DURBAN BOTANIC SOCIETY.

REPORT

ON

NATAL

Botanic Gardens

FOR THE YEAR 1896,

BY

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

Corresponding Member of the Pharmaceutical Society of Great Britain.

CURATOR.

DURBAN:

BENNETT & DAVIS, PRINTERS, 345, WEST STREET.

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COMMITTEE FOR 1896.

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Curator:

J. MEDLEY WOOD, A.L.S.

REPORT.

Botanic Gardens,
Berea, Durban, January, 1897.

To the President and Committee,
Durban Botanic Society.

Gentlemen,—

I have the pleasure to hand you herewith my fifteenth Annual Report on the work of the Botanic Gardens, It is gratifying to be able to state that during the past year, we have been quite free from damage from flood, frost, or drought, and though the locusts paid us several short visits, no material damage was done. The rainfall for the year as supplied by the kindness of the Government Astronomer has been 39·63 inches, being 8·7 inches less than in 1895; the season has nevertheless been a fairly good one, and the plants in the Gardens have made very satisfactory growth. In consequence of the opening of the railway to Johannesburg, the business of the Gardens has been very much increased, and large numbers of plants have been sent away, entailing a considerable amount of extra work, both to the gardeners and myself, and it has only been by the energy and ability of the staff that we have been able to keep pace with the work; as a matter of course the Garden has been somewhat neglected, and I represented to the committee that more assistance was urgently necessary. I therefore with the consent of the committee advertised in the local papers for a gardener, and though I had numerous applications, I was unable to select one from the number that was likely to be quite suitable for the work. I tried three for a short time each, but none of them were what we required, that is skilled propagators. I therefore wrote to the Director of Kew Gardens asking him to select and send out a suitable man for us, which he has very kindly done, and we expect the new man to arrive here early in January. The time of the gardeners has been so much taken up with attending to the large number of visitors that we have had during the year, that very few plants have been put out into the Gardens, though we have a large number in pots and tins, which ought to have been put out

before now. We hope, however, during the early part of the year to get some of them planted, but we are urgently requiring more space, and it will soon be necessary to clear away some more of the native bush, either at the foot of the Gardens, or at the upper portion near the Observatory, but with the present supply of labour, and the great pressure of other work, we have been quite unable to attend to this, however desirable it may be.

We have long felt the need of a propagating house, and I am pleased to be able to say that during the present year that want will be supplied; the walls are already erected and the superstructure, with boiler and piping, is on board the "Clan Lindsay," now daily expected, so that in a few weeks time, we may hope to have the building in working order.

As stated in my last Annual Report a new Conservatory is very much required, the present building is too small for our stock of plants, and is also sadly out of repair; we had hoped during the past year we should have been able to have had it put in thorough repair, and still look forward to having a larger and more commodious building at no very distant date.

I have been frequently asked by visitors whether a "Guide" of any kind was to be obtained, and as the number of visitors has very much increased, and it is quite impossible for a member of the staff to go round with all, I took advantage of a little comparative leisure in the winter to compile a "Guide to the trees and shrubs." Of course the information given is necessarily in a very condensed form, but it is hoped nevertheless that it may be found useful and interesting. It will be accompanied by a lithographed plan of the ground, on which the position of the trees is indicated by numbers, and also includes indices to both popular and scientific names of the trees. When time can be found for the work it is intended to affix to the plants numbers corresponding with those in the "Guide." This pamphlet will be ready it is hoped during the present month, and can then be obtained at the Gardens at about cost price.

The enamelled plant labels alluded to in my last report give general satisfaction, and it was my intention to have obtained a much larger number, so that one specimen at least of every tree in the Gardens should have a label affixed to it, but in consequence of many of them having been maliciously destroyed, presumably by mischievious boys, I hesitated about sending for more, but as I believe they are the best, neatest, and most conspicuous ones we can obtain, I shall have to send for more in the early part of the year, and we shall be compelled to make an example of the first person who may be detected in damaging them, either with slings, sticks, or otherwise.

My annual collecting trip with wagon was almost a failure. I left in company with E. Ryley, Esq., M.L.A., for Van Reenen, where the wagon was to meet us, and travelled to Nelson's Kop, in the Orange Free State, but the day after leaving I had an attack of dengue fever, which quite incapacitated me for work for several days, and left me too weak to do much in the way of collecting, and I returned earlier than I should have done if I had been in my usual health. I however succeeded in getting a few plants for the Gardens, and for exchange, but by no means as many as I had hoped for.

The locusts which have given so much trouble in other parts of the Colony, have, I am glad to be able to say, spared us altogether ; they visited us more than once, and on one occasion stayed for a few days, but except destroying a few annuals, and eating the leaves of some of the palms, they did but very little damage here ; in other parts of the Colony, and even within a short distance of the Gardens, farmers and planters have not been so fortunate. In addition to killing the young insects, several ways of getting rid of these pests has been proposed, such as spreading disease amongst them by scattering about the swarms the spores of the fungus which kills such numbers of them, shooting them with specially made mortars, and poisoning them with arsenic, and this last method is said to have been very successful when carefully carried out.

On February 20th, a Horticultural Show was held in the Town Hall under the auspices of the Society, assisted by a committee of gentlemen interested in this work ; the Gardens sent a large number of plants, not for competition, and the show was a complete success. It was intended that a similar show should be held annually, but we found that the staff were so overworked that it would have been almost impossible to have given the same time and attention to it at the close of the year, when it was proposed to hold it, as we had done at the commencement of the year. If, however, a separate committee had been formed to carry it out, the Society and the staff at the Gardens would have done what they could to make it a success, and would no doubt be prepared to do so at any future time, if arrangements are made to hold a similar show.

The following publications have been received —

Name.	From.
Kew Bulletin	Director.
Report Royal Botanic Gardens Jamaica ...	,,
,, ,, Trinadad...	,,
,, ,, Ceylon ...	,,
,, ,, Hong-Kong	,,
,, Botanic Gardens, Bangalore ...	,,
,, ,, Saharunpur ...	,,

Name	From.
Report Agricultural Experiment Station of Minnesota	Director.
,, Agricultural Experiment Station of Mississippi	,,
,, Secretary of Agriculture, United States of America	U.S. Government.
,, Secretary of Agriculture, Nova Scotia	Secretary.
,, Museum of Pharmaceutical Society	President.
,, Pomologist, U. States of America ...	U.S. Government.
,, of Chemical Investigations, by E. Merck	Author.
,, Albany Museum, Cape Colony ...	Curator.
,, Botanic Garden and Museum, Berlin	Director.
Bulletins of Botanic Gardens, Jamaica ...	,,
,, ,, Grenada ...	,,
Experiment Station Records U. States of America...	U.S Government.
Chemical Composition of American Food Materials	,,
Canadian Field Peas, by T. Shaw	,,
Forage conditions of the Prairie regions, by J. G. Smith	,,
Oil Producing Seeds, by G. H. Hicks ...	,,
Purity and value of Agricultural Seeds ...	,,
Testing Seeds at Home	,,
List of publications of the Smithsonian Institute	,,
American Blight on Apple Trees	Kew.
Mayflower	Editor.

And the following have been purchased :—Tropical Agriculturist; Farmers' Magazine.

Seeds were received during the year as under :—

	Packets.
Royal Gardens, Kew	35
,, Jamaica	1
,, Trinidad	1
Botanic Gardens, Hong-Kong	18
,, Bangalore	2
,, Saharunpur	42
,, Grenada	3
,, Najpur	3
,, Madras	49
,, New South Wales	1
,, Paris	1
Experiment Station, Kamerunga, Australia ...	2

	Packages.
United States Government	144
L. Cockayne	14
Dr. Schonland, Grahamstown	1
Baron F. v. Mueller, Melbourne	26
W. Buysman, Middleburg	4
Messrs. Reasoner Bros., Florida	16
J. Butt Davy, California	23
Max Leichtlin, Baden Baden	5
Dr. Franceschi, California	15
J. C. Harvey	18
General Lowther, England	3
Messrs. Sander & Co.	1
Messrs. Christy & Co.	1
Mr. A. Buring. Central Africa	1
Major Giles, Richmond	5
Mr. G. H. Wilkinson, Maritzburg	1
Mr. W. Groom, Inanda	1
Mr. R. Jameson, Durban	31
Mr. W. Nicholson, Richmond	1
Mr. M. S. Evans, Durban	1
Mr. W. Bazley, Umzinto	1
Mr. W. J. Dickens, Noodsberg	1
Mr. A. Wagner, Leipsic	7
Mr. F. Button, Durban	1
Mr. Jas. Wilson, East Africa	1
Mr. G. F. Hall, Lidgetton	1
Mrs. Schultz, Durban	1
Dr. Thompson, Gazaland	5
Messrs. Damman & Co., Naples	90
Messrs. Schaff, Shorting & Co.	5
	583

And the following plants were received :—

Messrs. Schaff & Shorting—Bulbs of *Calochortus*, 3 species.

Mr. J. C. Harwey—Bulbs of *Hesperocallis undulatus.*

Messrs. Sander & Co.—

3 *Amaryllis aulica.*	100 *Gloxinias.*
6 *Crinum sp.*	2 *Arum discorides.*
2 *Begonia socotrana.*	2 „ *aristatum.*
3 *Griffinia hyacinthina.*	2 „ *palestrinum.*

Hugh Dixon, Esq., New South Wales—

1 *Dendrobium gracicaule.*	1 *Dendrobium bigibbum.*
1 „ *Kingianum.*	1 „ *macrophyllum*
1 „ *caniculatum.*	1 *Cymbidium albuciflorum,*
1 „ *teretifolium.*	1 *Eria Fitzalleni.*
1 „ *undulatum*	1 *Phaius grandifolius* (dead)
1 „ „ *Johannis.*	

Agri-Horticultural Society of India, Madras—

3 *Dendrobium nobile.*
3 ,, *formosum.*
2 ,, *Farmeri.*
2 ,, *fimbriatum.*
12 *Vanda Roxburghii.*
1 *Denarobium moschatum.*
1 ,, *suavissimum.*
6 ,, *densiflorum.*
1 *Aerides odoratum.*
12 *Vanda teres* (dead)

Mr. Albert Wagner—

100 *Cocos Weddelliana.*
2 ,, *campestris.*
2 *Geonoma gracillis.*
2 *Phœnix canariensis.*
2 *Rhapis aspera.*
2 ,, *humilis.*
5 *Kentia Forsteriana.*
200 *Azaleas* (assorted).
5 *Kentia Mooreana.*
1 *Sabal Adansonii.*
3 *Livistona rotundifolia.*
1 ,, *altissima.*
2 ,, *Hoogendorffii.*
2 *Chamaerops excelsa.*
2 *Areca sapida.*
200 *Cycas revoluta.*
250 *Camellias* (assorted).

Mr. Jas. Wilson—20 Mangos varieties.

Botanic Gardens. Mauritius, *per* Mr. Bijoux—

40 *Orchids* 5 (dead).
4 *Hymenophyllum* (diverse).
9 *Manihot* (cuttings).
1 *Alpinia.*
2 *Maranta zebrina.*
2 *Pandanus.*
2 *Hedychium.*
12 *Gloxinia.*

During the year 1895 we received 307 plants and 800 packets of seeds, with the following results:—

PLANTS.

Dead on arrival	19
Died afterwards from effects of voyage	50
Planted in Gardens	83
Still in Pots	138
Already in stock	17
	307

SEEDS.

Failed to germinate...	214
Germinated, but died afterwards	70
Distributed	82
Already in stock	200
Still in pots or planted in Gardens	190
Annuals and weeds	37
	800

Packages of plants were sent away for exchange during the year as under :—

Royal Gardens, Kew	...	1 box containing	14	plants
„ Mauritius	...	4 cases „	113	„
E. M. Holmes, London	...	1 box „	5	„
J. Moir, Central Africa	...	1 case „	40	„
J. Wilson, East Africa	...	1 „ „	24	„
Dr. Thompson, Gazaland	...	1 „ „	12	„
A. Wagner, Leipsic ...	...	6 „ „	244	„
Sander & Co., St. Alban's	...	2 „ „	460	„
„ „	...	1 „ „		seeds
Botanic Gardens, Manchester		1 „ „		plants

Packets of seeds were sent away as under :—

	Packets.
Botanic Gardens, Mauritius	14
„ Bangalore	25
„ Maritzburg	22
„ St. Petersburg	25
Scharff & Shorting, California	25
Reasoner Bros., Florida	26
Jackson & Perkins	25
J. C. Harvey, California...	26
C. Gross	25
S. Tomayana, Japan	25
Damman & Co., Naples	2
To 30 correspondents in the Colony	370
	370

And to 27 applicants in the Colony, 81 lots of Sweet Potato cuttings, in 3 varieties.

The following free grants of plants have been made during the year : —

Government Asylum, Maritzburg ...	£10	12	1
Ladies College, Durban	1	5	6
Durban Corporation	3	5	0
Baptist Chapel, Durban	2	1	6
	£17	4	1

The following plants have flowered for the first time in the Gardens during the year :—

	Received From
Acacia spectabilis	Damman & Co.
Agati grandiflora coccinea ...	„
Alchornea ilicifolia	Kew
Aloysia lycioides...	Damman & Co.
„ *urticoides*	„

Amoora Rohituka	Saharunpur
Aristolochia elegans	Mr. Labistour
,, *gigas Sturtevantii*...	Port Elizabeth
,, *ridicula*	Mr. Labistour
Cannas (56 varieties)	Damman & Co.
Cienkowskia Kirkii	Sander & Co.
Clerodendron siphonanthus ...	Madras
Clusia alba	Mauritius
Cobaea macrostemma	Max Leichtlin
Costus igneus	Sander & Co.
Crescentia cujete...	Saharunpur
Cypripedium Chamberlaynii ...	Sander & Co.
Dendrobium Farmeri	H. Strauss
Ehretia serrata	Sahrunpur
Erythrina crista-galli	Damman & Co.
Ivora picturata	Agri-Horticultural Society of India
,, *venusta*	,, ,,
Jacquinia aurantiaca	Reasoner Bros.
Lettsomia sp.	Damman & Co.
Lycium chinense	,,
Melia azederach (continuous flowering)	J. C. Harvey, California.
Passiflora mannicata	
Physalis glabra	Acclimatisation Society of California
Physostegia virginica alba ...	Damman & Co.
Roupelia grata	Agri-Horticultural Society of India
Stevia odorata	Damman & Co.
Thunbergia grandiflora alba ...	Kew
Turnera elegans	Damman & Co.

Amongst the plants enumerated in my last report as having been put out in the Gardens, the following have since died, or been found to be mere weeds, for which we have not sufficient room in the Gardens :—

Delphinium cardinale	*Pueraria Thunbergii*
,, *puniceus*	*Rumex Barlandieri*
Genista tinctoria	*Sisynchrium bellum*
Hypericum assyrion ?	*Trifolium rossidum*
,, *tetrapteron*	*Vicia grandiflora*
Isatis tinctoria	,, *serratifolia*

Poterium sp.

"Sweet Potatos."—The 3 varieties imported from Florida have done very well indeed with us, and a large number of the bines have been distributed to applicants. The tubers are not so good a colour as those commonly grown here, but have a

different flavour, and are at any rate a change from those that we have been accustomed to for so long. One of the varieties yields a very large amount of bines, and will no doubt be found useful as a forage plant, as well as for its tubers, as cuttings of the bines may be freely taken without apparently diminishing the yield of tubers. Another variety produces but a small quantity of bines, which reach only a very short distance from the root, but the produce of all of them is very similar, and which of them may be most profitably grown may be a matter for experiment.

Atriplex spp.—Seeds of several species of this genus have been repeatedly received from Australia, chiefly from the late Baron F. v. Mueller; they have been tried here, plants have been raised and put out in the Gardens but have invariably dwindled away, and eventually died off; numbers of packets of seed have been given away to applicants, but I have not heard of a single case in which any of the plants have been successfully reared, and think it most likely that they will not succeed in Natal, except it may be in an alkaline soil, of which we do not appear to have much in the Colony. I have, however, received from the United States Government, seeds of another species of this genus, *Atriplex canescens*, of which Mr. F. Lamson Scribner, the States Agrostologist, says:—"I send you by mail to-day a small sample of seed of one of our native forage plants, *Atriplex canescens*, James, locally known as "Shad Scale," "White Sage," or "Sweet Sage," It was formerly one of the chief reliances of the cattle men on the arid plains from Western Texas to Arizona, but has now become almost extinct, occurring only on steep cliffs and in protected situations where cattle and sheep cannot reach it." This plant will have a fair trial here and will be noticed in a future report.

Desmodium tortuosum, "Florida Beggar Weed."—In September I received from the same gentleman a packet of seed of this plant about which he says that it is "A wild forage plant highly esteemed in the subtropical portion of the United States. It produces a fodder of fine quality in large quantities, and grows best on sandy soils containing lime. On cultivated lands it grows often 8 to 10 feet high. The haulms, though woody, are eaten by cattle and working stock of all kinds. Beggar Weed makes an excellent green manure. In Florida it is extensively used as a renewer of worn lands. It promises to be a plant of much agricultural value in the warmer countries." This seed was sown at once on receipt, and the plants are now from 12 to 15 inches high, and growing vigorously, seed will most likely be obtained from it for distribution, and I quite expect to be again told that "cattle will not eat it," but farmers must surely understand that cattle require a little management

before they will take to a plant so different from their ordinary food plants as these are, but a little care and trouble will soon overcome the difficulty, as I know from personal experience.

Rheea or China Grass.—(*Boehmeria nivea*).—So many enquiries have been made during the last few months about this plant that I venture to take over from the "Tropical Agriculturist" for November last, the following article, which contains information for which I have been frequently asked. I would at the same time strongly recommend those who are inclined to cultivate the Rheea, to first make sure that our native species, *Urera tenax*, called by the natives *um-Bogozembe*, will not be a more profitable plant to cultivate than the Rheea :—

SOME PARTICULARS REGARDING RHEEA CULTIVATION.

(Being extracts from a report to the Government of India by James Montgomery, Esq., Kangra).

PROPAGATION.

(1) By seed.—This course must be adopted in some cases, when the germ of the plants has to be carried over great distances; but probably much disappointment will attend the result. To obtain the seed great care is requisite, and a favourable atmospheric season. For this purpose young spring shoots should be carefully reserved in a well sheltered position. These plants should receive special care and be well manured. During the rainy season they must be kept thoroughly drained, and after that has passed, the ground should be carefully loosened round the plants. If the rains come early in October, a fair amount of seed may be obtained; but, as far as I can judge, no amount of care can ensure success, so much depending on the season, a dry one being most favourable for the full development of the seed. The only method of sowing which I found successful, was on a gentle hot-bed under glass, in March and April; the seed scattered over the surface. covered very thinly with sifted earth, and carefully shaded from the sun, until the plants were about three inches high, when sunlight may gradually be admitted. When sufficiently strong they should be planted out a foot apart every way.

(2) By cuttings of the stems.—The stems should be spring grown ones, allowed to ripen well and not cut until duly ripe. Then divide the ripened portion of the stem where the cuticle has turned fully brown into short lengths, each including three eyes or buds, cut a quarter of an inch below the the bottom bud and as much above the top one, and plant with the centre bud level with the surface If the weather be damp and cloudy, they will readily strike root, otherwise they will require shading for a week or ten days, the soil being kept moist. As

with seedlings, I find a foot apart every way the most advantageous distance, as very few shoots are thrown up the first year.

(3) By divisions of the roots.—This is by far the most advantageous and profitable method. The plants for this purpose should be three or four years old. After gathering the spring crop, dig out each plant carefully, and remove the earth from the roots. I generally put the mass of roots into running water for a short time; this cleanses them thoroughly and enables the gardener to see his work clearly. The tuberous portions of the roots will be found to show a large number of eyes similar to those on a potato. From these carefully separate portions, each containing five or six eyes; let the cuts be clean and reject all fibrous and decayed matter. Expose these sets to the sun for a couple of hours to dry the surface of the wounds, and then plant six inches deep, and at the full distance of four feet apart every way. In this way two good crops will be obtained from them the first year.

THE SOIL AND SITUATION FOR PLANTATIONS.

A rich loam suits the plants best, but they will grow in any kind of soil, provided that a full supply of moisture be available, combined with thorough drainage. The latter is emergently (*sic*) required, particularly during the rainy season, as should the land be retentive, and become swampy. the plants will decay in a very short period.

If the land be poor, a liberal supply of manure is requisite, otherwise the stems will be short and weak, yielding scarcely any fibre. In no part of upper India can the plant be successfully cultivated unless water for irrigation be available during the dry season. The facilities for obtaining an ample supply of water, combined with the moderate temperature at all seasons, renders this district particularly favourable to the plant.

CULTIVATION.

Should the land have been stocked with seedlings or cuttings, then in the following spring, after having reaped the first crop of available shoots, every other plant should be transferred to fresh ground, and put down at two feet apart. The following year the same course should be pursued, taking up each alternate root and replanting at four feet apart. After this the plants may well remain undisturbed for four years, hoeing well between after each crop, clearing away weeds, irrigating moderately during the dry season, and supplying manure where neceesary. The only manure I had at command has been vegetable, consisting mainly of the leaves and wood portion of the plant itself, and of tree and vegetable leaves stored up for the

purpose, with which I mix a considerable amount of wood ashes. With the aid of this only, I have kept plants growing in the same spot for upwards of six years; but consequent on the then very crowded state of the ground, the stems were short and very weak. I would therefore recommend a thorough removal after four years, the land to be then well ploughed, cleaned and manured.

GATHERING THE CROP.

The period of reaping will vary slightly according to difference of season. I find that in this district three good crops can be relied on each year—the first during the latter end of April, the second about the commencement of August, and the third about the end of November; the weather here during the remainder of that month is not sufficiently cold to keep back the new growth, und should the young shoots appear above ground early in January, the forests (*sic*) which are usual at that period seriously injure them and lessen the spring crop. My own experience indicates that the stems should be gathered as soon as the cuticle shows a clear brown colour for about one third of the length. At this stage, if the soil be good and the plant healthy, the stems will be clean from butt to point, the leaves of a rich dark green above, and pearly white below, and the branch buds, at the axle of each leaf-stalk just showing. If gathered earlier than this, I find the connection of the fibres very weak, and that a considerable portion separates in the operation of scraping the peel. If allowed a further growth, the axillary branches will have been thrown out, which will cause breakages at every point both in peeling and cleaning.

The average height of stems grown here has been six feet, after cutting off the soft portion at the top. In gathering I supply each coolie with a sharp pruning knife. With this they cut the ripe stems close to the butt; these are removed in bundles by boys to the nearest manure pit. Here the boys cut nine inches off the top and pass one hand with a gentle pressure from top to butt; this removes all the leaves. The stems are then placed in clean water, from whence the peelers remove them and separate the peel, which is again thrown into water, from which it is withdrawn as wanted by the men who clean it. These lay three or four strips of peel on a flat board, scrape it a few times on the inner side from butt to point, then turn it over and repeat the scraping, which removes the cuticle: it is then hung up, or thrown on clean grass to dry.

Taking the distance of four feet apart for fully bearing plants, an acre will contain (allowing for paths and water channels) 3,000 plants; more than this I find to be too crowded and to increase labour, while lessening the actual yield during

a four years period. Thus planted the yield will be a steadily increasing one, and the plants will not show any deterioration.

From repeated experimental washings, I have deduced the following average proceeds from 1,000 freshly cut 6 feet stems

Weight	Lbs.	Per Cent.
As cut	286	
When dried	77·5	= 27
Fresh peel	83	= 29
Dry peel	21·5	= 7·5
Fresh wood	203	= 71
Dry wood	56	= 19·5
Clean dry fibre	18·7	= 6.5
Water	208·5	= 73

If larger stems, from 7 to 8 feet, be taken, the average is less in the weight of peel, but in the outturn of clean fibre it is slightly greater. With small stems, from 3 to 4 feet, the percentage of peel is markedly greater, but the return of fibre is barely 35 per cent. Moreover the extra labour in cutting, peeling, and cleaning these small stems is an important consideration.

The crop cut during the rainy season will always contain a large percentage of water, and that of clean fibre be formed rather less, the fibre being also softer than at other periods of cutting. This I consider due to the fact that at this period the resinous matter in the plant is in a more diluted state, and consequently a greater portion of it is removed during the process of washing and scraping the peel

I have already expressd my opinion against the use of either immature or small stems as likely to give a result inferior both in quality and quantity. Yet I am fully satisfied as to the advisability of not only sorting the crop, as cut, according to length of stem when necessary, but I would further recommend that the peel from all stems of five feet and upwards should be divided into two, and the fibre from the upper and lower portions kept distinct. If cultivated as I suggest, the difference in length of the stems at each cutting will be found very small, the monsoon crop always giving the longest stems.

* * * * * * * * * * *

In earlier estimates, calculating on closely planted crops, and stems four to five feet, I was cautious to restrict my estimate to 750lbs. per acre, but five years additional experience has shown me that with proper open cultivation 1,000lbs. per acre may be fully assured.

Manihot utilissima—"Cassava."—In my Report for 1892, page 13, I alluded to this plant, and gave an extract from the

"Florida Despatch" showing the value placed upon it there as a food for domestic animals and human beings, but no one in Natal cares to give it a trial. When Mr. Bijoux, Curator of the Botanic Gardens, Curepipe, Mauritius, visited Natal, amongst other things that he brought for us were cuttings of nine different varieties of this plant, all of which are growing well, some of these varieties yield a large and coarse root, and are used for feeding cattle and horses, others are used by the labourers on the estates, while the finer varieties give a smaller crop, but the roots are of a superior quality, and are extensively ueed by the planters, and I add here a description of the manner of using them which I obtained from Mr. Bijoux, who tells me that the plant is largely grown on nearly every Sugar Estate in Mauritius.

NOTES ON THE CULTIVATION OF "MANIOC" ("MANIHOT UTILISSIMA.")

This plant is largely grown at Mauritius, first for food, and secondly for starch. It succeeds well in all kinds of soil, but prefers a light sandy one. There is in Mauritius no particular season for planting the cuttings, but they are planted all the year round. When the plant reaches maturity the leaves turn yellow and fall off, and this is the time to dig it. In no case should the roots be dug for use if they have begun to grow, because the starch has lost its properties and the roots become watery. To uproot the plant, the stems are seized and gently shaken, pulling them upwards until all the roots are out. The roots are then cut off and the stems put in a shady place to be replanted in about a month's time. If immediately required to extract the starch, or to eat the roots, they should be peeled, the whole of the skin being removed. In no case should the root be used without the skin being removed. To extract the starch the cleaned roots are reduced on a rasp to a pulp, and then allowed to drop into a large bath or pail, three-quarters filled with water. The pulp is then pressed through a strong linen cloth, with the addition of water, until all the starch has passed through the cloth. The water with the starch is then allowed to settle until all the starch has been deposited, and the water becomes clear, which will be in about 24 hours, the water is then gently poured off, and the starch is found at the bottom of the vessel. It is then collected and laid upon clean linen, or plank, till dry, when the starch is ready for market, and 4 pounds of roots will yield about $1\frac{1}{2}$ pounds of starch. When required to be made into biscuits, the pulp is simply collected and pressed in a bag, and no water is put with it. After 12 hours under the press, the pulp is removed from the bag and placed in a basket in which clean linen has been

laid. A sheet of iron about a foot square and ¼ inch thick is heated to a good heat, it is then well cleaned with a brush, and the pulp is spread upon it. After four or five minutes the cake is turned and when sufficiently cooked is finally removed. In Mauritius this is called "Manioc Gallette," and is eaten by children in the morning with milk or coffee. The cake is made as follows:—The pulp is prepared as for the "Galette" and mixed with a little sugar and butter to taste, placed in moulds of three inches square, and one inch thick, and then baked till brown in an oven. There is a factory at Mahebourg, expressly to make Manioc biscuits, and to extract the starch, and I can say that it is in a very prosperous condition; there is a very large demand for its biscuits. Every sugar estate cultivates large quantities of Manioc for its oxen; the variety cultivated for this purpose is a very large one, the roots weighing sometimes as much as 12 to 15lbs. The horses and ponies are also fed with it on many estates.

Zeea Mays.—I received from Mr. Thos. Christy, of London, five seeds of a mealie which is said to reach over 12 feet in height, and to bear cobs 22 inches in length. These seeds were planted on the 22nd of November, and at the close of the year were 6 feet in height, and looking exceedingly well; every care will be taken of them, and if found to be really an acquisition, seeds will be distributed to applicants when ready.

Wildringtonia Whytei.—This is the large "Cedar" from Nyassaland, of which we obtained a few seeds some years ago, and subsequently on Mr. Whyte's visit to Natal he kindly gave us a larger quantity. A number of plants have been reared and sent to different parts of the Colony for trial, and in the midlands at any rate, some of the plants have done very well, but with us, though they grow very well in pots or tins, are taken by white ants soon after being put out, and we have lost in this way every one that has been planted. In this connection I give below a recipe for protecting trees from these pests. We have not tried it yet, as I am at a loss to know what to substitute for the "dekamali" gum, an ingredient about which I have at present no information whatever.

PAINT USED AGAINST WHITE ANTS.

During a brief visit to the Native State of Gondal, the writer gave this subject considerable attention. There seemed to be no doubt that His Higness the Thakore Sahib, by his enlightened action in this matter, had effected a radical improvement. The trees throughout his State were all painted as described, and not a single tree could be found showing the mud encase-

ments so characteristic of the presence of white ants. And very possibly, as a consequence of the care bestowed on these trees, they were healthy and vigorous while those in neighbouring States were sickly and badly attacked by white ants. In consequence of these observations the writer asked for information as to the composition of the paint which had been used. He was informed that the red colour was merely to indicate the fact that the trees had been painted, and that it was for the most part red ochre. The useful ingredients were said to be as follows :—

1 part dekamali gum (the resin of *Gardenia gummifera*).
2 parts asafœtida.
2 parts bazar aloes.
2 parts castor oil cake.

These are well pounded, mixed, and kept in water for about a fortnight. When thoroughly united, and what may be called decomposed into a thickened compound, water is added in order to bring it to the consistency of paint, and the colouring matter is then added. The mixture is now ready for use, and if thoroughly applied for about two feet will check not only the attacks of white ants, but of red ants and other insect pests. Its effect will last for two years or more. The cost of the preparation comes to about 4 to 5 rupees per 100 trees. But according to the information furnished from Gondal, "al" refuse possesses no special properties ; from other parts of India the reputation is very general that it is of great value; the red ochre added to the above preparation may not only be useful as indicating the trees that have been painted but give a useful consistency, if it does not serve to mechanically hold the other ingredients.

The paint was prepared according to the directions given by the "Economic Reporter" to Government, and applied to a number of mango, shisham, and siris trees on the Sirsawa road that were badly attacked by white ants. Before applying the paint the coating of earthy matter deposited upon the trunks of the trees by the ants was removed, and in all instances where the earthy deposit was entirely removed, the paint has, so far, had the effect of preventing further attacks by the ants upon the trees. In a few cases the men employed upon the work of painting, overlooked strips of earthy deposit lying in hollow channels on several of the trunks of trees operated upon. The strips of earthy deposit overlooked were painted over together with the cleaned portion of the trunk, but the ants took no notice of the paint when applied to the outside of their earthy runs, and therefore made use of the strips that were left as passages to communicate with the upper portion of the

trunk, where they continued their attacks as before the application of the paint. The experiment has therefore proved that the paint is an effective against the attacks of white ants if applied directly to the bark of attacked trees, but that it is of little use if applied without first entirely removing all earthy ant deposit from the trees.

The trees experimented on were 29 full grown specimens averaging from $2\frac{1}{2}$ to $3\frac{1}{2}$ feet in diameter. Ingredients for paint to the value of Rs. 13-3-0 were purchased, but as the full quantity was not used, the actual cost of painting the 29 trees operated on was Rs. 7, or at the rate of 3 annas 10 pice per tree nearly. I therefore consider the paint too expensive for extended use on large sized trees, but its cost would not be prohibitive for use on young trees or saplings. In districts where it is found exceedingly difficult to establish the commonest and hardiest of roadside trees, owing to the presence of white ants, the paint, would, I feel sure be most useful.

The following list of weeds of cultivation commonly found in the colony may be of some use, and can be continued in future reports, especially if farmers would be good enough to supply me with recognisable specimens of weeds which may appear on their ground, together with any information they may possess about them, so that at some future time a fuller list with more complete information may be published.

WEEDS OF THE FARM AND FIELD.

Acalypha Ecklonii. (Baill). Natural order, *Euphorbiaceae.*—A small plant abounding in some places in the midlands, but not specially troublesome. Called by the natives *i-Boza.*

Aizoon canariense. (Linn). Natural order, *Ficoideae.*—A prostrate herbaceous plant found all over South Africa, especially in cultivated ground. The ashes are said to abound in soda.

Argemone mexicana. (Linn). Natural order, *Papaveraceae.*—Originally a native of Mexico, but now widely distributed in waste places in most tropical, and sub-tropical countries. The seed possess acrid narcotic, and purgative properties, and have been used medicinally. In Natal this plant seems to be almost confined to the coast districts

Achyranthes aspera. (Linn). Natural order, *Amarantaceae.*—An upright herbaceous plant, found chiefly in the coast districts, but reaching also some distance inland; its barbed seed vessels, which adhere to passing animals, would cause it to be a great nuisance in the sheep-rearing counties.

Amarantus paniculatus. (Linn) Natural order, *Amarantaceae.*
,, *spinosus* ,, ,, ,,
,, *Thunbergii.* (Moq.) ,, ,,

These three plants are all called by the natives *im-Buya*, and are well known to all farmers ; they spread themselves with great rapidity from seed, which they produce at a very early age. *A. spinosus* was probably introduced into Natal with forage, about the time of the Zulu War, and is particularly troublesome, on account of the thorns with which it is furnished. *A. Thunbergii* has been used by both colonists and natives as a sort of spinach, and is probably still so used.

Aneleima Dregeana. (C.B.C.) Natural order, *Commelinaceae.*
,, *equinoctiale.* (Kth.) ,, ,,

Troublesome weeds in the coast districts, the former bearing pink, the latter yellow flowers. Like all plants of the order found in Natal, they are very difficult to eradicate, as they will continue to grow even when pulled up by the roots, and left in heaps on the ground.

Bidens pilosa. (Linn). Natural order, *Compositae.*
,, *bipinnata.* (Linn). ,, ,,

The first named plant is the well known "Black Jack" or "Vegetable Tick," the second one is probably an introduction from N. America, where it is indigenous. So far it has only been found near the Inanda Mission Station. The flower-heads of *B. pilosa* have been used in the colony as a remedy for diarrhœa, and it is said with good effect.

Ceratotheca triloba. (E.M.) Natural order, Pedalineae.—A weed in waste ground, bearing pretty foxglove like flowers, and having a rather unpleasant scent. It is not particularly troublesome.

Chenopodium ambrosiodes. (Linn). Natural Order, *Chenopodiacae.*
,, *Botrys* ,, ,, ,,
,, *murale* ,, ,, ,,

The first and last mentioned are found in the coast districts, up to at least 2,000 feet above sea level, the second named one, appears to be confined to midland and upper districts, and is commonly found in old mealie fields. All three are introduced plants, and the first named is used by the natives as a kind of spinach

Coleotrype natalense. (C.B.C.) Natural order, *Commelinaceae.*
Comelina (several species) ,, ,,

Coleotrype natalense is quite confined to the coast and midland districts, but several species of *Commelina* are found from the coast to the top of the Drakensberg, and in the coast districts at least are very troublesome on account of the great difficulty

experienced in eradicating them, as they will grow vigorously even if pulled up by the roots and turned completely over on the ground. They are often called "Pigweeds," but it is unsafe to feed pigs, especially young ones, on their leaves and stems, as is often done, as they appear to have some deleterious properties, though the underground stems of some of the species yield starch, and are said to be used as food.

Cuscuta africana. (Willd). Natural order, *Convolvulaceae.*—This is a plant belonging to the same genus as the well known "Dodder," and is probably quite as destructive to the plants upon which it affixes itself; it should therefore be carefully destroyed whenever found in the vicinity of cultivated lands. Another species, *C. cassythioides,* which is parasitical on trees, is known to the natives as "Makumkumka."

Cyathula cylindrica. (Moq.) Natural order, *Amarantaceae.*—
,, *globulifera* ,, ,, ,,
,, *lappacea* ,, ,, ,,

These plants bear their flowers clustered together in cylindrical spikes, or in globose heads, and are extremely annoying to passing travellers from their habit of clinging persistently to the clothing, by the hooked bristles with which the seed vessels are furnished, and for this reason should not be permitted to grow on sheep farms. The two first named are found from the coast to about 3,000 feet above the sea, the latter one in the upland districts only. The second on the list is known to the natives as "Sinana" and is used by them medicinally.

Cynoglossum enerve. (Turcz). Natural order, *Borragineae.*
,, *micranthum.* (Desf). ,, ,,

Weeds found on hillsides and moist places throughout the colony, and whose seed vessels are more or less thickly covered with hooked bristles, and therefore very undesirable occupants of sheep farms. Specimens of wool have been sent to me in which were found numbers of the seed vessels of one of these plants.

Cyperus retusus. (Nees). Natural order, *Cyperaceae.*—A pestilent weed, found in cultivated ground in most parts of the Colony, but especially I think in the coast districts. This plant belongs to the family which are commonly called "Sedges." The base of the stem is bulbous, and not unpleasantly scented. It propagates itself with great rapidity from long thin roots or stolons which proceed from the main stem, and its rate of growth in the summer season is astonishing. To rid the ground of this pest it is necessary to pull it up by the roots and carry it away, simply hoeing or cutting it off above the ground is of no use, as in a few days' time it will be as

vigorous as ever. It is I believe more properly called *C. esculentus*, and the small tubers have been used as a substitute for coffee, and as food in the south of Europe.

Datura Stramonium. (Linn). Natural order *Solanaceae.*—An introduced weed now found at all altitudes in the colony, but perhaps most plentifully near the coast. Simply considered as a weed it is not very formidable, but it contains an alkaloid called "daturin," and all parts of the plant are more or less poisonous. It has been used medicinally in neuralgia, epilepsy, and asthma.

Echinospermum capense. (D.C.) Natural order, *Boragineae.*—A plant closely related to the *Cynoylossums*, and likely also to prove a pest on sheep farms; the chief difference between the two genera appears to be that while the seed vessels of *Cynoglossums* are covered all over with the hooked bristles, those of *Echinospermum* have them at the margin only, but in either case the purpose of distributing the seeds is equally well accomplished. The seed vessels in both genera consist of four little nuts, which are affixed to a central column, from which at maturity they are easily detached, The flowers of the above named species are either blue or white, and are produced in great abundance.

Eclipta erecta. (Linn). Natural order, *Compositae.*—A common tropical weed, found in waste places, and ill-kept ground all over the coast districts, but not extending far up country. The flowers are yellow, and the plant is not specially troublesome.

Erigeron canadense. (Linn). Natural order, *Compositae.*—A weed belonging to the same order as the last-named one and found in waste and cultivated lands all over the colony. Except for the great profusion in which it occurrs, it is scarcely worth naming here, as it is very easily got rid of. The name signifies "soon becoming old," and is very appropriate, as the plant flowers very early, and has a worn out appearance. It is a common weed in all tropical countries.

Euphorbia sanguinea. (E.M.) Natural order, *Euphorbiaceae.*—A common weed all over the colony, found usually on walks, in damp places, or in slight shade. It is a native of Tropical and South Africa, but the natives do not appear to have any distinctive name for it. The flowers are an interesting object for microscopical examination.

Euphorbia pilulifera. (Linn). Natural order, *Euphorbiaceae.*—A tropical weed found on the coast lands only, and probably introduced. It is not in great abundance, and is only enumerated here, as it is used medicinally both in Natal and at Home, and the dried leaves are an article of commerce.

Gnaphalium luteo-album. (Linn). Natural order *Compositae.*
„ *purpureum* „ „ „
„ *undulatum* „ „ „
Weeds appearing sometimes in great profusion, the foliage being covered with woolly down, the first named is also a native of Great Britain, and prefers moist ground: like the Erigeron, and belonging to the same order, they are only formidable on account of their great numbers, and the rapidity with which they spread themselves.

Gomphocarpus physocarpus. (E.M.) Natural order, *Asclepiadaceae.*
„ *fruticosus* „ „ „
The first named is a coast plant, the second is only found in the up-country districts, especially in the vicinity of Ladysmith. They are easily got rid of, and only alluded to here, as both species may eventually become of economic value, for the fibre contained in their stems, and the cottony substance which is attached to their seeds, which has been used for stuffing cushions, etc., etc.

Gomphrena globosa. (Linn.) Natural order, *Amarantaceae.* —A pestilent weed, common in tropical, and sub-tropical countries, and in Natal almost or quite confined to the coast districts, it flourishes well amongst grass, and is a great nuisance when present in quantity on grass lawns.

Hedyotis Heynei. (R. Br.) Natural order, *Rubiaceae.*—A low growing, much branched plant found chiefly in the midland districts. I should scarcely have thought of alluding to it here, but for the fact that on a recent journey through the Noodsberg district, I found it in great abundance in some Kafir gardens where it occupied almost the whole surface of the ground, and recognised that it might become a most annoying weed, it is a native of Natal only, the flowers are small and white, the leaves linear, and few, and the branches numerous.

Hydrocotyle asiatica. (Linn.) Natural order, *Umbellifereae.* —A prostrate plant with reniform, or cordate leaves, usually found in moist places all over the colony, it is easily eradicated, and though it belongs to an order containing many poisonous plants it is itself quite harmless.

Lactuca capensis. (Thb.) Natural order, *Compositeae.*—A well known plant, common all over the colony. It is closely related to the garden lettuce, but in outward appearance very different, for the lettuce has become so altered by long ages of cultivation that it is not quite certain from which species it originally sprung. *Lactuca capensis* very probably possesses narcotic properties which are most abundant when in flower, or in seed.

Lantana spp. Natural order, *Verbenaceae.*—These plants, which are so common on the coast lands, were probably introduced in the earlier days of the colony, and are now quite acclimatised. In some parts of India, and Ceylon, they grow with great luxuriance, and quite take possession of waste and uncultivated lands. By some they are thought to be a great nuisance, while others think that they are rather of benefit to the land than otherwise, by keeping down other, and more troublesome weeds, and improving land which has become impoverished. In Natal they have been attacked by a parasitic or suctorial insect, which in a very short time destroys them wholesale.

Leucas martinicensis. (R.Br.) Natural order, *Labiatae.*—A common tropical weed, not worth further notice at present.

Milla borbonica. (Baker.) Natural order, *Liliaceae.*—A bulb bearing weed with white flowers, formerly known as *Allium fragrans.* It is a native of Mauritius and Bourbon, from which place it has no doubt been imported into Natal. It is found in great profusion in cultivated lands, spreads with great rapidity, and in Mauritius is said to be very troublesome.

Nicandra physaloides. (Gaertn.) Natural order, *Solanaceae.*—A half shrubby plant bearing large and pretty bell shaped flowers, with its fruit enclosed in the enlarged bladder-like calyx, in the same manner as the Cape Goosebery (*Physalis sp.*) hence the specific name. It is a native of Peru. but has become almost naturalised in Natal, and quickly takes possession of unoccupied ground. The scent of the crushed leaves is somewhat unpleasant.

Oenothera macrantha. (Sellow). Natural order, *Onagrarieae.*—One of the "Evening Primrose" family, a common tropical weed, whose native country appears to be uncertain. Though sometimes growing in great abundance in waste ground, it is quite easily got rid of.

Oxalis corniculata. (Linn.) Natural order, *Geraniaceae.*
,, *semiloba.* (Sond). ,, ,,

These plants are usually known as "Sorrel" and are common all over the colony; the first named is also an English weed; the second is peculiar to South Africa and is occasionally found with double flowers. The natives know it as (um-Swempe) and the tuberous roots are said to be useful as a vermifuge, while the leaves of most of the species of the genus contain a certain amount of acid, and have been used medicinally.

Parthenium hysterophorus. (Linn). Natural order, *Compositae.*—A much branched herbaceous plant, bearing numerous small white flowers, and growing to two or three feet high.

Hitherto I have only seen this plant in the vicinity of Verulam, where for many years past it has luxuriated in waste places and by roadsides. It is a native of Tropical America, and has evidently been accidentally introduced into Natal, probably from Mauritius where it abounds. The leaves have been used medicinally as a febrifuge.

Portulaca oleracea. (Linn). Natural order, *Portulacceae.*—The common "Purslane," which has become naturalised here, it is somewhat difficult to eradicate. as the succulent stems and branches retain life for a considerable time, and should be carried from the ground after being hoed up. It has antiscorbutic properties, and is frequently used as a salad.

Richardsonia scabra. (St. Hil.) Natural order, *Rubiaceae.*—A most troublesome weed, which in the vicinity of Durban appears to be greatly on the increase. It bears small white flowers, in few flowered heads, which are enclosed in in an involucre, and its leaves and stems are covered with fine white hairs, the roots run for a considerable distance, and take almost complete possession of the ground where it is found; it is perhaps most destructive to lawns, from which it is very difficult to eradicate. The roots are emetic, and have been used at Home under the name of "White Ipecacuana," but have been completely superseded by the true drug, which is said to be more active and certain in its effects. Baron Mueller quotes it as "an herb for pastures and hay-crop, appreciated in localities with sandy soil." In Natal, however, it is not much appreciated for that or any other purpose.

Rumex luxurians. (Linn.) Natural order, *Polygoneæ.*—A climber of the "Dock" family, found chiefly at edges of bush, and in newly-cleared land, but soon disappears as cultivation advances.

Senecio pterophorus. (DC.) Natural order, *Compositae.*—A tall weed bearing large numbers of yellow flower heads, and appearing in quantity in neglected ground in the summer and autumn, except for the great profusion in which it occurs, and for the rapidity of its growth, it is not a very great pest.

Siegesbeckia orientalis. (Linn.) Natural order, *Compositae.*—A well known tropical weed reaching from 1 to 3 feet high, with branching stems and yellow flowers. It is quite confined to the coast and midland districts, not very formidable, and has no useful properties.

Solanum nigrum. (Linn.) Natural order, *Solanaceae.*—A very variable, low growing weed, bearing white flowers with conspicuous yellow stamens, berries which are black, when ripe. It has been said to have poisonous properties, but the berries are eaten by children with impunity, and the leaves have

been used in salads in Mauritius. So variable is this plant that it has received upwards of 60 different names, all of which have been reduced to this one species.

Sonchus oleraceus. (Linn.) Natural order, *Compositae.*—One of the "Sow-thistles" cosmopolitan weeds in cultivated grounds, they have all a milky juice, and are sometimes used in salads.

Spilanthes Africana. (D.C.) Natural order, *Compositae.*—Another tropical weed belonging to the same order as the last-named one. It is a low growing plant with conical heads of yellow flowers. It has been called in Natal the "Electric" plant on account of the peculiar pungent taste of the leaves, and is used by the natives medicinally.

Striga coccinea. (Bth.) Natural order, *Scrophularineae.*
„ *Forbesii.* „ „ „

These two plants are called by the natives "i-Sona," and are usually found in cultivated ground. The first-named one bears scarlet flowers, and is the smallest of the two; the other has lighter coloured flowers, and much more conspicuous leaves. Both of these plants are said to be destructive to mealie and other crops, and it is, I think, certain that where they appear in large numbers in cultivated ground heavy crops need not be expected. There are different theories to account for this —one being that they are parasitical on roots of other plants, especially on those of plants belonging to the Order Gramineae, to which the mealie belongs. The other theory is that these plants only appear on land that has become to some extent exhausted by frequent cropping.

The matter has often been debated in Natal, but so far without satisfactory result. The genus Striga includes about 18 species, all natives of tropical countries, and taken as a whole the genus is thought to be a parasitical one, but though I have often examined the plants, I have never been able to discover any organs on the roots, which would lead me to say certainly, that the plants were parasitical, even when they have been gathered in close proximity to a mealie plant I was once gravely assured by a farmer that the "Isona" and the "Horse-tail" (Equisetum) were the same plant in different stages of growth, that is, that the "Horsetail" of this season would be the "Isona" of next season, and when I ventured to assert that the thing was quite impossible, I was told that botanists "did not know everything." Of course the idea is absurd. Of the genus *Striga*, we have in the Colony five species, the two above named being the only ones which are commonly found in cultivated ground in any quantity, though probably in the upper districts *S. Thunbergii*, or *S. elegans*, may be occasionally

seen, but I have never yet seen or heard of their being found in such profusion as *S. coccinea* and *S. Forbesii*, though they are plentiful amongst grass, on the hillsides all over the upper districts. Information on this point would, however, be very welcome.

Xanthium spinosum. (Linn). Natural order, *Compositae.*
„ *strumarium.* „ „ „

The first of these plants is too well known to need any mention here; spasmodic attempts are made to keep it under or destroy it, but it seems still to increase and to extend its area of growth. It may not be generally known, however, that *X. strumarium* has the reputation of being poisonous to cattle, and some years ago I supplied the Government with information which had come into my possession on this matter: an attempt was then made to exterminate the plant, but I note that it is still occasionally met with. It is quite probable that it is only in the early spring, when grass is scarce, that cattle would care to eat it, and then only in its early stages of growth.

In conclusion, I wish to offer my very hearty thanks to the members of the Committee, for much kindness and valuable support in the prosecution of my work, also to all donors of seeds and plants, both within the Colony and abroad, and I have much pleasure in again acknowledging the very valuable services rendered by Mr. Wylie, who has given his time and ability without stint to the work of the Gardens during the busiest year that we have had since I took charge of the work, and probably since the Gardens were first established; also to Mr. Harman and Mr. Rutter, who still remain with us.

I have the honour to be,

Gentlemen,

Your obedient servant,

J. MEDLEY WOOD.

DURBAN BOTANIC SOCIETY.

RECEIPTS AND EXPENDITURE, 1896.

Cr. Dr.

1896.	Expenditure.	£	s.	d.
To	Labour	1072	8	0
	Maintenance	454	7	3
	Rations	88	17	0
	Interest	42	0	0
	Colonial Herbarium	100	19	11
	Commission	10	5	4
	New Propagating House ...	45	0	0
	Passage, Gardener	16	16	0
		£1830	13	6
	Balance in the Natal Bank ...	894	10	2
		£2725	3	8

1896.	Receipts.	£	s.	d
By	Balance in the Natal Bank at 31st December, 1895 ...	709	4	1
	Produce sold	1717	1	7
	Colonial Herbarium	60	0	0
	Subscriptions	238	18	0
	Government grant paid last year in advance			
		£2725	3	8

MAURICE S. EVANS,
Hon. Treasurer.

Examined and found correct, Durban, 22nd February, 1887.
(Signed) W. MURRAY SMITH, A.S.A.A. (Eng.), Auditor.

ABSTRACT OF METEOROLOGICAL OBSERVATIONS FOR THE YEAR 1896,

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.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	
Barometer—Highest ..	30·269	30·270	30·271	30·334	30·431	30·481	30·503	30·491	30·453	33·455	30·534	30·417	
Lowest ..	29·652	29·663	29·839	29·800	29·860	29·889	29·882	29·865	29·695	29·715	29·662	29·697	
Mean, 9 a.m...	30·022	30·055	30·069	30·127	30·245	30·233	30·296	30·255	30·153	30·142	30·112	30·051	30·147
Thermometer in shade—	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Year.
Highest ..	95·2	93·2	91·4	87·1	87·6	88·9	88·9	89·4	109·6	107·8	90·2	94·1	109·6
Lowest ..	59·1	64·6	64·5	56·7	52·9	46·8	48·3	52·0	46·5	58·2	54·6	60·5	46·5
													Mean.
Mean, 9 a.m...	76·2	76·5	76·2	70·9	65·5	63.7	62·4	68·0	70·9	74·0	73·1	77·6	71·3
Mean reading of													
Maximum Thermometer	85·4	85·9	85·8	80·6	77·6	76·8	76·8	78·0	80·2	80·9	80·4	84·4	81·1
Minimum ,,	68·6	70·0	68·6	65·0	58·3	56·2	53·3	59·4	59·6	63·6	63·6	68·6	62·9
	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	Year.
Rainfall	2·95	3·80	4·28	5·34	1·00	0·11	0·71	1·34	3·89	5·31	4·34	6·56	39·63
	Units.	Units.	Units.	Units.	Units.	Units.	Units.	Units.	Units.	Units.	Units.	Units.	Units.
Days on which rain fell ..	16	14	13	15	11	7	6	12	15	8	19	22	158
Mean force of wind ..	1·16	0·95	0·94	0·94	0·91	0·95	0·94	1·06	1·14	1·11	1·18	0·86	1·01
Mean amount of cloud ..	5·31	5·59	3·86	6·09	2·62	3·15	2·00	3·74	4·47	5·28	6·35	6·95	4·62