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REPORT

—ON—

NATAL BOTANIC GARDENS,

—AND—

COLONIAL HERBARIUM

FOR THE

YEAR 1903—1904.

—BY—

*J. MEDLEY WOOD, A.L.S.,*

Corresponding Member of the Pharmaceutical Society  
of Great Britain.

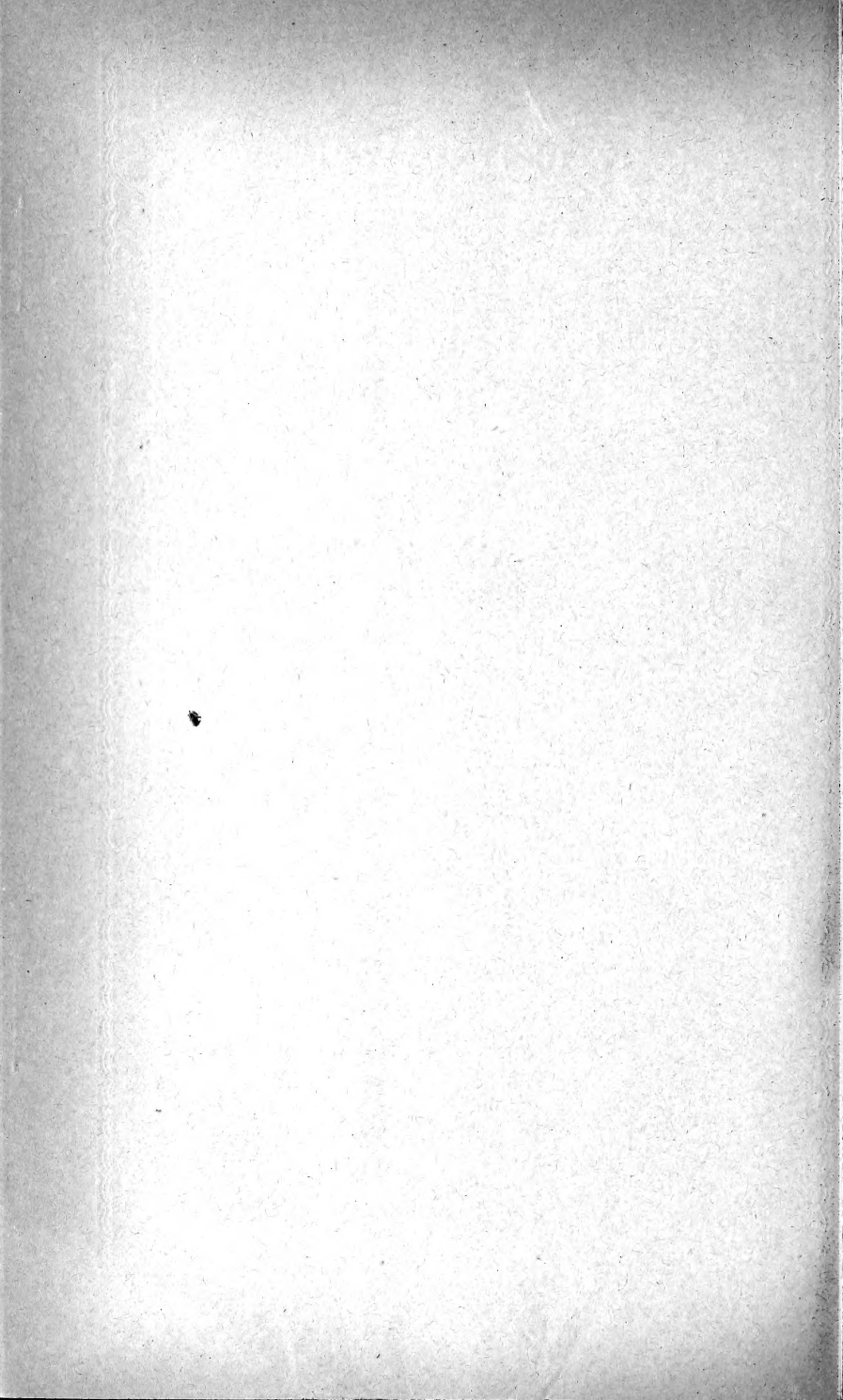
✧ DIRECTOR. ✧

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DURBAN:

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1904.



# Durban Botanic Society.

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## REPORT

—ON—

# NATAL BOTANIC GARDENS,

FROM

—✂— July 1st, 1903, to June 30th, 1904, —✂—

—BY—

*J. MEDLEY WOOD, A.L.S.,*

Corresponding Member of the Pharmaceutical Society  
of Great Britain.

23377

\* DIRECTOR. \*



# DURBAN BOTANIC SOCIETY.



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MR. J. MEDLEY WOOD, A.L.S.

## Director :

MR. J. MEDLEY WOOD, A.L.S.

## Curator :

MR. JAS. WYLIE.

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# DURBAN BOTANIC GARDENS.



## +✂ BYE - LAWS. ✂+



1. The Gardens are open to the public every weekday from sunrise to sunset; on Sundays from 2 o'clock p.m. until sunset.

2. The only public entrance is opposite to Botanic Gardens Road, and persons are prohibited from entering or leaving by any other way.

3. Children under 10 years of age, unless accompanied by a competent protector, cannot be admitted.

4. Persons accompanied by a dog or dogs cannot be admitted.

5. No vehicle shall be allowed entrance, nor persons upon bicycles, but upon application to the Curator, invalids in wheeled chairs may be admitted.

6. Admission may be granted to pic-nic parties, if permission be first obtained from the Curator.

7. Visitors are requested to keep to the paths.

8. Touching or handling plants, fruits, or flowers, is strictly prohibited.

9. All games, climbing of trees, shooting with guns or catapults, throwing of stones or fruit, disorderly or indecent behaviour, are strictly prohibited.

10. Any persons abstracting, destroying or damaging any property of the Society shall be liable to be prosecuted.

11. The Curator is hereby authorised to prosecute offenders under the foregoing Bye-Laws whenever found to be necessary.

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The Jubilee Conservatory is open to the public as under :—

Week days from 9 a.m. to 6 p.m. in summer; from 9 a.m. to sunset in winter; Sundays, from 2-30 p.m. to 5-30 p.m. in summer; from 2-30 p.m. to sunset in winter.





# REPORT.

NATAL BOTANIC GARDENS, BEREA,  
DURBAN, JULY, 1904.

*To the President and Committee,  
Durban Botanic Gardens.*

GENTLEMEN,

I have the honour of presenting my Twenty-third Annual Report on the Botanic Gardens and Herbarium under my charge, and am pleased to be able to say that the Report is not at all an unfavourable one. During the greater portion of the year now ended the weather has been quite favourable to the growth of the plants, and we have not to any serious extent been troubled with either floods, drought, locusts, or other plagues, except that a species of "Mole Cricket" was the cause of some damage to the young Citrus stocks, and men were employed for several weeks in digging up and destroying them; whether this is or is not the one known as the "Changa" (*Scapteriscus didactylus*, Latri) I am unable to say, but it is reported that the damage done to crops in Porto Rico by this pest amounts to 100,000 dollars annually; certainly had they not been checked the damage done here would have been very considerable. Specimens of these creatures may be seen in our Museum.

The Mango crop was again a very poor one, chiefly due to the ravages of the fruit fly, and of Litchis we had scarcely any, but we can only expect to have a crop of this fruit when plenty of rain falls during the season of ripening: the situation in which the trees are growing is too dry for this plant, which succeeds much better in a moist than in a dry soil.

We have now a trolley and a light cart for use in the Garden. The trolley has been found extremely useful in taking out plants and bringing manure, of which we were much in want, while the cart has been employed in bringing "antheap" from the upper part of the ground to harden the lower walks; the lowest walk, which extends nearly the whole width of the Garden has now been hardened: it was formerly heavy sand, but is now a very pleasant path, and is much frequented by visitors.

The old Conservatory which it was intended to remove to another part of the ground has been repaired and put into good order, it being found that in consequence of the rusting of the ironwork its removal was quite impracticable; in consequence of this we were unable for want of space to enlarge the old fernery as intended, but it has now been decided to erect a new fernery at the end of the Jubilee Palm House, and the work will be commenced as soon as possible.

The house for the native labourers having been found too small, another room has been added to it doubling its size, and this will be sufficient for our needs for many years to come. The Indian labourers have been much inconvenienced for want of small places to cook their food. Nine small cooking sheds have therefore been obtained ready for putting together, and they will be finally erected as soon as possible.

Many of the seats in the Garden have become dilapidated, and some wilfully broken by visitors. A stronger class of wrought-iron seats have been purchased and will be placed in the Garden as soon as they arrive, and it is to be hoped that visitors will refrain from carving their "ever to be detested initials" on the wooden seats.

As the live fence along the Sydenham Road side of the ground has not succeeded according to expectations, and as portions of it are likely to be destroyed by the soil having been taken away by the Corporation men to repair the road, it has been decided to erect a post and rail fence of "Karri wood," and afterwards, if considered advisable, to replace the living fence of "*Aberia caffra*, with one of the "*Amatungulu*," "*Carissa grandiflora*, the whole ground will then be enclosed with a living fence which will last for very many years. The teak numbered labels corresponding with the numbers in the "Guide" having become illegible, they have been renumbered and varnished, and will be put into their places in a very short time, while another lot of the iron labels which have been found to answer well will be obtained from England shortly.

As it is in contemplation by the Durban Corporation to harden the road at the bottom of the Gardens, and eventually to lay a tramline between the new Athletic Ground now in course of preparation, and our lower fence, with a stopping place at the corner of the ground opposite to an entrance to the Athletic Ground, it will be necessary for us to remove the nursery, the fumigating house, stable, potting shed and Indian quarters to another site, and to open an entrance to the Gardens at the corner of the ground where these buildings

now are; this will entail considerable trouble and expense, but the result will be that the Gardens will be much more accessible to the public. This work is not likely to be done for some time yet, but our future arrangements will be made in view of its soon being commenced, especially as it is hoped that the Athletic and Agricultural Show Ground, or part of it, will be ready for use during next year.

It was most unfortunate that the seeds of the *Victoria regia* that had been saved here last year proved to be infertile. I had therefore to write to the Director of Kew Gardens for a fresh supply, and I have to thank him for so promptly complying with my request. Plants were reared from the seed that he so kindly sent, but the delay thus caused was sufficient to prevent the plant that was placed in the tank from flowering, and it died at the approach of the cooler weather; we hope to be more successful next season. One of the plants brought from Zululand by Mr. Wylie, though not new, is a very singular plant of the Vine family, viz.. *Vitis quadrangularis*. (Wall), it has quadrangular green stems with a small deciduous leaf at each node, and is more like a Cactus than a *Vitis*. Plants of it are growing in the Garden, and when it flowers I hope to have it figured and described in "Natal Plants." It is also a native of tropical Africa, India, Arabia, and the Moluccas; the fruit is said to be eatable. Another plant from Zululand brought by Mr. Wylie proves to be a new species of *Lotononis*, which I have named *L. Wylei*; it will be published in the "Gardener's Chronicle," and is already figured for "Natal Plants." A new and singular species of *Ceropegia* was obtained for us by Mr. W. J. Haygarth near Hill Crest; it flowered in the Gardens, and will, I hope, be described in the *Flora Capensis*. A specimen of it has been sent to Kew, and it is hoped that the plant may be propagated here. A plant which flowered here 22 years ago, and of which dried specimens were sent to Kew, has been published in the *Flora Capensis* as *I. Saundersiana*, Baker. It will shortly be figured, and as its history so far as we are concerned is rather interesting, it will not be out of place to give it here. When I took charge of the Gardens in 1882 a single plant of this species was growing here, and bore flowers for a year or two and then died. Its flowers are very similar to those of *Ipomoea bona-nox*, but remain open all the day, and are borne in abundance. It ripened seeds in profusion, and they were given to many persons who admired the plant. After the loss of our plant I tried to obtain seeds or plants from those persons to whom seeds had been given, but it was found that in no case had plants been reared, the seeds apparently not having germinated. Several years afterwards one or two plants made their appearance here in places

where rubbish had been thrown, and they were transplanted but died soon afterwards. In the early part of the season last year two more plants were found, and this time the Curator was successful in rearing them, and one is now in full flower. These seeds must therefore have lain dormant in the ground for at least 17 or 18 years. The only specimen at Kew appears to have been sent from here, but whether they reared plants from the seeds or not I do not know. In consequence of its having been sent from here it is now included in the Flora Capensis; it will be thought by most readers that it is a native of Natal, but I think that there may be some doubt on the matter; the seeds were received from the late Mrs. Saunders, of Tongaat. I understood at the time that they came from the interior of the continent, but Mr. Keit does not now seem to remember whether or not he was told from whence they came. I can only say that I have never met with it in any part of the Colony that I have visited, and its flowers are so conspicuous and abundant that it could not escape observation for very long.

In the middle of April a Flower Show was held in Durban, the first for a number of years, and it is hoped that they will now be held regularly. A large number of plants not for competition were sent from the Gardens, and Mr. Wylie was awarded a gold medal for successful pot cultivation.

The following plants have flowered for the first time in the Garden :—

<i>Aloe minima</i>	<i>Ocimum viride</i>
<i>Aponogeton distachyon</i>	<i>Pelargonium flabellifolium</i>
<i>Castanospermum Cunninghamsii</i>	<i>Pentas Wylei</i>
<i>Ceropegia</i> , new sp.	<i>Pterospermum semisagittatum</i>
<i>Ipomoea Saundersiana</i>	<i>Terminalia tomentosa</i>
<i>Nymphaea</i> , sp. from Beira	<i>Thunbergia grandiflora</i>

Packets of seeds have been received during the year as under :—

	PACKETS.
Botanic Gardens, Bangalore	2
"    "    Saharanpur	122
"    "    Adelaide ...	55
"    "    Seychelles	5
"    "    Port Darwin	6
"    "    Sydney ...	53
"    "    Melbourne	20
"    "    Baroda ...	24
"    "    Gold Coast	1

Messrs. Reasoner Bros., Florida	...	...	8
C. C. Sprenger, Italy	...	...	33
Hon. R. Jameson, Natal	...	...	1
F. E. Burnard ?	...	...	1
W. S. Lyons, Manila	...	...	3
Sander & Son, England	...	...	2
— Suter, Natal	...	...	5
Brunning & Son, Australia	...	...	18
Damman & Co., Italy	...	...	14
W. F. Upsher, East Africa	...	...	1
A. Robertson Proschowsky, Nice	...	...	1
J. van der Merwe, Cape Colony	...	...	2
J. C. Harvey, Mexico	...	...	1
M. Herb, Italy	...	...	30
Total	..	...	408

Sander & Sons, England	...	...	2 boxes seeds
Botanic Gardens, Sydney	...	...	1 box seeds

Packets of seeds were sent away in exchange as under :—

			PACKETS.
Botanic Gardens, Adelaide	...	...	41
"    "    Bangalore	...	...	48
"    "    Brisbane	...	...	48
"    "    British Guiana	...	...	48
"    "    Cambridge	...	...	48
"    "    Dunedin	...	...	48
"    "    Edinburgh	...	...	48
"    "    Fiji	...	...	48
"    "    Grenada	...	...	48
"    "    Hobart	...	...	48
"    "    Hong Kong	...	...	48
"    "    Lagos	...	...	48
"    "    Madras	...	...	48
"    "    Najpur	...	...	41
"    "    Ootocamund	...	...	48
"    "    Ottowa	...	...	48
"    "    Port Darwin	...	...	48
"    "    Saharunpur	...	...	48
"    "    Sierra Leone	...	...	48
"    "    Singapore	...	...	48
"    "    Sydney	...	...	48
"    "    Mauritius	...	...	11
"    "    Melbourne	...	...	48
"    "    Montreal	...	...	48
"    "    Seychelles	...	...	34
Royal Botanic Gardens, Calcutta	...	...	48



Botanic Gardens, Mauritius, 56 plants of 10 species.

J. O'Brien, London, 75 bulbs of *Begonia* varieties.

J. C. Harvey, Mexico, 6 plants of 1 species.

Plants have been supplied free as under:—

Cemetery, Eshowe	...	value	£2	10	0
Library, Durban	...	"	3	0	0
Y.M.C.A., Durban	...	"	4	4	0
Durban Corporation, Durban		"	2	2	0
Athletic Grounds, Stanger		"	2	0	0
Guild of Loyal Women, Ladysmith		"	3	3	0
Durban Home, Durban	...	"	4	14	0
Convalescent Home, Durban		"	3	3	0
			<hr/>		
			£24	16	0

Names of plants put out in the Garden during the year:—

<i>Abutilon Swartzii</i>	<i>Ardisia crenulata</i>
" <i>ricinifolia</i>	<i>Brassaia actinifolia</i>
<i>Acalypha Sanderi</i> (red var.)	<i>Beaucarnea tuberculata</i>
" " (white var.)	<i>Brugmansia cornigera</i>
" <i>marginata</i> , var.	" sp. (cream)
" <i>musaica</i>	<i>Brunfelsia</i> , sp.
" <i>tricolor</i>	<i>Caryopteris mastacanthus</i>
<i>Acokanthera venenata</i>	<i>Cassia grandiflora</i>
<i>Allamanda violacea</i>	" sp.
" <i>neriifolia</i>	<i>Clerodendron Kaempferi</i>
" <i>Williamsii</i>	" <i>Thompsoniae</i>
" <i>magnifica</i>	" <i>speciosa</i>
<i>Aloysia citriodora</i>	" <i>nutans</i>
<i>Alpinia tricolor</i>	" <i>splendens</i>
<i>Cocos nucifera</i> , var.	<i>Galphimia nitida</i>
<i>Coffea zanguibariae</i>	<i>Goldfussia anisophylla</i>
<i>Dombeya punctata</i>	" <i>glomerata</i>
<i>Dracaena maculata</i>	<i>Habrothamnus elegans</i>
" <i>gracillimum</i>	" <i>cyaneus</i>
" <i>nutans</i>	" <i>aurantiacus</i>
" <i>angustifolia</i>	<i>Hibiscus</i> , 5 varieties
" <i>Godseffiana</i>	" hybrids from Smart
" <i>cernuum</i>	" hybrids from Nicol
" <i>Dallerii</i>	<i>Iris Florentina</i>
" <i>Sanderiana</i>	<i>Ixora</i> , sp.
<i>Duranta Plumiera</i> , var.	" <i>coccinea</i>
<i>Eranthemum atro-violaceum</i>	" <i>rosea</i>
" <i>alba-maculata</i>	<i>Jasminium pubigerum</i>
" <i>pulchellum</i>	" sp.
<i>Ficus Cannoni</i>	<i>Jubaea spectabilis</i>

Lagerstroemia, alba	Plumbago zeylanica
Leucadendron argenteum	Poinsettia pulcherrima
Latania borbonica	"    alba
Livistona subglobosa	Plumiera alba grandiflora
Loxostylis alata	Pritchardia filifera
Musa religiosa	Quassia amara
Mussaenda frondosa	Rodeletia speciosa
Nevinsia alabamensis	Russellia juncea
Ocimum viride	Scilla clusi
"    gratissimum	Sesbania Santa Paulensis
Pritchardia, sp. ?	Solanum jasminoides
Pentas Wylei	"    Wendlandii
Petraea volubilis	Sonchus sanguini
Pittosporum rhombifolium	"    sp.
"    crassifolium	Spiraea sp.
Panax elegans	Stemmadenia bella
Plumbago capensis	Streptosolen Jamesoni
"    "    var. alba	Tecoma Smithii

In my last Report it was stated that we had received 337 packets of seeds, and 169 plants, which resulted as follows:—

PLANTS.		SEEDS.	
Dead on arrival ...	10	Failed to germinate	56
Died afterwards ...	20	Germinated but died afterwards	26
Still in pots ...	50	Still in pots ... ..	124
Planted in Garden...	81	Annuals and vegetables ...	56
Previously in stock...	8	Not suitable for climate ...	25
	—	Duplicates ... ..	50
	169		—
			337

As a few notes on some of the plants in the Gardens may be interesting, I add some here which may be useful for reference.

*Agave rigida*, var *sisalana*.—About 20 plants of these species were received from Kew by parcels post in 1890, and have grown well and flowered. This is said to be one of the best fibre yielding plants, and is being largely cultivated in some parts of the world, as the fibre is stronger than that of the Fourcroys? The plant is well suited to the coast and midland districts, and a few plants have been supplied gratis to applicants. A small specimen of the fibre is in our Museum.

*Amoora Rohituka*, W. & A.—A native of India, the wood is useful for many purposes, and the seeds yield an oil. Our tree was planted in 1892, and is now about 14 feet high, not doing very well.



*Albizzia procera*, Bth.—A large quickly growing tree from India, in its native country reaching 100 feet in height; the wood is valuable and is used for many purposes. Baron F. v. Muella says of it—"amongst the number of limited trees fit to live on saltish land." (See Guide, p. 57.) Our tree was planted in 1885, and is now 35 feet in height, with a circumference of stem at 4 feet from the ground of 3 feet 7 ins.

*Acacia cavenia*, Bortero.—The "Espino" or "Cavan" of Chili, suitable for hedges. Our tree was planted in 1894, and is now 10 feet in height. (See Guide, p. 23.)

*Acacia pendula*, Cunn.—The "Boree" or "Weeping Myall" of Australia. Wood useful; leaves eaten by stock; trunk yields a gum. Planted in 1894 and is now 20 feet high.

All the Acacias are, with us, very subject to attacks of white ants.

*Atriplex*, spp.—These plants are commonly known as "Salt-bush" and are valuable for pastures. We have tried several species: plants have been reared and put out, but they do not attain their full size and die during the first season. They evidently require a saline or alkaline soil to be a success.

*Arenga saccharifera*, Labill.—A handsome Palm from the Indian Archipeligo. Yields a fibre; toddy is obtained from cutting off the flower spikes, also; sugar, or "jaggery," an inferior sago, is obtained from the stem, and a spirit from the outer covering of the seeds. Our plant is about 35 feet high but has not borne seed.

*Afzelia cuanzensis*, Oliv.—A leguminous tree of East Central Africa; the large seeds, which are black with a red arillus, are often seen in Natal, as curiosities. Plants have been reared and put out, but make no growth, and eventually die. The wood is said to be valuable and the seeds to yield an oil.

*Brassaia actinophylla*, Endl., "Umbrella Tree."—A native of Queensland, reaching 40 to 60 feet in height. Uses not known to us, but the plant is very ornamental, especially when in flower.

*Brownea grandiceps*, Jacq.—A handsome shrub, native of Caraccas, the flowers are borne in drooping heads, and are bright scarlet. Ornamental only. Planted in 1891 and has flowered.

*Bertholettia excelsa*, H. & B., "Brazil Nut"—A plant was put out in the garden, but soon died, when about a foot high. Baron Muella says that it succeeds just outside the tropics, but its growth is then very slow.

*Boehmeria nivea*, Hook, "China Grass."—This plant succeeds well in the garden and may be cut three times in the year, in favourable seasons, perhaps four times; it bears seeds every season, and seed can be supplied when ripe, but we do not keep them on hand. Cuttings can be supplied when required, but division of the roots is the quickest and best way. From a recent article on Rhea or Ramie fibre in "Indian Planting and Gardening," I venture to extract the following:—

"We have on several occasions in our columns drawn attention to the mixing up of Rhea or Ramie ribbons, fibre, and filasse. The first is the bark stripped from the stem and dried with the gummy substance which forms such a formidable barrier to the cleaning of the fibre; the second is the fibre cleaned of its gummy envelope; and the third is the fibre worked up into the condition of "floss" silk, ready for spinning. The ribbons can, we believe, be shipped from India at about £12 per ton f.o.b. London, and leaves a margin of profit to the grower. The fibre could not be exported at anything under £30 per ton, while the filasse could only be shipped at from £50 to £70 per ton. We have worked out all these figures in previous issues. The only circumstance that has stood in the way of Rhea fibre becoming a recognised industry in India is the uncertainty of finding a market for it. Let the Ramie Fibre Spinning Syndicate, Ltd., or any other firm using Rhea fibre, send us an offer to buy all that our planters can produce in the way of Rhea fibre, and they would soon have their orders filled. Let them offer a reasonable price, and within one year from date of order there would be a continuous supply of fibre from India, quite equal in quality to China Grass.

"We do not say, nor have we ever said, that Rhea fibre would oust cotton, hemp, and jute. These fibres serve a certain purpose, which Rhea could not, but it would certainly come into severe competition with flax and silk. In strength and durability it is superior to both, in lustre superior to flax, and quite equal to silk. It can be produced cheaper than both. For men's wear fabrics made from Rhea fibre would completely oust linen. We have seen the most beautiful fabrics, which could not be distinguished from silk in delicacy of colouring and soft texture, made from Rhea fibre. The late Sir Thomas Wardle, the well-known silk manufacturer, when he visited India some years ago, exhibited fabrics made from Rhea fibre

which elicited admiration of all who saw them. He prophesied a great future for Rhea. But there is so much British capital sunk in jute and cotton in India that all attempts to exploit Rhea have so far proved unprofitable.

“It must be remembered that Rhea is not an annual, like jute and cotton. It is a perennial; and once planted goes on giving from three to four crops a year for many years in succession. All that it requires in the way of cultivation is that it be planted very close together; be irrigated in the very dry months of the year like any other field crop, and that the leaves stripped from the stems be given back to the soil in the shape of green manure. The bark can be stripped from the stem by hand quite easily and there need be no machine for this purpose. The bark can be dried and shipped in the form of “ribbons;” and, indeed, this is the way in which most Rhea mills require the fibre stripped, they having methods of degumming and finishing the fibre for spinning which are trade secrets. There is a lot of nonsense written about Rhea or Ramie which requires to be brushed aside. We write from a practical knowledge of the subject.”

*Crescentia cujete*, Linn., “Calabash tree.”—The seed vessel is like a gourd and is used as the natives use the calabash; the pulp is medicinal. Our plant was put out in 1887 but has not yet borne fruit, but a tree in the ground of Mr. J. D. Ballance has fruited, and a specimen is in our museum.

*Cedrela toona*, Roxb., “Toon” tree.—Native of India. Wood valuable. Fruit and bark used medicinally. Does fairly well, and is said to succeed far better in the midlands. Planted in 1886, and is now 28 feet high. (See Guide, p. 41).

*Cunanga odorata*, H.K.F.—A tall soft-wooded tree. Native of India, sometimes reaching 150 feet in height. Uses not known to us. Planted in 1892, now 15 feet high.

*Catha edulis*, Forsk. — A shrub or small tree, native of Arabia and East Africa. The leaves have been used as tea and are said to be stimulating, and to some extent may be compared to those of *Eythroxylon cocoa*. They have been, and perhaps still are, used by the Hottentots. Planted in 1894 and doing well.

*Castilloa elastica*.—One of the best of the rubber yielding trees. Planted out in 1892 but died the first season, not suited to the climate of Natal.

*Chloroxylon Swietenia*, D.C., "Satin Wood."—Native of the mountains in India, where it is said to be rapidly disappearing under the woodman's axe. The wood is valuable, the finer grained specimens especially so. Our plant was a slender twiggy shrub in 1882, never made much growth, and died in a few years. When it was planted we do not know.

*Cytisus proliferus albus*.—This, I understand, is merely a variety of *Cytisus proliferus* Linn. A native of the Canary Islands. It was highly extolled as a fodder plant, but did not find much favour in Natal amongst those to whom we distributed seed and plants. It was not suited to the coast, but grew fairly well in the upper districts; still farmers did not take kindly to a fodder plant which assumed the form of a flowering shrub and reached to 10 or 12 feet in height. It is a valuable plant for apiarists.

*Convolvulus scammonia*, L.—A native of Asia Minor, which yields the purgative drug "scammony."

*Chrysophyllum cainito*, Linn., "Star Apple."—A West Indian tree bearing an edible fruit said to be as large as an apple. Our plant was put out in 1894, and has borne fruit several times, but probably in consequence of the very dry seasons the fruits have been small and not of great excellence; when the trees are older an improvement may take place. The plant is a spreading shrub and seems quite healthy. In a list of plants in the Gardens planted in 1876 this plant appears, but must have died quite young as it was not in the Garden in 1882 when I took charge.

*Cola acuminata*, Schott.—The fruit of this plant is known as the Cola nut, and is an article of commerce. The tree is a native of West Africa, and plants have been put out in the Garden but make little growth, and do not seem likely to succeed here. We have one species of the genus *C. natalensis*, which is not uncommon in coast and midland districts. Its seeds are not so large as those of the *C. acuminata*, but as it is indigenous and forms a small tree it is possible that the true cola of commerce might be grafted upon it.

*Carya oliviformis*, Nuttall.—"The Peccan Nut" of North America has been tried here without success. It is more suited to the upper districts of the colony.

*Caryophyllus aromaticus*, Linn., "The Clove."—Two plants were in the Garden in 1882. They were in a sheltered place and were quite healthy and had to be removed to make room

for a new building, but did not recover after being transplanted. It is scarcely likely that the plant would be a commercial success in Natal, unless, perhaps, in the lower parts of Zululand.

*Coffea, var Maragogipe.*—This variety put forward has been said to be proof against the coffee leaf disease (*Hemileia vastatrix*), but the two plants that we have are in the season covered with the spores of the fungus and flower, and bear fruit very sparingly.

*Coffea sp.*, probably *C. zanguebariæ*.—Seeds and plant of this variety were received from Mr. R. Benningfield, who brought them from the East Coast. The plants have done well, and have borne seeds abundantly. It is said that the berries are used as coffee on the East Coast; the flavour is said to be peculiar but not unpleasant. It is worthy of note that these plants seem to be immune to the coffee leaf disease. They are both growing, the one 18 feet and the other 22 feet from the "Maragogipe," which is infested with the fungus, and leaves covered with the spores have been placed upon them but so far without effect. A trial will therefore be made of grafting the ordinary coffee plant on the East Coast species as soon as the plants that we have reared are large enough for the purpose.\*

*Cassia florida*, Vahl.—In Surgeon-Major Balfour's work on the timber trees of India, it is said of this tree, "heartwood almost black, used for shelves, walking sticks, mallets, &c." A cubic foot weighs 58lbs. In a full grown tree on good soil the average length of the trunk to the first branch is 15 feet, and average girth at six feet from the ground is six feet. Dr. Watson tells us that the *Cassia florida* in Tenarassim has wood "not inferior to ebony." Our tree was planted in 1884; the soil is sandy and not very good, but the tree is now 60 feet in height and the stem 3ft. 8in. in girth at about four feet from the ground. It has produced seeds for several years past.

*Croton tiglium*, L.—The seeds of this plant yield the Croton oil, a dangerous drastic purgative. Our plant was put out in 1901, and is now about four feet high and has flowered.

*Cichorium intybus*, L. "Chicory."—This plant grows like a weed, and its cultivation should be profitable. In addition to the use of the root for mixing with coffee, the leaves also are blanched and used for salads.

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\* A sample of the roasted and ground coffee from this plant was sent to Mr. T. W. Turner, of Durban, who kindly gave me the following report on it:—"I have tested the sample of coffee submitted. It possesses a herby flavour which makes it of little value as a coffee. When mixed with chicory it is somewhat disguised, and may find a market for a cheap class of mixed coffee. Value about 3d per lb.

*Castanospermum Cunninghamii*.—This name does not appear either in the Index Kewensis or Flora Australiensis. It appears, however, to differ from the well-known *C. australe*. Our plant was put out in 1884, and is now 35 feet high. The flowers, which are scarlet and orange, are borne in profusion on the branches, and when in flower it is very conspicuous.

*Cryptostegia grandiflora*, Br.—A plant bearing the name of *Cryptostegia Madagascariensis*, Linn., has been in the Gardens for many years, but a recent examination of it shows that it has been incorrectly named and that it is really *C. grandiflora*, a native of India. Both of these plants yield a medium quality of rubber which has been valued at home at 2/4 per lb., but whether the yield of the rubber and the cost of its extraction would leave a margin of profit to the grower is as yet doubtful. Mr. Cavanagh, the Superintendent of the Agri-Horticultural Society's Gardens at Madras, has discovered that the plant also contains a valuable fibre; specimens of it have been sent to the Imperial Institute, and I give below some extracts from the report of Professor Dunstan, the Director of the Imperial Institute. He says:—

“This sample of fibre was forwarded for examination by the Agri-Horticultural Society, Teynapett, Madras, and is referred to in a letter, No. 754, dated 3rd June, 1903. It is stated that the plant occurs wild throughout the district. The present sample of fibre is said to have been prepared by steeping the branches in water for three days; the fibre was then easily removed, and was afterwards washed with water. The sample consisted of about 3 oz. of a nearly white, fine, strong fibre with a staple of average length, 16-20 inches. In its general character and appearance, this fibre resembles that of *Marsdenia tenacissima*, on which a report was recently supplied by the Imperial Institute to the Government of India. The results of the chemical examination by the Scientific and Technical Department of the Imperial Institute show that the fibres are also very similar in their chemical properties and behaviour. The two plants are allied botanically, both being climbing shrubs of the N.O. Asclepiadeae. \* \* \*

The sample has been submitted to leading fibre brokers for commercial valuation, who report that the fibre is of a good quality and worth about £30 per ton. They are of opinion that the fibre is likely to prove of considerable value, but that its commercial possibilities can only be arrived at by submitting it to manufacturing tests, and they ask to be supplied with two or three bales for this purpose. They point out that the fibre should be as long and as even as possible, and that the long and short filaments should be kept separate; in the present

sample the length is very irregular. From the foregoing report, it is evident that the fibre is of excellent quality. If, therefore, it can be obtained in sufficient quantity to admit of its commercial exploitation, it seems desirable that the trial consignment asked for by the brokers should be forwarded as soon as possible."

This plant grows well in the Gardens, flowers and produces seed regularly, and plants will during the coming season be reared for experiment.

*Desmodium tortuosum*, D.C., "Florida Beggar Weed."—Seeds of this plant were received in 1896, and my correspondent said of it: "A wild forage plant, highly esteemed in the subtropical portion of the N. States. It produces a fodder of fine quality in large quantities, and grows best on sandy soils. On cultivated land it grows often 8 or 10 feet high; makes an excellent green manure." The plants were grown, and seeds were distributed to applicants, but as it promised to become a noxious weed we were glad to get rid of it.

*Dipterya odorata*, Willd., "Tonka or Tonquin Bean."—A large tree, native of Guiana. The seeds are usually known as Tonquin beans, and are used for giving an aromatic odour to snuff; they are also placed with clothing to keep away insects, and to communicate an aromatic odour. Our tree was put out in 1898, and is now about 12 feet high and fairly healthy.

*Erythroxylon coca*, Lam.—This plant is the "Coca" of the Peruvians, and from its leaves the drug known as "cocaine" is obtained. Our plant was put out in 1880, and is healthy and vigorous. The leaves have been tested by an expert and found to yield a good percentage of alkaloid. Seeds are produced every season.

*Epipremnum mirabile*, Schott.—A plant belonging to the family "Aroideae," native of South Sea Islands, and the chief if not the only ingredient in the medicine known as "Tonga," supposed to be beneficial in neuralgic affection. This plant grows well under glass, but has not been put out in the Garden. Its success out of doors is, I think, doubtful.

*Gouania domingensis*, Linn.—The "chew-stick" of the West Indies. Stem chewed by the negroes as a stomachic. Planted in 1895 and growing luxuriantly. (See Guide, p. 24).

*Giant Lemon of Figi*.—Seeds of this plant were received and have been grafted on to Lemon stocks, but have not yet borne fruit.

*Gynocardia odorata*, R. Br.—The seeds of this tree yield the “Chaulmugra” oil which is used medicinally. Our tree was planted in 1892, and is now about 15 feet high, but has not yet flowered.

*Hippomane mancinella*, Linn.—The Manchineel tree of the West Indies. A highly poisonous tree which yields a gum which has been used medicinally. Our tree was planted in 1892, and is now about 8 feet high and healthy, but has not yet borne flowers.

*Humulus lupulus*, Linn., “The Hop Plant.”—In the year 1885 a large number (4-5,000) Hop plants were obtained from England for trial here. A few were retained at the Gardens, the remainder were distributed to different parts of the Colony, both on the coast and in the midlands. Those that were planted in the Gardens lived for a short time but did not survive the winter, and I do not think they proved a success in any locality where they were tried. I note that Baron F. V. Mueller states that the Hop plant “is known to yield enormously on river banks in rich soil, or on fertile slopes where irrigation can be effected,” and, in the “Hop Farmer,” by E. J. Lance, I find the following:—“Although it will be seen that the hop is grown in almost every sort of soil, yet it only succeeds in full perfection where there is a clayey or calcareous loam or open marly subsoil.” Whether any of these imported plants were tried on such soils as indicated above I am not aware. Probably the plant is worth another trial in suitable localities.

*Hymenaea courbaril*, Linn.—A large tree yielding what is known as “Gum Anime.” It attains a large size, and the timber is hard, heavy, and close-grained. It is said to exceed the British oak in elasticity, and three times in resistance to fracture. Our tree was planted in 1867, and is now about 66 feet in height. Plants have been reared and put out in the Garden.

*Hura crepitans*, Linn., “Sand Box Tree” or “Monkey’s Dinner Bell.”—A native of tropical America, where it reaches to 30 and 40 feet in height. Our tree was planted in 1890, and is now 18 feet high.

*Lagerstroemia reginæ*, Roxb.—A native of India and Ceylon, where it grows to a large size. The wood is used for house-work and for boat-building and for many other purposes, and is much esteemed. There appear to be two varieties of the wood, one tree bearing red wood, another white. A cubic foot is said to weigh 42 to 44 lbs. The flowers are very handsome,



and are borne in great profusion. Our tree was planted in 1892, and is quite healthy.

*Lysiloma sabicu*, Bth.—A native of Cuba, yielding a hard and heavy wood known as “Sabicu, Savacu, or Savico” wood. Our tree was planted in 1892; it has several stems, and is now about 11 feet high. It has flowered several times, but as yet has not perfected its seeds. (See Guide, p. 11).

*Liquidambar styraciflua*, Linn.—A native of North America, yields a gum and is a handsome tree, but is better suited for the midland than coast districts. Our plant was put out in 1894, and is now about 22 feet in height.

*Lathyrus sylvestris*, L., “Wagner’s Improved.”—This plant was much advertised as a forage plant, and was at first very favourably reported on. It was tried here and grew fairly well, but I came to the conclusion eventually that it was not suited to Natal; and it is also reported that a free use of it by cattle as food would be dangerous, on account of a deleterious property contained in it. We therefore abandoned its cultivation. It was tried in some other places in the Colony, but did not find favour amongst the farming community. (See Report for 1893, p. 13).

*Mosquito Plant*.—The plant now commonly known by this name is *Ocimum viride*, Willd, a native of India and tropical Africa, and it was stated that three or four plants of it growing in a room would be quite sufficient to drive all mosquitos away. As our native plant *O. gratissimum*, Linn., is very powerfully scented, it occurred to me that it might be quite as efficacious as a culifuge as *O. viride*. I therefore had seeds and plants collected in some quantity; plants were grown here and tried in different rooms, but I regret to have to say without the slightest effect on the lively mosquito. Seeds of *O. viride* were afterwards received from Lagos and plants were reared from them, but it does not appear to me that the leaves of that plant are more powerfully scented than those of *O. gratissimum*, and certainly the effect upon the mosquito is not greater, and this is now confirmed by reports from other parts of the world, with the result that the “mosquito plant” has had its day and must now be relegated to its former obscure position. I should say that the seeds and seed vessels of *O. gratissimum* are much more powerfully scented than the other parts of the plant, and small muslin bags filled with them have been hung on posts of bedsteads, but the effect so far as the mosquitos were concerned were not perceptible.

*Myroxylon peruiferum*, H. B. and K.—A native of South America. Yields what is known as “Balsam of Tolu,” which is obtained by making incisions in the bark during the hot season. The balsam is at first liquid, afterwards forming solid, yellow, brittle masses, which are used medicinally and also in perfumery. Our plant was put out in 1892, and is now about 10 feet high.

*Oxalis crenata*, Jacq., “Oka” of the Peruvians.—Tubers of this plant were received from Kew and were planted. At the close of the season they were found to have increased, but not sufficiently so to admit of their being distributed; they were therefore re-planted, but the plant was found to be unsuitable to the coast districts. In the summer months it grows well, but does not produce many tubers, in the winter it bears rather more plentifully, but the tubers were difficult to keep, and we eventually lost them all. The tubers are used as a vegetable, and the leaves and stems are useful with salad. (See Report 1898, p. 17 : 1899, p. 26.)

*Paulownia imperialis*, Siebold.—A quickly growing tree, native of Japan, more ornamental than useful, does not succeed with us, keeps alive but does not make any growth. I understand that it succeeds much better in the midlands.

*Pimenta acris*, Kostel.—A shrub or small tree, cultivated for its aromatic leaves which are used in the manufacture of “Bay Rum.” Planted in 1891, and succeeds fairly well.

*Pimenta vulgaris*, Ldl. “Allspice.”—A small tree which yields the “Allspice” of commerce; succeeds well. The young saplings are imported into Europe for walking-sticks, umbrella handles, etc. (For fuller account of this see Annual Report Jan. to June, 1901, p. 14.)

*Polygonum sacchalinese*, F. Schm. “Sacaline.”—This plant has been highly extolled as a forage plant, but was not a success here: that is, the plant lived, but did not yield sufficiently well to make it worth growing. In the higher parts of the Colony, and in the Transvaal, I believe it has done better. (See Annual Report 1897, p. 16.)

*Rheum officinale*, Baill.—This is the plant yielding the officinal “Turkey Rhubarb.” Seeds of it were obtained in 1893, part of them were sent to the Botanic Gardens at Maritzburg, and plants were reared there as in our Gardens, but they soon died; it is scarcely suitable to our soil and climate.

*Rumex hymenosepalus*, Torr. "Canaigre."—This plant has been alluded to several times in my Annual Reports, and I have only now to say about it that it continues to thrive, and bears seeds every year. The roots are used for tanning purposes, and it has been estimated that its cultivation would pay as well as "Wattle Bark." The annual yield would not be so great, but it would give a crop in a much shorter time. The roots could be lifted every year, or they could be left in the ground without deterioration, and would increase correspondingly in weight.

*Sarcocephalus cordata*, Miq.—This tree is a native of India, where the wood is used for various purposes, chiefly in house building, but also for cabinet work and gunstocks. Our tree is about 20 feet high and is now in fruit; it was planted in 1894.

*Sapium sebiferum*, Roxb.—This tree was formerly known as *Stillinga sebifera*. It is cultivated in China for the sake of its seeds, which supply an oil of which candles are made, and which is also used in medicinal preparations as a substitute for lard. Some parts of the tree are also used medicinally. Our tree was planted in 1894 and is now 20 to 30 feet high, and bears seed in abundance, but it is doubtful whether the collection of the seeds would be remunerative.

*Smilax sarsaparilla*, Linn., and *S. macrophylla*, Roxb.—These two plants, both of which yield the "Sarsaparilla" of commerce, thrive well in the Gardens, where they have been for many years. Several other species of the genus are similarly used, but I am not aware that our indigenous species, *S. Kraussiana*, Meisn., has ever been chemically tested to ascertain the proportion of "smilacin" that it contains, though I understand that its roots have been used medicinally by some colonists.

*Swietenia mahogani*, Jacq. "Mahogany Tree."—This tree was put out in the Garden in 1887, and is now about 25 feet high, with circumference of stem at 4 feet from the ground of about 21 inches. It is quite healthy.

*Swietenia macrophylla*, King.—This tree is a native of Honduras, and yields mahogany, but the wood is lighter in colour than that of *S. Mahogani*; it also flowers earlier and seeds more freely. Both of these trees attain a great age. Our tree was planted in 1886 and is now about 18 feet high, with a diameter of 3 feet 4 inches from base.

*Sapotu achras*, Mill.—This tree appears in the "Guide to the trees and shrubs in the Gardens" as *Sapota sideroxylon*, under

which name it was received. It is now about 12 feet in height; the fruit is known as "Sapodilla," and is much valued in South America, of which place the tree is a native. After the receipt of the plant from Kew, a plant in the Gardens, which was labelled *Canella alba*, flowered and bore fruit, though not abundantly, and proved to be of the same species as the one under notice, but it does not seem to be a really good variety. The correct name is *Achras sapota*, L.

*Strophanthus hispidus*, D.C.—This is one of the plants known as the "Arrow poisons" of the East Coast of Africa. Our plant is a rambling shrub of 8 to 10 feet in height, and bears its singular flowers in abundance, but has not produced seeds. The alkaloid "strophanthin" is contained in the seeds, and is used in cardiac affections. The seeds of one or two other species are also similarly used, but I understand that those of *S. hispidus* are considered to be of the most value. We have one species at least of *Strophanthus* indigenous to the Colony, but I do not know that its seeds have been tested.

*Tectona grandis*, L.f.—This tree, which is a native of India, yields the well-known Teak wood of commerce. The tree which was originally planted in the Gardens died some years ago, but it had produced seeds and plants were reared, one of which is now about 12 feet high. It was planted in 1898.

*Tectona Hamiltoniana*, Wallich.—Also a native of India, its wood is said to be not so good as that of *T. grandis*, and Baron Mueller states that it is not so hardy. Our tree is now more than 20 feet in height, and is quite healthy. It was planted in 1883.

*Terminalia tomentosa*, W. and A.—This tree was planted in the Garden in 1894 and is now 11 feet in height, and quite healthy. In India, of which country it is a native, it attains a height of 100 feet, and is said to thrive at an altitude of 4,000 feet. It is said to be an important tree, as the leaves are the food of a species of silkworm.

*Trachylobium Hornemannianum*, Hayne.—This is the tree yielding the East African "Gum Copal." In the sandy soil of the Gardens these trees thrive well, and produce flowers in abundance. I have no record of the date of planting, but they must be over 30 years old, and are now some 30 feet in height, with long spreading branches.

"Fever Tree."—A tree growing near the railway line between Delagoa Bay and Komati Poort is known locally by this name,

and to the natives as "Mhlofunga." Some part of it, probably the bark, is used by the natives medicinally in fevers. It was described to me as a thorny tree with light coloured bark and horizontally spreading branches. Commander Elliott, of H.M.S. Beagle, very kindly brought a small plant of it for us, and it is now growing in the Garden. It appears to be an *Acacia* with remarkably horizontally spreading branches, and bearing long white thorns, but it will be some years before it can be identified from our tree. Dried flowering specimens with legumes would be very acceptable for the purpose of identification.

In the Agricultural Bulletin of the Straits and Federated Malay States for January and February of the present year I find an article on Pine Apples, and as much interest seems now to be taken in the cultivation of this fruit, I venture to copy the article almost entire; it is by Mr. H. N. Ridley, M.A., F.L.S., the Director of the Botanic Gardens:—

"The Pine apple (*Ananassa sativa*) of the order *Bromeliaceae* is a native of South America, probably Southern Mexico, and was introduced very early into the East Indies by the Portuguese, shortly after the discovery of America, as, according to Linschoten, it was abundant in India in 1583, and in 1593 sold for as little as 2 reals a piece (Acosta Hist. Arom. 295). It seems, indeed, to have spread over the world more rapidly than any other cultivated plant, and probably arrived in Malacca about the same time as it did in India. The name Nanas, or Ananas, by which it is known in almost all languages, is of South American origin. The Spaniards called it Pinas, from its resemblance to pine cone, and similarly we get the English name.

#### VARIETIES OF PINE-APPLES.

"The number of named varieties of pines is very large, each country giving special names to its varieties. Unfortunately most of these varieties have hardly been adequately described, still less figured or classified. Mr. D. Munro, in the Transactions of the Horticultural Society of London, 1835, gives a list of fifty-two kinds, which could probably be largely supplemented now. The plant varies in the colouring and presence or absence of spines on the leaves, the colour of the outside of the fruit and the flesh, and in size. The earliest cultivated appear to have been very small, about the size of an orange, and seem to correspond to what is now known as the Mauritius pine.

“ Among the best known named kinds from various parts of the world are—

“ The Smooth Cayenne or Giant Kew, apparently identical with what is known in some places as the King Pine. It has bright green long and broad leaves without thorns on the edge, or but few, and bright yellowish green cylindric fruit, the bracts often tinged with red. This pine is the one commonly sold in London, being imported from the Azores, and it, or a closely allied form, is cultivated in the fields in the Straits for tinning. Its weight when full sized is  $8\frac{1}{2}$  pounds.

“ The Queen pine, including the forms Golden Queen, Egyptian Queen, Red and Green Ripleys, Jamaica Ripley. *Ananassa ovalis*, of Miller's dictionary, has short bluish green leaves armed with distant strong thorns and a yellow fruit, ovoid in outline. Weight 3 to 8 lbs.

“ The Red Pine, of Miller's dictionary, is either a sub-variety of this, or is the Red Jamaica Pine known in the West Indies and elsewhere, also as the Sam Clarke or Goffe Pine. The pine most common in the fields here is the one referred to here, I believe. It is a medium sized pine, with often reddish leaves and dull red fruit cylindric in outline and not tapering upwards, the flesh white, or more usually, yellow. This field pine is rather flavourless, or apt to be so when fresh, but develops a good flavour when tinned, and is very widely grown for this purpose.

“ The Black Jamaica or Black Spanish has dark green leaves shading to a blue purple in the centre, with short hooked prickles on the edge. The fruit is fairly large, dark green, with often a purple or blackish tint, somewhat pyramidal. This is an excellent eating pine and weighs 4 or 5 lbs.

“ The Sugar Loaf, *Ananassa pyramidalis* of Miller's dictionary, has a conic fruit tapering upwards, bright yellow with yellow flesh. It is one of the largest pines, and the big pines, weighing from 14 to 28 lbs. generally, I believe, belong to this class of pine. It is not used for tinning, but is a popular and handsome eating kind. The Abbasaxi of Brazil is one of the finest flavoured pines, but seems to be rare in cultivation. The flesh is quite white, with hardly a trace of yellow, very soft and juicy.

“ The Monsterrat Pine, *A. viridis* Miller's dictionary, has a pyramidal greenish yellow fruit, and the Havannah Pine *A. glaber*, Miller, is described as having only a few teeth at the tip of the leaf and probably belongs to the group of King pines.

“The Mauritius Pine is very well known in the Straits. It has narrow leaves of a distinct reddish colour, and very small bright yellow cylindric fruit usually about 4 to 6 inches long, the flesh is rather firm and yellow, and of exceptionally delicate flavour, too small for ordinary tinning, but considered the best eating pine here. It is perhaps what Miller calls *Ananassa serotina*, the St. Vincent or Green Olive Pine.

“The Spineless Guatemala Pine is described by Mr. J. C. Harvey, of Mexico, who sent suckers of it to the Botanic Gardens, Singapore, as having smooth leaves without spines. A smooth, not shouldered, not conical fruit, weighing about 7 lbs., the flesh almost white. He recommends it as a high class fruit.

“Among ornamental and curious pines, the variegated pine, with leaves marked with red and white, and a bright red fruit, is well known in gardens. The fruit, which is very handsome, is usually rather poor in flavour. A very ornamental kind, has reddish green leaves and a crimson red fruit, very showy, but poor eating. Hen and Chicken Pine, with a number of small fruits surrounding the central one, which is yellow and has the conic shape of the Sugar Loaf Pine, is a well-known curiosity.

#### PROPAGATION.

Pines can be propagated by means of the off-shoots or suckers from among the lower leaves of the plants. They are pulled or cut off and allowed to dry a little in the sun and then planted. Some planters in other parts of the world recommend that they should not be allowed to dry thus, but this depends really on the humidity of the season and climate. These suckers, if sufficiently dry, will travel well for a long distance. They should be wrapped in tinfoil or some such material. If sent damp they will quickly rot, as they will if packed at all damp in bulk. Several suckers of the Spineless Guatemala Pine were lately received from Mexico, sent through the post, wrapped in tinfoil, by Mr. J. C. Harvey, and arrived in the best condition. These suckers should fruit in twelve to fifteen months after planting. Some varieties of pines send out subterranean shoots, ratoons which can be utilized. The suckers selected for planting should be, according to a writer in the *Jamaica Bulletin*, strong fresh ones 12 to 15 inches long, but those used here are generally much shorter. The lowest leaves are usually pulled off before planting, so as to allow a bare piece of stem to fix the plant in the ground.

“Slips or suckers from the base of the fruit above the leaves produced in some kinds of pines are used for planting. They are stated to take not less than 18 months to produce fruit, being slower than the suckers from below the leaves, but the fruit is larger and better. It is recommended that these slips should be removed where possible from the base of the fruit, as they are injurious to the development of the fruit. The tops or crowns of the fruit can be planted if necessary, but this is not recommended except in exceptional cases, as they are very slow of growth. It is not at all uncommon to see plants growing along roadsides or in waste ground which have sprung from tops thrown away by someone who has been eating pines in the neighbourhood. Seed is occasionally produced but not often, at least in the Malay Peninsula, and pines containing seed are generally inferior in texture and flavour. They can be used if required for planting, but are practically only sown in the case of hybridization, which is occasionally done in the West Indies and in Florida.

#### SOIL.

“The soil used for pine-apple culture in Singapore is the ordinary earthen stiff clay soil of the small hills which cover the island. Most of these hills have been previously used for pepper and gambier and then abandoned, and often are covered with low secondary scrub which is burnt and the ground dug for planting. The soil is usually very poor, especially in potash phosphates and lime. Richer soil does not seem to suit the pine-apple better, but the plant does not appear to be very particular as to its habitat so long as the soil is free and open, and not damp or low lying.

“Under shade the pine-apple grows and develops long leaves but little or no fruit, and that very inferior.

“That pines will grow in the very poorest soil so long as they have suitable drainage is shown by the cultivation in Florida, where they are grown in hundreds of acres on coralline rocks covered with a thin layer of soil, with the use of fertilizers. Pines grown in low lying damp ground do not thrive. They fruit badly and are more liable to disease.

#### PLANTING.

“The Chinese plant the pines in rows, each plant  $2\frac{1}{2}$  to 3 feet apart, with a path of about 4 feet width between each row, so that they can hoe out the weeds between each plant. The Bugis planters plant them about the same distance apart but without a wide path between, each row forming beds about 40



or 50 feet long, the path being between each bed. The best plan is to plant them in rows  $2\frac{1}{2}$  feet apart, with a 5 feet path between every 3 or 4 rows. In any case the plants should not be more than  $2\frac{1}{2}$  to 3 feet apart.

“The fields require careful weeding, but are not generally manured here. The first pines are produced from the suckers in from 12 to 18 months. After the ripe fruit is removed the suckers should be cut out, leaving only two or three of the strongest. If all the suckers are left they will produce fruits next crop perhaps as many as a dozen, but the fruits will be small. If only one or two are left the fruits will be much larger.

“There are three crops in the year, November to December, February and March, and the biggest in June and July, but the crops depend very much on the rainfall. When there is a spell of dry weather of long duration the pines do not fruit.

“A properly cared for estate as cultivated in the Straits Settlements lasts five or six years, but the pines gradually get smaller. If neglected it lasts but two or three years. Doubtless an estate could be carried on for very many years, and there is a record in the West Indies of a pine-apple field lasting for sixty years. Pines remain on abandoned ground for very many years and go on growing, but when over crowded or covered with shrubs produce few or no fruits, and those that are produced are small and poor. In long grass and bush under shade the leaves often attain a great length, 8 or 9 feet, and these are suitable for making fibre.

#### MANURING.

“Manure is not commonly used in the Malay Peninsula on the large estates, but the Chinese occasionally apply a small quantity of cowdung, burnt earth, &c. For tinning pines which require to be cheap it would not be worth while to go to the expense of manuring. In Jamaica, however, where pines are chiefly grown for the fresh fruit market, and consequently a finer class of pine is required, manuring seems to be considered advisable if not necessary. It is recommended (Jamaica Bulletin VIII., 1901, p. 139) if the soil be poor and arid to fork in or plough in a good dressing of farm yard manure, when breaking up the soil six months or so before planting, and give a top dressing of wood ashes after the plants have started to grow. Artificial manures are also largely used in the West Indies. In clayey soils the application of lime when preparing the ground is found highly beneficial, and soils

that have become exhausted by other crops may be suitable for pines by growing a crop of cow peas and ploughing them in when in flower.

“A Jamaica planter, Mr. Smith (Jamaica Bulletin, VII., 1900), writes on experience with fertilizer thus:—‘The best results, so far, I have obtained have been from 550 lbs. of cotton seed meal per acre, combined with 100 lbs. of high grade sulphate of potash at time of flowering. I do not seem to get any results at all from phosphoric acid. Stable manure (from horses) should never be used, no matter how thoroughly rotted. The manure from cattle may be used with splendid results.’

“Mr. Cousins, in the *Jamaica Gleaner*, November 2, 1903, gives an excellent report on the use of fertilizers in Jamaica, of which the following extracts are of interest:—

“No results whatever from fertilizers were observed at any centre except Clover, near Mandeville, where the results were quite striking.

“The Rowington results were not encouraging. It appears likely that after the heavy rains a good deal of surface rooting took place, and that the plants suffered from scorching when the drought followed and the full sun beat down upon them later.

“On the red soil from the limestone in St. Ann (Huntly) fertilizers produced no effect. This soil is apparently quite rich enough without assistance.

“At Barbican, on the alluvial soil of the Upper Liguanea plain, fertilizers were quite inoperative. This soil is apparently richer than the maximum requirements of the pine in plant food.

“At Billy Dun, on a similar soil with less humus and exposed on a hilly slope to intense heat, fertilizers were alike of no avail; the plants suffered greatly from scorching.

“The experience of the Hon. Phillip Cork, when he grew pines at Barbican, is in agreement with these results. Even enormous doses of fertilisers proved ineffectual when applied to the pines.

“The phosphate fertilizers had absolutely no preventitive effect on the formation of ‘coxcombs’ on the United Fruit Company’s plantation.

“ At Clover, on the red soil of Mandeville, the pines were grateful for manure, and Mr. Palache has ascertained from the experiments that the complete manure, 2 cwt. sulphate of ammonia, 4 cwt. mixed phosphate, and 2 cwt. sulphate of potash, applied to plot 2 gave the biggest fruit and fruit of the best quality.

“ The analysis show that this soil is of low fertility compared with the others.

“ On the St. Catherine soil 80 per cent. of the Smooth Cayenne may be expected to produce monstrosities. The high content of nitrogen (six times the normal and sixteen times that of the Florida soil) is undoubtedly one of the causes of this extraordinary vegetative exuberance.

“ As has been mentioned pines are here usually grown without manuring at all, and it is perhaps noteworthy that the soils best adapted here or rather most largely used for pine cultivation are remarkably deficient in potash and lime. It is, however, to be remarked that the pine fields of the Straits last a considerably shorter time than those of the West Indies, and the field pine is decidedly poor in flavour for dessert purposes, though it seems well suited for tinning. The ordinary resident is quite satisfied with the tinning pine, although he often grumbles at the pooriness of its quality, and he does not seem to be aware of the fact that a better class of pine could easily be grown here for direct eating with very little trouble.

“ The Chinese are said here to increase the size of pines by cutting out the terminal shoot. This, though producing a large pine, diminishes its sweetness.

#### AMOUNT OF PINE PER ACRE.

“ The yield of pines in a crop in the West Indies appears to be in good estates from 8,000 to 15,000 per acre. In the Malay Peninsula it is usually about 5,000. But much depends on the growth allowed as explained above if all the suckers are left on the plant they will produce pines though small, while if only one or two are left on the plant the pines are larger and better.

#### COST OF PINES.

“ The cost of pines varies from time to time according to the supply, which depends on the season and on the weather. In Singapore pines can be obtained pretty nearly always through-

out the year. At the present time they sell at from one to seven cents each, but they are usually about four cents apiece. Before the tinning industry developed the prices were very low.

“ Thus in 1850 (*Logan's Journal*, III, p. 79) Mr. Thompson states that they were sold for 10 for a cent.

#### TINNING.

“ The pines are here always peeled by hand, though machines for this purpose have been invented, as it is found more economical to use hand labour here where it is cheap. The peelers are Chinese. They cut the top and bottom off the pine and peel it with a knife, holding the pine with the left hand, which is covered with an india-rubber glove, to protect it from the acid action of the pine juice. The gloves have constantly to be renewed, as they are soon destroyed by use. The pines are then put into the tins, which are filled up with either water or syrup. The cores are removed previously, if required, by a tin tube, which is pressed through the centre, but most pines are tinned without coring. The syrup is made of 3 catties of sugar to one picul of water. After the pine is put in the tin it is soldered up, and a number of tins are put on a kind of wooden raft and plunged in a tank of water heated by steam. They are boiled in this tank for from ten minutes in the case of the smallest tins, to an hour and a half for large tins. The biggest tins weigh five pounds when full. After removal from boiling water, a puncture is made in the top of the tin with a hammer and punch, and in large tins two punctures. This is to let out the steam, and after this the holes made are resoldered and the tins plunged again into boiling water for nine minutes. They are then labelled and packed for export. The object of tinning without sugar is to avoid duty on sugar, and also to enable confectioners to use them for their purposes. Pineapple juice is often added in the case of pines not preserved with sugar, but the tins are often filled with plain water. Other forms of exported pines are in slices half an inch thick (sliced pines), and with the eyes removed (eyeless pines). Bruised pines and others are often cut into chunks or cubes. All these are tinned in the same way. Grated or jam pine is another form of export. Crystallized pines are dried in the sun and then crystallized into sugar.

“ The sugar used is usually Java sugar, but Mr. Landau tells me he finds Austrian beet sugar better on account of its colour. The cost is, however, about the same. One manufacturer states that he preserves all his pines in syrup about 30 degrees solution, using from 11 to 20 lbs. of sugar to a cwt. of pines.

## MACHINERY.

“The greater part of the machinery employed (90 per cent.) is of English manufacture. It consists of tin plate cutting machines, cover presses, and rolling machines for making the tins, and boilers for the cooking of the fruit. The tins are made completely in Singapore.

## REFUSE.

“The waste bits, peelings, etc., are used to a small extent for feeding pigs by the Chinese, and also in dyeing cloth with indigo. But far the greater part is treated as waste and dumped down in waste ground or rubbish heaps and left to decay.

## MEDICINAL USES.

“The juice of the young leaves is used in India as a purgative and anthelmintic. The fruit, especially when unripe, is used as an abortient, and in Burmah and some parts of India absolutely considered poisonous.

## PINEAPPLE BEVERAGES.

“There have been a number of attempts to make wines or champagnes from pines, but they have not met with much success; generally speaking, they do not seem to have been very popular drinks.

“In 1850 the Bugis men in Singapore used to make an intoxicating liquor of pine-apple juice in the first stage of fermentation, but it seems to have been rather too acid, for it was found necessary to mix with it some Nireh bark (*Carapa molucanna*), to prevent its producing diarrhœa. This drink was only made before a feast day and was not preserved. It seems to have been popular with them, but the manufacture has died out now. (*Logan's Journal*, III., p. 579.)

“In concluding this Report I regret to have to say that on June 27th, only four days before the conclusion of the year, Mr. J. Harman died of pneumonia. He had been employed here for 21 years and 10 months. He was a valuable and reliable man and a faithful servant. His loss is deeply regretted by all who knew him, especially so by those who have worked with him for so long a time.

“Shortly after the commencement of 1904, Mr. Jas. Wylie, who joined the staff in 1882, took the position of Curator. The change is a great improvement and is working well. I am relieved of a large amount of work and worry, and Mr. Wylie, with a young man as assistant, is perfectly capable of filling his present position to the complete satisfaction of all connected with the Gardens, and to the public who visit them or are interested in them. With these exceptions the European staff remain as before, and the thanks of the Committee and myself are due to them for their ungrudging services.

To the members of the Committee my very hearty thanks are due for their valuable assistance, and for the interest taken by them in all matters connected with the working of the Gardens whenever brought before them.

I have the honour to be, Gentlemen,

Your obedient servant,

J. MEDLEY WOOD.

DIRECTOR.

The following publications have been received:—

#### REPORTS.

- |        |   |                              |
|--------|---|------------------------------|
| Report | Botanic Gardens,                              | Saharunpur.                  |
| ”      | ”   | ” St. Louis, Missouri.       |
| ”      | ”   | ” Straits Settlements.       |
| ”      | ”   | ” Zurich.                    |
| ”      | ”   | ” Trinidad.                  |
| ”      | ”   | ” Gold Coast.                |
| ”      | ”   | ” Sydney.                    |
| ”      | Public Gardens,                               | Capetown.                    |
| ”      | Government Gardens and Parks,                 | Mysore.                      |
| ”      | Government Gardens, Plantations and Board of  | Agriculture, Jamaica.        |
| ”      | Botanic Gardens and Afforestation Department, | Hong-Kong.                   |
| ”      | Royal Gardens,                                | Calcutta.                    |
| ”      | Cinchona Plantation and Factory,              | Calcutta.                    |
| ”      | Experimental Farms,                           | Canada.                      |
| ”      | Conservator of Forests,                       | Natal.                       |
| ”      | Government Entomologist,                      | Natal.                       |
| ”      | Land and Forest Department,                   | German East Africa.          |
| ”      | Secretary of Agriculture,                     | Nova Scotia.                 |
| ”      | Smithsonian Institute,                        | Washington, U.S.A. (2 vols.) |
| ”      | Government Botanist,                          | Capetown.                    |

- Report Albany Museum, Grahamstown.  
 ,, Field Columbian Museum, Vol. II, No. 2.  
 ,, Colonial Museum, Haarlem  
 ,, Agricultural Work in Barbados 1901-3-

DIRECTOR ROYAL GARDENS, KEW.

- Report on Tea Culture in Assam.  
 Circular of Royal Botanic Gardens, Ceylon, Vol. II., Nos.  
 2 and 3.  
 Agricultural Ledger 1903, No. 1.  
 Hooker's Icones Plantarum, Vol. VIII., p. 3.  
 Flora Capensis, Vol. IV., Sec. 2.  
 Kew Bulletins 1, 2, 3 (1903), 1, 2, 3, 4 (1904).

SECRETARY OF AGRICULTURE, MELBOURNE.

- Journal of Agriculture, Vol. II., p. 1.

COMMISSIONER OF AGRICULTURE, WEST INDIES.

- Agricultural News, Barbados, current numbers.  
 West Indian Bulletin, Vol. IV., Nos. 2 and 3 ; Vol. V., No. 1.  
 Notes on Poultry in West Indies.  
 Barbados and Porto Rico Molasses.  
 Ground Nuts in West Indies.

ZANZIBAR GOVERNMENT.

- Journal of Agriculture.

DIRECTOR CONGO MUSEUM.

- Annales du Musee du Congo, Vol. I., fasc. 1.  
 Plants of Congo, by E. M. de Wildeman.

DIRECTOR BOTANIC GARDENS, STRAITS SETTLEMENTS.

- Bulletines, Vol II., Nos. 3 to 12 ; Vol. III., Nos. 1, 2, 3.

GOVERNMENT UNITED STATES OF AMERICA.

- Contributions to U.S. Herbarum, Vol. VIII., p. 1.  
 Economic Plants of Porto Rico, by O. F. Cook and G. N.  
 Collins.  
 A Study of Certain Mexican and Guatemalan Species of  
 Polypodium, by W. R. Mason.  
 Report of Bureau of Animal Industry, by D. E. Salmon.  
 Culture Work at the Substations, 1899-1901.  
 Experimental Stations Record, Vol. XIV., Nos. 5 to 10 ;  
 XV., Nos. 1 to 8.  
 The Mango in Porto Rico, by G. N. Collins.  
 Silkworm Food Plants, by G. W. Oliver.  
 American Ginseng, by G. V. Nash.

- Stigmatose, a Disease of Carnations and Pinks, by A. F. Woods.
- The "Changa" or Mole Cricket, by O. W. Barrett.
- Fruits and Fruit Products, Chemical and Micro-Examination, by W. D. Bigelow.
- Three New Plants Introduced from Japan, by D. G. Fairchild.
- Japanese Bamboos, by D. G. Fairchild.
- Letters on Agriculture in West Indies and the Orient, by D. G. Fairchild.
- Observations on Termites, by G. D. Haviland.
- Forest Destruction, by Gifford Pinchot and C. H. Merriman.
- Irrigation, by F. H. Newell.
- Transmission of Yellow Fever by Mosquitos, by G. M. Sternberg, M.D., L.S.D.
- Malaria, by G. M. Sternberg, M.D., L.S.D.
- Life in the Ocean, by Karl Brandt.

BUREAU OF AGRICULTURE, PHILLIPINES.

- Distribution of Seeds.
- The Cocoa-Nut.
- Report of Investigations made in Java, 1902.
- Maguey in the Phillipines.
- Dictionary of Plant Names in the Phillipines.
- New or Noteworthy Phillipine Plants.

DIRECTOR OF EXPERIMENTAL FARMS, CANADA.

- Evidence of Dr. Saunders on Agriculture and Colonisation.

HERBARIUM BOISSIER.

- Studies of the Geology, Paleontology and Botany of Scarpato. (Illustrated).
- Studies of the Geology, Paleontology and Botany of Samos. (Illustrated).
- Compendium of the Flora of Sardinia.

DEPARTMENT OF AGRICULTURE, CANADA.

- Bulletin No. 43: Plum Culture, by W. T. Macoun.
- Bulletin No. 44: Trial Plots of Grain, Fodder, &c.

DIRECTOR ROYAL GARDENS, CEYLON.

- Agricultural Journal Circulars, Vol. II., Nos. 3, 4, 5, 6.

AGRICULTURAL AND HORTICULTURAL SOCIETY OF INDIA.

- Proceedings Jan. to May, 1903; June to September, 1903.

AGRI-HORTICULTURAL SOCIETY OF MADRAS.

- Proceedings Oct. to Dec., 1902; Jan. to Dec., 1903.



## IMPERIAL BOTANIC GARDENS, ST. PETERSBURG.

Acta Horti Petropolitani, Vol. XXI., part 2 & 3; Vol. XXII., p. 1.

## HAWAII EXPERIMENT STATION.

The Cultivation of Sisal in Hawaii.

## DEPARTMENT OF AGRICULTURE, TRANSVAAL.

Bulletins, Nos. 1 to 6.

Agricultural Journal, Vol. II., Nos. 5, 6.; Vol. I., Nos. 2 to 7.

Bulletin, No. 1 Division, Chemistry.

Leaflets, 4

## DIRECTOR AMES BOTANICAL LABORATORY.

Orchid Flora of Southern Florida, by Oakes Ames.

Reversionary stages in *Drosera Intermedia*, by R. G. Leavitt.

## DEPARTMENT OF AGRICULTURE, VICTORIA, AUSTRALIA.

Two Years Field Work of the Chemical Branch, by F. J. Howell, Ph. D.

Journal of Agriculture, current Nos.

Co-operative Forage Experiments in Southern Victoria, by F. J. Howell, Ph. D.

Codlin Moth Experiments.

"Take all" and "Whiteheads" in Wheat.

## BOTANIC GARDENS, JAMAICA.

Bulletin Agricultural Department, Vol. I., parts 8, 9, 10;  
Vol. II., part I.

„ Botanic Department, Vol. I.

## DIRECTOR IMPERIAL GARDENS, BERLIN.

Beitrage zur Flora von Africa, Vols. XXI. to XXIV.,  
8 & 8a.

Description of Three New African Genera.

On the Vegetation of the Mountainous Districts North of Nyassa.

Engler's Botanischen Jahrbuchern, Vol. XVIII., p. 1, 2;  
Vol. XIX., p. 1; Vol. XXIII., p. 1, 2, 4; Vol. XXIV., p. 4; Vol. XXVI. p. 3, 4; Vol. XXVII. p. 1, 2.

## DIRECTOR BOTANIC GARDENS, MISSOURI.

Synopsis of the Genus *Lonicera*.

## DIRECTOR BOTANIC GARDENS, SYDNEY.

Critical Revision of the Genus *Eucalyptus*.

## INDIANA ACADEMY OF SCIENCE.

Proceedings, 1902.

Resistant Vines and their Hybrids, by E. H. Twight.

The Californian Sugar Industry, by G. W. Shaw

Value of Oak Leaves for Forage, by W. W. Mackie.

DIRECTOR KOLONIAL MUSEUM, HAARLEM.

Bulletin No. 30.

DIRECTOR TECHNOLOGICAL MUSEUM, SYDNEY.

On a New Species of *Ardisia* from N.S. Wales, by R. T. Baker.

On a New Species of *Symplocos* from N.S. Wales, by R. T. Baker.

On *Eucalyptus Melanophloia*, F. v. M., by R. T. Baker.

Contributions to a Knowledge of the Flora of Australia.

A Research on the Eucalypts in Regard to Their Essential Oils, by R. T. Baker, F.L.S.; and H. G. Smith, F.C.S.

W. FITZGERALD.

Notes on Some Hitherto Unrecorded Species of Plants of W. Australia.

F. LAMSON SCRIBNER.

Soil Conditions in the Phillipines, by C. W. Dorsey.

Cultivation of Tobacco in the Phillipines, by C. W. Dorsey.

A. ROBERTSON PROSCHOWSKY.

Bulletin Societe Nationale d'Acclimatation de France.

C. G. LLOYD.

Mycological Notes.

A.I. ROOT CO.

Gleanings in Bee Culture, Current Nos.

E. DE WILDEMAN

Notes on Some Apocynaceae of Congo.

*Ficus* of Congo State. (Illustrated.)

DR. S. SCHONLAND, F.L.S.

Records of Albany Museum.

Stone Implements in Albany Museum.

Notes on the Genus *Anacampseros*.

Biography of Mrs. Barber.

MESSRS. BURROUGHS WELLCOME & Co.

Five Pamphlets on Chemical Subjects.

C. F. MILLSPAUGH.

Plantae Yucatanæ, by C. F. Millspaugh.

DR. R. MARLOTH.

Transactions of S A. Philosophical Society, Vol. XIV., p. 4.

J. MEDLEY WOOD.

Journal of Linnean Society, Vol. XXXVI.

SIR J. D. HOOKER.

Sketch of the Flora of British India.

DR. ZAHLBRUCKNER.

Plantae Pentherianæ

R. SCHECHTER.

Monograph of Diseæ.

F. TURNER, F.L.S.

Botany of the Darling.

D. E. HUTCHINS.

Some Aspects of South African Forestry.

PURCHASED.

Journal of Botany	Current Nos.
Journal of Mycology	”
Indian Gardening	”
Tropical Agriculturist	”
Gardeners' Chronicle	”
Botanical Magazine	5 Volumes.

# - - DURBAN BOTANIC SOCIETY. - -

Statement of Income and Expenditure for the year ending June 30, 1904.

	INCOME.		EXPENDITURE.	
	£	s. d.	£	s. d.
1903.				
July 1—BALANCE in Bank	423	15 8		
SALE OF PLANTS	3,356	10 6		
GOVERNMENT GRANT year ending June 30, 1903	350	0 0		
Do., Do., Colonial Herbarium, year ending June 30 1903	300	0 0		
GOVERNMENT SUBSCRIPTIONS to "Natal Plants"	65	0 0		
SUBSCRIPTIONS AND DONATIONS	262	17 6		
	£4,758 3 8			
			SALARIES AND EUROPEAN WAGES	1,621 13 4
			INDIAN AND NATIVE WAGES	554 15 6
			RATIONS	149 16 8
			MAINTENANCE	1,306 7 8
			COLONIAL HERBARIUM—	
			Salaries	191 8 4
			Special Payments	206 3 2
			BALANCE IN BANK—	
			Fixed Deposit	750 0 0
			Less Debit Balance	22 1 0
			<u>727 19 0</u>	
			<u>£4,758 3 8</u>	

Audited and found correct,  
 Durban, 28th July, 1904.  
 (Signed) R. P. McNAIR,  
 Accountant.

WORK IN HAND.—New Fernery, to cost about £700.

# Abstract of Meteorological Observations for Year ending 30th June, 1904.

TAKEN AT THE NATAL OBSERVATORY, DURBAN. READINGS, 9 A.M. AND 3 P.M.

Reading of Barometer reduced to sea level and 32° Fahrenheit. A light wind has a mean force of 1.00. A fresh wind a mean force of 2.00. 10 corresponds to an overcast sky. Zero to a clear sky.

	1903.		1903.		1903.		1904.		1904.		1904.		1904.		Year.	
	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan'y.	Feb'y.	Mar.	April.	May.	June.	In.	Deg.	In.	Deg.
Barometer—Highest	In. 30.653	In. 30.606	In. 30.589	In. 30.442	In. 30.345	In. 30.285	In. 30.197	In. 30.274	In. 30.357	In. 30.433	In. 30.450	In. 30.614	In. 30.653		In. 30.614	In. 30.653
Lowest	30.810	29.754	29.744	29.570	29.672	29.656	29.631	29.755	29.754	29.754	29.743	29.910	29.631		29.910	29.631
Mean, 9 a.m.	30.287	30.233	30.300	30.083	30.089	30.018	30.000	30.029	30.074	30.102	30.197	30.240	30.184		30.240	30.184
Thermometer in Shade—	Deg. 80.3	Deg. 84.2	Deg. 96.1	Deg. 93.4	Deg. 87.6	Deg. 92.3	Deg. 94.5	Deg. 95.4	Deg. 88.4	Deg. 94.5	Deg. 91.2	Deg. 90.0	Deg. 96.1		Deg. 90.0	Deg. 96.1
Highest	47.4	49.2	48.9	54.0	52.4	59.8	62.8	61.4	61.6	53.7	50.4	48.8	47.4		48.8	47.4
Lowest	61.0	64.5	67.1	71.3	72.0	75.9	76.9	76.5	73.3	71.9	66.7	63.4	70.0		63.4	70.0
Mean Reading of																
Maximum Thermometer	72.4	76.6	75.9	78.5	78.6	83.3	85.4	84.4	82.2	82.5	79.2	76.1	79.6		76.1	79.6
Minimum	54.1	56.7	57.2	61.8	63.2	66.5	68.8	67.7	66.5	62.6	58.2	54.5	61.5		54.5	61.5
Rainfall in inches	In. 1.16	In. 1.85	In. 0.62	In. 1.16	In. 8.99	In. 5.33	In. 4.11	In. 8.77	In. 4.87	In. 0.65	In. 0.44	In. 0.66	In. 38.61		In. 0.66	In. 38.61
No. of days on which	No. 8	No. 7	No. 7	No. 12	No. 19	No. 20	No. 14	No. 18	No. 15	No. 5	No. 8	No. 5	No. 138		No. 5	No. 138
rain fell	8	7	7	12	19	20	14	18	15	5	8	5	138		5	138
Wind—Mean Force of ...	.59	.89	1.16	1.12	1.09	0.91	0.83	0.89	0.96	0.88	0.74	.80	0.91		0.74	0.91
Cloud—Mean Amount of	3.90	3.32	3.72	4.94	6.69	5.32	6.09	4.71	5.41	2.65	1.97	2.34	4.26		1.97	4.26



# Colonial Herbarium.

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## REPORT

FROM

—✧ JULY 1st, 1903, to JUNE 30th, 1904, ✧—

—BY—

**J. MEDLEY WOOD, A. L. S.,**

*Corresponding Member of the Pharmaceutical Society  
of Great Britain,*

**DIRECTOR OF BOTANIC GARDENS,**

—✧ DURBAN. ✧—





# COLONIAL HERBARIUM.



During the past year, in addition to the ordinary work of the Herbarium, drying and classifying the specimens which have been collected, mounting, entering, and placing in the Cabinets those that have been received, myself and assistants have made steady advance with the work "Natal Plants." Of Volume 2, containing grasses only, the 3rd and 4th Parts concluding the Volume have now been published, and the senior assistant, Miss M. Franks, is now at work at the remainder of the grasses, which will take a large portion of another volume. The remainder may probably be occupied with representative species of the different genera of Cyperaceae. Of Vol. IV., which contains miscellaneous plants, the 1st and 2nd parts have been published, and the 3rd part is well in hand. The drawings for it are being made by Miss Dean, the junior assistant. During the year the specimens in the Herbarium have been increased from 28,879 in June last to 30,934 at the close of June. Of these, 9,624 are South African, and 21,310 foreign. Five new Cabinets were obtained at the commencement of the year, and 8 are now on order, bringing the number of Cabinets to 54. Since the date of my last report, specimens have been received as under:—

H. Bolus, Capetown	...	...	...	...	84
Royal Gardens, Calcutta	...	...	...	...	164
Dr. Rosenstock, France	...	...	...	...	276
Botanic Gardens, Sydney	...	...	...	...	107
M. Guadagno, Naples	...	...	...	...	212
M. Mouillefarine, Paris	...	...	...	...	595
Botanic Gardens, Turin	...	...	...	...	155
M. Lillo, Argentine Republic	...	...	...	...	115
A. Deflers, Egypt	...	...	...	...	269
Jas. Yllie, Durban, (Ferns and European Plants)					269
					<hr/> 2062 <hr/>

The whole of these were compared with the specimens in the Herbarium, and all that were new to our collection, or better specimens than those we already had, were poisoned, mounted, and placed in the Cabinets.

Dried and classified specimens of Natal plants were sent to the following persons and Institutions for exchange :

J. Burt Davy, F.L.S, Transvaal	...	...	100
R. T. Baker, F.L.S., Sydney	...	...	314
Dr. H. Bolus, F.L.S., Capetown	...	...	65
Field Columbian Museum	...	...	111
Philadelphia Museums	...	...	107
Botanic Gardens, Melbourne	...	...	102
Botanic Gardens, Sydney	...	...	217
Royal Botanic Gardens, Calcutta	...	...	106
E. Mouillefarine, Paris	...	...	505
Prof. Gibelli, Italy	..	...	109
Baltimore Herbarium, U.S. America	...	...	106
M. Lillo, Argentine Republic	...	...	109
M. Guadagno, Naples	...	...	212
D. Rosenstock, Germany	...	...	120
Ames Botanical Laboratory, U.S. America	...	...	108
			<hr/>
			2391
			<hr/>

In consequence of the great pressure of other work, I have not been able to take a botanical collecting trip, but a fair number of specimens have been obtained by the native collector, and Mr. Wylie on two trips to Zululand obtained a large number, many of them being rare and some new. All such of them as were required have been placed in the Herbarium, and the remainder are now available for distribution.

As a result of the very welcome publication of another Part of the Flora Capensis, I am now enabled to give a further list of additions to the "Preliminary Catalogue of Natal Plants," this being the eighth list given in my Annual Reports since the publication of the Catalogue in 1894. Before my next Annual Report is printed, I hope to revise and make ready for printing the "Handbook" which is now nearly finished, but which pressure of other work has hitherto prevented me from completing.

Additions to "Preliminary Catalogue of Natal Plants" :—

<i>Aptosimon albomarginatum</i> , M. & E.	...	<i>Scrophulariaceae</i>
<i>Aster (Diplopappus) serrulatus</i> , Harv.	...	<i>Compositae</i>
<i>Astrochlaena malvacea</i> , Hallier	...	<i>Convolvulaceae</i>
<i>Breweria capensis</i> , Baker	...	"
<i>Convolvulus arvensis</i> , L.	...	"
„ <i>Bullerianus</i> , Rendle	...	"

<i>Convolvulus calycinus</i> , E.M.	...	...	<i>Convolvulaceae</i>
" <i>capensis</i> , Burn	...	...	"
" <i>farinosus</i> , L.	...	...	"
" <i>hastatus</i> , Thb.	...	...	"
" <i>sagittatus</i> , Thb.	...	...	"
" <i>ulosepalus</i> , Hallier	...	...	"
<i>Crassula brevistylis</i> , Baker	...	...	<i>Crassulaceae</i>
" <i>sessilifolia</i> , E. Baker	...	...	"
<i>Cuscuta appendiculata</i> , Englm.	...	...	"
" <i>Gerrardi</i> , Baker	...	...	"
" <i>natalensis</i> , Baker	...	...	"
<i>Diascia capsularis</i> , Bth.	...	...	<i>Scrophulariaceae</i>
" <i>cordata</i> , N.E.B.	...	...	"
" <i>expolita</i> , Hiern	...	...	"
" <i>purpurea</i> , N.E.B.	...	...	"
" <i>rotundifolia</i> , Hiern	...	...	"
<i>Floscopa Mannii</i> , C. B. Clarke	...	...	<i>Commelinaceae</i>
<i>Hoslundia decumbens</i> , Bth.	...	...	<i>Labiatae</i>
<i>Ipomoea cardiosepala</i> , Hochst.	...	...	<i>Convolvulaceae</i>
" <i>ficifolia</i> , Ldl.	...	...	"
" <i>geminiflora</i> , Welw.	...	...	"
" <i>Gerrardiana</i> , Rendle	...	...	"
" <i>Greenstockii</i> , Rendle	...	...	"
" <i>Lambtoniana</i> , Rendle	...	...	"
" <i>Oenotherae</i> , Hallier	...	...	"
" <i>Saundersiana</i> , Baker	...	...	"
" <i>sublucens</i> , Rendle	...	...	"
" <i>quinquefolia</i> , Hochst	...	...	"
" <i>tetraptera</i> , Baker	...	...	"
" <i>Wightii</i> , Choisy	...	...	"
<i>Leonotis urticifolia</i> , Briq	...	...	<i>Labiatae</i>
<i>Lessertia perennans</i> , D.C., var. <i>pubescens</i>	...	...	<i>Leguminosae</i>
<i>Lithospermum officinale</i> , L.	...	...	<i>Boraginaceae</i>
<i>Lycium acutifolium</i> , E.M.	...	...	<i>Solanaceae</i>
" <i>pendulinum</i> , Miers	...	...	"
<i>Myosotis afropalustris</i> , C. H. Wright	...	...	<i>Boraginaceae</i>
" <i>sylvatica</i> , Hoffm	...	...	"
<i>Nemesia coerulea</i> , Hiern	...	...	<i>Scrophulariaceae</i>
" <i>floribunda</i> , Lehm	...	...	"
<i>Nerine Schlechteri</i> , Baker	...	...	<i>Amaryllideae</i>
<i>Olea capensis</i> , L.	...	...	<i>Oleaceae</i>
<i>Orthosiphon inconcinus</i> , Briq	...	...	<i>Labiatae</i>
<i>Physalis minima</i> , L.	...	...	<i>Solanaceae</i>
<i>Plectranthus dolichopodus</i> , Briq	...	...	<i>Labiatae</i>
" <i>Draconis</i> , Briq	...	...	"
" <i>elegantulus</i> , Briq	...	...	"
" <i>gallatus</i> , Briq	...	...	"
" <i>nummularis</i> , Briq	...	...	"

<i>Plectranthus pachystachyus</i> , Briq	...	...	<i>Labiatae</i>
<i>Pycnostachys Schlechteri</i> , Briq	...	...	"
<i>Salvia natalensis</i> , Briq & Schinz	...	...	"
„ <i>Schlechteri</i> , Briq	...	...	"
<i>Solanum acanthoideum</i> , E.M.	...	...	<i>Solanaceae</i>
„ <i>bifurcum</i> , Hochst	...	...	"
„ <i>didymanthum</i> , var. <i>pluriflorum</i> , Dunal	...	...	"
„ <i>exasperatum</i> , E.M.	...	...	"
„ <i>ferrugineum</i> , Jacq	...	...	"
„ <i>geniculatum</i> , E.M.	...	...	"
„ <i>incanum</i> , L. ...	...	...	"
„ <i>sodomoeoides</i> , O. Kuntze	...	...	"
„ <i>tomentosum</i> , L.	...	...	"
<i>Stachys leptoclada</i> , Briq	...	...	<i>Labiatae</i>
„ <i>lupulina</i> , Briq	...	...	"
„ <i>petrogenes</i> , Briq	...	...	"
<i>Syncolostemon</i> , <i>Cooperi</i> , Briq	...	...	"
<i>Trichilia pterophylla</i> (Cas) D.C.	...	...	<i>Meliaceae</i>
<i>Vitis quadrangularis</i> , L.	...	...	<i>Ampelideae</i>

Alterations in the names of species published in the Preliminary Catalogue or in additional lists :—

<i>Trichilia alata</i> , N. E. Brown	is	<i>T. pterophylla</i> (Cas), D.C.
<i>Ipomoea holosericea</i> , E.M.	is	<i>I. ficifolia</i> , Ldl.
<i>Convolvulus malvaceus</i> , Oliv	is	<i>Asterochlaena malvacea</i> , Hallier

The following additions have been made to the collection in the Museum Department :

SPECIMENS OF WOOD.

<i>Cedrela australis</i>		Australia.
<i>Dysoxylon Fraserianum</i>	“ Rosewood ”	„
<i>Castanospermum australe</i>		„
<i>Dysoxylon Muellerei</i>	“ Red Bean ”	„
<i>Villarsea Moorei</i>	“ White Maple ”	„
<i>Callitris columellaris</i>	“ Cypress Pine ”	„
<i>Weinmannia rubifolia</i>	“ Corkwood ”	„
<i>Frenela robusta</i>	“ White Pine ”	„
<i>Duboisea myoporoides</i>	“ Corkwood ”	„
<i>Acacia melanoxylon</i>	“ Blackwood ”	„
<i>Melia composita</i>	“ White Cedar ”	„
<i>Stenocarpus salignus</i>	“ Beefwood ”	„
<i>Casuarina torulosa</i>	“ Forest Oak ”	„
<i>Tristania laurina</i>	“ Water Gum ”	„
<i>Eucalyptus microcorys</i>	“ Tallow-wood ”	„
<i>Grevillea robusta</i>	“ Silky Oak ”	„
<i>Fagus Moorei</i>	“ Negrohead Beech ”	„

<i>Banksia integrifolia</i>	"Honeysuckle"	Australia.
?	"She Beech"	"
<i>Strychnos Henningsii</i>	"Umcaloti"	Natal
<i>Santalum album</i>	"Sandal wood"	Grown in Botanic Gardens, Durban
<i>Eucalyptus tereticornis</i>	"Silky Oak"	"
<i>Grevillea robusta</i>	"Waterboom"	" Natal
<i>Eugenia cordata</i>	"Isi-Fuca"	"
<i>Rhus longifolia</i>	"Msityana"	"
<i>Olea foveolata</i>	"Impahla"	"
<i>Brachylaena discolor</i>		"
<i>Strychnos Atherstonei</i>		"
<i>Elaeodendron velutinum</i>	"Nqui"	"
<i>Euclea natalensis</i>	"Untungamusi"	"
<i>Ekebergia natalensis</i>	"Essenwood"	"
<i>Mimusops caffra</i>	"Milkwood"	"
<i>Trema bracteolata</i>	"Pigeonwood"	"
<i>Acacia natalitia</i>	"u-Munga"	"
<i>Mimusope obovata</i>	"Milkwood"	"
<i>Millettia caffra</i>	"Umzimbiti"	"
<i>Xanthoxylon Thunbergii</i>	"um-Numbambili"	"
<i>Ficus natalensis</i>	"um-Tombi"	"
<i>Chaetachme Meyeri</i>	"um-Kovoti"	"
<i>Sideroxylon inerme</i>		"
<i>Scolopia Eckloni</i>		"
<i>Myrsine melanophleus</i>	"isi-Qulabahlati"	"
<i>Olea verrucosa</i>	"Ironwood"	"
<i>Calodendron capense</i>	"um-Baba"	"
<i>Podocarpus elongata</i>	"Bastard Yellowwood"	"
<i>Podocarpus Thunbergii</i>	"Yellowwood"	"
<i>Curtisea faginea</i>	"Assegai wood"	"
<i>Kiggelaria africana</i>	"Skali"	"
<i>Royena lucida</i>	"um-Timatane"	"
<i>Buddleia salvifolia</i>	"i-Lotyane"	"
<i>Cathastrum capense</i>		"
<i>Olerodendron glabrum</i>	"um-Qwaqwana"	"
<i>Scolopia Zeyheri</i>		"
<i>Halleria lucida</i>	"i-Meinza"	"
<i>Leucosidea sericea</i>	"um-Tyityi"	"
<i>Trimeria alnifolia</i>	"i-Dhebenhlovu"	"
<i>Acacia horrida</i>		"
<i>Rhus lucida</i>		"
<i>Toddalia lanceolata</i>	"um-Zana"	"
<i>Protea lanceolata</i>	"isi-Qalaba"	"
<i>Schmidelia africana</i>	"in-Qala"	"
<i>Oreodaphne bullata</i>	"Stinkwood"	"
<i>Olea laurifolia</i>	"Ironwood"	"
<i>Apodytes dimidiata</i>	"White Pear"	"
<i>Albizia fastigiata</i>	"Flatcrown"	"

## SEED VESSELS.

<i>Harpagophytum procumbens</i>	Transvaal.
<i>Cola natalensis</i>	Natal.
<i>Callitris cupressoides</i>	"
<i>Eucalyptus capillata</i>	Australia.
" <i>resinifera</i> . var <i>grandiflora</i>	"
" <i>hemiphloia</i> . var <i>albicans</i>	"
" <i>robusta</i>	"
" <i>diversicolor</i>	"
" <i>eugenioides</i>	"
" <i>haemastoma</i>	"
" <i>amygdalina</i>	"
" <i>pilularis</i>	"
" <i>maculata</i>	"
" <i>hemiphloia</i>	"
" <i>resinifera</i>	"
<i>Melaleuca leucadendron</i>	"
<i>Angophora cordifolia</i>	"
" <i>lanceolata</i>	"
<i>Casuarina nana</i>	"
" <i>paludosa</i>	"
" <i>torulosa</i>	"
" <i>suberosa</i>	"
" <i>lepidophloia</i>	"
" <i>Muelleri</i>	"
<i>Leptospermum lanigerum</i> . var <i>grandiflorum</i>	"
<i>Banksia collina</i>	"
" <i>integrifolia</i>	"
<i>Pyralia pubera</i>	N. America.
<i>Hicoria alba</i>	"
" <i>sp.</i>	"
" <i>ovata</i>	"
<i>Quercus lyrata</i>	"
" <i>fenestrata</i>	"
" <i>alba</i>	"
<i>Pergularia africana</i>	Natal.
<i>Dichrostachys nutans</i>	"
<i>Melaleuca hypericifolia</i>	Australia,
<i>Syncarpia laurifolia</i>	"
<i>Vanilla</i> . <i>sp.</i>	Grown in Natal.
<i>Myristica Hookeriana</i>	
<i>Albizzia</i> . <i>sp.</i>	Central Africa.
<i>Baumontia grandiflora</i>	Grown in Natal.
<i>Pinus serotina</i>	N. America.
" <i>pungens</i>	"
" <i>australis</i>	"

<i>Macadamia ternifolia</i>		Australia.
<i>Lodoicea seychellarum</i>	"Coco de mer"	Seychelles
<i>Oncoba spinosa</i>		Zululand.

## FIBRES.

<i>Sisal Hemp.</i>	Grown in Botanic Garden, prepared by Mr. D. W. Watt.	
<i>Fourcroya Hemp</i>	"	"
<i>Banana fibre</i>	"	"
<i>Urera tenax</i>	Returned from England to ascertain name of plant, the fibre was said to be the second best in the Colonial and Indian Exhibition, the best being that of <i>Cannabis sativa</i> , also sent from Natal.	
<i>Phoenix reclinata.</i>	Fibre from roots	Natal.
<i>Sisal Hemp.</i>	"Agave rigida, var sisalana. Prepared in Jamaica	
<i>Sansevieria thrysiiflora</i>		Natal.
<i>Crotalaria juncea</i>	"Jute"	Grown in Botanic Gardens, Durban.
<i>Gomphocarpus physocarpus</i>		Natal.
<i>Hibiscus cannabinus</i>		"
<i>Yucca baccata</i>		"
<i>Sesbania aculeata?</i>		"
<i>Furcraea gigantea</i>	Grown and prepared in Natal.	
Fibre and bark of " <i>Umunga</i> " ( <i>Acacia</i> sp.)		Zululand.
Fibre of <i>Usantolo</i> , known as <i>Usi</i>		"

## MISCELLANEOUS.

<i>Polyporus lucidus</i> ..	...	...	Natal
Rubber from Barberton	...	...	Transvaal
" " St. Lucia	...	...	Natal
Oil from seeds of <i>Aleurites triloba</i> .	Extracted in		Natal
<i>Polyporus dichroos</i> ...	...	...	Natal
Native Emetic Medicine from Zululand	...	...	
<i>Hexagramma polygramma</i>	...	..	Natal
<i>Pelargonium flabellifolium</i> .	Root.	Said to	
be a Remedy for Dysentery	...	...	"
<i>Kalchbrennera Tuckii</i>	...	...	"
"Morolane" Native Remedy for Dysentery			Transvaal
<i>Polystictus conchifer</i>	...	...	N. America
<i>Irpea coriaceous</i> ..	...	...	"
<i>Lentinus Zeyheri</i> ...	...	...	Natal
<i>Trametes hydroides</i> ...	...	...	Florida
Seeds <i>Voandzeia subterranea</i>	...	...	Natal
Root Unknown, Supposed Cure for Dysentery			O.R. Colony
<i>Polystictus pergamens</i>	...	...	N. America
" <i>cinnabarinus</i>	...	...	"
<i>Bersama lucens</i> . Bark.	"Isindiyadiya"		Natal
<i>Arachis hypogaea</i>	"Ground Nut"	Legumes	"

<i>Arachis hypogaea</i>	Seeds
”	American variety
”	with Legumes in situ.
Indigo.	Manufactured in Natal from <i>Indigo-</i>
	<i>fera arrecta</i> , by Dr. Addison

During the past year a number of specimens have been sent for identification by numerous applicants, but as a rule the specimens sent are not complete, and very little care is taken in drying and preparing them. Surely if a person wishes for information about our indigenous plants he should not object to carefully press and dry the specimens, and so save us much unnecessary trouble and vexation. Printed directions for drying specimens will be sent on application.

During the month of June Mr. J. Burt-Davy, the Government Botanist and Agrostologist of the Transvaal, has been working in the Herbarium, and all the assistance in my power was afforded to him.

As stated in my last Annual Report, a large Show-case was obtained for the centre of the Museum room, and is now fairly well filled with specimens, but I regret that so few of them are the produce of Natal, but hope to have contributions from time to time of specimens illustrative of the botany and vegetable resources of the Colony. A few have already been received, and are very acceptable. Amongst those contributing are Mr. Carl Hall of Durban, Mr. A Galloway of Malvern, Mr. T. R. Sim of Maritzburg, and Mr. J. Hawkins of Somkeli. Parcels of specimens, if under the limit of size and weight, will pass free through the post in the Colony, or by rail through South Africa. Printed direction labels will be supplied on application.

At the close of 1903 Miss Lauth left on the eve of her marriage, and her place is now efficiently filled by Miss M. Franks, late junior assistant. In March I obtained the services of Miss Dean, who is now engaged with assistance from Miss Franks, in making the drawings for Vol. IV. of "Natal Plants," while Miss Franks is making those of the grasses for Vol. V. of the same work.

J. MEDLEY WOOD,

DIRECTOR.