motihari ...	9
Ditto,	Mymensingh Jail, Mymensingh ...	2
Ditto,	Noakhali, Jail, Noakhali ...	2
Ditto,	Palamanu Jail, Palamanu ...	2
Ditto,	Patna Jail, Bankipore ...	2
Ditto,	Puri Jail, Puri ...	1
Ditto,	Rajshahi Central Jail, Rampur Boalia ...	2
Ditto,	Ranchi Jail, Ranchi ...	2
Ditto,	Rangpur Jail, Rangpur ...	2
Ditto,	Saran Jail, Ohapra ...	1
Ditto,	Annandale Gardens, Simla ...	1
Ditto,	of Forests, Marwar, Jodhpur ...	1
Ditto,	Cossipore Practical Institution, Cossipore ...	3
Ditto,	Cooch Behar State, Public Works Depart-	25
Ditto,	ment, Cooch Behar ...	3
Divisional Forest Officer,	Sukkur, Sind ...	1
Deputy Commissioner,	Kamrup, Gauhati, Assam ...	27
Ditto,	Tespur, Assam ...	188
Imperial Commissioner,	Uganda Protectorate, East Africa ...	1
District Engineer,	Dinajpur ...	6
Ditto,	Patna ...	18
Executive Engineer,	Myitkyina Division, Myitkyina ...	2
Conservator of Forests,	Central Circle, Madras ...	9
Ditto,	Port Blair, Andamans ...	

APPENDIX IV—continued.

To WHOM SENT.	Number of parcels or packetfl.
Deputy Conservator of Forests, Belgaum, Bombay Presidency	2
Extra Assistant Conservator of Forests, Tehri (Garhwal), Tehri	8
Supervisor in charge, Chakradharpur subdivision, Chakra- dharpur	1
Sub-Overseer in charge, Govindpur subdivision, Govindpur	5
District Traffic Superintendent, Bombay-Boroda and Central India Railway, Cawnpore	3
Messrs. Hush, Low and Company, Clapton Nursery, London	1
„ MoLeod and Company, Calcutta	27
„ Cutler, Palmer and Company, Calcutta	8
„ Reasoner Brothers, Boyal Palm Nurseries, Onega, Florida	9
„ E. 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	157
M. le Conservateur, Jardin Botanique, Geneve, Switzerland	3
Government Botanist, Melbourne, Victoria, Australia ...	87
Colonial Botanist, Queensland, Brisbane	2
Administrator, Botanical Station, Gambia	2
Big. Conde de Fioalho, Director do Jardim Bot. da Escola polyteonica, Lisbon, Portugal .. ^	1
Huzur Deputy Collector, Sukkur, Bind	1
Postmaster, Diamond Harbour, 22-Parganas	11
L'Hortioole Internationale (Sooiete Anonyme) Bue Wertz 79, Pare Leopold, Brussels, Belgium	1
Hon'ble C. Hardinge, C.B., Her Britannio Majesty's Charge d'Affairs, Teheran, Persia, care of the Political Resident, Persian Gulf	42
Bight Hon'ble the Earl of Annesley, Castle Wellan Co Down, Ireland	35
Professor Dr. Y. Wittrook, Director, "Hortus Bergianus," Stockholm, Sweden	1
Sir J. D. Hooker, Q.C.S.I., C.B., P.E.S., &O., 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 Offio, Assam	2
Surgeon-Captain A. B. S. Anderson, Indian Museum, Caloutta	11
A. Brownlow, Esq., Banskali, Chittagong	1
Dr. Bomford, Medical College, Calcutta	12
Dr. Bower, F.B.S., Professor of Botany, University of Glasgow	1
M. W. Barbey, Les Jordils, Chambezy, pres Geneve, Switzer- land	1
W. Bull, Esq., 636, King's Road, Chelsea, London, 8. W.	2
John B. Burnett, Esq., Telloherry, Malabar Coast	4
W. Brien, Esq., Beedh Cottage, Bowden, Newton, St. BDswell>, Roxburghshire.	^ j o
H. R. H. Ooxe, Esq., i.cs, Civil and Sessions Judge/ Midnapore	1
M. Cas. de Candolle, Cour St. Pierre, 3, Genev. Switzerland	1
Lieutenant H. W. Oruddaa, Commandant, Military Police. Myitkyins, Upper Burma	*
M. J.	6
M.	6
C. Curtis, Esq., Forest Department Penang, Straits SetUel	**
M.	2
J. M. Domengoe, Esq. VKopa Taluk, Kadur dirtriot	—
Miss A. Eastwood, Ban Francisco, United States, America...	<<

APPENDIX IV—concluded.

To WHOM SENT.	Number of parcels or packets.
J. Gammie, Esq., Mungpoo	2
T. Hanbuxy, Esq.; La Mortola, pres Yentimiglia, Liguria, Italy	3
D. G. Head, Esq., Curator of Garden, Crystal Palace, Sydenham	2
Bevd. A. H. Hildesley, Sanawar, Simla, Punjab	23
W. H. Lee, Esq., i.c.s., Collector of Puri, Puri	1
W. H. Lewis, Esq., Duloberra Tea Estate, Barkhola	1
Herrn GustavMann, 24, Romanstrafse, Muenohen, Bavaria	3
E. H. Man, Esq., Port Blair, Andamans	2
Wm. Moore, Esq., Dibrugarh, Upper Assam	2
B. Pantling, Esq., Deputy Superintendent, Government Cinohona Plantation, Mungpoo	1
G. M. Peche, Esq., Moulmein, Burma	3
Dr. G. Post, Beirut, Syria	2
J. L. Schiller, Esq., Rutherford, New Jersey, United States, America	7
S. O. Smith, Esq., Delhi	3
Dr. J. W. H. Traill, F.E.S., Old Aberdeen, Aberdeen	15
Colonel Thomas, 7, Passeorgio, Leghorn (Ldvurno), Italy	4
Big. Direttore, dell'R. Orto Botanico, Palermo, Sidlia, Italy	2
H. J. Veitch, Esq., Chelsea, London, S. W.	2
George Watt, Esq., M.B., C M., C.I.E., Reporter on Economic Products to the Government of India, Indian Museum, Calcutta	1
Frank Walker, Esq., Nurseryman and Seedsman, Sandhill, Tasmania	87
S. L. Watkins, Esq., Oak Leaf Nurseries and Floral Gardens, Grizzly Flats, California, United States, America	3
G. M. Woodrow, Esq., Poona	7
Thomas S. Ware, Esq., Tottenham, London	2
L. Wray, Esq., Jr., State Museum, Larut, Perak, Straits Settlements	2
O. M. Wilson, Esq., Heatherbank, Weybridge, near London	13
Dr. L. G. Yates, Santa Barbara, California, United States, America	2
M. H. Youpghusband, Esq., Baipur, Central Provinces	4
Mr. Cooverjee Bomonjee, Calcutta.	3
Sahibzada Nooroodeen Khan, Bussapagla, 24-Pargauas	4
Babu Abinash Chandra Sen, Sibpur	4
„ Ambioa Charan Pal, Proprietor, Oossipore Practical Institution of Horti.-Flori. and Agricultural Depart* ment, Oossipore	10
„ Ausit Kumar Gangulhr, Barisal	1
„ Bata Krishna Datfo, Habibpur, Banaghat	1
„ Brojo Nath Banerjee, Sub-Overseer, Burhi, Haaari-Dagn	1
„ Girija Prosad Mookerjee, Gobardanga, 24-Parganas	1
„ Gop^ Chandra Datta, Sibpur	24
„ Heerulall, Ajaigarh	1
„ Jadub Chandra Biswas, Calcutta	1
„ Kedar Nath Roy, Purulia, Bengal	6
„ Gopal Ohanira Dhur, Overseer, Public Works Department, Siliguxi	5
„ Prosona Coomar Chatterjee, Chunditolla Nursery, Serampore	26
„ 8. P. Chatterjee, Victoria Nursery, Calcutta	4
„ Sridhar Chuokerbutty, Extra Assistant Conservator of Forests, Palaniau	1
Total distributed	2,177

APPENDIX V.

List of Herbarium Specimens received during the year 1807-98.

	Number,
Director, Royal Gardens Kew (general)	957
Keeper, Botanical Department, British Museum, London (general)	575
Director, Botanical Department, Hof Museum, Vienna (cryptogams)	100
Sir George King, x.c.i E. (British mosses)	150
„ H. Collet, K.C.B. (Algerian plants)	161
J. Medley Wood, Esq., A.L.S., Durban (Natal plants)	128
A. H. Curtiss, Esq. (plants of S. United States)	130
O. G. Pringle, Esq. (plants of Mexico)	315
Director, Botanical Department, Northern India, Saharan- pur	1,207
Reporter on Economic Products with Government of India (Assam plants)	1,158
Director, Botanical Department, Singapore (Plants of Malay Peninsula)	374
Director's Lands Plantentuin, Buitensorg, Java (Plants of Malay Archipelago)	579
College of Science, Poona (Deccan plants)	60
Lieutenant Pottinger, K.A. (Kaohin hill plants)	300
Shaik Molrim, Plant Collector, (ditto)	2,500
R. Li. Heinig, Esq., Forest Department (Andaman plants) J. H. Lace, Esq., Forest Department (Plants of Punjab Himalaya).	280
G\ A. Qammie, Esq. (Sikkim bamboos and economic plants)	150
O. Maries, Esq. (Naini Tal plants)	106
Surgeon-Captain C. J. Milne (Plants from Tirah)	34
Surgeon-Major H. H. Johnston (plants from Buner)	17
Hon'ble H. G. M. James, C.A.I. (Bind desert plants)	12
Petty contributions	21
Total	<u>9,475</u>

APPENDIX VI.

List of Herbarium Specimens distributed during the year 1897-93.

	Number.
Herbarium, Royal Gardens, Kow	962
Ditto, British Museum, London	959
Ditto, Arnold Arboretum, Cambridge, Massachusetts, United States, America	351
Herbarium, Harvard University, Cambridge, Massachusetts, United States, America	344
Herbarium, Smithsonian Institution, Washington, United States, America	420
Dr. J. H. Sandberg, Minneapolis, Minn., United States, America	170
Reporter on Economic Products to Government of India, Calcutta	1,353
Director, Botanical Department, Northern India, Saharan- pur	574
Government Central Museum, Madras	388
College of Science, Poona	265
J. S. Gamble, Esq., Director, Imperial Forest School, Dehra Dun	184
W. A. Talbot, Esq., Deputy Conservator of Forests, Bel- gaum	180
Herbarium, 's Lands Plantentium, Buitenzorg, Java	234
Ditto, Royal Gardens, Berlin	904
Ditto, Brussels	450
Ditto, Florence	664
Ditto, Fribourg	470
Ditto, Leiden	609
Ditto, Munich	443
Ditto, Paris	885
Ditto, St. Petersburg	698
Ditto, Upsala	540
Ditto, Vienna Hofmuseum	790
Ditto, Zurich	399
M. O. de Gandollo, Genova	835
M. E. Drake del Castillo, Paris	386
Herr W. Kinzel, Dahmo, Brandenburg	25
Total	<u>14,482</u>

DAVID PRAIN, M.B., *Surgeon-Major*, I.M.S.,
Snj>dt., Royal Botanic Garden, Calcutta.

FINANCIAL DEPARTMENT.

MISCELLANEOUS.

DAEJEELING, THE 27TH JUNE 1898.

RESOLUTION—No. 3559Mis.

READ—

The Report of the Royal Botanic Garden, Calcutta, for the year 1897-98.

Read again—

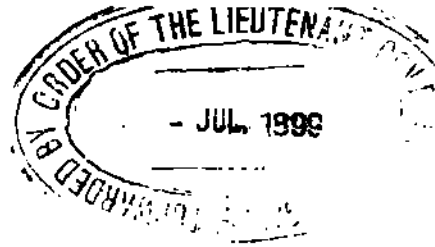
The Report of the Royal Botanic Garden, Calcutta, for the year 1896-97, with the Resolution recorded thereon.

THE Botanic Garden has not yet fully recovered from the drought of the last two years. Among the more delicate plants the orchids suffered especially, and most of them came into flower too early and produced but scanty blossoms. On the other hand the unusual conditions proved most beneficial to a number of exotics, and several species flowered, which had before produced nothing but leaves. The Clarke and Thompson avenues were thoroughly repaired during the year, and the Roxburgh Avenue and the road leading from the banyan tree to the Andul Road will be taken in hand as soon as funds permit. Visitors to the Garden were more numerous than ever, and it was found necessary on this account to make some additions to the Garden rules.

2. Plants of an economic value received especial attention. In the cold weather Dr. Prain commenced the study of the various kinds of pulses and other leguminous crops cultivated in Bengal, but as the subject is a large one, it could not be brought to completion in one season. The results of a series of experiments on the cultivation of rhea-seed were inconclusive, but they tended to show that seed derived from plants grown in Lower Bengal is very often infertile. At the request of the Reporter on Economic Products to the Government of India, certain of the varieties of cotton were experimentally cultivated, and the same officer supplied a number of tubers, bulbs, and seeds of plants of economic interest to be cultivated and determined, after they had flowered and fruited. In this way, Dr. Prain reports, the sources of a considerable number of economic products, the origin of which was unknown or doubtful, have been definitely ascertained, and this branch of study is about to be developed.

3. The collection in the Herbarium was increased by 9,475 specimens, the chief donors being Mr. Thiselton-Dyer, Director of the Royal Garden, Kew; Mr. Duthie, Director of the Botanical Department, Northern India; Dr. Watt, Reporter on the Economic Products to the Government of India; Dr. Treub, Director of the Botanic Garden at Buitenzorg in Java; and Mr. Murray, Keeper of the Botanical Department, British Museum. An interesting collection of plants from Algeria was received from Sir H. Collett, and one from Natal from Mr. Medley Wood, while collections of plants from Mexico and from Florida were acquired by purchase. Contributions were also received from Dr. Gunther Beck von Mannagetta, Surgeon-Major Johnston, Surgeon-Captain Milne, Mr. Woodrow, the Hon'ble Mr. James, Mr. Lace and Mr. Maries. An addition, that is especially noteworthy, was that of a collection, which had been made in the hitherto unexplored Kachin Hills by Lieutenant Pottinger and by a botanical collector who was deputed to that region. Sir George King presented the garden with a collection of European mosses, and Mr. Gainmie with a collection of bamboos and economic leguminous plants from Sikkim. The number of specimens of plants sent out from the Garden to the chief herbaria of Europe, America and Asia amounted to 14,482.

4. The chief work of the year was the completion of an account of the *Orchids of Sikkim* by Sir George King and Mr. Pantling. This constitutes one of the finest contributions to systematic and regional botany that has recently appeared. Some valuable papers on botanical subjects were also published by Sir George King and Dr. Prain, the contributions of the latter



ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR
THE YEAR 1898-99.

No. 20GK, dated Royal Botanic Garden, Sibpar, the 35th May 1899.

From—MAJOR D. PRAIN, M.B., F.R.S.B., 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 112th 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 three successive reports do not on this occasion have to be recorded. The show of 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 collectors, 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 *Sioeroxylon* belonging to the natural family *Sapotocea* were sent for examination to Professor Donaten 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 *Polygala butyracea*, an African species which yields an excellent vegetable oil. For the gift 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 India* 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 no result 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 7,185. The work of the Herbarium was considerably interfered with, owing to my being absent till 20th June 1898, when Lieutenant Gage took over the management of the Herbarium.

over charge of the post and duties of Curator of the Herbarium, and again owing to my absence on deputation from 6th January, 1899, till 20th February 1899. The number of specimens contributed reached 10,672, many of the collections received being of special interest and value. From Sir W. Thiselton-Dyer, Director of the Royal Gardens, Kew, the Director, Rijk's, Herbarium, Leiden and Heer Buysmann of Middleburg, Holland, interesting general collections were received. A collection of Australian plants was sent by the Government Botanist, Melbourne. Three American collections, from the Eastern and Southern United States respectively and from Mexico, were acquired by purchase, while small collections of North American plants were presented by the United States National Museum, Washington, and by Professor Fowler of Kingston, Ontario. Mr. Medley Wood of Durban, Professor Schinz of Zurich, and Herr Schlechter of Berlin, formerly of Cape Town, presented three 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 Asiatic acquisitions were a large and very fine collection of Chinese plants made by Dr. A. Henry, Ssumao, and a smaller one from the same country sent by Captain Pottinger, B. 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 Sikkim orchids received from Mr. R. Pantling in order to complete the authentic sets of Sikkim orchids distributed last year; also a very valuable collection of mosses from Coorg made by Dr. T. L. Walker of the Geological Survey. This latter collection forms the subject of a special report by Dr. V. F. Brotherus of Helsingfors 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. G. Bourne and Mr. T. F. Bourdillon from the Pulney Hills and Travancore ; by Mr. G. M. Woodrow from Poona; by Captain C. J. Milne from Ali Masjid; by Mr. J. F. Duthie, Director of the Botanical Department, Northern India, and Mr. J. S. Gamble, Director of the Imperial Forest School, Dehra Dun, from the N.-W. Himalaya; by Mr. G. A. Gammie, from Sikkim. 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 myself. Thanks are due to J. F. Severin, Esq., of Tingali Bam, who has kindly supervised the work of a native collector in the Jaboka Naga Hills ; to Lieutenant Cruddas, B.A., who gave great assistance in the early part of the year to a native collector working in the Kachin Hills, and to E. H. Man, Esq., C.I.E., who kindly directs the work of a native collector in the Andamans and Nicobars. Captain A. R. S. Anderson, I.M.S., of Her Majesty's Indian Marine S.S. *Investigator*, has also kindly helped the Garden by taking a native collector with him during the time that the *Investigator* was engaged in a survey of the coasts of North Andaman.

4. *Botanical Publications*—The chief publications of the year have been *Descriptions of Some New Plants from the North-Eastern Frontiers of India*, by Sir G. King and myself, published in the *Journal of the Asiatic Society of Bengal*; *A Note on the Botany of the Kachin Hills North-East of Myittha*, by Captain Pottinger, B.A., and myself, published in the *Records of the Botanical Survey of India*; *On three new genera from the Kachin hills*, by myself, published in *Scientific Memoirs by Medical Officers of the Army of India* and *Herbier Boissier*, by myself, published in the *Bulletin de l'Herbier Boissier*.

5. *Library*—The usual purchases were added, and a number of works were added to the library. The library is steadily increasing in size, and it will be considerably to the number of collections in which the details of the plants and seeds during the year are fully given in Appendix IV. The

(31,867 in place of 36,885) is due to the same cause noticed last year—a mailer demand for plants of rhea; less interest in this plant, which was noted in the report for 1907, than because those who wish to grow the crop are not provided with a sufficiency of plants.

The number of packets of seeds received during the year was 1,101, practically the same as last year. The number distributed was, however, considerably increased (5,794 in place of 2,177). This satisfactory result is largely due to its having become possible to induce native collectors to again 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 allotment* of money both for the Royal 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 eight 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 thereto 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
Royal 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 Oornu, Paris	1	4
H. B. Morse, Esq. (Paikho6) Lungohow, 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, 8.8. JPurulia	1	62
Government Museum, Madras	171
Ldeut. Bayley, South Lushai Hills	2	37
A. G. Bourne, Esq., D.S.O., F.B.S., Madras	2	48
J. ii. Lister, Esq., Pashok	70
E. H. Man, Esq., C.I.E., Port Blair ...	12	*6	1,236
O. Maries, Esq., Gwalior	5	606
W. F. Mitchell, Esq., Calcutta	35
B. Pantling, Esq., Mungpoo	5	581
G. MoD.. Peohl, Esq., Moulmein	5	1,070
Mr. J. a Eraser, Kalewa, Burma	4	898
J. P. Severin, Esq., Tiogali Bam, Assam	2	87
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- jeelinnff and Nilgiris.	80
Shaik Mokim, oollected in Chittagong, Anda- mana, &c.	2	8	1,008
Munrfii Abdul Hock, collected in Assam	4	275
XUnknown donors	4	98
Total ...	17	15"	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
Royal Gardens, Kew, London ...	3	...	114
Royal 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	2	223
Royal Botanic Gardens, Peradeniya, Ceylon	1	...	35
Botanic Gardens, Ootacamund	2	14
Ditto, Saharanpore	1	12
Ditto, Nagpur	1	183
Ehusru Bagh, Allahabad	6	119
Lall Bagh, Bangalore	1	25
Yiotoria Garden, Bombay	4	85
Memorial Garden, Cawnpore	1	50
Belvedere Garden, Alipore	2	71
Zoological Garden, Caloutta	854
Barrackpore Park	57
His Excellency the Viceroy's Body Guard, Ballygunge.	30
M. Wm. Barbey, Les Jordils, Chambézy, prts Genève, Switzerland.	...	1	180
Professor J. Briquet, Directeur, Jardin Botanique, Gendve, BwitslerantL	...	1	176
Sig. Thomas Hanbury, Palazzo Orengo, JbaMortola, Ventimiglia, Italy.	...	1	181
S. T. Heard, Esq., Rossdohan, Tohill, Kenmare R. 8. O., Co. Kerry, Ireland.	...	1	28
Howard Fox, Esq., Bosehill, Falmouth	1	28
Herr Professor Dr. H. Sohinz, Direktar, Botan. Gartens, Zurich, Switzerland.	...	1	182
Well. Ed. Heer Dr. M. Treub, Directeur, 'sLands Plantentuin, Buitenzorg, Java.	...	1	146
Dr. J. Urban, Königl. Botanisches Museum, Berlin.	1	...	16
Agri-Horticultural Society of India, Caloutta	2,018
Ditto ditto of Punjab, Lahore	...	19	248
Conservator of Forests, Dehra Dun.	1	12
Ditto, Central Provinces, Nagpur.	...	4	50
Deputy Conservator of Forests, Sonthal Parganas, Dumka.	...	5	200
Magistrate, Burdwau	27	694
Ditto, Howrah	150
District Magistrate, Gaya	12	30(i)
Subdivisional Officer, Feni	7	165
Ditto, Jamui, Monghyr	1	24
Ditto, Rajmahal...	1	16
Chairman, Eatwa Municipality	1	8
Ditto, Khulna Municipality	2	fiO
Ditto, District Board, Nadi*	40	1,000
Ditto, Local Board, Hatkkandi, Caohar	...	6	160
Vice-Chairman, MuniioipaUty, Silohar	8	150
Executive Engineer, 2nd Oaloutta Divinon, Cdcutta.	220
Ditto, Publio Works Department Caloutta.	600
Ditto, ChoU Nagpur Divinon, Ranchi.	...	87	92ft

APPENDIX II—continued.

To WHOM SENT.	Ward- ian oases.	Boxes.	Number of plants.
1	2	3	4
Distriot Engineer, Backergunge, Barisal	10	250
Ditto, Bhagalpur	14	350
Ditto, Bogra	22	560
Ditto, Dinajpur	50	1,250
Ditto, Howrah.	129
Ditto, Murshidabad	20	500
Ditto, Noakhali	6	150
Resident Engineer, Port Commissioners (for the office of Commissioners for toP Port of Oaloutta).	300
Overseer, Distriot Board, Feni	6	150
Superintendent, Her Majesty's Common Prison, Bombay.	...	2	50
Ditto, ComiilaJoil	7	162
Ditto, Small Arms Ammunition Fao- tory, Dum-Dum,	400
Ditto, Gunpowder Factory, Iohapur	100
Ditto, Government Printing, India, Calcutta.	48
Commandant, 8th Regiment, M. L, Barrack- pur.	25
Mayo Hospital, Oaloutta	24
Howrah Hospital	130
St. John's Church, Calcutta	108
St. Thomas' Churoh, Howrah	111
St. Vincent's Home, Kidderpore	...	8	395
St. Patriok's Sohool, Asansol	200
Church Mission Sooty, Calcutta	55
Little Sisters of the Poor, Calcutta	18
Loretto Convent, Entally, Calcutta	16
Pratt Memorial Bohool, Calcutta	50
Art School, Calcutta	150
Ravenshaw College, Outtaok	3	74
East Indian Railway, Howrah	1,300
Howrah and Sheakhali Tramway	200
Eastern Bengal State Railway, Sealdah	...	3	60
Indian Museum, Oaloutta	160
Government Museum, Trivandrum	...	1	1
Agricultural Farm, Sibpur	200
Revd. H. Anderson, Calcutta	400
Surgeon-Colonel Banks, Kamptee	...	2	69
O. B. Bnyley, Esq., Barisal	4	100
Revd. E. H. Bradburn, Nadia	1,590
O. Buokland, Esq., C.I.B., Caloutta	2
Revd. A. Campbell, Pathuria, Manbhum	...	4	100
„ E. Cornelius, Jamtara	4	100
N. J. Oox, Esq., Howrah	2
Revd. Dr. J. A. Dyer, Paohambe, Giridih	...	4	100
D. Elder, Esq., Buddertolla	20
M. Fitzgibbons, Esq., Sibpur	6
G. A. Gammie, Esq. Mungpoo	2	38
Dr. E. M. Gordon, Bilafqur	18
O. Gray, Esq., Ooonoor, Nilgris	...	1	29
B. Heaton, Esq., Sibpur	226
W. Henderson, Esq., Oaloutta	1,166
Revd. W. J. Hoiking, Earmator	...	4	100
H. E. Houffhton, Esq., Madras	1	16
Herd. W. Kief el, Ranohee	16	400
M. U Ltauenant Lalande, B.S. Duplti*	1

APPENDIX U—concluded.

To -WHOM SENT.	Ward- ian cases.	Boxes.	Number of plants.
1	2	3	4
Thomas Lee, Esq., Sibpur	90
W. H. Lewis, Esq., Oachar	1	30
J. L. Lister, Esq., Fashok, Ghoom	1	6
A. Maodonell, Esq., Engineering College, Sibpur.	7
Wm. McGlaahan, Esq., Oossipore	28
W. T. Martin Macdonald, Esq., Siwan, Saran	1,000
E. H. Man, Esq., C.I.B., Fort Bfirir ...	14	...	461
Mrs. Maxwell, Howrah W-	310
B. D. Mehta, Esq., Calcutta	1	21
B. H. Morton, Esq., Jalpaiffuri	1	212
Surgeon-Major Murphy, Calcutta	100
Bevd. W. S. Page, Barisal	100
„ G. W. Panes, Banka	4	200
B. Pantling, Esq., Mungpoo	8	646
G. McD. Peohe, Esq., Moulmein	20	3
Bevd. P. Bowat, Mihijam	1	100
J. F. Severh, Esq., Tingali Bain, Assam	4	* 277
J. S. Slater, Esq., Engineering College, Sibpur	12	6
W. M. Smith, Esq., Madhupur	86
Bevd. B. W. H. Stuart, Dum-Dum	3	26
„ B. H. Tregellas, Khulna...	60
E. Upton, Esq., Calcutta	2	1,666
J. C. White, Esq., Guntok, Sikkim	388
Messrs. Ootavius Steel & Co., Calcutta	22	1,000
„ Andrew Yule & Co., Bajgunge	12
„ F. Sander & Co., St. Albans, England	1	100
Nawab Ehakhan Hossein, Cawnpoie	8
Zamindar Bhagwan Bao, Etawah	1	8
„ Sur Veo Narayan Singh, Balgarh	3	66
Babu Bhaira Mull, Ohandernagore	2,000
„ B. B. Boy, Calcutta	62
„ G. C. Datta, Sibpur	40
„ H. S. Boy, Calcutta	7
„ H. P. Datta, Sibpur	16
„ H. C. Hitter, Cossipore	6
„ P. C. Ghosh, Calcutta	2
„ B. B. Boy, Serampore	6
„ S. N. Boy, Dinajpur	1	2
Sheik Lall Mahamad, Calcutta	116
99 Gobeidhun, Triahbigha	300
Total ...	23	476	31,867

▼

APPENDIX in.

*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, Ootaoxund	10
Ditto, Fenang	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	8
Deputy Opium Agent, Malwa, Indore	2
Senior Director, do Jardin botan Quito, Ecuador, South America	14
Senior Director, Santiago, Chile, South America	17
Herr Direktor, des Bot. Gartens, Berlin	1
Messrs. Beasoner 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 Oornu, Paris	19
Miss A. Eastwood, San Francisco, California	6
Dr. F. Franoesohi, Santa Barbara, ditto	1
G. A. Gammie, Esq., Mungpoo	9
D. Hooper, Esq., Indian Museum, Calcutta... ..	6
W. Holland, Esq., Iohang, China	2
E. H. Man, Esq., C.I.B., Port Blair	8
G. S. Sargent, Esq., Arnold Arboretum, Jamaica Plain, Mass., U. S. A.	4
Major Prām	7
J. Parkes, Esq., Mungpoo	3
U. Pantling, Esq., Mungpoo	109
Prof. Claude Verne, Grenoble, France	1
George Watt, Esq., M.B., O.M., C.I.B., Reporter on Economic Products to the Government of India, Indian Museum, Calcutta	3
Bai Kanye Lall Dey Bahadur, Calcutta	1
Abdul Hock, Plant Collector, Assam	128
Shaik Mokim, Plant Collector, Burma	67
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
Royal Gardens, Kew, London ...	...	65
Director, Botanic Garden, St. Petersburg, Russia	...	8
Ditto, Tiflis, Russia	...	37
Ditto, Peradeniya, Ceylon	...	1
Botanic Garden, Adelaide, New Zealand	...	1
Ditto, Bangalore	...	13
Ditto, Birmingham	...	1
Ditto, Bermuda	...	65
Ditto, Brisbane	...	3
Ditto, Buitenzorg	...	44
Ditto, Cambridge	...	63
Ditto, Cambridge, Massachusetts, 17. 8. A.	...	1
Ditto, Christ Church, New Zealand	...	1
Ditto, Copenhagen	...	80
Ditto, Cork	...	1
Ditto, Darjeeling	...	143
Ditto, Dunedin	...	1
Ditto, D'Urban, Natal	...	1
Ditto, Edinburgh	...	123
Ditto, Glasnevin	...	61
Ditto, George Town, Demerara	...	3
Ditto, Glasgow	...	1
Ditto, Ganeshkhind, Poona	...	3
Ditto, Graham's Town, Cape Colony	...	1
Ditto, Graf Reinet, Cape Colony	...	1
Ditto, Grenada	...	4
Ditto, Hobart Town, Tasmania	...	1
Ditto, Hongkong	...	1
Ditto, King William's Town, Cape Colony	...	1
Ditto, Liverpool	...	1
Ditto, Malta	...	2
Ditto, Manchester	...	1
Ditto, Melbourne	...	8
Ditto, Montreal, Canada	...	1
Ditto, Nagpur	...	14
Ditto, Napier, New Zealand	...	1
Ditto, Pietermaritzburg, Natal	...	1
Ditto, New York City	...	1
Ditto, Ootaoamund	...	5
Ditto, Oxford	...	1
Ditto, Pampelmousse, Mauritius	...	1
Ditto, Regent's Park, London	...	1
Ditto, Pondioherry	...	8
Ditto, Baharanpur	...	47
Ditto, Saigon	...	20
Ditto, Singapore	...	31
Ditto, Sydney	...	2
Ditto, Trinidad	...	4
Ditto, Uitenhage, Cape Colony	...	1
Secretary, Agri-Horticultural Society of India, Calcutta	...	6
Ditto, ditto, Moulmein	...	8
Q . * P^9k **** Rangoon	...	15
Superintendent, Government Horticultural Garden, Laoknow	...	22
Ditto, Government Gardens, AUWI^	...	2
Ditto, Royal Horticultural Society's Garden, Chiffwick, London*	...	1
The Superintendent, Government Agri-Horticultural Garden, Lahore	...	10
Ditto, Agri-Horticultural Society, Madras	...	21
Ditto, Victoria Garden, Bombay	...	6
Ditto, State Gardens, Baroda	...	4
Ditto, Gwalior State Gardens, Owalior	...	15

APPENDIX IV—*continued.*

To WHOM SENT.		Number of parcels or packets.
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. Vincent, West Indies	...	3
Ditto, ditto, Sierra Leone, West Africa	...	65
Ditto, Botanic Garden, University of California, San Francisco, U. 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, Minister, Germany	...	1
Ditto ditto, am Polytechnikum, Dresden Germany	...	1
Ditto ditto, Frag, Austria-Hungary	...	2
Ditto ditto, Rostock, Germany	...	1
Ditto ditto, Strassburg i. E., Germany	...	1
Ditto ditto, Trieste, Austria-Hungary	...	5
Ditto ditto, Tubingen, 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, Ztrich, Switzerland	...	109
Ditto ditto, U. Institut., Zurich, Switzerland	...	3
Herrn Inspektor des Botan. Gartens, Bucuresci, Romania	...	1
Herrn Direktor d. landwirthschaftl Versuchsstation, Anhalt, Germany.	...	22
Ditto, der Samenoontrolstation, Arendsee, Sachsen, Germany.	...	22
Ditto, d. Agriculture, botan. Versuchsstation, Breslau, Germany.	...	22
Ditto, k. k. Malarisch-Schlesische Gesellschaft fur Beforderung d. Ackerbaues d. Natur—u. Landeskunde, Briinn, Austria-Hungary.	...	22
Ditto, landwirthschaftl Versuchsstation, Braunaoh* weigt Germany.	...	22
Ditto, d. landwirthschaftl. Versuchsstation, Carlsruhe, Baden, Germany.	...	22
Ditto, de l'herbier de la Ville, Genive	...	22

APPENDIX IV - *continued.*

To WHOM SENT.		Number of parcels or packets.
Herrn Direktor	d. Samen-controlstation, Gottingen, Germany.	22
Ditto,	d. baolog. u. ondog. Versuohsstation, Graz, Austria-Hungary.	22
Ditto,	agrikulturohexnisoehen Versuohsstation, Hflldesheim, Hanover, Germany.	22
Ditto,	d. Landwirtschaftl. Versuohsstation, Halle a Saale, Germany.	22
Ditto,	d. Landwirtsoli. Versuohsstation, Hohenheim, Germany.	22
Ditto,	Landbohojskolen, Ejobenhavn, Denmark	22
Ditto,	Vorstohd. landwirtschafth Versuchsstation, Konigsberg, Germany.	22
Ditto,	d. landwirtschafth. Versuohsstation, Jena Germany.	22
Ditto,	d. landwirtsch. Versuohsstation, Moo* kern, Germany.	22
Ditto,	d. landwirtschafth. Versuohsstation, Munster, Germany.	22
Ditto,	d. landwirtschafth. Versuohsstation, Posen, Germany.	22
Ditto,	d. landwirtschafth Versuohsstation, Be- genwalde, Germany.	22
Ditto,	d. landwirtschafth. Versuohsstation, Ru- faoh, Germany.	22
Ditto,	Versuohsstation der landwirtschafth. Akad., Stockholm, Sweden.	23
Ditto,	u. d. landwirtschafth. Versuohsstation, Tharandt, Germany.	22
Herrn Professor,	d. landwirtschafth Station, Bernburg, Anhalt, Germany.	22
Ditto,	d. Bot. and Kgl ungar. landwirtsch. Akad. Attenburg, Austria-Hungary.	22
Ditto,	d. Gartenbaues und landwirtschafth Sohule zu Fereetren, Buouresoi, Romania.	22
Ditto,	d. landwirtsch. Versuohsstation Rostook, Germany.	22
Ditto,	landwirtschafth Centrabehule, Wei- heostepham, Germany.	22
Herrn Docent für landwirtschafth an d. Univers. Voret.	d. landwirtsch. Venahastation, Eel, Germany.	22
Herrn Yontand der Samenoontrolstation,	Wien, Austria* Hungary.	22
Wohlgeboren, Herrn Graf. Zu Sohwerin Windiaoh-WU-	W iMdwigrfelde, Germany ...	V2
M. le Dixeoteur du Jardin Botanique, Amsterdam	..	1
Ditto	ditto, Angers, Franoe ...	1
Ditto	ditto, Antibes, do. ...	1
Ditto	ditto, Anvers, Belgium ...	1
Si ^	\$%* Atheos, Grfoe ...	I
Ditto	ditto, Bordeaux, Franoe ...	1
Ditto	ditto, BruxeUea, Belgium...	2
Ditto	ditto, Oaen, Franoe* ...	1
Ditto	o, Cairo, Egypt ...	1
Ditto	Christiana, Nonrv... ..	1
Ditto	^ S l, Gsd, Belgium ...	1
	ditto, Gentre, Switserland	38
Ditto	\$ 2 fi, GvdenTHolland	1
Ditto	ditto, IiegeTBelgSr Z	1

APPENDIX IV—*continued.*

To WHOM SENT.		Number of parcels or packets.
M. le Directeur du Jardin Botanique,	Louvain, Belgium ...	1
Ditto ditto,	Lund, Sweden ...	1
Ditto ditto,	Lyon, France ...	1
Ditto ditto,	Moskau, Russia ...	1
Ditto ditto,	Odessa, do. ...	1
Ditto ditto,	Puy-de-Dome, France ...	1
Ditto ditto,	Marseille, France ...	5
Ditto ditto,	Nancy, do. ...	1
Ditto ditto,	Rouen, do. ...	23
Ditto ditto,	Stockholm, Sweden ...	1
Ditto ditto,	St. Denis, Reunion ...	1
Ditto ditto,	Tjpsala, Sweden ...	1
Ditto ditto,	Warschau, Russia ...	1
Ditto ditto,	Medicale, Fadolte de	
Ditto ditto,	Médoine, Paris, France ...	1
M. le Directeur du Jardin des Plantes,	Dijon, France ...	1
Ditto ditto,	Grenoble, do. ...	1
Ditto ditto,	Montpellier, do. ...	138
Ditto ditto,	Nantes, do. ...	1
Ditto ditto,	Paris, do. ...	29
Ditto ditto,	Toulouse, do. ...	1
Ditto ditto,	Tours, do. ...	1
M. le Directeur du Jardin d'aoclimatation,	Cannes, Alpes	5
	Maritimes, France	3
Ditto ditto,	HaTmna, Algeria ...	
Ditto ditto,	Orotava, Canary	1
	Islands ...	22
Ditto de la station agronomique, Arras, France		22
Ditto ditto,	Olermont Ferrand,	22
	France ...	54
Ditto ditto,	Dijon, France	
M. le Conservateur, Jardin botanique, Geneve, Switzerland		1
M. le President de la Commission du Jardin Botanique,		
Lille, France ...		
M. l'Administrateur Directeur d' Hortxulture Internation-		13
ale, Sooiete Anonyme, Paro Leopold, Bruxelles,		
M. l'IS^Seur GSntoJl de l'nseiSolément a^rioolle, Paris,		23
		22
		22
		22
M. le ProfeMor de botanique, Montpellier, France		1
SIR. Pixettoxe dell'Orto Botanico, Bologna, Italy		1
* Ditto, ditto,	Catania, do.	1
Ditto, ditto,	Oaserta, do.	1
Ditto, ditto,	Ferrara, do.	7
Ditto, ditto,	Firenze, do.	
Ditto, ditto,	Genova, do.	
Ditto, ditto,	Milano, do.	23
Ditto, ditto,	Modena, do.	1
Ditto, ditto,	Napoli, do*	
Ditto, ditto,	Pavia, do.	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,	Portioi, do.	1
Ditto, ditto,	Boma, do.	3
Ditto, ditto,	Siena, do.	i
Ditto, ditto,	Siojlia, do.	i
Ditto, ditto,	Herisan Giobbe, Yeneifa,	i
Ditto, ditto,	Italy ...	i
Ditto,	della Scuola d'agrioolt., Caltagirone,	22
	Italy ...	

APPENDIX IV—continued.

To WHOM SBNT.	Number of parcels or packets.
Sc% Direttore dell'Orto di Stazione agronomique, XJdine, Veneto, Italy ...	22
Signor Direttore della Stazione agronomique, Caserta, Italy	22
Herrn Prof. Engler, Direktor Kgl. Bot. Garten, Berlin, Germany ...	17
Senor Director, do Jardin Botan., Quito, South America	1
Ditto, ditto, Bio, Brazil, ditto ...	6
Ditto, ditto, Santiago, ditto ...	1
Sig. Director do Jardin bot. da Universidade, Coimbra, Portugal ...	3
Ditto de la Escuela de Medidna, Port au Prince, Haiti, West Indies ...	1
Ditto del Jardin botan., Madrid, Spain ...	2
Signor A. Todaro della Gallia, Consul-General de Perse, I Wermo, Italy ...	1
Signor Alberto Lofgren, F.L.S., Chefeda Seoc&o Botanioa da Commissao Geographica e Geologica, 8. Paulo, Brazil, South America ...	184
Direktor^ Bot. Gartens, Kriegsohiff Hafen, Viktoria, Kamerun, West Africa ...	3
Director, do Jardin botan., Lima, South America ...	1
Ditto, Department of Public Gardens and Plantations, Jamaica ...	3
Ditto, Department of Land Beords and Agriculture, Surma, Rangoon ...	3
Ditto, Colonial Botanio Garden, Wellington, New Zealand ...	1
Ditto, Shaw Botanio Garden, St. Louis, Missouri, U. S. A. ...	22
Ditto, Tennessee Agricultural Experimental Station, Knoxville, U. S. A. ...	22
Ditto, Agricultural Experimental Station, Columbus, U. S. A. ...	22
Professor of Botany, University, Aberdeen, Sootland ...	22
Ditto, ditto, Edinburgh, Sootland ...	22
Prof essor of Botany at the State Agricultural College, Baltimore, T.J. S. A. ...	23
Ditto of Botany and Director, Botanio Garden, University, Upsala, Sweden ...	67
Ditto at the State Agricultural College, Amherst, U.S. A. ...	22
Ditto Dr. V. Wittrook, Director, Hortus Bergianns, Stookholm, Sweden ...	36
Ditto A. D. Romanoff, Institute of Communication, St. Petersburg ...	16
Director, Shaw School of Botany, St. Louis, U. S. A. ...	66
Ditto, New York Agricultural Experimental Station, Geneva, New York, U. S. A. ...	22
Ditto, Botanio Garden and PubUo Parks, Cape of Good Hope, South Africa ...	i
Honorary Secretary of the Acclimatization Society, Wanjnui, New Zealand ...	22
M. T Administrates du Jardin des Plantes, Orleans, France ...	1
M. le Seo.-GenL de la Societe National d'aodimatatiGn de France, Paris ...	2
M. le Jardinier en Chef Jardin Zoologique d'aodimaül ti<m,RiisdeBoulq<ie,Par^ France ...	1
M. le Jar^er en Ohef, Jardin d u Izenbourg, Paris, France	1
M. le Jardinier en Chef du Chateau Fontainebleau, Seine-et-Marne, France ...	1
L'Hortiwle Intematioiale (Socbtö Anonym^V Pare Leopold, Belgium ...	1
Supern^ a ^ J a ^ ^ i p o w ...	1
Ditto, Baraat Jail, Bamat ...	1
Ditto, BhagalpvJailBhagalpur ...	1

APPENDIX IV—*continued.*

To WHOM SENT.	Number of parcels or packets.
Superintendent, Bogra Intermediate Jail, Bogra	1
Ditto, Birxar Jail, Buxar	8
Ditto, Ohittagong Jail, Chittagong	1
Ditto, Central Jail, Midnapore	1
Ditto, Central Jail, Raipur	1
Ditto, Comilla Jail, Coxilla	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, Motihari	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, Ranohi Jail* Banohi	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. Aibans, England	11
Do. Reasoner Brothers, Florida, U. S. A.	48
Do. Herb and Wulle, Naples, Italy	49
Do. Dammann and Co., San Giovanni a Teduooio, 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	1
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, Oirenoester, London	22
Sig. Conde de Ficalho, Director do Jardin bot. da Esoola Polyteoniao, Lisbon, Portugal	3
Director, Government Experimental Farms, Ottawa, Canada	22
Acting Turkish Oonsul-General, Bombay	2
Commissariat Store and Shipping Offioer, Baloo Ghat, Calcutta	2
Officiating Director of the Department of Revenue and Agriculture, Burma, Rangoon	4
Manager of Dhenkanal, Orissa	1
Superintendent* Oossipore Pracioal Instittition, Cbsaipore	1
Proprietor of "Cheapest Dum-Dum Nursery," Dum-Dum	1
Right Hon'ble the Earl of Annesley, Castle Wellan, Co. Down, Ireland	30
A. W. O. Addis, ESQ., Mussooree	6
M. W. Barbey, Les Jovdils, OhamMsy, pr& Gendve, Switzerland	108
CoL B. H» Beddome, Sispara, Putney, London	1
Sir George Birdwood, K.CS.I., India Office, London	86
A. B. Black, Esq^ Adelaide, Australia	9
W. Bull, Esq., 636, King's Road, Chelsea, London	40
Mrs. Baby M. Brown, Cfaraul, Tirhut State Railway	1
B. P. Bnmton, Jbq.y Municipal Offlo^ BomUy	1

APPENDIX IV—*continued.*

TO WHOM SENT.	¹ 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, Genève, Swit- zerland	1
Mrs. Campbell, Glenakil, Tarbert, LoohFyne, Scotland ...	36
Henry J. Colbourn, Esq., Agricultural College, Ulverstone, Tasmania, Australia	87
Mrs. Colomb, Homesdale, Shillong	13
M. Maximo Cornu, Jardin des Plantes, 57 rue Cuvier, Paris	33
M. J. Linden, Bue de Chaume, Gand, Bruxelles ...	26
Herm Gustav Mann, 24, Romanstrasse, Muenohen, Bavaria, Germany	1
E. H. Man, Esq., C.I.E., Port Blair	0
G. B. Miller, Esq., Sydney	2
Mr. M. B. Naidu, Dharwar	2
Major A. G. E. Newland, I.M.S., Civil Surgeon, Haka, Chin Hills, Burma	14
Captain Novitsky, Calcutta	1
B. Pantling, Esq., Mungpoo	7
Dr. G. Post, Principal, Syrian Protestant College, Beirut, Syria	1
Mr. A. J. 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, Butherford, New Jersey, U. S. A.	J
W. Thompson, Esq., Haslemere, Ipswich, England ...	«
Dr. J. W. H. Traill, F.R.S., Old Aberdeen, Aberdeen, Scotland	8*
H. J. Veitoh, Esq., 644, Eng's Road, Chelsea, London ...	1
Ptof. Dr. M. Vladesou, Director, Botanic Garden, Univer- sity, Buouresci, Eomania	-J
M. Aug. de Villile, St. Denis, Eeunion	1*
H.A. Wadia, Esq., Rqjkot	jj
P. Wagstaff, Esq., Calcutta	z
Lieutenant H. W. Cruddas, Commandant, Military Police, Myitkyina, Burma	7 34
Dr. D. D. Cunningham, Torre Mount, Torquay, Devon ..	17
C. Curtis, Esq., Forest Department, Penang	14
Rev. E. Dickinson Price, Mandla, Central Provinces ...	1
M. Drake del Castillo, Bue Balno, 2, Paris, France	
H. S. Ferguson, Esq., Director, Government Museum and Public Gardens, Travancore	2
Professor M. Foster, Esq., Shelford, Cambridge, England ...	3
Dr. F. Francesohi, Santa Barbara, U. & A.	3
G. A. Gammie, Esq., Mungpoo	6
J. B. Gaudin, Esq., Gauhata, Assam	1
C. Gray, Esq., Ooonoor	79
Sir J. B. Fifooker, O.A.S.I., C3., V.B.S., the Camp, Sun- ningdale, London	141
Marcus Hartog, Esq., D.S.O., Ptofenor of Biology, Queen's College, Cork, Ireland	18
T. Hanbury, Esq., La Mortola, Iiguria, Italy ...	1
D. O. Head, Esq., Curator of Gardens, Crystal Palace, London	1
W. Holland, Esq., H. M. Consulate, Iohanff, China ...	7
J. Harvard de KIMy, Esq., University High School, Oarlton, Melbourne, Victoria	8
Herm Dr. W. Kinad, Dahme, Hark, Brandenburg, Germany	4H
D. Hooper, Esq., Indian Museum, Calcutta	24
D. H. Lewis, Esq., Barkhola, Caohar	1
Uerm Max IchUein, Baden-Badn, Qermany	85
Thomas S. Ware, Esq., Hall Farm Nonary, Tottenham, London	1
Q. Marshall Woodrow, Esq., College of Bamoe, Foona ...	6

APPENDIX IV—concluded.

To WHOM SENT.	Number of parcels or packets.
D. R. Wallace, Esq., Howrah	5
S. L. Wathins, Esq., Oak Leaf Nurseries and Floral Gardens, Grizzly Flats, California, IT. S. A. ...	12
G. W. Wilson, Esq., Heatherbank, Weybridge, London ...	44
Colonel Withered, Puerto, Canary Islands ...	54
L. Wray, Esq., Jr., State Museum, Larut, Perak ...	14
Dr. L. G. Yates, Santa Barbara, California, XI. S. A. ...	1
Babu Gopal Chandra Datta, Sibgar ...	24
y Gopi Krishna Singha, Sabibpur ...	1
: Kedar Nath Roy, Furulia ...	1
99 Pasupati Nath Basu, Calcutta ...	1
99 Prafulla Nath Ghosh, Hazaribagh ...	2
99 Santosh Kumar Mitra, Sibpur ...	5
99 Troy lokya Nath Ghosh, Calcutta ...	1
Total distributed ...	<u>5,794</u>

APPENDIX V.

List of Herbarium Specimen received during the year 1898-99.*

	Number.
Director, Royal Gardens, Kew	302
Do., Bilk's Herbarium, Leiden ..•••	64
Well Ed. fteer M. Buysmann, Hortns Plant., Diaphor, Middellburg, Holland	21
Government Botanist, National Museum, Melbourne ...	268
Professor J. Fowler, Queen's University, Kingston, Ontario	99
Curator of Botany, United States National Museum, Washington	188
E. O. Wooton, Esq., Herbarium Columbia University, New York City, United States, America ...	485
A. H. Ourtiss, 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. Bud. Sohleohter, Boyal Botanic Museum, Berlin ...	88
M. le. Direoteur, Musée Cantonal, Fribourg ...	533
Dr. A. Henry, Mengtze, China (Plants of China) ...	2,511
Captain Pottinger, R.A. (ditto) ...	234
Director, Botanical Department, Singapore ...••	&12
Major IX Prain, I.M.S., Superintendent, Boyal Botanio Garden, Calcutta	190
Lieut. A. T. Gage, I.M.B., Curator of the Herbarium, Boyal Botanio Garden, Calcutta	169
B. 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. F. Bourdiilon, Esq., Conservator of Forests, Quilon, Travancore	83
College of Science, Poona	192
Captain C. J. Milne, Ali Masjid	152
Director, totanioal 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	6
W. A. Kennedy, Esq., Curator, Lloyd Botanical Garden, Darjeeling	8
Dr. Grant, Dalhousie	6
Babu N. B. Datta, Ultadanga, Calcutta	29
Munshi Abdul Huk, Plant Collector, Assam ...	702
Shaik Mokim, Plant Collector	495
Petty contributions	20
Total ...	<u>10,672</u>

APPENDIX VI.

List of Herbarium Specimens distributed during the year 1898-99.

	Number.
Herbarium, Royal 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, Utreoht University, Holland	319
Ditto, Cambridge University	326
Ditto, Boyal Gardens, Berlin	101
Ditto, Vienna Botanio Garden, Austria-Hungary	333
Ditto, Vienna Hofmuseum, Austria-Hungary	77
Ditto, Paris (Jardin des Plantes), Franoe	64
Ditto, Aberdeen 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
Ditto, Natural History Survey, Minnesota, United States of America	326
Ditto, Pribourg, Switzerland	88
Ditto, Brussels, Belgium	23
Ditto, Boissier, Chamb&y, Switzerland	405
Ditto, Queen's University, Kingston, Ontario	290
Ditto, St. Petersburg, Bussia	83
Ditto, Tjpeala University, Sweden	97
Ditto, Buitenzorg, Java	50
Ditto, Perak Museum, Straits Settlements	76
Ditto, Boyal Botanic Garden, Peradeniya, Ceylon	194
Ditto, Munich University, Bavaria	139
Herrn Bud. Schlechter, Boyal Botanio Museum, Berlin ...	208
O. S. Sargent, Esq., Director of the Arnold Arboretum, Massachusetts, United States of America	177
J. Medley Wood, Esq., F.L.S., Durban, Natal	351
Directeur de l' Herhier Delessert et du Jardin Botanique, Genève, Switzerland	2
Sir Dietrioh Brandis, 27, Kaiserstrasse, Bonn, Germany...	245
Sir J. D. Hooker, the Camp, Sunningdale, Berks	101
Prof. Dr. Hans Sohinz, Zurioh, Switzerland	120
M. O. de Candolle, Genève, Switzerland	105
Harry Bolus, Esq., F.L.S., Sherwood, Kenilwork, near Cape Town, Cope Colony	55
Herrn Prof. Dr. L. Badlkof er, Direktor dee 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. Soott Elliott, Dumfries, North Britain	231
Beporter on Economic I'roduots to the Government of India, Oaloutta	8
J. C. Prebble, Esq., Bombay	5
Dr. A. E. Hoernle, Simla	1
G. A. Gammie, Esq., Mungpoo	1
J. L. Walker, Esq., Indian Museum, Calomta	1
Director, Botanioel Department, Northern India, Saharan- pur	56
Total	<u>7,185</u>

DAVID PEAIN,

Superintendent, Boyal Botanic Garden, Calcutta.

4. The decrease in the number of plants distributed is due to the large demand of two years ago for rhea plants having now been satisfied, and the satisfactory increase in the number of seeds distributed is due to the fact that it has lately become possible to obtain collections from Sikkim of seeds of Alpine species which were till recently unobtainable.

5. The Lloyd Botanic Garden at Darjeeling, which was in charge of 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 Sanitarium, 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 order 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,

R. SHEEPSHANKS,
Under^Secy. to the Govt. of Bengal.

DAKJEELING ;
FINANCIAL DTSIV.—*Miscellaneous,*
The lit July 1899.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR
THE YEAR 1899-1900.

No. 11GK, dated Govt. Cinchona Plantation, Sureil, Kurwong, the 8th May 1900.

From—MAJOR D. PRAIN, M.B., V.R.S.B., F.L.S., I.M.B., 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 REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR
THE YEAR 1899-1900.

THE weather during the year under review was marked by a heavier rainfall 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 conservatories has been this season particularly fine. The chief outdoor improvement affected during the year has been the completion of the heavy task of repairing the "Roxburgh Avenue." The necessary earthwork was practically complete! at the commencement of the year. During the rains of 1899 the roadway was aligned 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 displayed 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;"⁹ from *Antevtera*, 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. *Sisalana*) 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 Herbarium, 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.

APPENDIX II—continued.

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, Daooa	...	2	50
Ditto, Dinajpur	...	10	250
Ditto, Dmapur	789
Ditto, Jenapur	...	28	710
Ditto, Jessore	...	12	300
Ditto, Noakhali	...	8	200
Ditto, Bajshahi	...	6	150
Sanitary Engineer, Calcutta	223
Sub-overseer, Hili	...	14	360
Overseer, Alipur Municipality	500
Superintendent, Presidency Jail, Calcutta	1,006
Ditto, Pabna Jail	...	8	200
Ditto, Purulia Jail	...	4	100
Ditto, Suri Jail	...	4	100
Ditto, Small Arms Ammunition Factory, Dum-Dum.	344
Ditto, Gunpowder Factory, Iohapur	100
Ditto, Civil Veterinary Department, Bengal, Calcutta.	42
Officiating Superintendent of Government Printing, Government of Bengal, Calcutta.	100
Soldiers' Gardens, Fort William	200
Medical College Hospital, Calcutta	2
Lady DuffEerin's Victoria Hospital, Calcutta...	200
Howrah Hospital	1,700
Pilgrims Hospital, Gaya	...	2	50
Ohuroh Mission Society, Caloutta	50
Little Sisters of the Poor, Calcutta	1
Art School, Calcutta	50
Madrasah College, Caloutta	916
Patna College, Bankipore	...	22	546
East Indian Railway, Howrah	1,300
Eastern Bengal State Railway, Sealdah	100
Indian Museum, Caloutta	2
Department of Land Beoords and Agriculture, Calcutta.	1,012
Experimental Farm, Sibpur	54
J. E. Baxter, Esq., Sibpur	1,022
O. S. Bivar, Esq., Bungajam, Assam	...	2	15,000
W. J. Bradshaw, Esq., Calcutta	2
G. H. Cave, Esq., Mungpoo	...	1	27
B. Coventry, Esq., Dalsing, Tirhut	...	1	16
X. O. Oruiokshank, Esq., Luoknow	...	2	24
A. O. Falconer, Esq., Garden Beach	500
Captain Fordyoe, Commander Ship <i>Falko</i> HaUadak.	1
Mrs. Galstaup, Calcutta	16
G. A. Gammie, Esq., Poona	...	2	28
A. H. Gayer, Esq., Calcutta	40
Mrs. Gillispie, Howrah	7
Mrs. Greenwood, Sibpur	1
Miss M. Graybiel, Baidyanath	...	8	200
P. Hallaram, Esq., Kidderpore	1,000
B. Heaton, Esq., Sibpur	1
H. P. Henderson, Esq., Caloutta	30
W. S., Irwine, Esq., Segowlie	...	1	50

APPENDIX *II-concluded.*

To whom sent.	Ward-ian cases.	Boxes.	Number of plants.
1	2	3	4
Captain Jackson, Kidderpore	12
Bevd. W. Eiefel, Gobindpur	4	36
G. T. Lane, Esq.	63
Thomas Lee, Esq., Sibpur	1	550
J. H. Lewis, Esq., Calcutta	9
Major H. Iittledale, Rawalpindi	1	4
A. MaodoneU, Esq., Engineering College, Sibpur.	1,016
K. L. Mackenzie, Esq., Champaran	1	12
Mrs. D. Mackinnon, Garden Beah	2,000
Be*d. J. M. Maophail, M.D., Simultolla	12	300
E. H. Man, Esq., c.i.*r Port Blair	9	...	288
Mrs. Maxwell, Howrah	1,017
W. H. Miles, Esq., Calcutta	8	200
R. H. Morton, Esq., Jalpaiguri	200
Reyd. G. W. Panes, Banka	2	50
R. Pantling, Esq., Mungpoo	7	49
F. Pearoe**Esq., Caloutta	40
J« Porton, Estj., Howrah	1,220
Major D. Pram, I.M.S., Mungpoo	1	10
A. frevost, Esq., Bombay	1	19
Mn. Shaw, Civil Engineering College, Sibpur	566
William Smith, Esq., Madhupur	8	70
H. T. Thomson, Esq., Garden Reah	1,000
E. A. Watson, Esq., Calcutta	8
John Watt, Esq., Caloutta	53
W. EL White, Esq., Sylhet	1	26
Messrs. McLeod & Co., Caloutta	8	1,000
„ Mo Neil & 06;; Caloutta	200
„ F. Sander & Co., St. Albans, England	1	80
Prince Linben, Calcütta	2
Mrs. Ü. N« Baiierjee, Howrah **«	500
B. P. Chatterjee, Esa., Calcutta	263
Zamindar Surj Deo Narayan Sing, Balgarh	1	2
Babu A. 0. Sen, Sibpur	2
„ B. P. Banerjee, Sibpur	2
„ D. Burmun, Calcutta	4
„ G. 0. Datta, Sibpur	100
„ H. C. Mitter, Cossipore	38
„ J. C. Ghosh, Calcutta	19
8. Jotoda Sen, Port Blair	6
Sheik Mahamad Yasin, Samastipur	1	4
„ Mthamad Bhai A Co., Calcutta	60
Total	9	495	08,014

APPENDIX III.

Statement showing Seeds received from 1st April 1899 to 31st March 1900.

From whom received.	Number of parcels or packets.
Sir W. T. Thiselton-Dyer, K.C.M.G., F.R.S., CLB., Director, Royal Gardens, Kew, London	5
Director, Royal Botanic Garden, Peradeniya, Ceylon	1
Botanic Garden, Adelaide	30
Ditto, Bangalore	1
Ditto, Buitenzorg	8
Ditto, Darjeeling	112
Ditto, Durban	42
Ditto, Ganeshkhind	1
Ditto, Georgetown, British Guiana	1
Ditto, p Hongkong	11
Ditto, Ootaoaxnund	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, Agri-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, Angul	2
Conservator of Forests, Puri Division	1
Ditto, Quilon, Travancore	1
Ditto, Southern Circle, Upper Burma	1
Oftg. Conservator of Forests, Tenasserim	1
Deputy Conservator of Forests, Chanda	2
Forest Officer, Dehra-Dun	1
Forest Banger, Vizagapatam	1
Subdivisions! Officer, Jahanabad	1
Offg. Overseer, Dumraon Farm, Dumraon	4
Messrs. Damman A Co, Naples, Italy-	1
" Herb & Wulle, Naples, Italy	58
" Beasoner Brothers, Oneoo, Florida, T.J.S.A.	2
Herrn Prof. Engler, Berlin	3
M. le. Prof. Max Cornu, Paris	12
M. A. Godefroy-Ijeboeuf, Montmartre, Paris	1
Major A. W. Alook, Indian Museum, Calcutta	1
G. H. Cave, Esq., Darjeeling	78
Lieut. A. T. Gage, Lushai Hills, Assam	8
G. A. Ganftmie, Esq., Labdah	31
G. T. Line, Esq., Barraokpore Garden	8
J. li. Latter, Esq., Pashok	2
E. H. Man, Esq., C.I.B., Port Blair	15
Captain E. Pottinger, R.A., Shanghai	7
Major D. Prain, Darjeeling	50
O. S. Sargent, Esq., Director, Arnold Arboretum, Brooklyn, Mass., U.S.A.	4
W. Thompson, Esq., Haslemere, Ipswich, England	1
George Watt, Esq., M.B., O.I.B., Reporter on Economic Products to the Government of India, Indian Museum, Calcutta	1
OoL Wethezed, Puerto, Orotava, Teneriffe, Canary Islands	17
Rai S^nye Lall Dey, Bahadur, C.I.E., Calcutta	3
Babu Jonardun Nusker, 4Bandarbans	1
Shaik Mokim, Plantcollector, Andamana	1
Total	1,066

APPENDIX IV.

Statement showing Seeds distributed from the Royal Botanic Garden during the year 1899-1900.

To whom sent.	Number of parcels or
Sir W. T. Thiselton-Dyer, K.C.M.G., F.B.S., C.I.E., Director, Royal Gardens, Kew, London...	280
Director, Botanic Garden, St. Petersburg, Russia	2
Ditto, Tiflis, Russia	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	6
Ditto, Ganefthkhind, Poona	8
Ditto, Grenada	6
Ditto, Eumgkong	7
Ditto, SSA Jamaica	10
Ditto, Kriegechiff Hafen, "Victoria"	2
Ditto, Liverpool	1
Ditto, Malta	6 ⁵
Ditto, Manchester	1
Ditto, Nagpur	9
Ditto, Ootaoamund	64
Ditto, Oxford	1
Ditto, Pampelmousse, Mauritius	4
Ditto, Malang	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, Moulmein	3
Ditto, ditto, Rangoon	ft
Superintendent, Government Horticultural Garden, Lucknow.	17
Ditto, Government Gardens, Allahabad	8
Ditto, Boyal Horticultural Society's Garden, Chiswick, London.	1
Ditto, .. Government Agri-Horticultural Garden* Lahore.	7
Ditto, A^ri-Hortioultral Bociety, 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, Barbadoce, ditto	2
Do., ditto, Dominioa, ditto	2
Do., ditto, Lagos, West Africa	12
Do., ditto, St. Kftt's-Nevis, West Indies	14
Do., ditto, St. Lnoia, West Indies	12
Do., ditto, St. Vincènt, ditto	9
9°" « «^ Botanic Garden, University of Califor- nia, San Franoisoo, UJ3.A.	6
Administrator, Botanical Station, Gambia	*

APPENDIX IV—continued.

To whom sent.			Number of parcels or paokots.
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,	^nnsbruofc, Austria-Hungary	13
Ditto	do Kgl. Landes)aum8chule,	Alt-Gelow, Germany	1
Wohlgeb. Graf zu Schwerin Windisoh-Wilmersdorf, bei Ludwigsfelde,	Germany	...	3
Wohlgeb. Gnf zu Sokns Laubaoh, Prof. der Botanik, TUniversitat Strassburg,	Germany	*	15
M. le. Direoteur du Jardin Botanique,	Amsterdam	...	2
Ditto	ditto,	Athens, Greece	72
Ditto	ditto,	Cairo, Egypt	2
Ditto	ditto,	Christiana, Norway	1
Ditto	ditto,	Geneve, Switzerland	3
Ditto	ditto,	Groningen, Holland	1
Ditto	ditto,	Leiden, Holland	1
Ditto	ditto,	Louvain, Belgium	1
Ditto	ditto,	Marseille, France...	4
Ditto	ditto,	Stockholm, Sweden	1
Ditto	ditto,	St. Denis, B&inion	16
Ditto	ditto,	TJpsala, 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'aodimatation,	Cannes, Alpes	Maritimes, France	2
Ditto	ditto,	Hamma, Algeria	10
Ditto	ditto,	Orotava, Canary Islands	7
M. le Conservateur, Jardin botanique,	Geneve, Switzerland		17
M. le Seo.-GenL de la Sociltt Nationale d'aocUxnation de France,	Paris	...	217
Big. Direttore dell' Orto Botanioo,	Napoli,	Italy	2
Ditto	ditto,	Palermo, do.	6
Ditto	ditto,	Portioi, do.	2
Hexrn Prof. Engler, Direktor, Kgl. Bot. Garten,	Berlin,	Germany	00
fienor Director do Jardin Botan.,	Bio de Janeiro,	Brazil,	17
Sen Direotor do Jardin bot. da Universidade,	Coimbra,	Portugal	20
Sen Conde de Ficalho, Direotor do Jardim boi. da Esoola polytecnica,	LUBoa,	Portugal	4
Signor A. Todaro della Gallia, Coniul-General de Perse,	Palermo,	Italy	48
Director, Shaw Sohool oi Botany,	St. Louis,	Missouri,	10
Professor of Botany and Direotor of Botanio Garden,	University, TJpeala,	Sweden	3
Surveyor-General, Agricultural Department!	Salisbury,	South Africa	20
Superintendent, Alipore Jail,	Aliport	...	1
Ditto,	Barasat Jail, Barasat	...	1
Ditto,	Bhogalpur Jail, Bhogalpnr	...	*
Ditto,	Chittagong Jail, Ohittagong...	...	1

APPENDIX IV—continued.

To whom sent.	Number of parcels or packets.
Superintendent, Central Jail, Midnapore	1
Ditto, Comillah Jail, Comillah	3
Ditto, Hazaribagh Jail, Hazaribagh	2
-i 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, Noakhaji	1
Ditto, Bampur Boaliah Central Jail, Rampur Boaliah '	2
Ditto, Banchi Jail, Banchi	1
Ditto, Bangpur Jail, Bangpur	2
Ditto, Sarun Jail, Chapra	1
Distriot Engineer, Daaoa	2
Ditto, Bangpur	2
Executive Engineer, PublicWorks Department, Banfipore	3
Ditto, Cossye Division, Midnapore	0
Assistant Engineer, Public Works Department, Bamnagar, Behea	4
Conservator of Forests, Central Circle, Madras	1
Ditto, Bengal, Darjeeling	3
Extra Assistant Conservator of Forests, Tehri, (Jarhwal ...	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, 17.8. A.	76
M Herb & Wulle, Naples, Italy	113
" Damman & Co., San Giovanni a Teduocio, Napoli, Italy	69
" Vilmorin, Andrieux ft Oie., Paris	8
" Ootayius Steel & Co., Calcutta	2
" Labiri ft Co., Calcutta	4
Colonial Botanist, Brisbane, Queensland	29
Consul-General for Franoe, Caloutta	4
Consulate-General of the United States of America, Caloutta	2
Chief Secretary to Government, Cyprus	1
Secretary, Indian Gardening Association, Caloutta	42
Battalion Commandant, Myitkyina, Burma	16
1st Assistant to the Agent to the Governor-General in Central India, Indore	1
Cantonment Magistrate, Jubbulpore	8
Vice-Chairman, Purnea Municipality, Purnea	28
Subdivision^ Officer, Alipur Duors	14
Postmaster, Diamond Harbour	20
Khaa Tahsildar, Sadar Chittagong	2 8
Proprietor of the Cheapest Dum-Xum Nursery, Dam-Dam	1
M. Achavd, Saiffon	4
Major A. W. A W , Indian Museum, Caloutta	1
Captain A. R. 8. Anderson, I.M.S , Chittagong	46
M. Binot, Petropolis, Brsal, South America	10
W. BuU, Esq., Chelsea, London	9
Arthur K. Bulley, E*^ West Kirby, Cheshire, England...	11
g Bivar.fe q ., BokagUf Assam	1
™™ Dr. A. Burgstein, Wien... ..	2
Well Ed. Heer M. Buvsman, MiddeHmrg^ittaUand	89
renfall	
... n B. Burnett, Esq., Tellioberry, Madras	4
William Pentaka, Esq., Madhupur	1
Mrs. Campbell, Glenakil, Looh Fyne, Scotland	2
Mons. J. Chiffot, Lyon, France	2
B. Coventry, Esq., Tirhut	4
Dr. D. D. Canningham, Torre Mount, Torquay, Devon, United Kingdom	6
...	14

APPENDIX IV—concluded.

To whom sent.	"Number of parcels or paokets.
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, Pharmaoien Ire Classe, Membre de la Societe 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. Farquharson, B. E., Eanchi	2
Dr. F. Franoeoohi, 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 Medioale, Eoolle ouperieure de Pharmacie, Paris	8
C. Gray, Esq., Coonor	10
R. L. Heinig, Esq., Port Blair	5
E. B. Havell, Esq., Government School of Art, Calcutta	1
M. le Prof. Hebkel, Marseilles, France	30
M. A. Godefroy-Leboeuf, Montmartre, Paris	24
8. T. Heard, Esq., Bosdohan, Tahilla Co., Kerry, Ireland	1
Lawrence A. Libert, Esq., Port of Spain, Trinidad	1
M. J. Linden, Gand, Belgium	16
Mrs. Lewin, Parkhurst, Abiuger Common, near Dorking, Surrey	22
H. J. MoLaughlin, Esq., Forest Banger, Vizagapatam	1
Herrn Gustav Mann, Ibienuhen, Germany	1
B. W. S. Mitchell, Esq., C.M.O., Calcutta	1
E. H. Man, Esq., C.I.B., Port Blair	10
G. M. Peoh6, 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., Ratherford, New Jersey, U. 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, Sootland	25
Mrs. Annie Thorp, Motihari	2
George Watt, Esq., M.B., CM., C.I.B., Indian Museum, Calcutta	1
Col. Wethered, Tenerifle, 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. Yatee, Santa Barbara, California, U. S. A.	2
Babu Abinash Chandra Sen, Sibpur	7
„ Atol Behary Moitra, Santjpur	1
„ Bany Kantba Mookerjee, Sibpur	1
„ Girish Chandra Chatterjee, Jhirighat, Cachar, Assam	1
„ Gopal Chandra Datta, Sibpur	25
„ J. Boy, Bajitpur, Mymensingh	1
„ Kunja Behari Basak, Calcutta	13
„ P. C. De, Calcutta	1
„ B. P. Chatterjet, Viotoria Nursery, Calcutta	1
Total	3,126

APPENDIX V.

List of Herbarium Specimen f 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
Seer M. Buysmann, Middleburg, Holland	20
Dr. W. Kinzel, Dahme, Germany	7
U. S. National Museum, Washington, XI. S. A.	646
Department of Agriculture, Washington, XI. 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. Kooh, Esq., Mt. Lyndhurst, South Australia	220
Director's Lands Plantentuin, Buitenzorg, Java	417
Director, Botanical Gardens, Singapore	430
Dr. A. Henry, Mengtze, China	2,852
Captain E. Pottinger, B. 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. Saines, Esq., Deputy Conservator of Forests, Singh- dhum	117
B. XJ. Heinig, Esq., Deputy Conservator of Forests, Anda- mans	25
Dr. T. tu Walker, Geological Survey of India	206
R. Pantling, Esq., Mungpoo (Orchids of the Sikkim Himalaya and of the Khasia and Jaintia Hills)	628
Lieut. A. T. Gage, i. M. S. (Plants of South Lushai Hills)	540
Mr. G. H. Cave, Mungpoo (Plants of Sikkim)	81
Major D. Prain, i. M. S. (Plants of British Bhutan)	82
Abdul Huq, Plant-collector (Plants of the Jabooa 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.

	No.	
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	#/6
Ditto, Science and Art Museum, Dublin	158	
Ditto, Queen's College, Cork	166	
Ditto, Jardin des Plantes, Paris	409	
Litto, Jardin Botanique de l'Etat, Brussels	23	
Ditto, Rijks, Leiden, Holland	328	
Ditto, Botanio Garden, Utreoht, Holland * ..	181	
Ditto, Royal Botanical Museum, Berlin	423	
Ditto, Botanical Museum, Hamburg	324	
Ditto, University of Munich	242	
Ditto, Botanio Garden, Vienna	183	
Ditto, Hof-Museum, Vienna	208	
Ditto, Boissier, Chambezy, Switzerland... ..	299	
Ditto, Musle Cantonal, Fribourg, Switzerland	206	
Ditto, Botanio Garden, Geneva	176	
Ditto, Eoyal Botanical Museum, Florence, Italy	234	
Ditto, Imperial Botanio Gardens, St. Petersburg, Russia	334	
Ditto, Tjpsala University, Sweden	269	
Ditto, Arnold Arboretum, Mass. U. S. A.	512	
Ditto, Harvard University, IT. S. A.	51	
Ditto, Minnesota Natural History Survey, U. S. A....	187	
Ditto, Montana State College of Agriculture, 17. S. A.	316	
Ditto, Smithsonian Institution, Washington, V. S. A.	195	
Ditto, Queen's College, Kingston, Ontario, Canada	16	
Ditto, Melbourne University, Australia... ..	198	
Ditto, Botanio Gardens, Sydney, Australia	51	
Ditto, Ditto, Durban, South Africa	187	
Ditto, Ditto, Baitenzorg, Java	202	
Ditto, Gardens and Forest Department, Penang *..	140	
Ditto, Perak Museum	179	
Ditto, Forest Department, Singapore	135	
Ditto, Royal Botanio Garden, Peradeniya, Ceylon	254	
Ditto, Forest School, Dehra Dun	190	
Ditto, Government Central Museum, Madras	155	
Ditto, College of Soienoe, Poona	290	
Ditto, Botanical Department, Northern India, Seharanpur	330	
Ditto of Reporter on Eoonomio Products to the Government of India, Caloutta	245	
Sir Dietrioh Brandis, x. c i. s., Kew	141	~>
G. F. Soott-Elliott, Esq., Dumfries, Sootland	148	
Mons. Barthelemy Bott, Doubs, France	20	
Mons. Drake del Castillo, Paris	217	
MODS. M. Gandoger, Yillefranohe, France	402	
Mons. T. Jadin, MontpeUier, France	15	
Mons. Gas. de Candolle, Geneva, Switzerland	306	
Dr. Hans Sbhinz, Zurich, Switzerland	229	
Signor Beoari, Florence, Italy	100	
W. A. Talbot, Esq., Deputy Conservator of Forests, Bombay	47	
Total	11,126	

DAVID PRAIN, M.B.,

MAJOR, L.M.B.,

Superintendent Royal Botanic Qaiden, Calcutta.

FINANCIAL DEPARTMENT.

MISCELLANEOUS.

DARJEELING, THE 29TH JUNE 1900,

RESOLUTION No. 817T.—F.

READ—

The Report of the Bojal Botanic Garden, Calcutta, for the year 1899-1900.

Read again—

The Report of the Royal Botanic Garden, Calcutta, for the year 1898-99, with the Resolution recorded thereon.

The rainfall of the year was heavier than usual, but did no harm to the foliage plants, ferns, and orchids, the show of which was particularly fine.

2. Plants of economic importance continued to receive attention, especially rhea, a practical machine for extracting the fibre of which is said to have at length been invented. An investigation into the diseases to which sugarcane is subject in Bengal is being conducted by Lieutenant Gage, I.M.S., Curator of the Herbarium. The enquiry into the identity of living plants yielding Indian products of obscure origin was continued during the year with valuable results. A representative collection of the various mangoes cultivated in Northern India and Bengal has been made on behalf of the Trinidad Government.

3. The collection in the Herbarium was increased by 13,728 specimens, the chief donors being Sir W. T. Thiselton-Dyer, Director of the Royal Gardens, Kew; Dr. Troub, Director of the Buiten Zorg Gardens, Java; the Director of the Vienna Botanic Garden; the United States National Museum and the United States Department of Agriculture; Mr. H. Bolus, of Cape Town; the Directors of the Botanic Gardens at Singapore and Sydney; the Director of the Botanical Department of Northern India; Messrs. Lace, Raines, and Heinig, Forest Department, and Dr. Walker of the Geological Survey. The most valuable of the collections obtained through the agency of the Royal Botanic Garden were a general collection made personally by Lieutenant Gage in the Lushai Hills, a tract hitherto unexplored botanically, and an excellent collection of orchids, chiefly from the Knasia and Jaintia Hills, made under the supervision of Mr. Pantling, Deputy Superintendent, Government Cinchona Cultivation. The number of specimens distributed to other herbaria was 11,129.

4. Nothing of special note occurred at the Lloyd Botanic Garden, Darjeeling. It escaped with comparatively little injury from the effects of the terrible storm which overtook the station of Darjeeling on the night of the 24th September 1890.47

5. The thanks of the lieutenant-Governor are again due to Major Prain for his efficient management of the Departments under his care.

By order of the lieutenant-Governor of Bengal,

E. N. BAKER,

Secretary to the Govt. of Bengal.

No. S18T.—F.

COPT forwarded to the Superintendent of the Royal Botanic Garden, Calcutta.

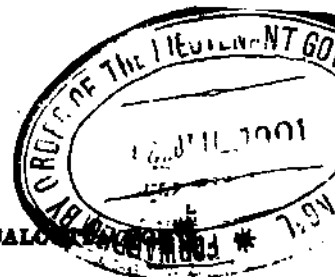
By order of the Lieutenant-Governor of Bengal,

E. N. BAKER,

Secretary to the Govt. of Bengal.

DARJEELING,
The 29th June 1900.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA,
FOR THE YEAR 1900-1901.



No. 14G., dated Camp "Darjeeling, the 30th April 1901.

From—MAJOR D. PRAIN, M.B., LL.D., F.R.S.E., I.M.S., Superintendent, Royal
Botanic Garden, Sibpur,

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

I HAVE the honour to submit herewith the 114th Annual Report of the
Royal Botanic Garden, Calcutta, for the year 1900-1901.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA,
FOR THE YEAR 1900-1901.

THIS weather conditions during the first half of the year under review were normal. In the middle of September a period of excessive rainfall set in which lasted till the 26th. The amount of rain registered during the week, from 19th to 25th September inclusive, was 40½ inches. The arrangements for the surface drainage of the Gardens, which, thanks to the disposition of the garden lakes and ponds, amply fulfil ordinary requirements proved inadequate to meet the needs of precipitation so phenomenal. The 64 inches that fell on September 19th considerably raised the surface level of the garden lakes, the 13½ inches of September 20th filled all but one of them to overflowing, and the 11 inches that fell on September 21st converted the whole of the western division of the Garden, which constitutes two-thirds of its area, into an almost unbroken sheet of water. Falls of about 4 inches daily on the 22nd and again on the 24th and 25th helped to maintain the abnormal water level in spite of all the efforts of the staff to drain it off. In the eastern section of the Garden normal conditions were reached before the end of the month and little damage was done by the flood. In the western half, however, it was not till ten days after the cessation of the storm that the lakes and ponds were again at their normal level, and many losses have unfortunately to be recorded. Fortunately little wind accompanied the storm and the damage due to trees being overthrown was confined almost entirely to three species—*Dalbergia siuoo*, the Sissoo tree, *Manihot Glaziovii*, the Ceara-rubber tree, and *Broussonetia papyrifera*, the paper mulberry; many examples of each fell, chiefly, apparently, from their own weight and owing to the sodden condition of the ground. The great damage to be recorded has been the death of many species as they stood. * This has occurred not merely in the case of shrubs or herbs more or less covered with water during, and for a few days after, the storm! but largely also in the case of trees, many of them of large size and of considerable age, that stood during this time with only the bases of their stems submerged. The majority of the species that have died were, as might be expected, strangers to the Gangetic delta; many of them, as will be readily understood, it will be difficult to replace. As the question of liability to inundation, and the power of a given species to withstand its effects, is one of practical interest to those engaged in agriculture and horticulture and to those charged with the duty of planting shade-trees on roadsides, it may not be without use to record here a few of the observations made during and after the September floods in these gardens. For convenience of reference, a list of the species that have died is added as a special Appendix to this report.

The majority of the species that have succumbed did so immediately. Nothing seemed the matter while the storm lasted. As soon, however, as the rain ceased and they were exposed to sunshine, their leaves wilted, and the plants at once were seen to be very sickly or quite dead. This was particularly the case with many herbs and shrubs—natives of all tropical countries, and even with some trees—the latter mostly American or African species. With a small number of the species whose leaves thus wilted and fell, the result has not been the death of the plant. This has been notably the case with the reed plant, *Bothriochloa nana*; all the plants of this species lost their leaves

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. *Sisalana*) 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 found 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 cold season, their leaves wilting gradually, and in a fortnight or so becoming sere 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 remained 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 improvements of the year have been the repair of the Northern or "Amherstia" section of the 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.

3. * *Economic Plants*.—The usual attention has been given by the Garden staff to the propagation and distribution of useful plants throughout the year. In view of the interest that is being manifested in fibre-yielding species, especially in the Agaves, steps have been taken to increase the stock of those available for distribution. Particular attention was paid to the behaviour under cultivation of certain non-Indian *Indigoferas* as compared with the Indian Indigo plant, *Indigofera tinctoria*. A representative collection of the various Indian plants was brought together by the Department of the Reporter on Economic Products; the plants were cultivated in the Garden and as far as possible determined. A complete report on this interesting subject cannot yet be submitted as several of the kinds, and particularly those most commonly found under cultivation, did not flower and so could not be definitely identified. Their cultivation will be continued till this happens. A question having arisen as to the source of the seeds known as "Chaulmoogra" largely used in native medicine and now attracting considerable attention in Europe, an endeavour was made to settle the point. The seeds in question have usually been attributed to the species known as *Gynocardia odorata*. Having satisfied himself that this opinion is erroneous, the Superintendent invoked the assistance of Dr. Watt, Reporter on Economic Products, to clear up the point. 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 *Taraktogma Kurzii*. Thanks to the assistance afforded by the Inspector-General of Forests, it has been possible also to finally 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 timber of *Pterocarpus macrocarpus*, a species that occurs only in Burma. Andaman Padouk or Andaman Red-wood is the timber of *Pterocarpus dalbergioides*, a species that is found in a wild state only in the Andaman*. The use as a fodder-grass of *Paspalum difratum*, a native of America, which has proved very valuable in Australia owing to its drought-resistant qualities, has led to its introduction to India on as large a scale as possible. Finding that very little seed could be obtained by Australian correspondent* of the Garden, the assistance of the

Agrostologist to the Department of Agriculture of the United States was invoked. Thanks to the kind help of that officer, a large supply of the seed of this grass was obtained from America and has been freely distributed throughout India.

3. *Herbarium*.—The work of this department has gone on as usual. The number of named specimens distributed to other botanical institutions has been 11,903. The details of this distribution are given in Appendix VI to this report. The work of collecting in Assam by native agency came to an end early in the year owing to the illness of the Collector, Munshi Abdul Huq, who unfortunately succumbed to the fever by which he had been attacked in the performance of his duties, shortly after his return. Dr. A. G. Bourne, F.R.S., on the occasion of a visit paid by him to Assam, most kindly supervised the work of a collector specially deputed to obtain specimens of the grasses of Assam. During the cold weather Mr. N. Gill, Assistant Curator of the Garden, made a very interesting and valuable collection in a portion of Assam not previously explored botanically, but now rendered accessible by the extension of the Bengal-Assam Railway system. In Burma at the commencement of the year another native collector was engaged in the Kachin Hills. This collector had to be recalled and was subsequently sent to Tenasserim, with the object of working under and in co-operation with the officers of the Forest Department there. The arrangement, however, does not promise to be wholly successful. In the Andamans the work of collecting has again been very thoroughly supervised on behalf of the Garden by Mr. E. H. Man, C.I.E., in whose retirement after 32 years' service this institution loses one of the most generous and sympathetic Benefactors it has ever known. In Bengal, collection was supervised in Sikkim by the Superintendent during his deputations to the Cinchona Plantation. The contributed collections have again been of much interest and value. The chief contributions came from the Royal Herbarium, Berlin, 1,056 specimens; the Botanic Garden at Singapore, 885 specimens; the Cantonal Museum of Pribourg, 318 specimens; the University of Munich, 296 specimens; Harvard University, 240 specimens; the Hof. Museum, Vienna, 205 specimens. Smaller but very valuable collections were also received from Sir W. T. Thiselton-Dyer, K.C.M.G., Director of the Royal Gardens, Kew; Mr. Medley Wood, Natal; Mr. H. Bolus, Capetown; Mr. Barbey, Boissier, Geneva; Dr. Trenb, Buitenzorg; and Mr. C. Curtis, Penang. The chief Indian contributors during the year have been Mr. J. F. Duthie, who has presented 1,052 specimens; Mr. R. L. Heinig, 435 specimens; Messrs. Ryan, Bourdillon and Haines who have sent 57, 56 and 54 respectively.

Sir George King, K.C.I.E., has been engaged at Kew during the past year in elaborating an account of the Malayan *Myrtaceae*. Thanks are again due to him for kindly naming the specimens belonging to the Calcutta Herbarium and assisting in distributing the duplicates.

4. *Library*.—A considerable number of books have been acquired by gift, by purchase, and in exchange. The customary periodicals have been added. Steady progress is being made by Lieutenant Gage with the heavy task of rearranging the collection.

5. *Botanical Publications*.—During the year the eleventh part of Sir George King's *Materials for a Flora of the Malayan Peninsula* has been issued and the manuscript of the twelfth part completed. The following papers have been published by the Superintendent:—(1) *Novicice Indicae XVII; Some new plants from Eastern India*; (2) *A list of the Asiatic species of Ormosia*, and (3) *Description of a new Himalayan genus of Orobanchaceae*, all three in the *Asiatic Society's Journal*, the last written in conjunction with Mr. J. S. Gamble, F.K.S. To the *Indian Forester* the Superintendent has also contributed three other papers; (4) *A new Burmese Timber-Tree*; (5) *Report on the Indian Species of Jpterocarpus*; and (6) *A new Assam Timber-Tree*. To the *Scientific Memoirs*, edited by the Director-General, Indian Medical Service, he has contributed a paper (7) *On the characters and relationships of Afzelia, Smith*. Lieutenant Gage, Curator of the Herbarium, has prepared a very valuable report on the diseases of Sugarcane in Bengal for the Department of Land Records and Agriculture, Bengal (*Bulletin No. 7, 1900, Department of Land Records and Agriculture*), and has contributed a paper, entitled the *Anatomy of the roots of Phoenix paludosa Roxb.*, to the *Scientific Memoirs by Medical Officers of the Army of India*. The manuscript of *Annals of the Royal Botanic Garden*, vol. IX, part I, was completed and sent to press in November 1900, and it is hoped that it may be issued

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., P.R.S., Mr. J. F. Duthie, P.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; those interested 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 received 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 of 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 slopes and hillsides within the municipality.

8. The money allotted for contingencies for the Royal Botanic Garden has been spent in full. A saving of Us. 827-6-4 has been effected under the allotment for establishment. The corresponding allotments for the Lloyd 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 of Rs. 489-4 and from the Lloyd Botanic Garden Rs. 880 have been paid into the treasuries at Calcutta and Darjeeling respectively.

9. During the year the gardens have been visited, among other distinguished strangers, by M. Prud'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 Government.

10. The Superintendent was in charge of his post throughout the year. Air. Gage, the Curator of the Herbarium, has worked very enthusiastically throughout the year, and in addition to the unremitting attention given by him to his proper duties has devoted much of his spare time to a thorough 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. Lane, Curator of the Garden, has also worked 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, appointed Probationer Gardener by the Secretary of State in succession to Mr Gill

1900 to the Cinchona Partition to fill a temporary vacancy on the stall of assistants there.

APPENDIX I.

Statement showing Plant received from Ut April 1900 to
3Ut March 1901.*

From whom received.	Ward- ian cases.	Boxes.	Number of plants.
1	2	3	4
Royal Gardens, Kew, London ...	1	...	35
Botanic Garden, Bangalore	1	300
Ditto, Daxjeeling ...	3	10	454
Ditto, Saharanpur	1
Jardin des Plantes, Paris	20
Khusru Bagh* Allahabad	25
Taj Garden, Agra	1	6
State Garden, Gwalior	5	1,843
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, Oalontta	312
Ditto Madras	1	24
Financial Commissioner, Burma, Mandalay	6
Director of liand Beords and Agriculture, Bengal.	1
Indian Museum, Calcutta	2
Experimental Farm, Sibpur	30
Mrs. S. Apar, BaUygunge	2
I* P. Broughton, Esq., CUoutU	147
G. H. Cave, Esq., Mungpoo	1	500
B. Coventry, Esq., Dalsing-Sarai, Tirhopt M#	14
Edward George, Esq., Bahamas	120
H. H. Hayden, Esq., Nilgiris	1	10
J. IJ. lister, Esq., Fashok	2	188
W. A. Lowry, Esq., Chittagong	825
A. R. Lamb, Esq., Manipur	248
B. H. Man, Esq., C.I.B., Fort Blair ...	10	9	2,142
G. A. Panisb, Ksq., Shalimar	1
G. MoD. Pech6, Esq., Moulmein	7	2,483
H. H. Rislegr, Esq., C.I.B., from Niobars	1	12
Dr. George Watt, M.B., O.I.B., Calcutta	59
& P. Ghattejee, Esq., Calcutta	2	2,469
Major D. Prain, I.M ^A .—Collected in Bikkim	115
Norman Gill, Esq.—Collected in Assam	1	190
Mr. J. O. Praser—Collected in Tavoy	3	137
Shaik Mokim—CoUected in Tavoy	2	556
Bevd. Li. Oardon, S.J., Bassia, Banchi	1	30
W. A. Talbot, Esq., Belgaum	15
Bought from Babu T. C. Nundy, Assam	2	408
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	180
Ditto, Bavaria	...	1	183
Ditto, Berlin	...	1	28
Botanic Gardens, Paris	...	2	212
Ditto, Trinidad	19	...	779
Ditto, Bangalore	...	4	80
Ditto, Ootacamund	...	1	2
Ditto, Daxjeeling	...	7	289
Ditto, Egypt	...	1	39
State Garden, Gwalior	...	6	436
Government House Garden, Calcutta	971
Zoological Garden, Calcutta	966
Belvedere Garden, Calcutta	6
Taj Garden, Agra	...	14	343
Barraokpore Pterk	1,713
His Majesty The King of Siam	4	...	200
His Highness The Sultan of Johore	...	1	25
Honaieur le Directeur da Jardin colonial de Nogent, France.	1	...	30
M. A. Godefroy-Liebeuf, Paris	8	...	129
Lord William Beresford, Deepdene, Surrey	...	1	182
Dr. D. D. Cunningham, F.H.S., C.I.B., Torremount, Torquay, Devon-	...	1	179
Mrs. Firth, Retford, England	...	1	58
Professor J. W. H. Trail, r.*.s., Old Aberdeen	...	1	182
Agri-Horticultural Society of India, Calcutta	4
Ditto ditto, of Punjab, Lahore	...	1	18
Ditto ditto, Liuknow	...	1	100
Oftg. Deputy Commissioner, Dumka, Sonthal Parganas.	...	9	225
Magistrate, Howrah	55
Ditto, Comilla	...	*1	19
Cantonment Magistrate, Barraokpore	100
Ditto, Jubbulpore	25
Subdivisional Officer, Tuniluk1	170
Inspector of Forests, Maurbhanj State	65
Vice-Chairman, Dinajpur Municipality	...	8	200
Chairman, Almedahad. Municipality	100
Ditto, Tatal Road, B...	9	230
Superrürw, Qmjn MmicioipWitr	...	8	200
ExeotttiTe Engineer, Slid Calcutta Drriaion, Oalenta.	1,430
EzeontiTe Engineer, Ohot Nagpur Division, Ranehi.	...	24	600
Executive Engineer, No. 15 Division, A. B.	...	4	100
Executive Engineer, No. 16 Division, Calcutta Section, Scaldah.	30
Executive Engineer, Ufpar R. jA^i IKTSBOQ, Saidpur.	...	2	60
District Engineer, Backergunge, Barisal	...	6	120
Dit Bhagalpur	...	9	880
Ditto, Bogra	...	60	...
Ditto, Dinajpur	...	17	1,500
Ditto, Huzaribagh	...	3	425
Ditto, Howrah	65
			60

APPENDIX II—continued.

To whom sent.	Word ian oases	Boxes.	Number of plants.
1	2	3	4
District Engineer, Jalpaiguri	12	293
Ditto, Nadia	36	900
Ditto, Saran	6	150
Ditto, Tippera	4	100
Khasmahal Officer, Bhagalpur	4	100
Manager, Hathwa Raj	1	12
Superintendent, Alms House, Calcutta	480
Ditto, Central Jail, Aliporo	600
Ditto, Comilla Jail	3	75
Ditto, Mymensingh Jail	20	500
Ditto, Silchar 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
Froe Church of Scotiaud, Calcutta	200
Christian Mission, Bilaspur	1	12
G. E. L. Mission, Chakradharpur	8	199
Mission House, Mi hi jam	10	250
St. Joseph's High School, Calcutta	162
Art School, Ca'cutta	12
Boys' Orphanage and Industrial School, Dam oh.	18	404
Civil Engineering College, Sibpur	69
Patna College, Bankipore	4	86
Alipore Observatory	60
Gunpowder Factory, Ishapore	160
Gun Foundry, Costipore	2
East Indian Railway, Calcutta	2,300
Police-station, Sibpur	200
A- Anderson, Esq., Howrah	400
Mrs. A. B^rson, Shalimar	80
Dr. A. G. Bjurne, Madras	3	118
Honourable J. Buckingham, Calcutta	1	24
Major B. H. Charles, Calcutta	3
Boyd. Charles Clarke, Calcutta	200
A. Cooke, Esq., Calcutta	1	9
B. Coventry, Esq., Dalaing-Sarai, Tirhoot	1	6
G. GelUtly, Esq., Cilctitta	26
W. Graham, Esq., Calcutta	38
G. Barton-Groves, Esq., Mount Abu	4
Mrs. L. Hood, Garden Beach	400
Major Hudson, Andamans	2	50
W. W. Johnson, Esq., Hyathpur	2	555
Mrs Kirkraan, Kidaerpore	6
G. T. Lane, Esq., Sibpur	55
L. Leo, Eiq., Riopur	1,076
Sir A. S. L#-th>ruige, Manbhum	2	170
Rev<l. O. U. Lrickios, Bajgungepur	8	200
J. A. Manning, Esq.	18
E. H. M.m, Esq, c i E., Port Blair ...	10	...	296
Mr* H. M A Morgan, C t ^ts	39
J. E. N^eJum, Esq., Calcutta	1,114
Mis* Ncolo, Cilcntta	120
Mrs. E. OrDi>ud, C Joutta	4

APPENDIX II—concluded.

To whom sent.	Ward- ian cases.	Boxes. 1	Number of plants.
1	2	3	4
R. Pantling, Esq., Mungpoo	...	1	1
llevd. E. W. Panes, Jeypur	...	75	75
G. McD.Peché, Esq., Moulmein	...	8	8
Mrs. Phelps, Calcutta	...	600	600
Mrs. Prain, Sureil	...	65	65
F. Wright, Esq., Ichapur	...	60	60
L. P. Shirres, Esq., Bhagalpur	...	800	800
H. E. Short, Esq., Sewan	...	0,000	0,000
T. E. Spier?, Esq., Calcutta	...	2	2
Messrs F. Sander & Co., St. Alba us, Iju gland	...	3,850	3,850
G. M. Vincent, Esq., Bhagalpur	...	67	67
F. A. Wearing, Esq., Darjeeling	...	24	24
Maharajah Soorjya Kumar Aoiarjya "how- dhury, Mymensing	...	24	24
S. P. Chatterjee, Esq., Calcutta	...	1,374	1,374
Babu A. C. Sen, Sibpur	...	12	12
" D. N. &ingh, IFowrah	...	8	8
" G. O. Datta, Sibpur	...	70	70
" H. C. Mitter, Cossipore	...	36	36
" K. C. Aoharjya, Caloutta	...	1	1
" K. N. Poor, Garden lieach	...	3	3
" T. C. R»y, Kalighat	...	2	2
" Kanaye Lall, Allahabad	...	9	9
Phallaram Mulie, Calcutta	...	1	1
Gopal l handra Samonta. Mallie, Calcutta	...	3	3
Gopal Chandra Sanati, Mallie, Caloutta	...	7	7
Shaik Rohoman Buz, Caloutta	...	1	1
Abdool Hook, Calcutta	...	1	1
Total	46	393	39,300

APPENDIX III.

Statement showing setsds receive*from 1st April 1900 to Sim Jfarch
1901.

From whom received.	Number of parcels or packets.
Sir W. T. Thiselton-Dyer, K.C.M.O., P.R.S., C.I.B., Direotor, Royal Gardens, Kew, London	76
Director, Royal Botanic Garden, Peradeniya, Ceylon	11
Botanic Garden, Bangalore	1
Ditto, Brisbane	1
Ditto, Darje-ling	...
Ditto, Durban	...
Ditto, George town, British Guiana	1
Ditto, Gold Coast	U>
Ditto, Saharanpuf	ai
Ditto, Sydney	8
Colonial Botanist, Melbourne	1
superintendent, Government	4
" Lahore Agri-Hoiticultural Garden,	384
Superintendent, A gtUHorti«lto»i Society, if adras	8
Ditto, agpar	1
Ditto, Gawalior	4
Ditto, State Gardens, B M O S	60

APPENDIX III—concluded.

From whom received.	Number of parcels or packets.
Conservator of Forests, Bengal, Darjeeling... ..	5
Ditto, Hyderabad Assigned Districts	1
Ditto, Tenasserim Circle, Rangoon	◇
Acting Conservator of Forests, Coimbatore	I
Deputy Conservator of Forests, Pilibhit Division, Bareilly	1
Ditto, Mercara, Coorg	8
Ditto, Atram Division, Moulmein	1
Ditto, Depôt and Agency Division, Rangoon	5
District Forest Officer, North Malabar, Manantoddy	1
Ditto, Tinnevely	1
Acting District Forest Officer, Camp, Sultan's Battery, Malabar	1
The Divisional Forest Officer, North-Western Provinces and Oudh, Gondah	1
Director, Botanical Department, Kingston, Jamaica	9
Assistant Director, Department of Land Records and Agriculture, Bengal	1
Director of Land Records and Agriculture, North- Western Provinces and Oudh, Cawnpore	1
Subdivisions! Officer, Naogaon, Rajshahi	1
Directeur de l'Agriculture, Tananarive, Madagascar	5
Experimental Indigo Farm, Dalsingsarai • • •	1
Messrs. Herb and Wulle, Naples, Italy	JO
„ J. H. William and Brothers, Heneratgoda, Ceylon	3
„ Beasoner Brothers, Oneco, Florida, United States, America	48
„ F. Sander & Co., St. Albans, England	12
„ T. W. Wood and Sons, Richmond, D. S. A.	1
Uerm Prof. Engler, Berlin	1
Le Directeur, du Museo National, San José, Costa Rica	2
Professor Max Cornu, Paris	4
M. A. Godefroy-Lebeuf, Montmatre, Paris	2
G. H. Cave, Esq., Mungpoo, Kurseong	?51
Henry J. Oolbourn, Hobart Town, Tasmania, Australia	17
H. Collingridge, Esq., Daudpore, Muzaffarpur	1
Norman Gill, Esq., Assam	x 22
T. Hanbury, Esq., La Mortola, Liguria, Italy	193
Sir George King, K.O.I. £., San Bemo, Italy	1
G. T. Lane, Esq., Barraokpore Garden	3
Laurence A* Libert, Esq., Conva, Trinidad	3
J. L. Lister, Esq., Pashok, Darjeeling	6
£. H. Man, Esq., C.I.B., Port Blair	21
R. Pantling, Esq., Mungpoo	12
Major D. Prain, Darjeeling	21
W. P. Pentzke, Esq., Asansol	1
J. G. Smith, Esq., Washington, X7. S. A.	44
T. J. Spooner, Esq., Uganda	1
George Watt, Esq., M.B.C.M., C.I.E., Reporter on Economic Products to the Government of India, Indian Museum, Caloutta	17
S. L. Watkins, Esq., Lotus, California	22
N. G. Mukerji, Esq., Civil Engineering College, Sibpur	J
Babu Preo Lill Dey, F.C.S., Caloutta	2
Shaik Mokim, Tavoy	34
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		
Eoyal Gardens, Kew, London ...	...	280
Director, Botanic Qarden, St. Petersburg, Russia	...	70
Ditto, Tiflis, Russia	...	2
Ditto, Peradeniya, Ceylon	...	79
Botanio Garden, Bangalore	...	19
Ditto, Jhaiteuzorg	...	65
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, Giasnevin, Dublin	...	8
Ditto, Goneshkliind, Poona	...	1
Ditto, Hongkong	...	68
Ditto, Malta	...	16
Ditto, New York City, XL S. A.	...	270
Ditto, Ootacamund	...	14
Ditto, Peiiang	...	3
Ditto, Port Darwin, Australia	...	8
Ditto, Sahampur	...	43
Ditto, Saigon	...	65
Ditto, Singapore	...	12
Ditto, St. Anns, Trinidad	...	4
Ditto, Sydney	...	3
Secretary, Agri-Horticultural Society of India, Calcutta	...	38
Ditto, ditto Moulmein	...	4
Ditto, ditto Itcngoon	...	6
Ditto, Indian Gardening Association, Calcutta	...	14
Superintendent, fiovorunient Gardens, Allahabad	...	8
Ditto, Government Horticultural Garden, Luoknow	...	14
Ditto, Victoria Garden, Bombay	...	4
Ditto, Government Agri-Horticultural Garden, Lahoro	...	7
Ditto, Agii-Horticultural Society, Madras	...	21
Ditto, Government Garden, Nagpur	...	4
Ditto, Memoritl Garden, Cawnpore	...	4
Ditto, Erato Gardens, Baroda	...	6
Dit»o, Taj GarJen, Agra	...	4
Ditto, Kniprtss Botanic Garden, Poona	...	20
Ditto, Government Cattle Farm, Hieear	...	6
Ditto, Berry White Kchod, Dibrugnrh	...	1
Ditto, Km ill Arms Ammunition Jfaotoxy, DumDum	...	23
Ditto, Gwalicr Stato Gardens, Gwalior	...	11
Ditto, Casif> ro Pmc^iral Institution of Horti-	...	1
Curator, Botanickl Sfation, Barbnofes	...	1
Do., ditto, Belize, Biit.'sh Honduras	...	2
Do., ditto, Lagos	...	2
Do., ditto, Kt.'Kit's Novis	...	4
Do., ditto," Sierra L'»one	...	1
Do., Botanic Garden, ULivorsity of Calif)rnia,	...	125
Porn Director dos but. Oartuup, Innsbrück, Austríá:		
	Hungary	87
Ditto ditto, Munich, Germany		1
Ditto ditto, S^l rannbiir^ Gerinuny		1
Ditto ditto, UnifroriitA*, Wicn, Austria-Hungary		1

APPENDIX IV—continued.

To whom sent.	Number of parcels or packet.
Herrn Director des bot. Gartens, Zurich, Switzerland ...	132
Wohlgeb. Graf zu Sohwerin Windisoh Wilmersdorf, bei Ludwigsfelde, Germany ...	4
M. le Directeur du Jardin Botanique Athens, Greece ...	2
Ditto ditto, Cairo, Egypt ...	1
Ditto ditto, Geneva, Switzerland ...	101
Ditto ditto, Marseilles, France ...	6
Ditto ditto, Bouohes-du-Rhone, France ...	4
M. le Directeur, Jardin Botanique, de l'Etat, Pondioherry	2
If. le Directeur, du Jardin des Plantos, Dijon, France ...	6
Ditto ditto Montpellier, France ...	2
Ditto ditto Paris... ..	202
Ditto ditto Villa Thuret, Antibes, France ..	1
M. le Directeur, Muséo Nationale, San Jose, Costa Rica, Central America ...	58
M. le Seo.-GenL de la Sociéty Nationale d' aeolimatation de.France, Paris ...	75
M. le Directeur, Jardin d ^o aeolimatation, FhmnMS Alger, Algeria ...	7
Ditto ditto, Cannes, Alpes Maritime*, France	1
Ditto ditto, Orotava, Canary Islands ...	1
> M. le. Prof. E. Heekel, Directeur, Musee Ooloniale, Marseilles, France ...	16
Sig. Direttore dell'Orto Botanico, Bologna, Italy ...	6
Ditto ditto, Palermo, do. ...	43
Ditto ditto, Firenze, do. ...	8
Ditto ditto, R.Univertita^Boma, Italy	6
Ditto ditto, Pisa, Italy	1
Sen6r Sig. Conde de Fioalbo Director do Jardin bot. da Escola Polyteonioa, LLaboa, Portugal ...	6
Sen6r Director do Jardin Botan, Rio de Janeiro Brazil, South America ...	51
Sen6r Director do Jardin bot. da Universidade, Coimbra, Portugal ...	23
Sen6r Director del Jardin Botan Madrid, Spain ...	1
Herrn Prof. Engler, Director Egl. Bot. Garten, Berlin, Germany ...	138
Signor A. Todaro della Gallia Consul-General de Perse, Palermo, Italy ...	2
Professor of Botany and Director of Botanio Garden, University, Upsala, Sweden ...	74
Knltr station Kwai, West Usambara, German East Africa ...	61
Superintendent, Alipore Jail, Alipore ...	1
Ditto, Baraaat Jail, Buasat ...	1
Ditto, Bariaal Jail, BariRal ...	1
Ditto, Bhagalpur Jail, Bhalalpnr ...	1
Ditto, Bogra Intermediate Jail, Bogra ...	1
Ditto, Unuzagong Jail, Unuzagong ...	1
Ditto, Comilla, Jail, Oomilla ...	1
Ditto, Central Jail, Daooa ...	2
Ditto, ditto, Midnapore ...	1
Ditto, ditto, Eaipur ...	1
Ditto, ditto, Bajahahi ...	1
Ditto, Darbhanga Jail,- Laheria Sarai ...	8
Ditto, Damka Jail, Dumka ...	1
Ditto, Haanbagh Jail, Hasaribagh ...	1
Ditto, Jalpaiguri Jail, Jalpaiguri ...	1
Ditto, Jessore Jail, Jeoore ...	1
Ditto, MaldaJail, Malda ...	2
Ditto, Mo tihari Jail, Mo tihari ...	1
Ditto, Mymensingh Jail, Mymensingh ...	1
Ditto, Noakhali Jail, Noakhali ...	1
Ditto, Palamau J ail, Valamau ...	1
Ditto, Patna Jail, Bankipore ...	1
Ditto, Ranohi o ail, Runchi ...	1
Ditto, Bangpur Jail, Kasgpur ...	2

via

APPENDIX IV—continued.

To whom sent.	Number of Parcels or packets.
Superintendent, Saran Jail, Chapra ...	J
District Engineer, Backergunge, Barisal ...	1
Ditto, Bhagalpur ...	1
Ditto, Manipur, Assam ...	1
Ditto, Rooriee, North-Western Provinces ...	6
Conservator of Forests, Central Circle, Madras ...	2
Ditto, Quilon, Travanoore ...	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 ...	1
Government Botanist, Melbourne, Australia ...	1
Chief Secretary to the Government of Cyprus ...	6
Commissioner of Revenue Settlement, Land Records and Agriculture, Madras ...	1
Commissioner of Agriculture for the West Indies, Barbadoes ...	11
Commissioner of Settlements and Agriculture, Nagpur ...	1
Deputy Commissioner, Thongwa district, Malabar ...	3
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, Luoknow ...	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
Do. 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, Shillong ...	1
Colonization Officer, Jamrood Canal, Thar and Parkar ...	2
Range Forest Officer, Khardi, Great Indian Peninsula Railway ...	1
Director, Shaw School of Botany, St. Louis* Mo., XI. S. A. ...	1
Consul-General for France, Calcutta ...	4
Ditto for United States of America, Calcutta ...	1
Yioe-Consul for Spain, Calcutta ...	1
His ExoEucy the Governor, German East Africa, Dar-Es-salaam ...	75
Surveyor-General, Agricultural Department! Surveyor-General's Office, BaSsbory,-British South Africa ...	63
Inspector of Forests, Motrbhanj State, Bahalda ...	4
Government Emigration Agent for Natal, Calcutta ...	2
Ordinance Officer, in bhuge Gunpowder Factory, Iahapor ...	18
M. Em. Prodjoine, Inapeotrar Chief da Senwe, de l'Agriculture, Tananarive, Madagascar ...	33
Postmaster, Outback ...	23
Ditto, Diamond Harbour ...	20
Khas Tahsildar, Sedar, Chittagong ...	1
Manager, Baracora Tea Company, Ltd., Baracora, Sylhet ...	1
Messrs. H. Low & Co., London ...	1
" F. Sander & Co., St. Albans, England ...	1
" Rosecrone Brothers, Florida, U. S. A. ...	164
" Herb and Walls, Naples, Italy ...	118
" Dammann & Co., San Giovanni a Teduccio, Napoli, Ital ...	
" Vilm ...	
" J. P. Wilh<modBrothm,H<w>lгод^O_vloB ...	J

APPENDIX IV - *continued.*

To whom sent.	Number of parcels or packets.
Messrs. Stanley Price & Co., Calcutta	1
„ Vishnool Sadashive & Co., Poona	2
Gremorne Nursery Company, Richmond, Australia	8
Sir J. D. Hooker, G.C.S.I., Sunningdale, London	99
M. Aohard, Inspecteur de V Agriculture, Directeur do I Agriculture, Saigon, Cochinchina	2
Oeo. A. Bishop, Esq., Public Garden, Bermuda	64
John Beck, Esq., Gorakhpur	1
M. Binot, Petropolis, Brazil, South America	89
G. W. W. Barolay, Esq., Aberdeen, Scotland	91
M. W. Barbey, Les Jordils, Chambezy, Geneve, Switze*. land «» ... ac4 .«» st-	101
W. Bull, Esq., Chelsea, London	1
A. K. Bulley, Esq., Neston, Cheshire, England	88
Well. Ed. Heer Buysman, Middelburg, Holland	99
G. H. Cave, Esq., Mungpoo, Kurseong	12
H. Collingridge, Esq., Daudpur, Muzif Earpux	2
O. F. Cook, Esq., Special Agent, United States Depart- ment of Agriculture, Division of Botany, Washington	2
Harold S. Cuthell, Esq., Ponampet, S. Coorg	4
M. Cas. de Condolle, Geneve, Switzerland	143
B. Coventry, Esq., Dalsingsarai, Tirhoot	1
Dr. D. D. Cunningham, Torre Mount, Torquay, Devon, England	90
Mrs. J. Curtis, Calcutta	1
G. Dalgleish, Esq., Hyaghat, T. S. Railway	1
R. Derry, Esq., Taiping, Perak, Straits Settlements	14
M. Demole, Cannes, Alpes Maritimes, France	1
H. C. Eddy, Esq., Narayangunge, Dacca	1
Dr. F. Franoesohi, Santa Barbara, California	36
Major J. R. Forrest, R.A.M.C. Dilkhusa, Luoknow	2
W. Fawoett, Esq., Hope Gardens, Jamaica	29
Edward George, Esq., Bahamas, West Indies	8
G. A. Gammie, Esq., College of Science, Poona	9
Prof. Goebel, Munich, Germany	1
Commandatore T. Hanbury, F.L.S., La Mortola, Ventimig- lia, Italy	14
E. M. Holmes, Esq., London	2
Prof. E. Heokel, Marseille, France	4
S. T. Heard, Esq., Rosdoham, Co. Kerry, Ireland	1
C. R. Hodgson, Esq., Calcutta	8
Mr. P. N. Aiya, Kodaikanal, Madras	18
W. W. Johnson, Esq., Hyathepur, Malda	1
G. T. Lane, Esq., Sibpur	7
M. A. Godefroy-Lebeuf, Montmartre, Paris	30
Mrs. Lewni. Parkhurst, Surrey	64
Mrs. Lely, Shahi Bagh, Ahinedabad, Bombay	1
J. L. Iister, Ksqy Pashok, Darjeeling	2
T. H. Lyle, Esq., Nan, Moulmien, Burma	1
M. J. Linden, Gand, Belgium	13
J. W. Maiden, Esq., Masalipatam, Madras	4
Mrs. Maophail, Chakai, Monghyr	1
E. H. Man, Esq., c I.E., Port Blair	6
E. Mailer, Esq., Calcutta	1
J. D. Maxwell, Esq., Liverpool, England	7
Pastor A. J. Meik, Bethang, Dumka	1
A. B. S. MaoTver, Esq., Coonoor, Nilgiria	8
Herbert Moss, Esq., Barjullie, Assam	1
Dr. Ahmed Mirza, Hyderabad, Decoan	1
R. W. S. Mitohell, Esq., C.M.G., Garden Reach, Calcutta	1
N. G. Mukerji, Esq., Engineering College, Sibpur	6
G. L. Newbery, Esq., Polibetta, S. Coorg	7
J. Nelson, Esq., Ocalia, Florida	9
it. Pantling, Ksq., Mungpoo, Kurseony	18
G. M. IVho, Esq.* Moulmein, Burma	2
A. Tiokford, Esq., Calcutta	1
Dr. James Petrie, Zululand, Africa	3
Col. G. F. Pearson, Kinglon, England	1

APPENDIX IV—concluded.

To whom sent.	Number of parcels or packets.
C. G. Rogers, Esq., DaTjeeling ...	...
C. S. Sargent, Esq., Arnold Arboretum Cambridge, Mass., U. S. A. ...	1
J. L. Schiller, Esq., Rutherford, 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 ...	83
Dr. J. W. H. Traill, F.R.S., Aberdeen, Scotland ...	81
Norman P. Troup, Esq., Almora, N.-W. P. ...	22
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 ...	32
J. C. White, Esq., C.E., Darjeeling ...	...
George Watt, Esq., M.B., CM., C.I.E., 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
Raja Grish Chunder Roy Bahadur, Ratabari, Sylhet ...	1
Babu B. M. Chongdar, Sibpur ...	9
„ Bama Charan Bhattaoharji, Giridih ...	12
„ Bhuban Chandra Kur, Dum-Duxn ...	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
„ Eanhya Lai, Gossain Tola, Allahabad ...	15
„ Kunja Behari Basak, Calcutta ...	7
„ *J. M. Nallaswami Pillai, Nandyal, Kurnool ...	4
„ Netto Gopal Chatterjee, Calcutta ...	1
„ S. P. Chattejee, Calcutta ...	11
„ Upendra Nath Roy Chowdhury, Rupdia, Jessore ...	7
Total ...	5,670

APPENDIX V.

List of Herbarium 'Specimens received during 1900-1901.

	No.
Director, Royal Gardens, Kew ...	136
Well. Ed. Heer M. Buysmann, Hortus riant Diaphor, Middlebuig, Holland ...	20
Conservator, Herbie Boiaieier, Lea Jordila, Chambezy, Geneva ...	186
M. le Prof. M. Musy, Musée Cantonal, Fribourg, Switzerland ...	318
Director, Hof. Museum, Vienna ...	205
Ditto Kgl. Bot. Museum, Berlin, Germany ...	1,056
Herra. Prof. of Botany, University, Munich ...	296
Herbarium, Harvard University, Cambridge, Mass., U. S. A. ...	240
Prof. A. Nelson, University of Wyoming Lararaec Wyoming ...	875
O. F. Baker Esq., High School, St. Louis Mo., U. S. A. ...	675
A. H. Curtiss, Esq., Jacksonville, Florida, U. S. A. ...	193
O. G. Pringle, Esq., Charlotte, Vermont ...	260
H. Bolus, Esq., Kenilworth, Cape Colony, South Africa ...	160
J. Medley Wood, Esq., A.L.B., Curator, Durban Botanio Garden, Natal ...	108
Director's Lands Plantentuin, Buitenzorg, Java ...	24
„ Botanio GardenR, Singapur ...	885
C. Curtis, Esq., F.L.R., I'cnang ...	60
M. Emile Desohampn, Singapar ...	6f>2
Mr. J. C. Prazer, Kalewu, Burma ...	87

APPENDIX V—concluded.

	No.
*E. H. Man, Esq., Deputy Superintendent, Port Blair,	1,161
R. L. Heinig, Esq., Deputy Conservator of Forests, Andamans	435
T. F. Bourdillon, Esq., Quilon, Madras	66
W. A. Talbot, Esq., Deputy Conservator of Forests, Bombay	13
G. M. Ryan, Esq., Deputy Conservator of Forests, Thana, Bombay...	67
Director, Botanical Department, Northern India, Saharanpur	1,053
J. H. Laos, Esq., Simla, Punjab	13
C. Maries, Esq., Gwalior State Gardens, Gwalior, O. I.	113
H. H. Haines, Esq., Deputy Conservator of Forests, Chambasa, Singbhum	54
Major David Prain, I.M.S.	311
Lieutenant A. T. Gage, I.M.S.	90
Mr. G. H. Cave, Mungpo	20
„ N. GI	254
Babu A. O. Chatterjee (Assam grasses)	200
Shaik Mokim, Plant-collector	808
Petty contributions	77
Total	10,740

APPENDIX VI.

Litt of Herbarium Specimen distributed 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, Aberdeen	230
Ditto, Science and Art Museum, Dublin	186
Ditto, Queen's College, Cork	12
Ditto, Bijks, Leiden, Holland	177
Ditto, Botanic Garden, Utrecht, Holland	163
Ditto, Jardin Botanique de l'Etat, Brussels	36
Ditto, Jardin des Plantes, Paris	417
Ditto, Boissier, Ghambezy, Switzerland	157
Ditto, Musée Cantonal, Fribourg, Switzerland	90
Ditto, Botanic Garden, Geneva	138
Ditto, Botanic Garden, Zurich	460
Ditto, Royal Botanic Museum Florence, Italy	312
Ditto, Botanic Garden, Vienna	164
Ditto, Hof-Museum, Vienna	197
Ditto, Royal Botanic Museum, Berlin	613
Ditto, Botanic Museum, Hamburg	208
Ditto, University of Munich	312
Ditto, Copenhagen Botanic Garden, Denmark	30
Ditto, Botanic Gardens, Christiania, Norway	28
Ditto, University of Upsala, Sweden	247
Ditto, Imperial Botanic Gardens, St. Petersburg, Russia	360
Ditto, Smithsonian Institution, Washington, U. S. A.	158
Ditto, U. S. Department of Agrostology, Washington, U. S. A.	396
Ditto, New York Botanic Garden, U. S. A.	124
Ditto, Harvard University, U. S. A.	804
Ditto, Arnold Arboretum, Mass., U. S. A.	115
Ditto, Minnesota Natural History Survey, U. S. A.	133
Ditto, Montana State College of Agriculture, U. S. A.	92
Ditto, Missouri Botanic Garden, U. S. A.	38
Ditto, California University, U. S. A.	43
Ditto, Botanic Gardens, Durban, Natal, South Africa	164
Ditto, Melbourne University, Australia	261
Ditto, Botanic Gardens, Buitensorg, Java	234
Ditto, Gardens and Forest Department, Penang	242
Ditto, Perak Museum	26f
Ditto, Forest Department, Singapore	212

APPENDIX VI—concluded.

	No.
Herbarium, Royal Botanic Garden, Peradeniya, Ceylon ...	319
Ditto, Government Central Museum, Madras ...	246
Ditto, College of Soienoe, Poona, Bombay ...	195
Ditto, Botanioal Department, Northern India, Saharanpur ...	282
Ditto, Forest School, Dehra Dun ...	189
Ditto, of Reporter on Economic Products to the Government of India, Calcutta ...	388
Sir Dietrioh Brandis, K.C.I.B., Kew ...	94
G. F. Scott-Elliott, -Esq., Dumfries, Scotland ...	30
Well. Ed. Heer M. Buysmann, Hortus Plant Diaphor, Middleburg, Holland ...	64
Mons. Drake del Castillo, Paris, France ...	162
Mons. M. Gandoger, Yille franohe, Franoe ...	166
Mons. Cas de Caudolle, Geneva, Switzerland ...	374
Mons. J. Briquet, Geneva, Switzerland ...	00
Herrn Dr. Prof. Kranzlin, Gr. Ldohterfelde, Berlin ...	59
Herrn Pastor G. Kueenthal, Germany ...	38
Herrn Bud. Sohleohter Grunewaldstr, 6-7, Berlin ...	66
Dr. J. H. Sandberg, 501, Central Avenue, Minneapolis, Minnesota, 17. S. A....	35
Dr. A. G. Bourne, F.B.S., Madras ...	112
W. A. Talbot, Esq., Deputy Conservator of Forests, Bombay ...	51
Mrs. Bell, Banda ...	23
Superintendent, Berry White Medical School, Dibrugarh, Assam ...	14
Petty distributions ...	40
Total	11,903

SPECIAL APPENDIX.

List of PlanU that died in the fioode of September 1900 and during the cold weather of 1900-1901 from the effect e of the fioode.

Magnolia f uscata.	Ipomcea biloba.
Miohelia ohampaoa.	Solanum maoranthum.
Monodora gramftflora.	Saintpaolia iooaniha.
Oananga odorata.	Tecoma velutina.
Steroulia oolorata.	Bignonia spp.
„ foetida	nerveua.
„ pailens.	« pulohellus*
Heiioteres Isora.	Sanoheria speotanilis.
Murraya exotica.	Strobilanthus Dyerianns.
Citrus deoumana.	„ Bcaber.
„ medica.	„ soandans.
Spathelia simplex.	Barleria coerulea.
Swietenia Mahogani.	Eranthemum discolor.
Soymida febrifuga.	Aphelandra fulgens.
Cedrela Toona.	Serieographbis Ghiesbreghtii.
Spondias axillaris.	Tiantana Hellowiana.
Brya Ebenus.	derodendron odoratum.
Indigofera oligosperma.	Premnaspp.
„ tiootoria.	Myristioa spp.
Lonohooarpus Sp.	Bridelia amoona.
Dalbeigia Siscoo.	„ glauca.
Sohotia braohypetala.	Cruton Klotzsohianum.
„ latifolia.	Aoalypha macroph^lla.
Cassia trachypus.	„ marginata.
Acacia arabica.	„ tricolor.
JBnterolobium Saman.	Manihot Glaziovii.
Aralia Veitchii.	Boehmeria nivea.
Exos^emma oaribaum.	Fious Roibuwhii.
Ageratum oonysoides.	Phalaenopsis Sohilleriana.
Chrysanthemum up.	Cyphpedium Spioerianm.
Canthium glabrum.	„ venosum.
Linooiera malabarica.	Diosooeasp.
Buddleia madagascariensis.	ThysanolMna aoa ^{rifera} .
Heliotropium sp.	

DAVID PRAIN, MB, Major. I.M.8.,
Superintendent^ Royal Botanic Garden, Calcutta.

FINANCIAL DEPARTMENT.

MISCELLANEOUS.

No. 609T.-F.

DARJEELING, THS 19TH JUNE 1901.

PROM E. N. BAKER, ESQ., C.S.I.,

Secretary to the Qoternmnt 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,

Sm,

Your most obedient servant,

E. N. BAKER,

Secretary to the Govt. of Bengal.

No. 610 T.—F.

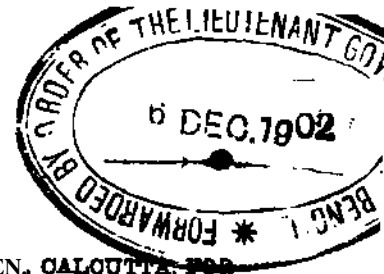
COPT of the above forwarded to the Superintendent, Royal Botanic Garden, Calcutta, for information.

By order of the Lieutenant-Governor of Bengal,

S. R. HIGNELL,

Offf. Under-Secy, to the Guvt. of Bengal.

DARJEF.LING;
The 19th June 1901.



maximum limit, 3 pages.]

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA,
FOR THE YEAR 1901-1902.

No. 256K, dated Eoyal Botanic Garden, Sibpur, the 15th May 1902.

From—MAJOR D. PRAIN, M.B., LL.D, F.R.B.E., L.M.B., Superintendent, Royal 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 out door improvement to be 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 the garden on 26th November 1901 and did much damage by uprooting a number of valuable trees and greatly disfiguring many that were not completely destroyed. With this exception the weather during the year was of a normal character and not unfavourable to vegetation.

2. *Economic Plants.*—The investigation of the dye-yielding *Indigofera* noticed in last annual report has advanced considerably during the past year. The opportunity afforded by a visit to Europe was utilized in a careful comparison of examples of the *Indigoferas* cultivated in South Eastern Asia with the authentic material preserved in the Herbaria of London and Geneva. The results have been in some cases unexpected. The belief that at the time of the early intercourse of Europe with India, there were two centres of Indigo export, if not of cultivation, has been confirmed. One of these centres was Surat, where the Indigo grown was a form of the Egyptian Indigo, *Indigofera articulata*, which still persists in various parts of India, notably, in Scinde and Rajputana where even now this plant alone receives the name "Nil" applied in Tirhut and Bengal to quite a different species. The other centre was Ceylon and the Coromandel Coast where the indigo was obtained from Indian Indigo, *Indigofera tinctoria*, the produce of which was even in these early times held in less esteem than Surat Indigo. There is evidence that the cultivation of the Surat, or Egyptian Indigo extended gradually eastward, reaching the Upper Gangetic plain about the time of Akbar, and apparently also finding its way later to Patna, Orissa and the Circars. But there is no evidence that Egyptian Indigo ever reached Bengal proper. While the Dutch held possession of Malabar, a third Indigo, *Indigofera wmalrana*, apparently derived from Eastern Malaya, came into use there. This particular plant seems to have been introduced to Bengal, either from Malabar or directly from Malaya, about a century and a half ago, and proving a more satisfactory plant than either the Egyptian or the Indian kinds, has spread westward through upper India as far as the Punjab and more recently southward to Madras, in the first case completely, and in the second almost completely, driving out of cultivation the Egyptian and the Indian Indigos respectively. From Bengal it was taken to the East Indies where it was, however, in turn displaced 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 from Indo-China on the other; in Upper Burma, for example, this West Indian Indigo is the only species to be met with. Either from the West Indies or directly from Bengal, the plant now grown so largely in the Gangetic plain, was also taken to Senegal and Angola where it is still largely grown side by side with West Indian Indigo, under the name "Indigo of Bengal." The importance of the knowledge thus obtained lies in the fact that another *Indigofera*, East African Indigo, *Indigofera arreata* 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, formerly cultivated there. It has been used as an argument against the proposal to introduce this East African *Indigofera* extensively into India that it cannot 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 they now grow. 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 is really as much an exotic in Upper India as the East African kind. Further, from the fact that *Indigofera tinctoria* or true Indian Indigo, is still found occasionally in a wild state in Rajputana, the hills to the south of Agra, and Chota Nagpur, it may be inferred that Egyptian Indigo had in Upper India, long ago displaced Indian Indigo. At any rate it is certain that within historical, and very recent historical times, Malayan Indigo, which is now so generally grown in the Gangetic plain displaced Egyptian Indigo. This being the case there is no reason why East African Indigo should not in turn displace the Malayan kind. It was recorded in the last annual report that during the excessive floods of September 1900 this East African Indigo came by 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 an insect blight which destroyed all save a few plants of every Asiatic and American *Indigofera* under cultivation without affecting in the least this East African species.

Among other economic operations for the year it may be noted that the efforts to extend the cultivation of *Festuca dilatatum* have been continued and that the difficulties regarding 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 the Khasia Hills; Nagpore, from Central India; and Suntolah, from Nepal, have been successfully transmitted; the despatch of other kinds will be effected in due course.

3. [^] *Herbarium*.—The collections made during the year in Assam have been chiefly from the Brahmaputra Valley where an endeavour has been made to bring together a representative collection of the crops cultivated in the province. In Burma native collectors have made large and valuable collections 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 still 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, 1,031 specimens; and the Director, Royal Gardens, Berlin, 1,134 specimens. Smaller but valuable contributions have to be acknowledged from the Director, Botanical Garden, Buitenaarg; 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 Botanist, Madras. Among private contributors to whom thanks are due for collections of Indian

plants, are Mrs. A. S. Bell, Ban da, 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. Craddock, Esq., Forest Department, Burma, &c. Some specimens were also acquired by purchase.

Sir George King has continued "at Kew the elaboration of the Malayan specimens belonging to this institution and has now dealt with the whole of the Calycifloral orders.

4. *Library*.—As usual a large number of books has been presented to this institution or has been acquired by purchase or in exchange. The task of cataloguing and arranging the collection is making steady progress,

5. *Botanical Publications*.—The ninth volume of the *Annals of the Royal Botanic Garden*, Part I, which was in the Press at the commencement of the year under review, was issued in May 1901. During the year the twelfth part of Sir George King's *Materials for a Flora of the Malayan Peninsula* was published and Part XIII was sent to Press. Other publications have been *JNOVVCUB Indices XVIII; The Asiatic Species of Dalbergia*, by the Superintendent, in the *Journal of the Asiatic Society*; *Notes on Indigofera*, by the Superintendent and Mr. E. G. Baker of the British Museum, in the *Journal of Botany*; and *A Botanical Tour in the South Lushai Hills* by Captain A. T. Gage, in the *Records of the Botanical Survey of India*.

6. *Interchange of Seeds and Plants*.—The number of plants distributed during the year was 35,134, slightly below the usual figure, the demand for *Rhea* having been very small. The number of plants received was 8,521; these include some very interesting contributions, the most notable of which are a small collection of authentically named *Sansecieras* (Bow String Hemp plants) from the Director, Royal Gardens, Kew; 389 bulbous and tuberous plants from Uganda, presented by F. J. Spooner, Esq., 305 orchids of remarkable interest, presented by Rev. L. Cardon, S.J., Chota Nagpur; collections of a very interesting nature from Madagascar, presented by M. Em. Prud'homme and from Dar-es-Salaam, presented by Herr Stuhlmann. During the year 1,206 packets of seeds were received and 4,08*3 packets distributed.

7. *Lloyd Botanic Garden*.—The whole of the ground formerly used as a municipal vegetable garden has now been laid out in conformity with the older portion of the garden. A road that will admit of rickshaws entering the garden has been provided and supplies a want that was greatly felt. A new public museum is being erected within the garden.

8. The money allotted for contingencies for the Royal Botanic Garden has been spent in full. There has been a saving under the allotment for establishment of Rs. 5,137-6 due chiefly to the absence for six months on leave of the Superintendent and the deputation of the probationer Gardener attached to the Garden, at the Cinchona Plantation. There has been a saving of Rs. 1,266-13-6 under the allotment for Travelling allowance. In the corresponding allotments for the Lloyd Botanic Garden a saving of Rs. 212-12 was effected on the Garden account and a saving of Rs. 161 under the allotment for Travelling allowance. The revenues from the Royal Botanic Garden of Rs. 874-1-4 and from the Lloyd Botanic Garden of Rs. 895 have been paid into the treasuries at Calcutta and Darjeeling respectively.

9. The Superintendent was absent on special leave, on urgent private affairs, combined with privilege leave for six months from 20th June till 19th December 1901. During his absence Captain A. T. Gage, Curator of the Herbarium officiated as Superintendent in addition to his own duties. Captain Gage availed himself of privilege leave for six weeks from 4th January to 14th February, 1902. Mr. G. T. Lane, Curator of the Garden, was in charge of his post throughout the year till 20th March 1902 on which day he proceeded to Europe on leave for nine months on medical certificate combined with privilege leave. Mr. N. Gill, Assistant Curator, having been appointed Superintendent of the Memorial and other Public Gardens, Cawnpore, vacated his appointment at the Royal Botanic Garden on 7th February 1902; Mr. H. F. Green, probationer Gardener attached to the Royal Botanic Garden, but at the time on deputation at the Government Cinchona Plantation, was

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 has 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. FOR
THE YEAR 1902-1903.

No. 138 dated Royal Botanic Garden, Sibpur, the 2nd May 1903.
From—MAJOR D. PAINE, M.B., L.M.S., Superintendent, Royal Botanic Garden, Sibpur,
To—The Secretary to the Government of Bengal, Financial Department.

I HAVE the honour to submit herewith the 116th Annual Report of the
Royal Botanic Garden, Calcutta, for the year 1902-1903.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA,
FOR THE YEAR 1902-1903.

THE principal outdoor work during 1902-1903 has been the deepening and widening of the ditch lying inside the northern and western garden boundary. The opportunity has been taken along with this work to improve the surface drainage of the adjacent portion of the garden and to fill up several unnecessary pits and ponds. The serviceable area of the garden has thus been considerably increased! The fern-house in the nursery, which had become dilapidated, has been overhauled and thoroughly repaired. The weather during the year was favourable to vegetation, and the show of orchids was particularly good.

2. *Economic work.*—As usual the attention of the garden staff has been almost exclusively devoted to the propagation, investigation, and interchange of plants of economic importance. A good deal of public interest has been shown in plants that yield fibre, and assistance has been freely given to enquirers for Rhea and for the fibre-yielding *Agaves* and *Furcraea**. An important question has been raised regarding the fibres vaguely classed as Indian Hemp; this can only be settled by cultivating and identifying the various plants. It appears that the expression "Indian Hemp" and its vernacular equivalent *Qan* do not exclusively connote *Crotalaria juncea*; further it seems that *Crotalaria* is not uniformly designated throughout India. The double confusion that results leads to trade difficulties; an attempt is being made to ascertain the actual facts and so remove these difficulties. Among other food plants the Indian Yams have received close attention during the year. The enquiry into this difficult subject, in which the Superintendent of the Garden and the Reporter on Economic Products are collaborating, has advanced considerably. Having regard to the fact that the East Indian Yams, with hardly an exception, are of very indifferent quality, some of the finest West Indian Yams have been introduced and are being experimentally cultivated. The difficulties that beset the propagation of *Ipecacuanha* having been largely overcome, samples of this drug have been submitted for examination and report to the Medical Storekeeper to Government, Calcutta. The fluctuating character of the *Ipecacuanha* market renders it desirable that, provided the drug is otherwise equally suitable, India should be able to depend, at least in part, on local supplies.

year an attempt has been made to introduce^{r r v} some of the finer kinds of American pine-apples, the ordinary Indian kinds being, as a rule, of the poorest description. An interesting introduction during the year has been the Japanese bamboo known as *Matake*, which is employed by the inhabitants of the Province of Chiba in sinking their artesian wells. In the introduction of this bamboo, the garden is indebted to the kind assistance of Dr. Tokutaro Ito.

3. *Herbarium.*—The botanical explorations made during the year have included a visit by the Superintendent to the Sundarbans; 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. L. 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 Mr. H. H. Haines, Deputy Conservator of Forests, who has sent further collections from Singhbhum; and by Mr. F. A. Slacke, 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 named specimens distributed to other Herbaria has been 10,888. The number received has been 14,920. The chief contributor for this year has been the University of Upsala, whence 2,758 specimens, mainly South American, and all of great value, have been received. Fine collections have been received also from Professor C. F. Baker, Stanford University, California, 873 specimens; Mons. E. Mouillefarine, Paris, 600 specimens; 's Lands Plantentuin, Buitenzorg, Java, 323 specimens. Smaller but very interesting collections have been contributed by the Director, Royal Gardens, Kew; Mons. Barbey, Geneva; Cantonal Museum, Fribourg; Hof-museum, Vienna; College of Agriculture, Montana; Botanic Gardens, Zurich; Botanic Gardens, Penang; Botanic Gardens, Singapore. Among Indian contributors have been Mrs. A. S. Bell, Banda, 578 specimens; J. H. Lace, Esq., 481 specimens; H. H. Haines, Esq., 206 specimens; Reporter on Economic Products, 190 specimens. Smaller collections have been contributed by the Conservator of Forests, Rangoon; Deputy Conservator, Port Blair; Lieutenant-Colonel J. J. Wood, i. M. S., Mr. W. H. Craddock, Forest Department, Burma; J. Marten, Esq., Forest Survey Department; Government Botanist, Madras; and others. Some specimens were also acquired by purchase.

4. *Library.*—& considerable number of additions have been made to the library by exchange, presentation and purchase. The collection has now been completely re-arranged and the scientific card catalogue giving both an authors* and a subject-index has been about half completed. Another large book 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 Thomas Hanbury, K.C.V.O., of La Mortola, Ventimiglia; a set of West Indian Tarns 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. Karpel&s, of the kinds grown in France and in Algeria. Donations of orchids of much interest were made by Captain Wood, B.E., from Burma; J. H. Lace, Esq., from the Sundribans; W. Goss, Esq., from the Duars. During the year 897 packets of seeds were received and 5,270 packets were distributed. Among the seeds received have been 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 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 alpine seeds, which forms a very important feature of the work of the garden, the Curator was

able personally to visit the higher levels at the proper season, greatly to the benefit of the work in question.

7. The money allotted for contingencies for the Royal Botanic Garden, Calcutta, was spent in full. There was a slight saving of Es. 39-9-11 under Establishment charges, and a saving of Rs. 284-3-6 under the allotment for travelling allowance. In the corresponding allotments for the Lloyd Botanic Garden there was a saving under contingencies of Rs. 442-10; under establishment of Rs. 1,900-9-2, and under travelling allowance of Rs. 67-11. The saving under establishment is explained by the fact that the present Curator is junior in the graded list of Gardeners to his predecessor. The revenues for the Royal Botanic Garden of Rs. 1,160-6, and for the Lloyd Botanic Garden of Rs. 1,133-7-6, have been paid into the treasuries at Calcutta and Darjeeling, respectively.

8. The Superintendent was in charge of his post throughout the year. Captain A. T. Gage, Curator of the Herbarium, was deputed by the Government of Bengal between 17th April and 22nd October 1902 to investigate along with Mr. H. M. Leake, Biologist to the Bihar Planters' Association, the sources and nature of the Indigo seed supply in Upper India. Except for this interruption the Curator of the Herbarium was in charge of his post* throughout the year. The Curator of the Garden, Mr. G. T. Lane, was absent at the commencement of the year on leave on medical certificate. He returned to duty on 20th March 1903. During his absence Mr. A. C. Hartless, 3rd Assistant, Government Cinchona Plantation, acted as Curator. With effect from 20th June 1902, Mr. H. F. Green, Assistant Curator of the Garden, was appointed 4th Assistant, Cinchona Plantation, and Mr. O. T. Hemsley, 4th Assistant, Cinchona Plantation, was appointed Assistant Curator, and from the same date was posted on deputation to Delhi in connection with the Coronation Durbar Camp. Mr. Hemsley continued on deputation till 14th August 1903 when he was granted privilege leave under medical advice till 30th September 1903. On 1st October 1903, Mr. Hemaley's services were placed at the disposal of the Government of the Punjab. Mr. J. E. Leslie reported his arrival from England and joined his appointment as Probationer Gardener attached to the Royal Botanic Garden on 2nd April 1902, and was subsequently appointed Assistant Curator, in succession to Mr. Hemsley, transferred, with effect from 1st October 1902. Mr. E. Long, the new Probationer Gardener, reported his arrival from England and joined his appointment on 12th January 1903. Mr. G. H. Cave, 3rd Assistant, Government Cinchona Plantation, was appointed Curator of the Lloyd Botanic Garden on 1st April 1902, in place of Mr. W. A. Kennedy who was on that date permitted by Government to revert to the Cinchona Department. Mr. Gave has been in charge of his post throughout the year.

THE filling up of a pond near the Cinchona office and close to the river bank has been the chief out-door operation during the year. The river, which was separated from this pond by a narrow embankment, showed signs, during recent rainy seasons, of breaking through. Under the professional advice of the Department of Public Works it was decided to fill this pond, and a special grant of Rs. 3,000 was provided for the purpose and expended in full during the year. The repainting of the Palm house was taken in hand and the cleaning and painting of the outer aisles overtaken, leaving the central dome still to be dealt with.

The weather during the early part of the year was marked by the absence of the usual hot-season rainstorms. The labour force of the garden had consequently to be employed in watering as many trees and shrubs as possible so as to ensure their preservation. In spite of these efforts a considerable mortality took place, over 50 trees and shrubs having died outright. As the watering of every tree in the garden being physically impossible, it was necessary to concentrate our efforts on the rare and valuable kinds whose loss would have meant the disappearance of a species from the collection; the death-roll, as a result, fortunately only includes six or eight of this class. The close of the year was marked by a severe wind-storm (March 9th, 1904), which overturned a number of trees, two or three of which were valuable species, and did much damage in the nursery. With these exceptions the weather throughout the year was favourable to vegetation. A large portion of the central section of the great banyan tree fell spontaneously at midnight on March 16th, 1904; the tree had not apparently been damaged by the storm of the previous week, and there was no wind at the time of the accident, which, it is to be feared, indicates merely the progress of natural decay.

2. *Economic Work.*—The interest taken by the public in plants yielding useful fibres has continued to be great and, in connection with this, progress has been made with the enquiry into the various species of *Agave* that occur in India. The successful introduction through this garden of *Agave Stsalana*, the species that yields the most esteemed fibre of this class, has been recorded in the reports for 1891-92 and subsequent years, and a review of the results so far obtained has been alluded to in the report for 1899-1900. The *Sisal Agave* does not thrive equally well or give equally remunerative results in all parts of India, and in certain districts species of *Agave* other than *Sisalana*, already so completely naturalised as to appear indigenous, thrive so much better than *Sisal* and yield fibres commercially so much inferior to the best *Sisal* fibre that their systematic cultivation offers a hopeful field for investment. The idea that any *Agave* is a native of India is a mistaken one; all are American, and all are introduced. The belief that all the *Agaves* naturalised in India belong to one or, at most, two species, *Agave americana* and *Agave vivipara*, would now also appear to be incorrect; it seems that, while, as a rule, more or less well-defined areas have particular species well established, the prevailing species in one area often differs from that most plentiful in another area. Moreover, it is found, when attempts are made to utilize the fibre of these local *Agave**, that somewhat diverse results are obtained; at times the fibre extracted is reported to be nearly up to the standard of *Sisal*, at other times it proves too weak to be worth extracting. The explanation of these facts appears to be that other species of *Agave* with *A. Stsalana* the peculiarity of adapting themselves readily to certain localities and thriving less vigorously in others. The original object of the introduction of all the species was to provide secondary lines of defence round stockades, forts and strong villages; in more settled times they have been chiefly used as hedges bordering highways and lines of railway. Vigour of growth therefore has been the only quality considered in selecting plants within any particular area; the nature of the fibre has not till recently attracted

attention. It is too soon yet to say how many different *Agaves* have really become naturalised; 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 confusion prevails with regard to the species of *Furcrcea* or "Mauritius hemp", of 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 Coconada, 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 are 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, cultivated under identical conditions, and their fibre is extracted in the same way, the 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 valuation 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 living 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 grafts of fruit-trees and the raising of stock of tries for planting by Government officers on roadsides and elsewhere. At the request of the Director of Land Records and Agriculture the Superintendent paid three visits to Bihar to inspect various centres of experimental cotton cultivation; he also paid a visit to Bardwan 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 Tibet. The journey was undertaken by the invitation of Colonel Younghusband, and with the consent of Government, in order to organise Botanical 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 elapse and 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. B. Clarke, Esq., London, 300 specimens; Mons. E. Mouillefarine Paris, 1,002 specimens; S. A. Prince Roland Bonaparte, 391 specimens; J. Tfaagoe, Esq., U.S.A., 14 specimens; A. F. Baker & Co., California, 628 specimens; C. G. Prinele, Esq., Vermont, U. S. A., 280 specimens; H. H. Smit, Esq., Pittsburgh, U. S. A., 1,890 specimens. In India the chief donors have been C. G. Rogers, Esq., Fort Blair, 203 specimens; B. B. Smit, Esq., 18 specimens; C. E. C. Fischer, Esq., 93 specimens; F. B. Manson, Esq., 82 specimens; H. H. Haines, Esq., 76 specimens; T. F. Bourdillon, Esq., 32 specimens; J. S. Slater, Esq., 195 specimens; P. P. Brühl, Esq., 10 specimens; J. Marten, Esq., 162 specimens; J. L. Lister, Esq., 72 specimens. The thanks of Government are due to the following individuals for their valuable contributions. Some specimens were also acquired by purchase and those

obtained through the agency of this institution included 1,960 specimens collected in connection with the Tibet Frontier Mission viz., 797 by Col. Young-husband and Mr. J. C. White and 1,163 by the Superintendent during his visit to the frontier, and 1,641 specimens obtained by the Curator of the Herbarium and by native collectors in Assam and Burma. From the Seistan Boundary Commission, 127 specimens were received.

4. *Library*.—A large number of books have been added to the library during the year; many of these have been presented or given in exchange for publications. Further progress has been made with the card catalogue and another bookcase has been added. The rate of accession to the library is, however, so great that it has been necessary to solicit the provision as soon as possible of farther extra accommodation.

5. *Botanical Publications*.—The chief publications issued during the year in connection with the garden have been:—*Annals of the Royal Botanic Garden*, Vol. X, Part I, {*The species of Dalbergia of South Eastern Asia*}, by the Superintendent; *Flora of the Sundribuns*, (in *Records of the Botanical Survey of India*), also by the Superintendent; *A Census of the Indian Polygonums* {*Records Botanical Survey*}, by Captain Gage, Curator of the Herbarium. Sir George King has continued his *Materials for a Flora of the Malayan Peninsula*, based largely on material belonging to the Calcutta Herbarium; of this invaluable work, Part XIV, dealing with *Caprifoliaceae* and part of *Rubiaceae*, has been issued during the year: with Sir George King, Mr. J. S. Gamble, P.R.S., has now become associated in this work.

6. *Interchange of Seeds and Plants*.—The number of packets of seeds distributed during the year was 6,152. The number of packets received was 1,677. These included valuable contributions from Australian Botanical establishments of seeds of *Eucalypti*; a fine collection of Japanese seeds from the Imperial Garden at Tokio; most interesting contributions from Mexico, by Mr. J. C. Harvey; from Europe, by M. Robertson-Proschowsky of Nice, and Signor C. Sprenger of Naples; from German East Africa, by the Agricultural Department at Dar-es-Salaam. They also included over 200 different seed packets received from the Reporter on Economic Products for experimental cultivation and subsequent identification. The number of plants distributed during the year was 8,887; these included a collection of useful species (340 plants) issued to the Rev. Dr. Russell Scott on behalf of an Industrial Mission Colony that is being established in British East Africa; over 2,000 issued to assist in the development of Uganda; a collection of the various kinds of pine-apples grown in India (87 plants) sent to Jamaica at the instance of His Excellency the Viceroy; economic plants asked for by the Bureau of Agriculture, Manila; representative collections of the various *Agaves* naturalised in India to the Director's Land Plantentuin, Buitenzorg and to the Directeur de l'Agriculture, Saigon; a further consignment of representative Indian oranges to the Government of West Australia and a collection of *Hwea branhmsia* plants to the Consul-General for Italy at Calcutta on behalf of the Italian Government. The number of rhea plants issued in India was 12 only, indicative of the fact that those interested in cultivating this plant have now received sufficient supplies; on the other hand, over 2,000 plants of rhea were issued to our Central and East African Colonies. The number of fibre plants other than rhea issued included 2,014 *Agaves*; 2,225 *Furaxu*; and a few plants of *Santmero* or "Bowstring hemp." The number of plants received was 11,019. These include a very interesting collection of 68 plants received from the Director Royal Gardens, Kew; an instructive collection of the *Agaves* established in Upper India from the Superintendent of the Botanic Garden, Saharanpur; a fine collection of orchids from the Salween Valley presented by Pantain-H Wood, B.B., of the Survey of India; a valuable collection of economic tubers from Chota Nagpur by the Rev. Father Cardon; a fine collection of pine-apple suckers by R. G. Girard, Esq., some interesting and valuable tubers presented by the Bureau of Agriculture, Manila; and over 6,000 tubers, bulbs and cuttings, mostly for the purpose of view to subsequent identification on behalf of his department, from the

^ r M S S - T h^{ts} e condition of this garden has been satisfactory throughout the year. The Curator again visited personally the higher

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 that 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. Hartless, 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.

D.»PRAIN, M.B., Major,

Superintendent, Royal Botanic Garden, Calcutta.

AMONGST the chief out-door works of the year were, the deepening of several of the tanks, the raising of a mound near the flower-garden with the soil left over after filling, up the office tank, and the reconstruction of the Palmyra avenue. The nursery has been laid out on an improved plan and several of the plant-houses in the nursery have been reconstructed. The weather during the greater part of the year was normal. An abnormally low temperature existed during part of January and February 1905, but appears to have left no permanent ill-effects on the garden. A severe storm on the 9th April 1904 overthrew about forty trees.

2. *Economic work.*—The investigations into the species of *Agaves* found in India, referred to in last year's report, have been continued and concluded during the year by Lieutenant-Colonel Prain and Mr. J. R. Drummond, i.cs. Their results, which promise to be of great value, are in the press. In connection with this investigation, a complete set of the *Agaves* grown in the Calcutta Garden has been sent to the Director of the Missouri Botanic Garden, who is an authority on *Agaves*. The experiments with 'sunn' hemp (*Crotalaria juncea*) are being continued. It appears that the time of sowing is not the same in all parts of the country. It appears to take place considerably earlier in the year at such places as Cawnpore, and Coconada than in Bengal. This accounts for the fact that whereas the fibre from Cawnpore, Coconada, and some other localities comes into the market in October-November, the best kind of 'sunn' hemp—the Bengal or Belgachia brand—does not come into the market until about February. Considerable attention was given to the growing of the different species and varieties of cotton—supplied by the Agricultural Department and the Reporter on Economic Products—cultivated or attempted to be cultivated in India. The plots furnished material for botanical identification, but in other respects the experiment was practically a repetition of the one made in 1870-71, as detailed in the garden report for that year, and with the same unsatisfactory results. The economic work of growing seeds, tubers and plants and identifying them for the Reporter on Economic Products to the Government of India has been carried on as usual during the year.

3. *Herbarium.*—The past year has been a notable one in the history of the Herbarium. In the annual report for 1889-90 Dr. (now Sir George) King writes that when the mounted collection was removed from the old building into the present one, it was contained in 93 cabinets*. In 1890 the collection filled 18½ cabinets and the number of specimens was estimated at over half a million. Since 1880 the collection has increased so prodigiously that until this year the cabinets were overflowing and many thousands of specimens had to be piled on tables and on the floor. The special giant allotted to the garden during the year under review has enabled the general Herbarium in the gallery of the building to be entirely reorganised. All the old cabinets which were arranged in groups of nine have been replaced by large handsome double-sided cabinets, built in four sections so as to allow of easy handling, each* new cabinet-occupying no more floor space than nine old ones, but having a capacity half as great again as the nine old ones. There are now thirty-two cabinets in the general Herbarium with a total capacity of about a million specimens, it *is hoped* to replace the old cabinets still remaining on the ground floor and containing the local herbaria and unclassified collections during the coming year. When this will have been done the capacity of the present building will be*utilised to the fullest extent. It would be rash to prophesy how long the present improved accommodation will suffice, but in the natural course of development of the institution, congestion is bound to recur, and when it does so it will have to be relieved by enlarging the building itself. It is very satisfactory to be able to chronicle such a great improvement as the liberality of Government has enabled the officers responsible for the Royal Botanic Garden to effect. It would, however, have been still more satisfactory to be able to state that the scientific staff had increased *pari passu* or approximately so, with the development of the Herbarium. During the last forty years the Herbarium and Library have

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. If 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. G. L. Searight, the officer in charge of the road survey there. The number of specimens received in the Herbarium amounted to almost 7,000. The 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, is 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 Cryptogamic 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 a 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 recent 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 ordinary photographic and photo-micrographic work has also been erected. The laboratory, although small, should be of great use to any botanist desiring to study tropical vegetation from a physiological or histological stand-point. 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* created 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 detail. A supply of electricity—so necessary for certain physiological investigations—is lacking. In connection with the Laboratory a part of the south verandah of the seed-house has been transformed into a email museum, which has been fitted up with excellent show-cases. A beginning for a larger and better museum in the future it should promise well.

6. *Library.*—During the year the Library has undergone as complete a reorganisation as the Herbarium. The old clumsy bookcases have been replaced by twelve fine new double-faced cases with sliding doors, each new case giving nearly twice as much space as four of the old ones, and in addition ^{prev} a ^{Gar} new room for the thousands of valuable drawings executed in the ^{Gar} inuring the last hundred years. The work of f i S S j S I &

from the old to the new cases naturally put a temporary stoppage to work on the card-catalogue, which should now, however, go on with greater rapidity. During the year a large number of books were added and several portraits of illustrious botanists were presented to the Library.

6. *Publications*.—During the year there were issued the following numbers of the Records of the Botanical Survey of India:—

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 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 Memoirs by Officers of the Medical and Sanitary Departments of the Government of India, as well as *Novice Indices*, NOS. XXIV and XXV, contributed to the Journal of the Asiatic Society of Bengal, Volume LXXIII, Part II, 1904.

During the year also Sir George King and Mr. Gamble have published Part XV of their *Materials for a Flora of the Malayan Peninsula*.

7. *Interchange of Seeds and Plants*.—During the year 3,368 packets of seeds were distributed and 1,674 packets were received. The latter included collections from the Botanic Garden, Sydney; the Botanic Garden, Sapporo, Japan; the Bureau of Forestry, Manila? Messrs. Reasoner Brothers, Florida; M. Buysmann, Middleburg, Holland; Sir Thomas Hanbury, M. Herb and M. Sprenger, Italy; and Mr. J. C. Harvey, Mexico, as well as gifts from the chief Botanical Gardens in England and the Continent. Large collections were contributed by the Reporter on Economic Products, by Mr. G. H. Cave while officiating as Curator of the Garden at Ootacamund, and by the Lepcha collectors in the Chumbi valley under Mr. Searight. The number of plants distributed was 40,898. These included a collection of Pomeloes sent to the Bureau of Plant Industry, Washington, a large collection of Rhea roots to Uganda and several thousands of Sisal Hemp plants to various parts of India. The number of plants received was 4,584. These included several hundreds of *Agaves* contributed by Mr. C. A. Barber of Madras; Dr. E. J. 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 Dharwar 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 indigenous species and as many exotic species were killed. Otherwise the condition of this Garden was normal throughout the year. The usual collections of Himalayan seeds were made for distribution.

9. *Financial*.—The allotment for contingencies for the Royal Botanic Garden, as well as the special grant for the reorganisation of the Herbarium and Library and establishment of a Laboratory and Museum were spent in full. There was a saving of Rs. 2,839-4-1 under establishment charges and of Re. 781-3 under travelling allowance. All the allotments for the Lloyd Botanic Garden were spent. The revenues for the Royal Botanic Garden of Rs. 1,415-0-6 and for the Lloyd Botanic Garden of Rs. 331-4 were paid into the Calcutta and Darjeeling treasuries, respectively.

10. *Staff*.—Lieutenant-Colonel Prain, I.M.B., held charge of his post of Superintendent from the beginning of the year until 1st November 1904, when he went on leave for thirteen months. Captain A. T. Gage, I.M.S., Curator of the Herbarium, was absent on six months' combined leave from 37th April. He has officiated as Superintendent from 1st November 1904. By special arrangement, approved by Government, Mr. J. R. Drummond, I.O.S., was in charge of the current botanical duties of the Curator of the Herbarium from May until 24th August 1904, and again from November 1904 until the 18th April 1905. From 24th August 1904 to the 28th October 1904,

Dr. Archer Iryine-Fortescue acted as Curator of the Herbarium. Mr. G. T. 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 Cinchona 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 Long, probationer Gardener, was on deputation to the Botanic Garden at 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. B. 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. Cave, Curator of the Lloyd Botanic Garden, *yraa* on deputation to Ootacamund up to 31st 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 22nd February 1905.

A. T. GAGE, *Captain, I.M.S.*
Acting Supt., Royal Botanic Garden, Calcutta.

(Maximum limit 3 pages.)

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA,
FOR THE YEARS 1906-06.

DURING the year weather conditions were normal, except for the unusual rainfall in February 1906, which, however, did not appreciably affect the garden. The principal outdoor works were the continued improvement of the nursery; the re-making of the Scott avenue leading from the riverside avenue to the Banyan avenue; the relaying of the paths around the Herbarium and Cinchona office; the erection of a stone parapet to the bridge on the Jacquemont Path, to replace the old tile parapet which had fallen into a ruinous condition, and the re-alignment of the path between the bridge and the Banyan avenue; the renovation by the Public Works Department of the two shelter-pavilions, and the complete renewal of the roof of the smaller one; the improvement of the Howrah gate entrance to the garden, and the re-planting of the large palm house. A minor improvement in the erection of a notice-board at each entrance to the garden, which shows by means of a simple arrangement for changing the figures, the hour of closing of the garden on any given day.

2. *Economic work.*—'Sunn' hemp (*Crotalaria juncea*)—seed of which was obtained from all parts of India where it is grown—was again cultivated in small plots. It was thought that by sowing fairly late towards the end of October, better results than those of last year might be obtained. As it turned out the result was the reverse of what was expected. Almost all the plants began to flower when little more than a foot high, and they obstinately declined to grow much higher. On two occasions every plot was flattened out by heavy rain, which did not tend to improve matters. As far as yield of fibre is concerned, no results which could be relied upon could be obtained from plants which behaved in such a manner. As the cultivation of 'Sunn' hemp is likely to prove of very considerable importance to India, it is proposed to continue plot-experiments until some definite results are obtained, or until the Agricultural Department can take up the experimental cultivation on a larger and more satisfactory scale than is possible on the very limited amount of ground available in the garden. Apart from the experimental side of economic work a considerable amount of useful work has been accomplished during the year in the distribution of economic plants by seed or otherwise throughout India and in their introduction into other countries. The space allotted to this report permits mention of only a few illustrative instances. In India there has been a revival of interest in rubber, and not a few applicants have been furnished with information and seed or plants of *Ficus elastica* and *Manihot Claziovii*. The latter, which yields Ceara rubber, appears to thrive in Bengal and Assam, but it is doubtful whether it yields rubber equal to that obtained from the same species cultivated in Southern India and Ceylon. Camphor-seed has been supplied to certain parties. Sisal hemp plants have been distributed to certain jails, and lime-seeds as usual to many of the jails in Bengal. Seeds of timber and other useful trees have been largely distributed over India and to other tropical or semi-tropical countries. Outside of India seeds of the species of *Aeschynomene* which furnish 'Sola' pith were supplied to the Jardin Colonial of Paris; collections of economic bamboos and of seeds of useful Indian trees were distributed to the Hon'ble Mr Joseph Baynes, C.M.G., and Mr. Charles Hitchins of Natal,—who had both personally visited the garden last year—for attempted acclimatization in South Africa; deodar seed was supplied to the Transvaal Landowners' Association, and jute seed to the Government of German New Guinea; seed of 'Sunn' hemp was distributed to the United States Agricultural Department in the Philippines, and Indigo seed to the Dutch Agricultural Department in Java, and to a correspondent in the Liege in Reunion; tea-seed was sent to the Agricultural Association of Sicily. The economic additions to the garden include Caravonica cotton; a collection of grasses from the Transvaal Agricultural Department; a similar collection from the United States Department of Agriculture; and a collection of economic plant seeds from the 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 in 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 help 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 *viâ* Kohima and Manipur, thence down the Surma valley to Silchar. In Burma as there was no European botanist available, a native 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 Cinchona 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 6,882. The specimens distributed to other Herbaria were about 7M/L. 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 direct 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 largely 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 is available. A commencement also has been made with a photographic survey of the Garden. It is proposed to systematically photograph the whole Garden, and specially interesting individual trees, and to register the actual area taken 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 usual number of accessions was registered. The Index of new species of plants, which is published monthly by the Herbarier Boissier in Switzerland, in the 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*, a Monograph with 27 plates by Dr. O. Stapf, of the Kew Herbarium.

Records of the Botanical Survey of India, Vol. IV, No. 2, *An Epitome of the British Indian Species of Impatiens*, Part II, by Sir J. D. Hooker.

Non-official publications include:—*Materials for the Flora of the Malatran Peninsula*, Parts XVI, XVII, XVIII, b^ Sir George King and Mr. J. S. Gamble, C.J.E. in the Journal of the Asiatic Society of Bengal; *Munsoniw, a new Tribe of the Natural Order Sterculiaceae*, 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.

7. *Interchange of seeds and plants.*—During the year 2,181 packets of seeds were distributed and 1,163 received, while the number of plants sent out reached 53,281 and the number received amounted to 2,292. The seeds and plants of economic importance have already been referred to as far as space permits under "Economic work." The number of plants sent out is the largest for many years, and includes over 17,000 for Dalhousie Square and the Esplanade in Calcutta.

8. *Lloyd Botanic Garden.*—The condition of this Garden was satisfactory throughout the year. The Curator and the Lepcha collectors visited the high levels to collect Sikkim plant seeds for distribution to the botanical and horticultural institutions of Europe and America.

9. *Visitors.*—During the year the Garden has been visited at various times by the officers of the Imperial Agricultural Department and of the Agricultural Department of the Bombay Government; the Reporter on Economic Products to the Government of India; the Economic Botanist to the Government of Madras and others, who also freely consulted the Herbarium and Library. Towards the end of the year the Garden had a distinguished visitor in the person of Dr. A. Engler, the Director of the Imperial Botanic Garden of Berlin who spent a few days in the Garden and also on the Cinchona Plantation, along with the Officiating Superintendent.

10. *General.*—The condition of the Garden generally is satisfactory, but there is room for improvement in various directions, some of which may be indicated briefly here. The present seed-house accommodation is very imperfect, and a properly built and properly fitted up seed-house is a pressing desideratum. The present office of the Curator of the Garden is a small dilapidated godown, quite unworthy of its purpose. There is no store-godown in the nursery for carpenters and blacksmiths' tools and such like small stores. There are no glass houses in the parts of the Garden open to the public for the display of the fine collection of Ferns and Cacti which at present, for lack of such houses, have to be kept hidden away in the nursery. There is no storage godown for the Herbarium, so that at present a room in the Superintendent's quarters has to be used as such.

11. *Financial.*—The allotments for contingencies for the Royal Botanic Garden were fully spent. Under "Establishment" charges there was a saving of KB. 5,380-9-7 for the Royal Botanic Garden, and under "Travelling Allowance" a saving of Rs. 334-15. The allotments for the Lloyd Botanic Garden were spent in full, except for the sum of Rs. 2-2 saved on travelling allowance. The revenues for the Royal Botanic Garden of Rs. 846-7 and for the Lloyd Botanic Garden of Rs. 233-6-6 were paid into the Calcutta and Darjeeling treasuries respectively.

12. *Staff*—Lieutenant-Colonel D. Prain, I.H.S., who was on furlough at the beginning of the year under review was granted an extension of furlough for nine months from 1st December 1905. Since then he has been appointed Director of the Royal Botanic Gardens, Kew. The writer of this report officiated as Superintendent throughout the year. Mr. A. Irvine-Fortescue, M.B., acted as Curator of the Herbarium from 1st May to 28th October 1905, on which latter date he resigned the service of Government owing to illness after being on medical leave from 29th July to 28th October 1905. Since 29th July 1905 the current duties of the Curator of the Herbarium have been performed, as far as possible, by the Acting Superintendent. Mr. G. T. Lane held his post of Curator of the Garden throughout the year. Owing to the creation of a series of new gardening posts in Upper India, and a succession of casualties amongst the officers holding the older posts, there has been an unprecedented drain on the gardening staff of the Calcutta Garden. During the year the following officers consecutively held the post of Assistant Curator of the Garden, substantive or acting:—Mr. R. H. Locke from 1st April to 2nd August 1905, during the whole of which period he was on deputation at Cawpore, whence he was transferred permanently to Delhi on 3rd August 1905; Mr. J. T. Johnson from 3rd August to 16th October 1905, during the whole of which period he was also on deputation at Cawpore, being permanently appointed to the Memorial Garden there on the latter date; Mr. W. R. Brown from 3rd November 1905 to 9th January 1906 when he was transferred to Lahore; Mr. A. E. Brown from 9th to 24th January 1906 when he was transferred to Fyzabad; Mr. E. Little, from 24th January to 31st March

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, AND THE LLOYD
BOTANIC GARDEN, DARJEELING, FOR THE YEAR 1906-1907.

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 or initiated. A considerable clearance was made in the north-west corner of the Garden, partly to allow the 'Gold-Mohur' trees, which were planted several years ago along the Koxburgh Avenue eastward of the Roxburgh Monument and were suffering from lack of space, to recover themselves, and partly to have a piece of ground available for a representative collection of economic plants. A fair amount of work still remains to be done before the Economic Garden can be started, but the immediate result has been a distinct improvement in the appearance of that part of the Garden. Through the courtesy of the Hon'ble Mr. A. A. Apcar, C.I.E., the avenue of Royal Palms between the Water-gate and Kyd's Monument was rehid with several tons of gravel-sand obtained from Kowloon. The improvement of the river bank, which is very unsightly in several places, has been taken in hand, and towards the end of the year arrangements were made for the supply of a quantity of stone-ballast to be deposited near the Superintendent's quarters, where the bank is particularly in need of repair. The scheme of improvement of the main nursery was appreciably advanced during the year, and it is hoped that the coming year will see it completed. The centre beds of the orchid-house were demolished and relaid with distinctly better effect on the general appearance of the house. The Garden roads have been kept in repair, but the advent of the motor-car with its dust-throwing propensities will render it necessary in the near future to adopt some more effective means of watering the roads than the present slow and primitive methods.

2. *Economic.*—In accordance with the intension mentioned in last year's report, the plot experiments with 'Sunn hemp' [*Orotalaria juncea*] were repeated, and this time with great success as far as development of the plants and appearance of the fibre were concerned. The fibre was sent to London for valuation, but up to the time of writing no report has been received. It is not proposed to continue this experiment longer or to initiate any similar one during the coming year. Circumstances have greatly altered since the days when the Calcutta Botanic Garden was the chief place in India for Dr experimental economic work. Now that there are the imperial and the various local agricultural departments, each provided with an expert staff, land and laboratories for the investigation of economic problems, there does not appear to be the same necessity as formerly existed for the very restricted staff of the Calcutta Botanic Garden spending time—to the possible neglect of pure botanical research—on work which could be done now under much more satisfactory conditions elsewhere. But because there is now generally speaking no necessity for the Garden to undertake economic experiments, it is not to be implied that it is to cease to take interest in economic plants. A large field of usefulness still remains in the exchange of seeds and plants of economic importance between India and other countries, and such exchanges formed quite a considerable part of the year's work. To mention a few instances, consignments of *Bambusa Tulda** one of the most useful bamboos grown, were sent to the United States Department of Agriculture and to German East Africa for experimental cultivation; sweet potatoes of the best varieties, obtained through the Imperial Agricultural Department were sent to several foreign countries; cinchona seeds were sent to California, lemon grass to Kew *Gynostemma odorata* to the French Colonial Bureau, etc. Amongst the useful plants or seeds introduced for cultivation in the Garden or in other parts of 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 elaeagnifolia*, a rubber-yielding plant—from the Botanical Department of Trinidad, *Canhamo brasiliensis*, the so-called Brazilian linen-plant—through the Director-General of Commercial Intelligence. As usual seeds 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 officer 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, however, over 12,000 specimens were added to the Herbarium, comprising amongst others about 1,500 collected by the Calcutta and Lloyd Botanic Garden 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 3,000 from the Bureau of Science of the Philippine Islands; over 2,000 European plants from Mr. A.* Meeboid of Heidenheim, Germany; over 800 from the University of Pennsylvania, U. S. A.; over 300 from Mr. J. C. White, c. i. B., of Gangtok, Sikkim; over 200 Indian plants from Mr. A. R. 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 1,000 as owing to there being no Curator, this work has had to remain in abeyance.

Although botanical work in the Herbarium itself has been an impossibility, the collections have not lain entirely useless, for certain orders and genera of plants have been freely loaned for research work outside India to botanical institutions like those of Berlin and Buitenzorg.

4. *Laboratory and Museum*.—These still await the officer who will put them 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 are strong individualists as regards colour and material of binding, but now in binding new and in rebinding old books some uniformity is being introduced.

6. *Publications*.—Part II of Volume IX of the Annals of the Garden, entitled *The Orchidaceae of the North-Western Himalaya*, by Mr. J. F. Duthie, B. A., P. L. S., formerly Director of the Botanical Department of Northern India, was issued after a very long delay in the Press. This monograph gives descriptions of all the orchids known to occur in the Western Himalaya, with plates of all the species not already figured. Volume XI, constituting a huge monograph of the genus *Calamus* of climbing palms by Signor Beccari of Florence, with superb plates, and Part II of Volume VI, being descriptions of Burmese algae by Messrs. W. 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 record* of the Botanical Survey of India, No. 3 of Volume IV has been published, being the third and concluding part of Sir J. D. Hooker's *Epitome of the British Indian species of Impatiens*. Number 3 of Volume III of the same publication, embodying descriptions of new species of *Sapindum* by Professor L. Radlkof er of Munich is in the Press and should issue very soon. The Superintendent has contributed several botanical papers to various 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 4,000 J. P. were distributed and over 2,000 received. The seed-distribution list has of late been considerably increased with corresponding 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 Curator of the Garden to give practical instruction in the planting and care of trees to District Overseers, Sub-Overseers and Road Sarkars, who are to be sent to Sibpur in Datohes during August to October for that purpose.

9. *Lloyd Botanic Garden*.—The Curator reports that extensive damage was done to unprotected plants by severe hailstorms on three occasions. Alpine plants are gradually being established on the Indigenous Rockery. The Garden workshops were rebuilt during the year and a new glass propagating house and a seed-room erected in the Nursery. A second cloak-room and a 'shelter' were also built, and the boundary fencing was 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 slope of some of the rougher banks were improved. The statistics supplied by the Curator show that the work of this Garden has increased markedly during the last few years. *

10. *Financial*.—The allotments for contingencies for 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 Lloyd 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.

11. *Staff*.—Captain A. T. Gage, I.M.S., officiated as Superintendent of both Gardens until 30th July 1906, and on the retirement of lieutenant-Colonel D. Prain, I.M.S., F.R.S., C.I.E., was confirmed with effect from the 31st July 1906, since which date he held charge to the end of the year. The Curatorship of the Herbarium was vacant throughout the year. Mr. G. T. Lane held charge of his post of Curator of the Garden throughout the year. Mr. E. Little was Assistant-Curator of the Garden up to 29th October 1906, when he was transferred to the Government Gardens, Bombay. Mr. W. R. Mustoe, probationer for Upper India served in the Garden on 1st April 1906 and was transferred to Lahore on the following day. Mr. P. T. Russell served as Probationer Gardener until his appointment as Assistant Curator from 30th October 1906. He has been on deputation to the Cinchona Plantation, Mungpoo, since 12th May 1906 to the end of the year. Mr. it. Badgery, Probationer Gardener, arrived in the Royal Botanic Garden on 8th November 1906, from which date he has acted as Assistant Curator of the Garden. Mr. G. H. Cave was Curator of the Lloyd Botanic Garden, Darjeeling, 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.I.S.,

*Superintendent, Royal 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 THE LLOYD BOTANIC GARDEN, DARJEELING, FOR THE
YEAR 1907-03.

Royal Botanic Garden.—In the Royal Botanic Garden the weather conditions, generally speaking, were normal throughout the year. The storms of the 24th and 25th June 1907, however, wrought a deplorable amount of destruction. Over one hundred trees were uprooted and the appearance of others hopelessly ruined by the tearing away of great branches, while, as a secondary effect, the necessary diversion of a considerable part of the labour force to the removal of the wreckage interfered for a considerable time with the ordinary work of the garden. The survey of the garden which was initiated last year is almost completed, and a basis for an accurate catalogue of the plants of the garden laid down. From the large map a small scale map is being prepared, which will serve both as an index map to the garden officials and will displace the present Garden Guide map, no longer accurate, when the next edition of the Guide is issued. The photographic survey of the garden has also been continued during the year, and there is now in existence quite a good collection of excellent negatives both of landscape views and of individual plants. Many of the photographs are of great scientific interest, and it is hoped that when a sufficient collection has been formed it will be possible to publish selections with descriptions from them. The area of the nursery available for work has been increased by deepening one half of the nursery pond and filling up the other half with the soil so obtained. The river bank has been strengthened near the Superintendent's quarters by the deposition of about 100 tons of stone ballast, but further work in this direction has been checked for the present by the impossibility of obtaining more ballast. The improvement of the south-west corner of the garden was taken in hand with good results both in the appearance of that part of the garden and in the comfort of the *durwans* and peons whose lines are situated there. For the better housing of those *durwans* and peons the Department of Public Works has, at the request of the Superintendent, prepared plans for new lines of more hygienic design, which, it is hoped, will replace the present unsatisfactory row of godowns. The same department has also prepared plans for new cloak rooms which will replace the existing hideous structures. Plans for the erection of a new office for the Curator of the Garden during the coming year have been sanctioned. Proposals for the introduction of a filtered water-supply into the garden have been under consideration during the year for submission to Government by the Department of Public Works. The dust nuisance occasioned by motor cars has been reduced by treating the dustiest roads with crude petroleum oil as suggested by the Curator of the Garden. It has been found to be fairly effective, and it is proposed, as far as financial considerations will allow, to extend and to continue the treatment. To make conditions more comfortable for visitors, about 30 additional garden chairs have been put out. Minor improvements have been the addition of ornamental iron gates to the Orchid House, the erection of glazed notification boards at each entrance to the garden, the substitution of less unsightly signboards for the garden roads and the abolition of various disfiguring and unnecessary notices. The Superintendent's office has been enlarged by the glazing in of the north verandah, while the extremely dilapidated floor of the adjoining godown and seed-house has been replaced with Indian patent stone. The system of office work has been drastically overhauled and the registering of general office work of seed, plant and herbarium accession and distribution, of garden stores and implements has been entirely remodelled upon similar scientific and simple lines to those on which the systematic classification of plants themselves is based.

2. *Economic.*—As hitherto, plants of economic interest have been cultivated in the garden on behalf of the Reporter on Economic Products to the Government of India and facilities have been afforded him for his investigations in connection therewith. The garden has continued to keep in touch with other Botanical Gardens and Agricultural Departments both within and outside of India with mutual benefit. The garden has established specially a close connection with the United States of America and has been the means of introducing into America, directly or indirectly, various species of economic

importance, such as rice of various varieties, *Bassia latifolia*, *Phragmites Karki*, *JBambusa arundinacea*, Indian varieties of Soybean and Cowpea. Amongst the 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 oranges 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 from 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 of 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 extra Indian plants are represented by collections from the Philippine Islands; from Siam, sent by Mr. W. F. Lloyd, Conservator of Forests there; from Russia, Austria, Switzerland, and Australia. Several orders and genera have been sent out on loan for study by Botanists in various parts of Europe. The 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 been passed some considerable time ago, so that its appearance should not be much 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 Indicae et Malaicae" 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 to various periodicals.

6. *Interchange of seeds and plants*.—Over a thousand packets of seeds were received from all parts of the world and nearly 3,000 packets distributed. Over 40,000 plants were distributed and nearly 4,000 received, most of the plants and seeds distributed being of economic importance, such as bamboos, timber trees, fibre plants, and so forth. During the year the means of dealing 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 this 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 remodelled. The large plant house was provided with a cement floor. A large number of plants have been supplied for planting the ground in and around the new Cantonment at Lebong, while Conifers and other forest trees, bamboos, 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 Garden*, Dalhousie Square, Curzon Gardens, Government House Gardens, at Barrackpore and Calcutta, and Hasting* 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 of any improvements being taken in hand in time to be mentioned.

year's report, and some time will probably have to be allowed before they get into thorough working order under the new conditions. ,

10. *Financial.*—The allotments for contingencies for the Royal Botanic Garden, Calcutta, and of the Lloyd Botanic Garden, Darjeeling, have been expended in full, with the exception of Rs. 100 on account of service postage stamps for the Royal Botanic Garden, Calcutta, and Rs. 74 on account of telegram charges for the Lloyd Botanic Garden, Darjeeling. There was a saving on account of travelling allowance of the Royal Botanic Garden of Rs. 576 and of the Lloyd Botanic Garden, Rs. 166-12. Owing to the appointment of Captain Gage as Superintendent in succession to Lieutenant-Colonel Prain, retired, and to the vacancy in the post of the Curator of the Herbarium for over seven months of the year, there was a saving of Rs. 5,903 under " Establishment " of the Royal Botanic Garden. On the other hand, there was an excess expenditure of Rs. 1,755 under " Establishment " of the Lloyd Botanic Garden, Darjeeling, owing to long leave granted to Mr. G. H. Cave, Curator of the Garden, and appointment of Mr. W. A. Kennedy, a senior officer, to officiate for him. The total expenditure for the gardens in Calcutta for contingencies and establishment since the date they have been put under the administrative charge of the Superintendent of this garden amounts to Rs. 9,477 as detailed below:—

					Rs.
Eden Garden	...	...	...	...	7,103
Dalhousie Square Garden	...	...	...	...	1,190
Curzon Garden	...	...	...	...	777
Hastings House Garden	...	...	...	...	407

The revenue from the Royal Botanic Garden was Rs. 670-10-6, paid into the Calcutta Treasury. The revenue from the Lloyd Botanic Garden was Rs. 20, paid into the Darjeeling Treasury. The revenues for the Calcutta Eden Garden of Rs. 162 and for the Dalhousie Square Garden of Rs. 34 were paid into the Calcutta Treasury.

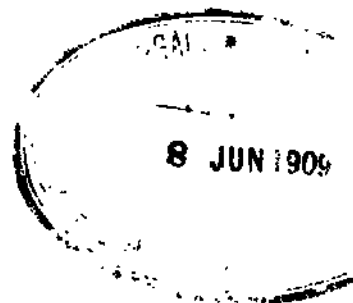
11. *Staff.*—Captain A. T. Gage was Superintendent, Royal Botanic Garden, Calcutta, from 1st April 1907 to 11th March 1908. From the 15th March to the end of the financial year he was on privilege leave. Mr. W. W. Smith, M.A., took over charge of the Curatorship of the Herbarium on the 14th November 1907 and continued in charge up to 14th March 1908, after which date he officiated as Superintendent to the end of the financial year. Mr. G. T. Lane was in charge of his substantive post as Curator, Royal Botanic Garden, Calcutta, from 1st April 1907 to 23rd January 1908, on which latter date he went on combined leave. Mr. H. Butcher, Probationer Gardener, Royal Botanic Garden, Calcutta, acted as Curator from 24th January 1908 to the end of the year. Mr. P. T. Russell, Assistant Curator, Royal Botanic Garden, Calcutta, was on deputation to the Cinchona Plantation from 1st April 1907 to 14th June 1907 (after which he was transferred to the Cinchona Department). Mr. R. Badgery, Probationer Gardener, acted as Assistant Curator from 1st April 1907 to 14th June 1907, and from 15th June 1907 he was appointed Assistant Curator and from 18th November 1908 he has been deputed to the Cinchona Plantation, Mungpoo. Mr. F. H. Butcher, Probationer Gardener, was appointed to act as Assistant Curator from 18th November 1907, and from 24th January 1908 he acted as Curator in addition to his own duties to the end of the year. Mr. E. (Jt. Stroud, Probationer Gardener, arrived on the 14th June 1907, and he acted as Assistant Curator, Government Gardens in and near Calcutta, from 15th June 1907 to 13th January 1908, after which he was transferred to the United Provinces. Mr. J. T. Johnson was Assistant Curator of the Government Gardens in and near Calcutta from 28th January 1908 to the end of the year. Mr. G. H. Cave was Curator, Lloyd Botanic Garden, Darjeeling, from 1st April 1907 to 20th May 1907, after which he went on combined leave. Mr. W. A. Kennedy acted as Curator, Lloyd Botanic Garden, Darjeeling, from 21st May 1907 to the end of the year.

All the officers and the clerical staff under the Superintendent have given every satisfaction to him in the discharge of their duties.

W. W. SMITH,

Offf. Supdt., Royal Botanic Garden and other garden in 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

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 Palmetum, 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 Glasiowii*, 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 more readily than the latter. *Manihot dichotoma* or Jequie Manitoba 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 5—7 ounces for *Manihot dichotoma* with present methods, and lib.—21bs. for *Manihot piauhyensis* or roughly half 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, in 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 elevation. 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.I., 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. Over 5,000 specimens, 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, Java, 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 disorganised 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 XI 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 on Algae from Burma, and forms a valuable contribution to the Cryptogamic flora of the East. The second is a magnificent monograph on the climbing palms of the genus *Calamus*, of over 600 pages with 238 double plates, by Signor Odoardo Beccari, the distinguished Italian botanist, explorer and authority upon Palms. It forms one of the most important contributions to systematic Botany that have appeared of late years. The third volume of the Records 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 all 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 Royal

Gardens, Kew, the Director of Agriculture, Dutch Indies, M. Buysman of Lawang, Java, and the United States Agricultural Department. Over 33,000 plants were distributed, 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 Eden Garden the old normal flower garden has been remodelled, and a new rose garden laid out, but lack of funds prevented the improvement of the garden in the neighbourhood of the bandstand being carried out, as was intended. In the Dalhousie Square Garden the experience of the last few years has shown the necessity of modifying the alignment of and widening certain of the paths, while narrowing others. There is scope also for better effect than at present in the treatment of the borders, and of the lawn* along the tank, and it is hoped that during the coming year something will be accomplished in this direction. Considerable changes have been effected in the Curzon Garden in the way of remodelling and replanting the former rather unwieldy beds of shrubs, while several of the paths have had to be re-made. ^ All those gardens, suffer under the disadvantages of there being no provision for Durwans' quarters, or for the proper storage of tools and stores. The officer in charge is as yet unprovided with quarters nor has he so much as a room at his disposal for "ordinary clerical work.

LLOYD BOTANIC GARDEN, DARJEELING.

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 ~~got~~ 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 Eookeriana* flowered throughout the station and died, with the result that some handsome clumps of it in the garden have disappeared

8. **Financial.**—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.

9. **Personal.**—It is with deep regret that there has to be recorded the death at San Remo on the 12th February 1909 of Sir George King, K.C.I.E., P.B.S., formerly Superintendent of the Royal Botanic Garden, who practically converted the Garden from a wilderness to its present beautiful form, and raised it once more to the front rank of the botanical gardens of the world. An old and faithful servant of Government in the person of Sheik Shadir, the head Indian Gardener, who had been connected with the Garden for over 40 years, died on 5th August 1908. An excellent and zealous worker and » most estimable man, his death is a heavy loss to the Garden. Captain Gage, Superintendent, was absent on leave from the beginning of the financial year until 11th December 1908. During his absence Mr. V. W. Smith, M.A., Curator of the Herbarium, officiated as Superintendent while Mr. W. G. Craib, M.A. officiated for Mr. Smith. Mr. G. T. Lane, Curator of the Garden, was on leave and Mr. K. Badgery, Assistant Curator of the Garden, on deputation to the Quinchona Plantation throughout the year. Mr. Y. H. Butcher, probationer, officiated both as Curator and Assistant Curator of the Garden from 1st April to 10th May, and as Assistant Curator only to 3rd November 1908, thereafter

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being deputed to the Government Garden at Ootacamund. Mr. G. H. Cave officiated as 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 of the Gardens in Calcutta and of the Lloyd Botanic Garden, Darjeeling, throughout the year. The Superintendent is glad to express his appreciation of the work done by the officers under him and by the clerical staff both in the general Garden Office and in the Herbarium.

A. T. GAGE, CAPTAIN, I.M.S.,
*Supdt. of the Royal 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

1900-1910.

ROYAL BOTANIC GARDEN.

General.—Weather conditions were practically normal throughout the year and the Garden was kept in good order except that during the cold weather the ponds were again at an unsightly and unhealthily low level—an undesirable condition that is certain to recur until it is found possible to replace the worn-out pumping engine by a new one. The chief outdoor works were the thinning of overcrowded parts of the garden, the development of vistas along suitable lines, the continued improvement of the nursery and the means of dealing with plant distribution and the solidification of the river bank which suffered badly during the heavy tides of September. The method now adopted in checking the river erosion is to push out buttresses built up of disused bricks held together in bundles by wire-netting and then to connect the buttresses at several levels along the bank by cross walls similarly built up. The result has been to check the destructive scour of the tides and to allow silt to be deposited between the buttresses and their connecting walls, thus making the river itself help to repair under new conditions the damage done under the old. The large palm-house was replanted during the year and repainted while the orchid house also had much of its contents renewed. 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 private individuals. An indication merely of this side of the work of the Garden may be got by mentioning some of the sources of supply such as the Royal Botanic Gardens of Kew and Ceylon; the Botanic Gardens of Penang, Java, Mauritius, Durban, Missouri, Sydney; the Agricultural Department of Formosa; the Forestry Department of Honduras; Pomona College, California, etc. The Garden on the other hand has distributed a great variety of both plants and seeds of general economic importance and seeds and plants of such special things as rubber and fibre-yielding plants, lemon grasses, mangoes, cinchona, ipecacuanha, tea, etc., to such departments and places as the United States Agricultural Department, the Java Agricultural Department, the Hawaiian Islands, the Fiji Islands, the Agricultural Department of Formosa, Japan, Uganda, etc. As usual the Garden has afforded facilities for the economic experiments of the Reporter *on* Economic Products to the Government of India. Nearly 1,500 packets of seed were received and over 4,700 packets distributed during the year. Over 3,000 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 300 plants of *manicoba* 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. Cubitt, H. W. A. Watson, A. Rodger and E. M. Buchanan of the Forest Department and Captain JR. 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., F.L.S.; from the North-West Himalaya by Mr. N. Gill, F.L.S., and Mr. A. R. Tucker; from Southern India by Mr. C. E. C. Fischer of the Forest Department. The foreign contributions include Chinese and Cochinchinese collections from the Museum d'Historie Naturelle, Paris; Malayan collections from the British Museum and the Singapore Botanic Garden; Philippine plants from the Bureau of Science, Manila; plants of Persia and Asia Minor from Mr. J. Bornmuller; European collections from Professor Pax of Breslau; African plants from M. Pitard of Tours and from the Botanical Garden of Zurich. The duplicates were distributed to the chief botanical 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 *Daemon* or ops of climbing palms by Signor Beccari—and Mr. Burkill'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 Survey—are in the press. Mr. W. W. Smith's account of his tour in North-West Sikkim made in conjunction with Mr. G. H. Cave during the year under report 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 was expended in full. Under salaries and establishment there was a saving of Rs. 2,422-2-5 and under travelling allowances and compensation for clearness of provisions a saving of Rs. 348-12-6. The revenue of Rs. 581-7, being Rs. 218-9 short of the sanctioned estimated receipts, was paid into the Bank of Bengal.

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. U. 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, performed the duties of his substantive post from the 28th April to 4th June 1900, and thereafter was on deputation to Caw up ore for the rest of the year. Mr. Alexander Hardie, probationer-gardener for Upper India joined on the 5th April 1909 and acted as Assistant Curator throughout the year except during the period that Mr. Budgery was in the Garden and from the 25th June to the 31st August 1909, when he held charge of the Lloyd Botanic Garden, 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 Ootacamund throughout the year. The Garden has sustained a heavy loss in the death of Shaik Diwan Nuaker, the head Indian gardener in charge of outdoor work, which occurred on 8th March 1910, at the age of 64 years. He had faithfully served in the Garden for very many years. Both he and Shaik Shadir, whose death was reported last year, were men of the old

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 Eastings 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. 178 from Dalhousie Square Garden and Rs. 143-8 from Hastings House.

LLOYD BOTANIC GARDEN, DARJEELING.

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 deserves 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. Oudc of Paris deserving special mention. The Indian collection is increasing in size and number of species and some surprising results 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 KB. 42-2-'J 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.

General—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 sawbench, 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.

gives an account of the vegetation of the route traversed by Mr. Burkill on his way to Khatmandu and of the Trisuli River valley in the neighbourhood of Niakot. A list is given of the plants observed and a route map on the scale of 16 miles to an inch. No. 5 of the same volume embodying an account by Mr. W. W. Smith, M.A., on the vegetation of the Lonakh and Zemu valleys of Sikkim is well advanced in the press. No. 1 of Volume V (115 pages), comprising the first fasciculus of Part I of the *Catalogue 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 list and comprising the numbers from 4,000 to 6,000, is in the press.

5. Financial*—The allotment of Rs. 38,425 for contingencies was expended in full. Under salaries and establishment there was a total saving of Rs. 2,191-3-3, and under travelling allowance and compensation for dearness of provisions a saving of Rs. 1,111-4. The revenue Rs. 436-11-8—being Rs. 236-11-6 in excess of the estimated receipts—was paid into the Bank of Bengal.

6. Staff*—The Superintendent of the Garden, the Curator of the Herbarium and the Curator of the Garden were in charge of their respective posts throughout the year. Mr. A. E. Brown was Assistant Curator of the Garden from the 29th July to 14th September 1910. He was dismissed on 15th September 1910 under circumstances already reported to Government. Mr. A. Hardie, Probationer Gardener, acted as Assistant Curator of the Garden, from the 1st to the 25th April 1910, being thereafter transferred 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 the 15th September 1910, *vice* Mr. A. E. Brown. Messrs. Harry Thomas and Harry Dodd, Probationer Gardeners, arrived on the forenoon of the 25th March 1911. Mr. Thomas was posted to the Cinchona Department and Mr. Harry Dodd as Probationer Gardener in the Garden. The new arrangement for the training of an overseer was given effect to during the year and so far has given satisfaction. Mr. A. Q. Lawrence was appointed overseer on probation from the 1st April. He was on medical leave from the 1st August to the 16th October 1910. The Curator of the Herbarium, the Curator of the Garden and the other Garden officers have given all attention to their duties throughout the year. The office staff have also worked well.

CALCUTTA GARDENS.

As regards these gardens generally the prolongation of the rains until about the end of October interfered greatly with the sowing of cold-weather annual seeds, and failure of the usual show of flowers seemed unavoidable. Fortunately although late, the final result was quite satisfactory. In the Eden Gardens the principal improvements were the raising and re-draining of the whole of the north-east corner—a part of the Garden that was formerly liable to flooding during the rainy season; the making and enlargement of the section of the Garden for the cultivation of which a large number of new and perpetual flowering varieties have been introduced to the Garden. The general effect of this section of the Garden is very pleasing. The lawns and footpaths generally were kept in good repair. In Dalhousie Square Garden the alteration of footpaths, which, as originally designed, proved inadequate to accommodate the traffic passing along them, has been carried on with as little alteration to the original design as possible. The general appearance of this Garden is gradually improving. In the Curzon Garden the lavish display of beds of flowering annuals called for a great amount of labour that however yielded very successful results. The sin'ub* in the temporary beds within the tramway line loops at Esplanade Comer suffered from the depredations of

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. 311, 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 Satyendranath Basu was appointed Overseer on probation on 1st April 1910. He has showed commendable attention to his duties throughout.

LLOYD BOTANIC GARDEN, DARJEELING.

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 Cryptomeria trees that overhung the entrance road, rendering the latter very damp and gloomy were removed and the banks sloped. Over 140 trees and young shrubs were planted out in the Garden. A good deal of damage was wrought by borer grubs, the presence of which is usually manifested after they have caused a considerable amount of damage. The survey of the Garden referred to in last year's Report was completed by Mr. Cave, the Curator, during 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 1902 no written records exist, so that for the older plants in the Garden the Curator had to depend on information supplied by the older *matts* of the Garden. For the future with quite an ordinary amount of care in working the system now introduced there should be no difficulty in registering information regarding the life history of all the newer plants. A revised map of the Garden, the contours of which have considerably altered of late years, and sketch maps of each 100 feet X 100 feet square on which the position of each specimen is marked for future reference, were prepared. Exclusive of additions of purely horticultural character, 368 plants and 166 packets of seeds were received and over 6,500 plants, over 4,700 dozens of seedlings and over 370 packets of seeds were distributed, the last mostly abroad. During the year seed collections were made along the western side of Cho-La range which separates the Chumbi from the Testa valley. Amongst these the collections of Rhododendrons and Primulas were exceptionally good. In addition to the general collections, 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 local herbarium which, if only suitable accommodation were available, could be made of much more use to teachers, students and others interested in the vegetation of the district than it possibly can be at present. The sum of Ha. 65-8 was received as revenue and paid into the Darjeeling Treasury, Mr. G. H. Cave 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.,

*Stipdt. of the Royal Botanic Garden, Calcutta,
and Lloyd Botanic Garden, Darjeeling**