# REPORT

—ON—

# NATAL BOTANIC GARDENS,

—AND—

# Colonial Herbarium,

FOR THE

## YEAR 1900,

—BY—


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

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

CURATOR.



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# Durban Botanic Society.

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# DURBAN BOTANIC SOCIETY.

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**Curator:**

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

# 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 ten 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, fruit, 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.

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,
DURBAN, JANUARY, 1901.

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

GENTLEMEN,

I regret that in offering this, my Nineteenth Annual Report on the Botanic Gardens and its work, that I have to chronicle one of the driest, if not quite the driest year on record, and following a year like the last in which the rainfall was 12.37 below the average of the previous 26 years, the effect is much more felt than it would have been had the rainfall for 1899 been at all near the average. By the record given below it will be seen that the last year's rainfall was no less than 13.20 inches below the average of the last 28 years.

RAINFALL AT BOTANIC GARDENS, DURBAN, FROM 1873 TO 1900 INCLUSIVE.

| | | | | | |
|---|---|---|---|---|---|
| 1873 | 42.21 | | 1889 | 29.28 | |
| 1874 | 55.06 | | 1890 | 32.90 | |
| 1875 | 54.78 | | 1891 | 45.45 | |
| 1876 | 35.23 | | 1892 | 38.37 | |
| 1877 | 35.67 | | 1893 | 71.27 | |
| 1878 | 28.24 | | 1894 | 37.27 | |
| 1879 | 44.46 | | 1895 | 51.50 | |
| 1880 | 47.63 | | 1896 | 39.63 | |
| 1881 | 35.65 | | 1897 | 34.39 | |
| 1882 | 36.21 | | 1898 | 42.48 | |
| 1883 | 44.52 | | 1899 | 28.75 | |
| 1884 | 44.56 | | | | |
| 1885 | 34.06 | | 27 | 1091.97 | |
| 1886 | 31.79 | | | | |
| 1887 | 31.87 | | | 40.44 | |
| 1888 | 37.74 | | 1900 | 27.24 | |
| | | | | | |
| | | | Below average | 13.20 | |

It will be noticed that the lowest fall in any of these 28 years was that of the year just closed, the nearest to it being that of 1878, which was exactly one inch more than that of 1900, but in 1887 the fall was 35.67, while in 1899 it was only 28.75. The ground has therefore been gradually drying up for the last two years; the rain that we have had has not penetrated the soil to any great depth, and the trees and shrubs are feeling the effect of the drought to a considerable degree, and I fear that our losses will be very severe unless copious rains fall very soon; as it is we have lost several plants, a list of which will follow.

We have been in the habit of sending out from year to year from 4 to 7 tons of Mangoes, plucked green for making chutney, &c., but last year none were gathered, and but very few are left on the trees. The crop of Litchis also was a complete failure, and all other fruit trees suffered in a similar way.

We have again had several visits from swarms of locusts, but they have done no appreciable damage, as their stay was not of long duration, but we have been much troubled by birds, notably by the "Weaver" bird or "Hloko-hloko" (*Hyphantornis sp.*); these birds damaged the young palms in the nursery to a considerable extent by stripping them of their leaves, which the birds appeared to find admirably suited to their requirements for nest building. Many of the palms had to be carried to another locality where a lookout could be kept, and I obtained from the Corporation a permit to use a gun in the Gardens, and in this way the colony was somewhat thinned, but the birds are still more or less troublesome.

The Jubilee Conservatory has, under Mr. Wylie's supervision, been kept in thoroughly good order, and has been visited by large numbers of persons, many of whom have expressed their warm appreciation of the luxuriance of the vegetation, and of the opportunity afforded them of admiring the many valuable plants contained in the building.

The old conservatory is still standing, and is used for keeping plants which are for sale. I had thought that when the Jubilee Conservatory was erected that it might be possible at small expense to remove the old house to a less conspicuous position, and then enlarge the Fenery which is at the back of it, bringing it out almost to the main walk of the Garden, and providing it with an ornamental front, but on examination of the building, which has an iron framing, it is found that it is too much rusted to allow of its being again erected if it were taken down, and as we are still somewhat short of room under glass, it will have to remain for some time longer, though it can hardly last very long.

There are in the Gardens a large number of trees which should be removed, such as Mangoes (*Mangifera indica*), Rose apples (*Eugenia jambos*), Flatcrowns (*Albizzia fastigiata*), and others; this has been in contemplation for some time, but we have not yet been in a position to commence the work on account of the want of native or Indian labour. It is to be hoped that during the year which has now commenced we shall succeed in getting one or more of the blocks cleared, and thus find room for other trees or shrubs, some of which we have in stock, or can procure from time to time, and which will be of more use in a botanic garden than trees which are now well known in cultivation, and of which two or three specimens are amply sufficient. Of course it is not contemplated to cut down the old Mango trees which were, I believe, the first introduced into the colony, nor the row at end of the main walk, but only those outliers which have been sprinkled with a liberal hand over the ground, and which are of no use to anyone, and which interfere with the growth of other trees, and fill ground which might be more profitably employed.

It is intended during the present year to import a number of labels for the trees and shrubs, the enamelled labels imported some years ago, though very conspicuous, are not found to stand well, and many of them require renewal; the unequal contraction of the metal and enamel causes the enamel to fly off in chips until the lettering becomes illegible; another label made of block tin and iron was sent to me by the same maker for trial, and after more than a year's exposure to the sun is quite as good as when first placed out; though not so conspicuous as the white enamelled label, I think it will stand our climate much better.

The "Guide" to the trees and shrubs in the grounds is still in demand, and many persons profess to find it useful. It will, however, be necessary before long to write a supplement, and I hope to commence it at an early date. The numbers attached to the plants corresponding with the numbers in the Guide are on teak lables and are rapidly becoming illegible, and will require replacing with something more permanent; probably the metal ones just alluded to will be the best, and I have written for quotations for them.

In consequence of the prevalence of "scale" and other insect pests on the fruit trees it was determined to build a house for the purpose of fumigating all plants requiring it before sending them out. The building is of brick with iron roof, and is 20 feet by 15 feet, divided into two rooms of unequal size; either can be used, or both together, according to the number of plants to be treated; one half of the building is open at the side and closed at both ends, and this is used as a potting shed, which was much required at the nursery and has been found of much

The only plants received during the year were as under : -

Professor MacOwan, Government Botanist, Capetown,
5 curious Cape plants.

Plants were sent away as follows :—

W. Thorpe, England, 1 box Asparagus plumosus.
Botanic Gardens, Cambridge, 1 case containing 44 plants
Reasoner Bros., Florida, 3 Kaempferia Ethelæ.
J. O'Brien, London, 12 plants Gladiolus oligophlebius.

The following Institutions were supplied with plants free to the amounts stated :—

| | | | |
|---|---|---|---|
| Durban Home ... | £0 | 18 | 0 |
| St. Faith's Mission ... | 3 | 4 | 0 |
| Addington Hospital ... | 9 | 17 | 0 |
| Durban Corporation (Waterworks) .. | 4 | 10 | 0 |
| Baptist Church ... | 0 | 12 | 6 |
| Queen's Hospital, Eshowe ... | 1 | 16 | 0 |
| Wesleyan Church, Greyville ... | 0 | 15 | 6 |
| | £21 | 13 | 0 |

In taking credit for plants supplied free to Government Institutions, Missions, &c., I prefer to state value, not number of plants supplied, as to give number only would most likely be very misleading.

During the year 1899 we received 166 plants and 490 packets of seeds as stated in my Report for that year, the result was as under :—

| PLANTS. | | SEEDS. | |
|---|---|---|---|
| Dead on arrival ... | 10 | Failed to germinate ... ... | 130 |
| Died afterwards ... | 6 | Germinated but died afterwards | 115 |
| Planted in Garden . | 16 | Distributed ... ... | 50 |
| Still in pots ... | 119 | Still in pots ... .. ... | 72 |
| Previously in stock... | 15 | Annuals and vegetables ... | 103 |
| | | Not suitable for our climate .. | 20 |
| | 166 | | 490 |

In consequence of the long coniinued drought but few plants were put out during the year. The following were, however, planted at different times, and are still growing :—

| NAME. | RECEIVED FROM |
|---|---|
| *Agropyron scabrum*, Beauv. | O. E. Menzel. |
| *Arundinaria Hookeriana*, Willd | Cambridge |

| NAME. | RECEIVED FROM. |
|---|---|
| *Bambusa arundinacea*, Willd | Botanic Gardens, Calcutta. |
| ,, *burmanica*, Gamble | ,, ,, ,, |
| ,, *nana*, Roxb. | ,, ,, ,, |
| ,, *Oliveriana*, Gamble | ,, ,, ,, |
| ,, *siamensis*, Kurz | ,, ,, ,, |
| ,, *vulgaris*, Schrad. var. *colorata* | ,, ,, ,, |
| ,, sp. (*Theekwa*) | ,, ,, ,, |
| ? sp. (*Fainiumica*) | G. H. Wilkinson & Co. |
| ? sp. (*Hachikii*) | ,, |
| ? sp. (*Hokonechikii*) | ,, |
| ? sp. (*Jadaka*) | ,, |
| ? sp. (*Kimneichika*) | ,, |
| ? sp. (*Swochikii*) | ,, |
| *Dendrocalamus Hamiltonii*, Nees & Arn, | Botanic Gardens, Calcutta |
| ,, *strictus*, Nees | ,, ,, ,, |
| *Melica latifolia*, Roxb. | ,, ,, Mauritius |
| *Modiola decumbens* ? | Dr. Franceschi, California. |
| *Oxytenanthera*, sp. | Botanic Gardens, Calcutta. |

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

| | |
|---|---|
| *Barklya syringifolia*, F. Muell | Queensland. |
| *Brachystelma*. sp. | Professor MacOwan. |
| *Coffea*. sp. from E. Coast of Africa | R Beningfield. |
| *Cyrtanthus Galpini*, Baker | M. Matthews. |
| *Echium gigantum*, Linn | R. Jameson. |
| ,, *nervosum* ? | ,, |
| *Hibiscus armangei* ? | Max Leichtlin. |
| *Ischaemum angustifolium*, Hack | Kew |
| *Ixora parviflora*, Vahl | Saharunpur |

## PUBLICATIONS RECEIVED.

| NAME. | DONOR. |
|---|---|
| Bulletins, Jamaica. Current numbers... | Director. |
| ,, Trinidad ,, ... | ,, |
| ,, Kew ,, .. | |
| Bench grafting resistant vines ... | United States Govt. |
| Catalogue of trees and shrubs in Experimental Farm, Ottawa ... ... | Director. |
| Cockle Burr, The (*Xanthium strumarium*) | J. H Maiden, F.L.S. |
| Catalogue of economic plants ... | United States Govt. |
| Co-operative experiments with grasses & forage plants, by P. B. Kennedy, Ph.D. | ,, ,, |
| Century book of gardening, 13 Nos. ... | Hon. R. Jameson. |
| Culture and diseases of the Orange tree | Kew. |

reared, but as we had not sufficient ground ready on which to plant them, they were handed over to Mr. W. R. Hindson, of Stanger; we put out 23 plants only, they were planted on February 27th, 1899, and on February 12th, 1900, the stems were cut, and when green they weighed 20 lbs., drying to 5 lbs. On June 22nd they were cut a second time, the weight of the green stems being 19 lbs., drying to 5 lbs., and they are now ready for cutting again. It seems, therefore, that two cuttings can be made in favourable seasons, perhaps three, but the last season was as unfavourable as any that we have had for many years.

*Cinnamomum cassia* (Blume).—This is the tree that yields the "Cassia bark" of commerce. In the year 1885 I received, by the kindness of Mr. C. Ford, Director of Botanic Gardens at Hong Kong, a few plants of this species, two were put out in the Garden, but have never thriven well, the climate being evidently unsuitable for them, and I think it may be taken for granted that the tree will not succeed in the coast districts. Two plants were sent to the Botanic Gardens, Maritzburg, for trial there; these plants grew well, one of them was I believe removed some years afterwards to make room for a building, the other has made good growth, and has I believe borne seed more than once. I think that the tree is well suited to the midlands of the colony, but whether its cultivation would be profitable I am at present unable to say.

*Chrysophyllum cainito* (Linn), "Star Apple."—This plant was alluded to in my Annual Report for 1899, and we hoped that we should during last season have had a larger crop of fruit, and to have been able to report on it more fully, but in consequence of the long drought all the fruit fell from the trees when quite young, and not a single one came to maturity. It is now again in flower, and we hope during the present year to be more fortunate.

*Cola acuminata.*—This is the tree which produces the Cola nut of commerce, and I regret to have to report that all the plants are dead; the soil and climate do not appear to be suitable to the growth of the tree.

*Dipteryx odorata* (Tonga or Tonquin bean).—One of these plants died during the year, probably from attack of White Ants, but the other two are doing well and are now more than 5 feet high, and will probably succeed if they survive this very long drought.

*Jacaranda mimosifolia.*—For several years after its first flowering in the colony this tree failed to produce any seeds, but last year a quantity of seed was collected, and it appeared to me that it would be worth trial as a timber tree. Baron F.

v. Mueller writes of it as follows:—"This tree with J. brazi-
" liana, and J. obtusifolia furnishes a beautiful and fragrant
" kind of Palixander or Palissandre wood, and so do probably
" some other tropical American species. This wood is bluish-
" red traversed by blackish streaks. J. mimosifolia is hardy
" at Melbourne, soon recovering from the injuries of our slight
" nocturnal frosts, and they may perhaps be reared with advan-
" tage in many of the warmer and moister regions of the tem-
" perate zone, if it were only for its ornamental grandeur." I therefore made it known that seed sufficient to provide plants for an acre of ground would be supplied free to any person who would give it a trial. The offer was accepted by Mr. G. L. Jenkinson, of Zululand, and the seed duly forwarded. I understand that the first sowing was successful, and hope in another report to be able to say that the ground has been planted and the trees doing well.

*Oxalis crenata* ("Oka of the Peruvians).—I regret to have to report that this plant has not been found suitable to the coast districts of the colony. I had hoped to have been able to send some of the tubers to the midlands for trial there, but we lost the whole of them and were therefore unable to do so.

*Oxycoccus macrocarpus* ("Cape Cod Cranberry").—At the request of a correspondent who thought that the locality in which he lived was very suitable for the growth of this plant which is said to be much superior to the ordinary Cranberry, I succeeded in obtaining from America a packet of seeds with full directions for sowing and after treatment, but I regret to say that the experiment has not been a success. My correspondent says:—"I am sorry to say that the Cranberries are
" not a success, as I could not get the seed to germinate; half
" of the seed I had in a shallow box on top of some chopped
" moss, and I kept it constantly wet, but could not get them to
" grow; the other half I planted in a peat bog near the house,
" but up to now I have not been able to find any young plants."
I am sorry for this, but shall try to obtain a few more seeds for another trial.

*Sapota achras* ("Sapodilla").—The remarks made as to the Star Apple apply to this plant also. A few fruits are now on the tree which we hope will ripen, but with two such unfavourable seasons as we have had in succession, anything like a crop could hardly be expected.

*Strophanthus hispidus.*—This plant grows vigorously and bears flowers in abundance, but so far has not produced a single seed. The seeds are used medicinally.

*Swietenia macrophylla* ("Large leaved Mahogany").—This plant seems likely to succeed, and is now more than 5 feet high.

*Widdringtonia Whytei* ('Mlangi Cedar).—Plants of this valuable timber tree have been distributed for trial to different parts of the colony, and reports on them are on the whole very favourable. From Karkloof I learn that a plant supplied by us 5 or 6 years ago is now 12 feet high, and one 4 years old is 7 feet high. One on the Berea is at least 6 feet high, and one sent to the Botanic Gardens, Maritzburg, for trial there is now about 13 feet high, and the Curator reports that if the leading shoot had not been accidentally broken it would no doubt have been higher still. We have sent out a number of the plants at later dates, most of them appear to be doing well, and are now 12 to 24 inches in height. I regret, however, that plants put out in the Gardens have been destroyed by white ants. There is, I think, no doubt but that as a timber tree the Widdringtonia will succeed in most parts of the colony, especially in sheltered valleys; as an ornamental tree opinions differ about it, but as a timber tree there can be little doubt of its value.

*Theobroma cacao.*—I regret to have to report that all the plants placed in the open ground have since died; two were reserved for the conservatory, and these are alive and healthy. I have never thought that this plant would succeed in the colony, as our climate is not sufficiently tropical for it; in the summer it is warm enough, but the cold winter months are not suited for plants of this kind. I have several times had sent to me fruits which were said to be Cocoa grown in the colony, but they have always turned out to be those of Carolinea, or Pachira alba, a plant in no way related to the Theobroma.

Pineapples, Manuring of.—I have several times been asked as to what is the best manure to use for Pineapple plants, and from want of practical experience I have not been able to give a satisfactory answer to the question, but a paper on this matter appeared in the *Jamaica Bulletin*, from which I venture to make copious extracts, omitting, however, several portions which are not applicable to Natal, and also a long list of the quantity of the fertilisers used on each of 51 plots of land, selecting only those which appear as 1st class. On 5 of the plots "Muck" was used along with other fertilisers, but none of these blocks rank better than 3rd class, except one on which it was used in combination with "Blood and Bone," which is placed as 2nd class. The article from which I make the extracts may be seen at my office by anyone who may feel sufficient interest in the matter to wish for further information.

"The following is a communication received from Mr. C. E. Smith, Bog Walk, and it is hoped that others who are experimenting in any direction will contribute their results for publication:—

"I would not care to express an opinion as to the best fertilisers to use in Jamaica because the soils vary so greatly. Here in St. Thomas ye Vale I have experimented extensively with all sorts of ingredients, and all kinds of combinations of the same. The severe storms of last fall made these experiments decidedly inconclusive, but the best results I have so far obtained have been from 550 lbs. of Cotton Seed Meal per acre, supplemented with 100 lbs. high grade (90 to 95 per cent.) Sulphate of Potash at time of flowering. I do not seem to get any results whatever from application of phosphoric acid. Of course I cannot say how it might be in other parts of the island. As a matter of fact I find the whole subject of fertilisers much more complicated here in Jamaica than on the comparatively barren sands of Florida. I feel that careful experiments are of great importance, for I think it is easy to apply uselessly expensive ingredients which are not required.

"Stable manure should never be used on pines—no matter how thoroughly rotted. I mean by "stable manure" the droppings from horses and mules; nor should that from poultry, except as a liquid dissolved in water. The manure from cows and oxen may be used with splendid results. In Florida we used to "Cow pen" our land. We would run a temporary fence about say an acre at a time, and then every afternoon drive into it as many cattle as could be confined within the fence, keeping them there over night. This would be done for two or three weeks, when the fence would be removed to enclose as much more land to be treated in the same way. This system of course had to be supplemented with the chemical elements, but it supplied both humus and the most expensive ingredient nitrogen.

"Above all no fertiliser should be used for pines in which the phosphoric acid has been rendered "available" by use of sulphuric acid This seems to be poison to the pineapple. As I say above, my land shows no result from applications of phosphoric acid. Other land may require it, in which case I would advise use of the finest ground bone meal. It is also possible that the phosphatic guanos may do well. Personally I have had no experience with them.

"The Florida Agricultural Experiment Station has published lately a Bulletin on this subject by Professor P. H. Rolfs. . . A summary of these experiments was read by Prof. Rolfs before the Florida Horticultural Society as follows:— . . .

PINEAPPLE LAND.

"In pineapple growing, as in other forms of horticulture, the tiller of the soil has had to learn by dear experience what kind of land was best adapted to this particular crop. Our veteran pineapple grower, Captain Richards, has told us repeatedly how

he attempteti to grow pineapples on the moist and fertile island soil. Finally ending in failure and almost despair, he planted a few on the sand ridge on the west bank of the Indian river at Eden. To his surprise this soil proved exactly what the pines wanted. From this small beginning, we may say that practically the whole pineapple industry on the spruce pine land of the Indian river section had its origin.

FERTILISERS.

"In visiting the various sections of the Indian river country during 1897 diligent enquiries were made of the principal pineapple growers as to what forms of fertilisers they would recommend for use on pineapples. The enquiry ended in finding out that very few people agreed on using the same fertilising substance. Those who mixed their own fertilisers seemed to be as much in doubt in regard to the action of particular substances as anyone else. By far the greater number of pineapple growers, however, seemed to be depending on ready mixed formulæ for their use, the composition of these being in no case known. While the fertiliser houses always appended the percentage of nitrogen, potash, or phosphoric acid present, there was no evidence as to the origin of the nitrogen, potash or phosphoric acid.

"A few points in connection with fertilising pineapples seem to be admitted by a considerable number of pineapple growers. However, there was no one form of nitrogen which was accepted by the majority of the extensive growers; and the same was true of potash and phosphoric acid. It was not difficult to find pineapple growers of more than local reputation who would condemn a certain form or forms of ammonia, and their neighbours would condemn certain other forms, and probably advocate the forms condemned by the first neighbour. By compiling the opinion of various growers every form of ammonia was condemned, and the opposite of the proposition was also true; that is, every form of ammonia had its advocates. The same was true of potash. Acid phosphate was quite generally considered a bad fertiliser. Of course everybody fertilised, and everybody was dissatisfied with the action of certain forms of fertilisers. Very few were entirely satisfied with the forms of fertiliser that they were using, and the greater number of those that were satisfied with their fertiliser were people who had not been in the pineapple business very long.

OBJECTS OF THE EXPERIMENTS.

"At this juncture the Experiment Station offered to set aside a certain amount of money from the Hatch fund to conduct experiments on a sufficiently extensive scale that they might be of value to the pineapple growers. Application was

made to various people interested for help in this connection. The Experiment Station agreed to purchase all fertilisers and superintend their application. The owner of the field was to furnish the labour, to cultivate it and receive the fruit when it had ripened on the field. Under these conditions many acres of pineapples were offered for experimental use. After making a diligent enquiry into the condition of the fields and of the soil, it was finally decided that a field belonging to Ballentine & Moore was the most suitable for experimental work. Accordingly the work was commenced on the field, which had been set out in pineapples the previous July or August on recently cleared spruce pine land. Chemical analysis of the "pineapple soil" indicates very strongly that all the essential elements of fertility are wanting in it. Consequently it was thought that no plots would produce a good crop with an incomplete fertiliser. Therefore the plots receiving an incomplete fertiliser were laid out in hundredth-acres, and plots receiving complete fertilisers were laid out in twentieth-acres. As many forms of nitrogen as were common on the market were secured; also of potash, bone meal and dissolved Florida phosphate. Each form of nitrogen was combined with each form of potash and conversely. The phosphoric acid was used in this connection as extensively as the fund would permit.

"The fertilisers used gave approximately the following formulæ.—

| | | | | |
|---|---|---|---|---|
| Nitrogen... | ... | ... | ... | 3 per cent. |
| Potash ... | ... | ... | ... | 7 „ „ |
| Available Phosphoric Acid | | | ... | 5 „ „ |

"The following amounts of fertilisers were applied February 7 and 8, 1898. A second application of two and a half times that amount was made June 27 and 28, 1898. A third application of one and a half times the amount was made November 4 to 12; 1898, at which time the photographs were taken.

"The appended table will give the plots in such a way that they may be compared with one another to better advantage:

| | Potassium Sulphate High Grade. | Potassium Sulphate Low Grade. | Kainit. | Muriate of Potash. | Potassium Magnesium Carbonate. |
|---|---|---|---|---|---|
| Cotton Seed Meal and Bone Meal. | 6th Class | 4th Class | 6th Class | 3rd Class | 4th Class |
| Cotton Seed Meal and Acid Phosphate | 6th Class | 5th Class | 3rd Class | 4th Class | 4th Class |
| Am. Sulphate and Bone Meal. | 3rd Class | 2nd Class | 3rd Class | 4th Class | 3rd Class |
| Am. Sulphate and Acid Phosphate | 2nd Class | 2nd Class | 6th Class | 6th Class | 3rd Class |
| Sodium Nitrate and Acid Phosphate | 5th Class | 2nd Class | 4th Class | 5th Class | 5th Class |
| Blood & Bone. | 1st Class | 1st Class | 1st Class | 1st Class | 1st Class |
| Blood & Bone and Acid Phosphate | | | | | 2nd Class |

EXPLANATION OF THE TABLE.

The above table shows the composition of the fertiliser applied to each plot and the class to which each plot belonged in December, 1898.

(NOTE.—In consequence of the omission of the previous table the numbers of the different plots are omitted from the above table.)

" The plots marked 1st Class were better than one is accustomed to see in pineapple sections. Plots marked 2nd Class would pass for fine. 3rd Class good 4th Class indifferent, with some spiky plants. 5th Class poor, with considerable percentage of spiky plants. 6th Class practically worthless, over 40 per cent. spiky, and the rest doing poorly.

CONCLUSION.

*Ammonia.*—For young pineapple plants growing on spruce pine land which has not been fertilised before, blood and bone furnish the best form of ammonia used. Nitrate of soda comes next to blood and bone, but there is a strong difference and a considerable step between these two. Bright cotton seed meal gave better results than sulphate of ammonia. Our experiments therefore seem to indicate that, as a source of ammonia, blood and bone stand first, nitrate of soda second cotton seed meal third, and sulphate of ammonia fourth of the substances with which we have experimented.

*Potash.*—While there is a great variation in the different plots treated with different forms of potash, there seems te be a greater difference due to the combination than to any particular form of potash. Summing up the whole and noting the character we find that potassium magnesium carbonate proved the most efficient. Low grade sulphate of potash, frequently called the double potash salts, stands second in the list. While none of its plots are unusually good, it has the good character of having very few poor plots. High grade sulphate of potash stands slightly below low-grade sulphate of potash in the potash list. Muriate of potash stands fourth in the list when all its combinations are considered, in spite of the fact that the best plot in the field was fertilised with muriate of potash.

*Phosphoric acid.*—As a whole, the experiments indicate that a small amount of soluble phosphoric acid will suffice. Acid phosphate is decidedly an unprofitable fertiliser in nine-tenths of the combinations. Its bad effects cannot be ascribed to the pressure of sulphuric acid or other caustic material. Bone meal has shown itself a very efficient substance.

No fertiliser ingredient used in the above experiments is absolutely bad in itself, but becomes bad by being combined with certain other forms. The detrimental effect of the fertilisers cannot be said to be due to some caustic substance in the combination. The facts accumulated are not sufficient to warrant any further conclusion to be drawn "

The European staff employed at the Gardens remains unchanged. Mr. Blunden, one of the under gardeners, was a

member of the Durban Field Artillery, and when the Volunteers were called out he left us and remained at the front until October 8th, and a day or two afterwards resumed his work at the Gardens. To Mr. Wylie especially my thanks are due for his valuable services, and efficient supervision of the work in the Gardens and Nursery, and to all the European members of the staff for faithful service efficiently rendered. To the members of the Committee I have much pleasure in again tendering my thanks for their unfailing courtesy and assistance in every matter on which I have found it necessary to consult them.

I have the honour to be,

Gentlemen,

Your obedient servant,

J. MEDLEY WOOD.

# - - DURBAN BOTANIC SOCIETY. - -

## Statement of Receipts and Expenditure for the Year ending 31st December, 1900.

### RECEIPTS.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Balance from last account .. | | | | 112 | 9 | 11 |
| Produce Sold .. .. | 1,634 | 10 | 5 | | | |
| Government Grants— | | | | | | |
| Botanic Society, for year ending June 30th, 1900 | 350 | 0 | 0 | | | |
| Colonial Herbarium, do... | 200 | 0 | 0 | | | |
| "Natal Plants," 1st Part of 2nd volume .. .. | 65 | 0 | 0 | | | |
| Subscriptions and Donations | 337 | 1 | 0 | | | |
| | | | | 2,586 | 11 | 5 |
| | | | | £2,699 | 1 | 4 |

### EXPENDITURE.

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Labour .. .. .. .. | | | | 1,300 | 14 | 10 |
| Rations .. .. .. .. | 102 | 19 | 6 | | | |
| Maintenance .. | 230 | 16 | 0 | | | |
| *Less* Rebate from Messrs. Okell & Evans .. .. | 15 | 12 | 7 | | | |
| | 215 | 3 | 5 | | | |
| Colonial Herbarium .. .. | 154 | 13 | 6 | | | |
| Do. do. "Natal Plants" | 90 | 12 | 6 | | | |
| Interest on Bond .. .. | 35 | 0 | 0 | | | |
| Commission, Collecting Subscriptions .. .. .. .. | 6 | 2 | 8 | | | |
| Bonuses to Staff .. .. | 103 | 0 | 0 | | | |
| | | | | 2,008 | 6 | 5 |
| Balance— | | | | | | |
| Cash in Natal Bank .. .. | | | | 690 | 14 | 11 |
| | | | | £2,699 | 1 | 4 |

Examined, payments compared with Vouchers, and found correct,
Durban, 13th February, 1901.

W. MURRAY SMITH,
Incorporated Accountant, Auditor.

J. MEDLEY WOOD,
Treasurer.

# ABSTRACT OF METEOROLOGICAL OBSERVATIONS FOR THE YEAR 1900,

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. | Year. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In. | In. | In. | In. | In. | In. | In. | In. | In. | In. | In. | In. | |
| Barometer—Highest .. | 30·287 | 30·223 | 30·293 | 30·482 | 30·421 | 30·596 | 30·622 | 30·514 | 30·668 | 30·427 | 30·362 | 30·373 | |
| Lowest .. | 29·705 | 29·824 | 29·703 | 29·800 | 29·778 | 29·937 | 29·769 | 29·645 | 29·766 | 29·612 | 29·583 | 29·735 | |
| Mean, 9 a.m... | 29·992 | 30·100 | 30·074 | 30·151 | 30·171 | 30·323 | 30·234 | 30·198 | 30·222 | 30·075 | 30·045 | 30·003 | 30·132 |
| Thermometer in shade— | Deg. | Deg. | Deg. | Deg. | Deg. | Deg. | Deg. | Deg. | Deg. | Deg. | Deg. | Deg. | Year. |
| Highest .. | 96·5 | 95·7 | 93·4 | 93·0 | 88·0 | 87·1 | 87·3 | 101·5 | 104·2 | 106·2 | 100·2 | 93·4 | 106·2 |
| Lowest .. | 59·8 | 61·2 | 63·4 | 59·6 | 51·5 | 50·2 | 49·5 | 47·2 | 50·4 | 52·2 | 56·9 | 58·9 | 47·2 |
| Mean, 9 a.m... | 77·4 | 77·2 | 76·7 | 74·8 | 68·8 | 63·6 | 63·0 | 63·5 | 69·4 | 70·9 | 73·8 | 77·9 | 71·4 |
| Mean reading of | | | | | | | | | | | | | |
| Maximum Thermometer | 84·2 | 85·1 | 85·2 | 85·2 | 80·9 | 75·4 | 75·5 | 75·3 | 77·8 | 79·9 | 81·2 | 85·7 | 81·0 |
| Minimum ,, | 68·4 | 68·6 | 68·5 | 66·5 | 60·3 | 56·8 | 55·6 | 55·4 | 60·2 | 62·4 | 64·5 | 66·6 | 62·8 |
| | In. | In. | In. | In. | In. | In. | In. | In. | In. | In. | In. | In. | In. |
| Rainfall .. .. .. | 3·91 | 2·57 | 2·14 | 1·55 | 0·38 | 1·04 | 1·62 | 1·56 | 1·37 | 4·52 | 3·74 | 2·84 | 27·24 |
| | No. | No. | No. | No. | No. | No. | No. | No. | No. | No. | No. | No. | No. |
| Days on which rain fell .. | 21 | 16 | 18 | 9 | 5 | 5 | 9 | 10 | 12 | 17 | 21 | 17 | 160 |
| Wind—Mean force of .. | 1·00 | 0·95 | 0·83 | 0·84 | 0·82 | 0·77 | 1·06 | 1·07 | 1·23 | 1·33 | 1·24 | 1·09 | 1·02 |
| Cloud—Mean amount of .. | 6·29 | 5·77 | 5·61 | 3·09 | 2·13 | 2·78 | 3·36 | 3·11 | 5·45 | 6·12 | 7·00 | 5·81 | 4.71 |

# Colonial Herbarium.

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## . . . REPORT . . .

FOR THE

## YEAR 1900,

BY


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

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

**CURATOR OF BOTANIC GARDENS, DURBAN.**

# COLONIAL HERBARIUM.

During the year now ended the specimens in the herbarium have increased from 24,268 at the close of 1899 to 26,040 of which 17,347 are foreign, and 8,693 South Africau species, and there are a number already in stock which will be mounted and placed in the cabinets as soon as time can be spared for the purpose. In addition to these, I have received advices of parcels already in transit, and of promises of others to be sent. The cabinets being inconveniently full, I have obtained four new ones at cost of £11, and these are now fairly well filled. In all there are are now 34 cabinets, and more will have to be obtained before very long. I wish once more to call attention to the fact that the whole of the property belonging to the Herbarium is contained in a building of iron lined with wood, and which is the property of the Botanic Society, and which is urgently required for other purposes. In addition to the liability of destruction by fire from various causes, not the least of which is that the spirit lamp is in constant use when plants are being dissected, the building is already much too small, the cabinets, bookcase, &c., occupying so much space that there is scarcely room for the workers. I have a number of carpological specimens in bottles which have perforce to be packed away out of sight, since there is no room for them on the shelves and no place where more shelves can be put. The books belonging to the library have increased considerably, the solitary bookcase is quite full, and there is not room for another one even if we had it, quite a number of books require binding, but I cannot have this done until we have more room for them, these books are, therefore, inaccessible without considerable trouble being taken to unearth them, occasioning much waste of time and vexation of spirit. The building being of iron lined with wood affords ample space between the wood and the iron for cockroaches, silver moths, &c., which damage the specimens and the paper on which they are mounted, and also the binding of the books. I had the room fumigated, but the improvement was not at all apparent, a few of these noxious insects were no doubt destroyed, but in a few weeks afterwards they were as rampant as ever. It is much to be hoped that a larger, better and safer building will soon be provided.

Dried and named specimens of the Natal Flora have been sent to correspondents as under :—

| | |
|---|---|
| Biltmore Herbarium, U.S. America ... ... | 300 |
| British Museum ... ... ... ... ... | 130 |
| Calcutta, Royal Botanic Gardens ... ... | 112 |
| Colonial Museum. Haarlem ... ... ... | 126 |
| Field Columbian Museum, Chicago ... ... | 287 |
| Fowler, J., Canada... ... ... ... ... | 218 |
| Menzel, O. E., Australia ... ... ... ... | 116 |
| Macoun, J. M,, Geological Survey, Canada ... | 137 |
| Philadelphia Museum, U.S. America ... ... | 237 |
| Saharunpur, Botanic Gardens, Herbarium ... | 290 |
| Sydney ,, ,, ,, ... ... | 253 |
| Trelease, W. St. Louis, Missouri .. ... ... | 126 |
| U.S. America, National Herbarium ... ... | 113 |
| | 2,445 |

Specimens have been received as under :—

| | |
|---|---|
| Bolus, H., F.L.S., Capetown ... ... ... | 83 |
| Calcutta, Royal Botanic Gardens ... ... | 150 |
| Central Africa, collected by the late J. Buchanan, C.M.G. ... ... ... ... ... | 224 |
| Galpin, E. E Queenstown, Cape Colony ... | 89 |
| Macoun, J. M., Geological Survey of Canada ... | 150 |
| Sydney, Herbarium at Botanic Gardens ... | 407 |
| U.S America, National Herbarium ... ... | 158 |
| | 1,261 |

In addition to the above, all of which are named specimens, I have received a number of specimens of our own flora for identification, often single specimens only when information has been required as to the uses or properties of the plant sent, in several cases larger number of plants have been sent by persons wishing to know something of the plants growing in the vicinity where they reside, or picked up in their travels. The largest contributor in this way has been Mr. G. H. Davies, of Qudeni, Zululand, who sent about 40 different species, chiefly shrubs or trees, the specimens sent have been excellent, well prepared, and in sufficient quantity, but they often suffered considerably in transit through the post. Amongst them are several new species, some rare ones, and a few that are not yet fully determined I should be very pleased to have a few more such valuable correspondents as Mr. Davies in other parts of the Colony, and I may again repeat that parcels of specimens will pass free through post, provided printed direction labels are attached to the parcels, these labels will be forwarded on

application, and also printed directions for preparing the specimens if required.

In consequence of the disturbed state of the country especially in the upper districts, but little collecting has been done. I have made two trips only, one in the early part of the year to Lidgetton, and one near the end of December to Ladysmith, on both occasions securing specimens for exchange; a larger number has been collected from time to time in the coast districts, so that our stock of duplicates is still a fairly large one. In consequence of the time of my Assistant being fully occupied in making the drawings for "Natal Plants," I obtained for a time the services of a young lady who is a refugee from Johannesburg, and her time was fully occupied for about three months in mounting specimens and looking out parcels of plants for exchange, work which otherwise would have to have been done by my Assistant, Miss Lauth.

The preparation of the plates for "Natal Plants" had to be suspended for about two months in consequence of the serious illness of the artist, still the second part of Vol. 2, containing 25 figures and descriptions of Gramineæ, and the first part of Vol. 3, containing 25 figures and descriptions of miscellaneous plants has been published; the second part of Vol. 3 will be issued early in the coming year. Altogether 43 drawings have been completed during the year. It was intended that Miss Lauth should keep to the grasses until completed, but chiefly in consequence of the war Mr. Haygarth was compelled to give up evening work in consequence of two of his assistants being at the front with the Volunteers, he could no longer give his attention to it, I therefore decided to leave the grasses for a time so as to finish Vol. 3, after that we shall probably return to Vol. 2 until completed.

During the past year further additions to the "Preliminary Catalogue of Natal Plants" have been made, and I now give the names of 61 which have been added to the list:—

| | |
|---|---|
| *Aloe natalensis*, Wood & Evans ... | ... *Liliaceae* |
| *Androcymbium decipiens*, N. E. Brown | ... ,, |
| *Anthospermum rubicaule*, K. Schum | ... *Rubiaceae* |
| *Argyrolobium reflexum*, N. E. Brown | ... *Leguminosae* |
| ,, *variopile*, N. E. Brown | ... ,, |
| *Aristida augustata*, Stapf ... | ... *Gramineae* |
| ,, *vestita*, Thb ... ... | ... ,, |
| *Asclepias Gerrardi*, Schltr ... | ... *Asclepiadeae* |
| *Athrixia Gerrardi*, Harv ... | ... *Compositae* |
| ,, *arachnoidea*, Wood & Evans | ... ,, |
| *Athanasia montana*, Wood & Evans | ... ,, |
| *Boerhavia ascendens*, Willd ... | ... *Nyctagineae* |

| | |
|---|---|
| *Celastrus albatus*, N. E. Brown ... | ... *Celastrineae* |
| „ *concinnus*, N. E. Brown ... | ... „ |
| *Cyrtanthus Galpint*, Baker ... | ... *Amaryllideae* |
| *Dipcadi Clarkeanum*, Schinz ... | ... *Liliaceae* |
| *Disperis oxyglossa*, Bolus ... | ... *Orchideae* |
| „ *Macowani*, Bolus ... | ... „ |
| „ *stenoglossa*, Schltr ... | ... „ |
| *Euphorbia cuspidata*, Bernh ... | ... *Euphorbiaceae* |
| „ *livida*, E. M. ... | ... „ |
| *Geranium robustum*, Kunze ... | ... *Geraniaceae* |
| *Geigeria natalensis*, Wood & Evans | ... *Compositae* |
| „ *rivularis*, Wood & Evans | ... „ |
| *Gladiolus oligophlebins*, Baker ... | ... *Irideae* |
| *Helichrysum Woodii*, N. E. Brown | ... *Compositae* |
| *Hermannia longifolia*, N. E. Brown | ... *Sterculiaceae* |
| *Indiyofera rostrata*, Bolus ... | ... *Leguminoseae* |
| *Lasiosiphon splendens*, Meisn ... | ... *Thymeleae* |
| *Lobelia erinoides*, Thb. ... | ... *Campanulaceae* |
| „ *scabra*, Thb. ... ... | ... „ |
| *Loranthus Sandersoni*, Harv ... | ... *Loranthaceae* |
| *Lotononis adpressa*, N. E. Brown ... | ... *Leguminoseae* |
| „ *Haygarthii*, N. E. Brown | ... „ |
| *Limosella tenuifolia*, Nutt ... | ... *Scrophularineae* |
| *Lyperia crassicaulis*, Bth. ... | ... „ |
| *Lythrum rivulare*, Wood & Evans | ... *Lythrarieae* |
| *Mystroxylon euclaefolium*, E. & Z.... | ... *Celastrineae* |
| *Nesaea Schinzii*, Kohn ... | ... *Lythrarieae* |
| *Olea Woodiana*, Knoblach ... | ... *Oleaceae* |
| *Ornithogalum Saltmarshii*, Baker ... | ... *Liliaceae* |
| *Othonna platyphlla*, N. E. Brown ... | ... *Compositae* |
| *Physalis minima*. Linn ... | ... *Solanaceae* |
| *Pterocelastrus echinatus*, N. E. Brown | ... *Celastrineae* |
| „ *rostratus*, Walp. ... | ... „ |
| *Pterygodium hastatum*, Bolus ... | ... *Orchideae* |
| „ *tricuspidatum*, Schlechter | ... „ |
| *Pygeum africanum*, Hook, *f.* ... | ... *Rosaceae* |
| *Rhus cuneata*, N. E. Brown ... | ... *Anacardiaceae* |
| *Satyrium aphyllum*, Schlechter ... | ... *Orchideae* |
| *Senecio seminivea*, Wood & Evans... | ... *Compositae* |
| „ *tugelensis*, Wood & Evans... | ... „ |
| *Streptocarpus angustilobus*, N. E. Brown | ... *Gesneraceae* |
| „ *Cooperi*, Clarke ... | ... „ |
| „ *Daviesii*, N. E. Brown | ... „ |
| „ *Haygarthii*, N. E. Brown | ... „ |
| *Strychnos Henningsii*, Gilg ... | ... *Loganiaceae* |
| *Syncolostemon macrophyllus*, Gurke | ... *Labiatae* |
| *Tylophora lycioides*, Dene ... | ... *Asclepiadeae* |
| *Ursinia brevicaulis*, Wood & Evans | ... *Compositae* |

*Vitex Zeyheri*, Sond ... ... ... *Verbenaceae*
*Zaluzianskya ovata*, Walp. ... ... *Scrophularineae*

The following publications have been received :—

| NAME. | DONOR. |
|---|---|
| Annual Report on New Remedies ; by E. Merck ... ... | Author. |
| Australian Saltbushes ; by M. E. Jaffa | Govt. U. S. America. |
| Acta Horti Petropolitani ... | Director. |
| Beitrage zur Kentniss der Africanscher Flora ... ... ... | Prof. Dr. Schinz. |
| Flora of Tropical Africa, Vol. V., Part II. | Director, Kew Gardens |
| Illustrations of Flora of Congo, Vol. 9 | Authors. |
| Icones Plantarum, Vol. VII, Parts 2, 3 | Director, Kew Gardens |
| Journal of Botany. Current numbers | Editor. |
| Memoires de L'Herbier Boissier, No. 10 | Prof. Dr. H. Schinz. |
| Merck's Digest, No. 8 ... ... | Author. |
| Monograph of Disperideæ ; by R. Schlechter ... ... | ,, |
| Monograph of Podochilineæ ; by R. Schlechter ... ... | ,, |
| New or little known African Orchids ; by R. Schlechter ... ... | ,, |
| New or little known African plants ; by R. Schlechter ... ... | ,, |
| New S. African plants, decades 8, 9 ; by R. Schlechter ... ... | ,, |
| Notes on Potamogetons ; by A. Bennett | ,, |
| Plant covering of Ocracoke Island ; by Th. Kearney, Jr. ... ... | Govt. U. S. America. |
| Plantæ Utowanæ ; by C. F. Millspaugh, M.D. ... ... | Author. |
| Revision of the genus Holothrix ; by R. Schlechter ... ... | ,, |
| Recent literature on Styptacin ; by E. Merck ... ... | ,, |
| Studies of American grasses ; by F. L. Scribner ... ... | Govt. U. S. America. |
| Stigmatose, a disease of Carnations and Pinks ; by A. F. Woods ... | ,, ,, |
| Two diseases of Cedar caused by fungt ; by Hermann von Schrenk ... | ,, ,, |
| West Indian Asclepiadaceæ ; by R. Schlechter ... ... | Author. |
| Wilt disease in Cotton, Water Melon, and Cow Pea ; by E. F. Smith ... | Govt. U. S. America. |

PURCHASED.

Trimens Flora of Ceylon, Part V.
Text Book of plant diseases; by G. Massee.
Agricultural Botany; by J. Percival, F.L.S.
Glossary of Botanic terms; by B. D. Jackson.

In my annual report for 1899, I repeated the descriptions of the third decade of new Natal Plants described by Mr. M. S. Evans and myself, and published at Home in the *Journal of Botany*. It was intended to publish a fourth decade, but the outbreak of war and press of other business prevented our obtaining specimens from the upper districts, we therefore determined to send what remained for publication in the *Kew Bulletin*, and not to continue the decades at present. The following descriptions were therefore sent for publication some months ago, and may possibly appear before this report is published, but as few people in Natal see that publication, I think it best to include them in this report especially as all the other species have already appeared in former reports.

## New Natal Plants.

*Senecio tugelensis*, Wood & Evans. Annual, herbaceous, erect, stems simple, striate, glabrous. Leaves oblong-lanceolate, or ovate-lanceolate, acute or obtuse, lower ones tapering to a winged amplexicaul petiole, upper ones amplexical, margins closely serrate, glabrous, purple beneath. Heads solitary, or 2–3 on somewhat elongated glabrous peduncles bearing 2-3 scattered lanceolate bracts, radiate, calycled with 6–7 linear bracteoles. Involucre of 12 to 14 glabrous scales. Ray florets 12 to 14; 4–5 lined, yellow; disk florets 60 to 80. Achenes (unripe) glabrous.

Habitat: Natal; sources of Tugela, summit of Drakensberg, near Mont aux Sources; 10 to 11,000 feet altitude, March, 1898; *M. S. Evans*, No. 750.

The whole plant 6 to 14 inches high; leaves 1 to 2 inches long, $\frac{3}{8}$ to $\frac{3}{4}$ inch wide; Involucral scales $\frac{3}{4}$ inch long; Heads spreading to 1 inch diameter.

*Senecio seminivea*, Wood & Evans. Suffruticose, ascending, branches curved, glabrescent below, glandular hairy in upper portion. Leaves crowded, alternate, sessile, half amplexicaul, pinnate, 5–7 lobes on each side, young ones very densely white woolly tomentose, mature one sub-glabrous, leaflets simple, entire or 2–3 lobed, acute, margins entire Heads solitary, radiate, pedunculate, calycled with 2–3 linear glandular bracteoles. Involucral scales 10–15, glandular hairy, with membranous margins, 3–4 nerved in central portion. Disk florets 40 to 50; ray florets 10 to 12; 4-lined. Achenes glabrous.

Stems 5 to 10 inches high; mature leaves $\frac{3}{8}$ to $\frac{5}{8}$ inch long, lobes $1\frac{1}{2}$ to 2 lines long. Involucral scales 3 to 4 lines long. Ray florets extending to $1\frac{1}{4}$ inch diameter, yellow; disk florets yellow.

Habitat: Natal; summit of Drakensberg, near Mont aux Sources, 10 to 11,000 feet altitude, M. S. Evans, No. 752.

This species is apparently closely allied to *S. tanacetoides*, Sond, but can at once be distinguished from that species by the peculiarity of the fascicles of young leaves being snowy white with woolly tomentose pubescence, while the adult leaves are dark green and almost glabrous, and this may be as well seen in the dried specimens as in the living ones; and also by the glandular hairs on the upper part of the stem, peduncle. and outside of involucral scales. We have only observed this species on the summit of the Drakensberg, while *S. tanacetoides* is plentiful at the foot of the mountain.

*Athrixia arachnoidea*, Wood & Evans.

Suffruticose, Stems solitary, erect or ascending, occasionally branched, terete, leafy to apex, arachnoid. Leaves alternate, erecto-patent, sessile, linear, acute, margins reflexed, glabrous or thinly arachnoid above, very densely so beneath. Peduncles 1-headed, short, terminal or axillary near apex of stem, swollen towards apex, clothed with scattered subulate, arachnoid scales similar to those on the involucre. Heads turbinate. Involucral scales pluriseriate, arachnoid, subulate, squarrose. Ray florets 20 to 30, disk florets about 1 0. Pappus uniseriate, without interposed scales, the bristles persistent, thinly clothed with minute hairs. Ripe achenes not seen.

An undershrub 6-12 inches high. Leaves in centre of stem $\frac{3}{4}$-1 inch long, $1\frac{1}{2}$-2 lines wide, gradually shorter to base and apex. Peduncles 3-6 lines long. Heads 9 lines diameter. Involucral scales 3-4 lines long. Ray florets 6-7 lines long, purple; disk florets 4 lines long, yellow.

Habitat: Natal; amongst grass, Polela, about 6,000 feet altitude. July, 1895. M. S. Evans, No. 513.

*Aloe natalensis*, Wood & Evans.

Shrubby, copiously and repeatedly branching from the very base, each branchlet ending in a dense rosette of leaves, occasionally producing adventitious roots from the lower branches. Leaves 30 to 40 in a rosette, linear lanceolate, falcate, acute, sub-glaucous, neither spotted nor lined, margined with deltoid curved pricles. Peduncles usually simple, bracts broadly obovate, veined. Racemes densely many flowered; pedicels erecto-patent. Perianth bright red, cylindrical. Stamens finally slightly exserted. Stigma exserted.

The whole plant, 8 to 12 feet high, with a diameter of 12 to 15 feet. Rosettes of leaves very numerous. Leaves 18 to 30 inches long; $1\frac{1}{2}$ to $2\frac{1}{2}$ inches wide; $\frac{1}{2}$ to $\frac{5}{8}$ inch thick at the base; prickles 1 line long, $\frac{1}{4}$ to $\frac{3}{4}$ inch apart. Pedicels 1 to $1\frac{1}{2}$ inch long. Racemes 5 to 10 inches long, spreading to 3 inches wide, bracts $\frac{1}{2}$ inch long and wide. Perianth $1\frac{1}{2}$ to $1\frac{3}{4}$ inch long.

HABITAT: Natal; Midlands from 800 to 3,000 feet altitude, usually, but not always on cliffs or rocky hills.

Differs from any species of Aloe known to us, or described in the *Flora Capensis*, and well distinguished by its copiously branching habit. It forms large clumps, and covers a large extent of ground in comparison with its height. The rosettes of leaves in moderate sized plants number from 200 to 300 or more, with a still larger number of small ones.

*Athanasia montana*, Wood & Evans.

Suffruticose, much branched. Stems erect, terete, clothed with scars of fallen leaves, finely arachnoid, pubescent. Leaves alternate, sessile, oblong-ovate to lanceolate, acute, broad based, margins deeply and sharply serrate; thickly covered with glands; with axillary tufts of small, entire, linear leaves. Inflorescence a compound corymb, many headed, pedicels bracteate, bracts linear-lanceolate. Involucral scales minutely ciliolate, sub-similar. Pappus of several short papillose scales. Achenes (unripe) striate, papillose.

Plant, 2 to 3 feet high. Leaves $\frac{1}{2}$ to $\frac{3}{4}$ inch long, 2-4 lines wide; axillary entire ones, $1\frac{1}{2}$ to 2 lines long; heads 4 lines diameter.

HABITAT: Natal; Drakensberg, Source of Bushman's River, 6–7000 feet altitude. June, 1896, M. S. Evans, No. 662.

The nearest species to this known to us is *A. leucoclada*, Harv, from which it is distinguishable by its more robust and branching habit, and also by its inflorescence being a compound corymb of many heads and not "simple, dense, few headed."

*Geigeria rivularis*, Wood & Evans.

Suffruticose, erect or ascending, glabrous, clothed with leaves from base to apex. Leaves linear, tapering to base and apex, entire, flat, impress-dotted, glabrous, acute, midrib inconspicuous. Heads lateral and terminal, subsessile or shortly pedunculate, subtended by many leaves. Involucral scales, outer ones linear from a broadened base, with swollen midrib; inner ones lanceolate, coriaceous, shorter than the outer ones. Pappus, outer of oblong, blunt, and inner of oblong bristle pointed scales. Receptacle covered with stiff bristles. Achenes very villous.

Stem 6 to 8 inches in height. Leaves $1\frac{1}{2}$ to 2 inches long. 1 to $1\frac{1}{2}$ line wide. Heads $1\frac{1}{4}$ inch diameter. Outer involucral scales $\frac{1}{8}$ to 1 inch long. Flowers yellow.

HABITAT: Orange River Colony, near Harrismith, 5–6000 feet altitude. March, J. M. Wood, No. 4784.

This plant is very closely allied to G. Burkei and G. Zeyeri, but differs from the former in indument, shape and size of involucral scales, and fimbrils. This is not strictly a Natal plant, but being found so near the border, and the district having not yet been very closely botanised it is very possible that it may yet be found on the Natal side of the border, it is the only one of the series that has not been actually collected in Natal.

*Geigeria natalensis*, Wood & Evans.

Suffruticose from a thickened woody root, Stems branching, often from base, slender, erect or ascending, glabrous, leafy to base. Leaves narrow linear, glabrous, punctate, entire. Heads subtended by leaves Involucral scales, outer one subulate from a broad base; inner ones lanceolate, coriaceous, ciliate on npper portion, longer than the outer ones, Pappus scales, outer ones oblong, obtuse, inner ones oblong, bristle pointed. Receptacle covered with stiff bristles. Achenes very villous.

The whole plant 9 to 12 inches high. Leaves $1$–$1\frac{1}{4}$ inch long, $\frac{1}{2}$ to $\frac{5}{8}$ line wide. Involucral scales outer, 3 lines, inner, 5 lines long.

HABITAT: Natal; Dry stony hill Whitecliffe near Greytown. April. J. M. Wood, No. 4317.

This plant differs from *G. rivularis*, W. & E., by its generally much more slender habit, size and shape of leaves, and comparative size of involucral scales, and in the much smaller size of the flower heads. Flowers yellow.

*Ursinia brevicaulis*, Wood & Evans.

Suffruticose. Stems 1 or more, erect or ascending, short, unbranched. leafy from base to apex, leaves crowded, pinnatipartite in upper portion, segments about 6, opposite or alternate, linear, simple or occasionally bifid, glabrous, punctate, acute at apex, petiole elongate, gradually dilated towards base, semiamplexicaul, glabrous. Peduncle 1-headed, elongate, thinly clothed with minute hairs. Involucral scales glabrous, outer ones dark edged, inner larger, amply membrane tipped, all obtuse. Palae a little constricted below apex, terminating in a rounded membranous lobe.

Stems $\frac{1}{2}$-1 inch long. Leaves 1-$1\frac{3}{4}$ inch long, petiole below lowest segments, $\frac{5}{8}$-$1\frac{1}{4}$ inch long; segments 2-3 lines long. Peduncles $2\frac{1}{2}$-5 lines long.

HABITAT: Natal. Summit of Mont aux Sources, 10-11,000 feet altitude. March, 1898. M. S. Evans, No. 744.

*Lythrum rivulare*, Wood & Evans.

Suffruticose, erect. Stems many from a woody root, copiously branching; leaves scattered, petiolate, lanceolate, acute, entire, margins reflexed, glabrous. Peduncles axillary, solitary 3-1 flowered by abortion, the one flowered peduncles with a pair of bracts above the middle, the 3-flowered peduncles with smaller bracts, the lateral flowers only, having a pair of bracteoles below the calyx, the central flower without bracteoles. Bracts linear, equalling the pedicels, bracteoles smaller. Calyx 8-costate, 4-toothed, Petals 4, ovate, Stamens 4, exserted. Flowers pink.

The plant 15 to 18 inches high. Leaves $\frac{1}{4}$ inch long, less than 1 line wide. Calyx 1 line long, petals equalling calyx.

HABITAT: Natal: Province of Zululand near Tugela River, J. Wylie (Wood, No. 5689).

This plant differs from *L. sagittaefolium*, Sond, which also has 4 stamens, by form size, and indument of leaves, and also in inflorescence, and from *L hyssopifolium* in size and position of leaves, mode of inflorescence, and number of stamens.

INDIGENOUS FOOD PLANTS.—In my Report for 1894 I gave a list of indigenous plants with the uses to which they are applied by the natives. This list, however, referred chiefly to medicinal plants, though a few others were included in it. It occurs to me that a list of the plants used as food by the natives would be interesting, and though I cannot hope that the list will be a complete one, still it may perhaps call attention to the subject, and elicit information that may lead to the publication of a supplementary list on a future occasion. I have thought it best now to divide the list into two sections, the first including the wild fruits of the colony, the second those plants which are used as vegetables or in other ways as food. It can hardly be said that our list of indigenous fruits is a large one, or that many of them are of value, still there are some that might perhaps be improved by cultivation, and it may therefore be of use in this way to enumerate them. Some of the plants noted can scarcely be considered to be really of value as food, though probably in times of great scarcity they may have been so used; now, however, they are only eaten by children or herd boys when out with the cattle, and some of the more insignificant ones I have for the present omitted altogether.

It will be seen that in this list the plants are for convenience arranged alphabetically; in a future and more complete list it may be as well to arrange them systematically in botanical sequence.

## FRUITS.

*Antidesma venosum*, E.M. isi-Bamuloti. *Euphorbiaceæ.*

A small tree whose fruits are eaten by natives and children, they are not very palatable, and probably might be injurious if eaten in quantity.

*Anona senegalensis*, Pers. i-Rabija. *Anonaceæ.*

A small tree bearing a fruit something like the custard apple, but much smaller, both this plant, the custard apple, sweet and sour sops, and cherimoyer, belong to the same genus, but the fruit of *A. senegalensis* is much inferior to any of them. It is also a native of S. America.

*Aberia caffra*, Hk. & Harv. um-Qokolo. *Bixineae.*

A small tree or shrub, often used for hedge purposes, the fruits are large, and very sour, except perhaps when quite ripe. They are often used for preserving, and Baron Mueller suggests that they might perhaps be dried "by which means the sourness might be lessened."

*Arachis hypogaea*, Linn., Ground Nut. *Leguminosae.*

This plant is cultivated in most tropical countries, and is too well known to need further description. The legumes are deposited beneath the surface of the ground, and the seeds yield a bland oil which is but little inferior to that obtained from the olive. A kind of butter made from the seeds is much esteemed by vegetarians and others.

*Bridelia micrantha*, Planch. um-Hlalamaquababa. *Euphorbiaceae.*

A tree bearing berries a little larger and about the same colour as a black currant, they are sweetish and edible.

*Cassia occidentalis*, Linn. *Leguminosae.*

A small undershrub bearing yellow flowers and long slender pods, it is probably not really indigenous, but has become naturalised in the coast districts The seeds have been used as coffee when roasted, and are said to be beneficial to asthmatic patients when used in this way.

*Chrysophyllum natalense*, Sond um-Tongwaan. *Sapotaceae.*

A moderately sized tree reaching to 20 or 30 feet in height, the fruit is sour but edible, and is sometimes called the Natal Plum.

*Carissa acuminata*, A. DC. um-Vusamkunzi. *Apocynaceae.*

A low rambling shrub attaining about 10 feet in height, the fruits are eaten by natives and are also used for preserving,

but they are much smaller than those of *C. grandiflora*, and are not so plentiful (Natal Plants, Vol. 3, Plate 203).

*Carissa grandiflora*, A. DC. Amatungulu. *Apocynaceae*

A low growing shrub, most plentiful near the coast, even close to the seaside, but we have seen it bearing fruit plentifully under cultivation at an altitude of 2,000 feet above sea-level. The fruit is delicious, and is much used for preserves and jellies, which have long been an article of export from the Colony, though except as a hedge plant it has been little cultivated, and almost the whole of the fruit used for preserving has been gathered from the wild plants on the coast belt of bush. As a fencing plant it is unsurpassed. (Natal Plants, Vol. 1, Plate 14.)

*Dovyalis rhamnoides*, Burch. Cumquin. *Bixineae.*

A small spiny shrub most common near the coast, the berries are edible, and are said to be "delicious, making a fine preserve" we, however, find them to be very sour. In some seasons the plants bear fruit in great abundance, in others little or none.

*Dovyalis rotundifolia*, Thb. *Bixineae.*

Very similar to the last named plant, but perhaps not so common. The fruit is used in the same way as that of *D. rhamnoides*, and is known to the natives by the same name.

*Eugenia cordata*, Laws. um-Done, Waterboom. *Myrtaceae.*

A large tree usually found in moist ground and common in swamps on the coast and midlands. The fruit is about the size of a cherry, and somewhat acid, but is much relished by the natives. The wood of the tree is valuable if cut at the right time of the year and properly seasoned.

*Eugenia albanensis*, Sond. i-Nanja. *Myrtaceae.*

A low undershrub about 6 to 12 inches high, the stems are solitary or several together from a woody root which is perennial, while the stems, if not annual, are usually burned to the ground by grass fires in the winter months. It is found plentifully in open grass lands from close to the sea to the midlands, and perhaps in the uplands also. The fruits are about 1 inch long, and are eaten by the natives and by some Europeans also, who find them pleasant to the taste. (Natal Plants, Vol. 3, Plate 205.) The leaves as shown in the plate are small and oblong, but they are often much larger and subrotund. It is quite possible that there are two varieties of the plant, but this needs further observation.

*Fadogia humilis*, Wood & Evans. *Rubiaceae.*

A very low undershrub having many short decumbent stems from a thick spreading woody root, the whole plant not more than 6 inches high. The fruits are globose and about $\frac{3}{4}$ to 1 inch in diameter, they are eaten by the natives in the districts where the plant is found. Hitherto it has only been reported from the ridges of the Drakensberg. It was described in the *Journal of Botany*, Vol. XXXVII., p. 252, and again in my annual report for 1899.

*Ficus*, spp. *Urticaceae.*

The fruits of several species of this genus are eaten by natives, and those of at least two of them are rather agreeable, but they are usually so full of insects that Europeans do not relish them.

*Garcinia Gerrardi*, Harv. *Guttifereae.*

A small tree found in woods in the midland districts, the fruit is edible, but the tree appears to be rather rare, and we have never seen the fruits, which are presumably at once appropriated by our native attendants, and it does not seem to be a very heavy bearer.

*Halleria lucida*, Linn. i-Meinza. *Scrophularineae.*

A shrub or small tree bearing red tubular flowers clustered on the stem and branches The fruit is globose about $\frac{1}{2}$ to $\frac{3}{4}$ inch in diameter, is edible and said to be not unpleasant.

*Kraussia floribunda*, Harv. Skupashaan. *Rubiaceae.*

A shrub with white flowers, the berries are a little larger than currants, brown when ripe, and though there is but little flesh, they are eaten and are not unpleasant to the taste.

*Lantana salviaefolia*, Jacq. Bukwebezaan. *Verbenaceae.*

A small undershrub with rough leaves, usually found at edges of woods, and often in moist localities. The berries are small, pink when ripe, agglomerated in subglobose clusters, edible, but not very tempting.

*Mimusops caffra*, E.M. um-Nweba. *Sapotaceae.*

A moderately sized tree, sometimes large, confined to coast districts, the fruit is edible. The wood is valuable and is popularly known as "Milkwood," it has been used for boat-building and other purposes. (Natal Plants, Vol. 1, Plate 43.)

*Mimusops dispar*, N. E. Brown. um-Pumbulo. *Sapotaceae.*

A tree of the upper districts, the fruit is oblong, 1 to 2 inches in length, yellow when ripe, and is much esteemed by the

natives, whose women we have seen carrying it in sacks for long distances to their kraals, it is well flavoured, and would perhaps be improved by cultivation, but the growth of the tree is very slow. Nothing is certainly known to us of the value of the wood, but it is most likely that it would be found to be useful, as is that of the preceeding and following species.

*Mimusops marginata*, N. E. Brown. um-Pumbulo. *Sapotaceae.*

A large tree of the coast and midland districts, the fruits are not quite so large as those of *M. dispar*, and they are differently shaped, being pointed at the apex, and brown, not yellow when ripe, they are edible but not so well liked as those of *M. dispar*. The wood is hard and valuable, and is also known as "Milk-wood."

*Mimusops obovata*, Sond. Masatole. *Sapotaceae.*

A smaller tree than any of the species of *Mimusops* alluded to above, bearing fruits neither so large, nor so palatable as those of *M. dispar* or *M. marginata*, but still are edible. The wood is used, but is not much esteemed. There are two other species of *Mimusops* in the Colony, viz , *M. natalensis* and *M. oleifolia*, and it is probable that their fruits are also edible, but we have not met with the trees and have no information about them.

*Odina caffra*, Hook. um-Gwenya. *Anacardiaceae.*

A large spreading evergreen tree, the fruit is edible. and has been used for preserving. As poles cut from this tree grow readily when planted it has been used as a wind break, the wood has been used for furniture, but the sapwood will not bear exposure. This tree has often been mistaken for *Ekebergia capensis*, which it much resembles, and both are popularly known as "Essenhout," or "Essenwood."

*Odina edulis*, Sond. um-Toto. *Anacardiaceae.*

A small undershrub, the very short stems springing from a thick woody spreading root, the whole plant not reaching more than a foot or so in height. It is usually found on the sides of stony hills, or near edges of woods. The fruit is globose in shape, and is edible, but not very tempting to European taste, when ripe it is reddish brown in colour.

*Phœnix reclinata*, Jacq. i-Sundu. *Palmae.*

This is our commonest indigenous palm, and is found from close to the coast to about 2,000 feet above sea level, the fruits are small and have the flavour of the date, but there is very little pulp covering the seeds, and they are only eaten by

children. From the stems of this palm are made the brooms that in old times were so commonly made and offered for sale by the natives, but are now seldom seen. The sap is also used for making an intoxicating drink.

*Physalis peruviana*, Linn. *Solanaceae.*

This is an introduced plant which has become quite naturalised in the colony, as it also has in most tropical and semi-tropical countries. It is commonly known as the Cape Gooseberry, and at Home, where it is sometimes seen, as the "Hooded Cherry." The fruit is much relished by both natives and Europeans. and large quantities of jam are made from it, both for home consumption and for export. Another species of the genus, *P. minima*, is also occasionally met with, but the fruits are much smaller than those of *P. peruviana*, and are of but little use; a third species also occurs in the colony, but has not yet been specifically identified, its fruits are also small, and though edible are of but little value.

*Plectronia ventosa*, Linn. um-Vutwamini. *Rubiaceae*

A small tree found all over the colony, its branches, especially the younger ones are spiny, the fruit is ovate and about $\frac{3}{4}$ inch long, edible but insipid. The fruits of *P. spinosa*, Klotsch, are very similar and are also edible.

*Rubus Ludwiggii*, E. & Z. i-Jingijolo. *Rosaceae.*
*Rubus rigidus*, Smith.

These are two of our indigenous species of "Blackberry" or "Bramble," their fruits are edible, but not equal to those of the European or American species; cultivation would probably improve them.

*Salacia alternifolia*, Hochst. i-Bonsi. *Celastrineae*

A small undershrub usually about 1 to 2 feet high, but occasionally at edges of woods assuming a rambling habit. The fruits are an inch or more in diameter, dull red when ripe, and are said to be not unpleasant to the taste. In plentiful seasons they are collected and offered for sale by the natives, but they are not suitable for cookery.

*Sclerocarya caffra*, Sond. um-Gano. *Sapindaceae*

A large deciduous tree, the fruit is about the size of a small hen's egg, slightly compressed, and yellow or greenish yellow when ripe, the small quantity of pulp contained between the outer skin and the kernel has somewhat the flavour of the Mango, but is more acid. The fruits are used by the Amatonga Kaffirs for making an intoxicating drink.

*Solanum nigrum*, Linn. um-Sobo. *Solanaceae.*

The small fruits of this plant are eaten by children, and though they have been often said to be poisonous, this is not confirmed. J. H. Maiden F.L.S., reports that they are used in some parts of Australia for making jam, and that comparatively little sugar is required in its preparation, and also that "the leaves were cooked as a potherb by the camp followers of Dr. Aitchison in Afghanistan." Our natives occasionally use the leaves in a similar way. The plant is found all over the colony, and is very variable in form.

*Strychnos Gerrardi*, Lam. Gulugulu. *Loganiaceae.*

A large tree bearing a profusion of fruits about the size of a small orange, the seeds are imbedded in a yellow pulp which is much relished by children, but it is understood that the large seeds themselves are more or less poisonous (Natal Plants, Vol. 1, Plate 16).

*Strychnos spinasa*, Lam. um-Hlala. *Loganiaceae.*

A small spiny tree whose fruits are larger than those of the last named species, and with a different flavour, they are used in the same way, but it is said that the unripe fruits possess emetic properties. The roots are used medicinally by the natives. The fruits are known to colonists as "Kaffir Orange," or "Monkey Orange."

*Vangueria infausta*, Burch, um-Vili, *Rubiaceae.*

An undershrub commonly known as "Wild Medlar," the fruits are eaten by natives and Europeans, and are not at all unpleasant; they are globose, and about 1 inch in diameter. Occasionally the plants are attacked by a parasitical fungus, *Hemileia Woodii*, K. & Cke., which is nearly related to the Coffee leaf fungus *H. vastatrix*, and when this fungus is present in quantity the shrubs bear little if any fruit; whether a shrub once attacked by this fungus ever shakes it off and recovers, I am at present unable to say, but think not. It is also the host plant of another parasitical fungus *Aecidium vanguerieae*, Cke., but this is not so destructive a pest as the *Hemileia*

*Vangueria macrocalyx*, Sond. *Rubiaceae.*

A shrub 6 to 8 feet in height found in the midlands, but not we think very common. The fruit is as large as a common plum, and is said by the late W. T. Gerrard to be "delicious eating."

*Vangueria latifolia*, Sond. in-Kabakaumtwana. *Rubiaceae.*

A low undershrub seldom more than 2 feet in height found in coast and midland districts, the fruit is smaller than that of

*V. infausta*, and with some acidity, but it is eaten by natives. The leaves are often badly attacked by a parasitical fungus, *Uredo vangueriae*, which frequently covers the whole leaf and detaches the epidermis; it is another form of the Aecidium found upon *V. infausta*.

*Vangueria pygmaea*, Schltr. *Rubiaceae.*

This species which has lately been described by Mr. R. Schlechter is found in the upper districts about Lidgetton and Nottingham Road; it is a low growing plant very similar in appearance to *Fadogia humilis*, W. & E., and with very similar fruits, which are eaten by the natives in the districts where the plants are found.

*Vitis capensis*, Thb. is-Inwazi. *Ampelideae.*

A strong climbing plant. the berries are not unpleasant to the taste, but somewhat astringent In the early days of the colony they were much used for preserving, but latterly they are not I think often used.

*Vitis cuneifolia*, E. & Z. is-Inwazi. *Ampelideae.*

An upright undershrub seldom more than about 3 feet in height, the fruits are smaller than those of *V. capensis*, but otherwise very similar, and they also have been used for preserving. Some parts of this plant are used medicinally by the natives.

*Voandzeia subterranea*, Thouars. in-Zhlubu. *Leguminosae.*

A low growing plant with creeping root and small yellow flowers. Like *Arachis hypogaea* it thrusts the young legumes below the surface of the ground where they ripen. It is cultivated by the natives all over South Africa, but its native country is uncertain, though the Index Kewensis gives it as Tropical and South Africa. The seeds are usually boiled, but are also eaten uncooked.

*Ximenia caffra*, Sond um-Tunduluku. *Olacineae.*

A small tree of the coast and midlands. The fruits are 1 to $1\frac{1}{2}$ inch long, oblong, bright red when ripe, and very acid. The kernels contain a large percentage of oil.

## POT-HERBS.

*Alepidea*, spp. i-Konkwaan. *Umbellifereae.*

Herbaceous plant usually with rather stiff looking umbels of whitish flowers. The leaves of one or more of the species are cooked and eaten, but not we think commonly.

*Argyrolobium marginatum*, Bolus. in-Tondo. *Leguminosae.*

A low growing plant with yellow papilionaceous flowers, and leaves which are more or less margined. The long fleshy roots are cooked and eaten, and are said to resemble sweet potatoes. Baboons are also fond of the roots.

*Amarantus Thunbergii*, Moq. im-Buya *Amarantaceae.*

A well-known weed whose young leaves are used as spinach by both Europeans and natives.

*Aloe Cooperi*, Baker. isi-Putamana. *Liliaceae.*

The flowers of this plant are used as a pot-herb, and we have found them very palatable; whether it would be safe to eat much of the dish at one time we are unable to say, but the natives appear to have no fear of evil effects from its use.

*Bidens pilosa*,, Linn Cadolo. *Compositae.*

The well-known "Black Jack," the leaves are boiled and eaten by the natives, and sometimes by Europeans also. We have understood that it is regarded as a good fodder for horses in India.

*Chenopodium ambrosioides*, Linn. um-Bigicana. *Chenopodieae.*

The leaves of this well-known weed are used as a pot-herb, but the odour of the plant would be sufficient we should think to deter Europeans from using it, except under very adverse circumstances.

*Coleus*, sp. Mazambaan. *Labiatae.*

The tuberous roots are boiled and eaten, and the plant is cultivated for this purpose by the natives, their name for it is the same as that given to the common potato.

*Colocasia antiquorum*, Schott. i-Dumbe. *Aroideae.*

This plant is largely cultivated by the natives, who are very fond of the cooked roots, but I cannot learn that they use the leaves as food, as is done in some other countries. Dr. Seeman says: "When the crop is gathered in Fiji the tops of the tubers are cut off and at once replanted. The young leaves may be eaten like spinach, but like the root, they require to be well cooked to destroy the acridity peculiar to aroideous plants. The Fijians prefer eating the cooked Taro when cold; Europeans as a rule like it quite hot, and if possible roasted. A considerable number of varieties are known, some are better adapted for puddings, some for bread, or simply for boiling or baking. The other marks of distinction chiefly rest upon the different tinge observable in the corm, leaf, stalks, and ribs of the leaves—white, yellowish, purple."

*Momordica cordifolia*, Sond. in-Shunga. *Cucurbitaceae.*

A climbing or rambling plant with large cordate leaves and yellowish flowers, the leaves are used as a pot-herb, and the pulp of the fruit is eaten by children.

*Ophioglossum reticulatum*, Linn. Sankushani. *Filices.*

The leaves of this well-known plant are also used as a pot-herb. It will, perhaps, be better known to most people as "Adder's tongue."

*Oxalis semiloba*, Sond. um-Swempe. *Geraniaceae*

The small tubers are eaten, and the leaves used as a pot-herb.

*Plectanthrus esculentus*, N.E.B., um-Bondwe, *Labiatae.*

An undershrub with yellow flowers, bearing small tubers which are cooked and eaten by the natives who cultivate it for that purpose. It is scarcely a table vegetable that would recommend itself to European taste.

*Richardia africana*, Kth. in-Tebe. *Aroideae.*

The well-known "Lily of the Nile," or "Pig Lily," whose large seeds are gathered when ripe and boiled for eating. The native women may often be seeu gathering them in the season.

*Riocrexia torulosa*, Dcne. u-Gwaba, *Asclepiadeae.*

A climbing plant with yellowish flowers, and long slender seed vessels, it is not uncommon in most parts of the Colony about edges of woods, and the leaves are cooked as food by the natives.

In comparing this list with a similar but more complete one issued in pamphlet form by Mr. J. H. Maiden, F.L.S., Director of the Botanic Gardens at Sydney, and dealing with the native food plants of Australia, it is somewhat singular to note that several plants which are used as food by the natives of Australia, and which are also common in Natal, do not appear to have been used by our natives to any extent if at all, so far as I have able to ascertain, they are as under :—

| | |
|---|---|
| *Avicenna officinalis*, Linn. | *Ipomea pes-caprae*, Roth. |
| *Canavalia obtusifolia*, DC. | *Marattia fraxinea*, Smith. |
| *Cardiosperum halicacabum*, Linn. | *Portulaca oleracea*, Linn. |
| *Cyperus rotundus*, Linn. | *Sesbania aculeata*, Pers. |
| *Gleichenia dichotoma*, Hook. | *Sonchus oleraceous*, Linn. |
| *Hibiscus tiliaceous*, Linn. | *Typha angustifolia*, Linn. |

Of these plants some are worthy of remark, and I therefore make a few extracts from Mr. Maiden's pamphlet regarding them :—

*Canavalia obtusifolia*, DC. *Leguminosae.*

This plant is not uncommon near the sea coast, and in woods and coast districts, it bears rather large pods, and Mr. Maiden says of it: —

" The seeds are eaten by the blacks after cooking, as they are poisonous in the raw state. Some shipwrecked sailors in North-west Australia were poisoned by them.

*Portulaca oleracea*, Linn. *Portulaceae.*

This is the common Purslane, and a well known weed here, but I cannot learn that the natives have made any use of it, though I think that I remember hearing that some of our colonists have used the leaves as a salad. Mr. Maiden says of it :—

" The seeds of this plant are largely used as food by the natives of the interior. One would suppose that so small a seed would scarcely repay the labour of collecting, but the natives obtain large quantities by pulling up the plants, throwing them in heaps, which after a few days they turn over, and an abundant supply of seed is found to have fallen out, and can be easily gathered up. The food prepared from this seed must be highly nutritious, for during the season that it lasts the natives get in splendid condition on it. The seeds are jet black, and look like very fine gunpowder. The natives grind them in the usual mill (*i.e.*, a large flat stone or bed stone on which the seed is put, and a smaller one to be held in the hand for grinding), and of the flour they make a coarse paste.

We had almost daily occasion to praise the value of the Purslane, which not only occurred in every part of the country explored, but also principally in the neighbourhood of rivers, often in the greatest abundance. We found it in sandy and grassy localities so agreeably acidulous as to use it for food without any preparation, and I have reason to attribute the continuance of our health to the constant use of this valuable plant (Baron Mueller's Botanical Report of the North Australian Expedition).

During the last drought a friend of mine was induced to try it as a vegetable, imagining that it must be nearly allied to spinach, and she assures me that she regarded it as a most valuable table vegetable (Wooll's Flora of Australia).

*Sesbania aculeata*, Pers. *Leguminosae.*

A tall annual plant with yellow flowers and long pods, it is not uncommon in the coast and midland districts. I cannot learn that it is used by our natives in any way, but Mr. Maiden says of it :—

The natives of Northern Queensland make, or used to make, a bread of the seeds of this species.

"In North Queensland, according to Mr. T. A. Gulliver, the natives make bread of the seeds of *Sesbania aculeata*, Pers. I am of opinion that this is the true Nardoo of the Cooper's Creek natives. The unfortunate explorers (Burke and Wills) might easily have mistaken the spore cases of a Marsilea for the shelled out seeds of *Sesbania*. (Bailey, in Proc. Soc., N.S.W., 1880, p. 8).

*Cyperus rotundus*, Linn. *Cyperaceae.*

Mr. Maiden says of this plant:—"Root a small bulb which the aboriginal calls 'Yower,' and other tribes 'Tharaka,' they roast them and eat them."

This plant is also a native of Natal, and though our natives do not appear to have made any use of it, a closely allied plant, *C. esculentus*, Linn, has an aromatic tuberous rootstock which they use medicinally, and another species also closely allied, *C. fastigiatus*, Roxb produces small tubers at the ends of some of the roots, which are eaten, the plant is known as in-Goopa.

*Typha augustifolia*, Linn. *Typhaceae.*

This plant is not uncommon in marshy places in the Colony, but I cannot learn that the natives make any use of it. I only quote a portion of Mr. Maiden's article:—In a paper by Gerard Krefft (Proc. Philos. Soc., N.S.W., 1862-5). "On the Lower Murray Aboriginals" the following description is given by him of the method of preparing these roots for food:—"At a certain period, I believe January and February the women enter the swamps, take up the roots of these reeds, and carry them in large bundles to their camp. The roots thus collected are 12 to 18 inches in length, and they contain, besides a small quantity of saccharine matter, a considerable quantity of fibre. The roots are roasted in a hollow made in the ground, and either consumed hot, or taken as a sort of provision upon hunting expeditions; they are at best a miserable apology for flour, and I almost believe it was on account of the tough fibre thus obtained that these roots were made an article of food.

The following food stuff is referable to this species:—

The broad flag-reed * * * * * which is an excellent and nutritious article of food. This root being dug up and roasted in hot ashes yields a great quantity of mealy farinaceous powder interspersed among the fibres; it is of an agreeable flavour, wholesome and satisfying to the appetite. In all parts of Australia, even where other food abounds, the root of this

reed is a favourite and staple article of diet among the aborigines. The proper season of the year for procuring it in full perfection is after the floods have receded, and the leaves have died away and been burned off. It is that species of reed of which the leaves are used by coopers for closing up crevices between the staves of their casks. (Eyre, Journ. of Exped. of Discovery, 99, 62).

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