

COLONIAL REPORTS—MISCELLANEOUS.

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No. 51.

SOUTHERN NIGERIA.

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REPORT ON THE FOREST ADMINISTRATION OF  
SOUTHERN NIGERIA FOR 1906.

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Presented to both Houses of Parliament by Command of His Majesty.  
*May, 1908.*

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## No. 51.

REPORT ON THE FOREST ADMINISTRATION  
OF SOUTHERN NIGERIA FOR 1906.

## I.—EXAMINATION OF FORESTS.

## WESTERN PROVINCE.

1. During the year frequent visits of inspection were made by the Provincial Forest Officers to the four reserves situated in the Western Province. In addition to this, the Conservator of Forests together with the Provincial Forest Officer, made a tour through the forests of the southern portion of the Ibadan State, the northern portion of Jebu-Ode, and the central part of the Ilesha District.

*Mamu Forests.*

2. South of the town of Ibadan the country is for some miles devoted to farming, and the forest belt is first struck close to Mamu where there are two reserves, one belonging to the Ibadan State and the other to Government. The vegetation is of the "mixed forest" type except along the banks of the streams, where belts of "evergreen forest" are met with. The most important trees of economic value to be found in these forests are a species of mahogany—*Khaya grandifolia*—which is not very plentiful; *Azelia africana*, a leguminous tree that yields excellent timber and is fairly numerous; *Mimusops multinervis*, of the natural order Sapotaceae, a valuable hard-wood tree, confined to the vicinity of the streams; *Pterocarpus tinctorius*, a fairly lofty tree that yields a red timber frequently used by the natives instead of the real camwood, the product of *Baphia nitida* (the former tree is rather plentiful in this locality and acquires a good growth); *Pterocarpus erinaceous*, the West African rosewood; *Chlorophora excelsa* (the Iroko), a species of lofty growth that furnishes one of the best woods of Southern Nigeria; *Erythrophloeum guineense*, the "Sasswood" tree that yields a very hard durable timber; a fine species of *Terminalia* not as yet identified; *Albizzia Brownei*; *Albizzia rhombifolia*; and an unnamed species of *Sterculia*, with a fine-grained rather soft wood, probably capable of replacing the pitch pine imported so largely from Europe. Amongst plants that yield products other than timber, the following

were noticed:—*Cyanothyrus ogea*, a magnificent lofty tree yielding the “gum copal” of Southern Nigeria; *Sterculia Barterii*, the best fibres of which are used by the natives for making rope; *Lonchocarpus cyanescens*, from the leaves of which the bulk of the indigo used by the natives of the Western Province is extracted; and *Sterculia tragacantha*.

3. The rubber-yielding plants found here are *Funtumia elastica*, very numerous, and the vine *Landolphia owariensis*. These two species give the best quality rubber. Other species, yielding an inferior product, are the vines *Landolphia senegalensis*, *Landolphia Thompsonii*, *Carpodinus hirsuta*, and *Carpodinus fulvus*; these are fairly numerous in this forest.

4. Taken as a whole the latter is in a very irregular condition, and consists chiefly of secondary growth that has sprung up on the sites of old abandoned farms. The average age of the trees may be estimated at something like 60-70 years, but, of course, some of the largest are much older, and probably represent the “standards” that were spared when the forests were cut down for agricultural purposes. The irregular condition of the growing stock, so far as the most important species such as the mahogany, Iroko, and silk rubber are concerned, is being gradually improved by systematic planting every year, and these areas will undoubtedly soon become valuable assets of the country.

#### *Oshun River Reserve.*

5. From the Mamu forests we proceeded to the Oshun River Reserve in the Jebu-Ode District. Until the Oshun River was reached the road passed through well-farmed land and some large native towns, the river forming the natural boundary between the farmed areas and the forest region. As regards the Reserve itself the site has not been very happily chosen, as it is much honeycombed with farms, and the far better forests lying further back from the river have not been included in the reserved area. The most characteristic feature of the forests bordering the stream is the prevalence of almost pure belts of a large forest tree, *Brachystegia spicaeformis*, a species that yields a very hard, heavy wood, and the fibrous bark of which is used for making a coarse native cloth. Further back from the river, in localities that have not been farmed, we came across small patches of lofty forest consisting mainly of trees such as *Erythrophloeum guineense*, *Detarium senegalensis*, and a few mahoganies (*Khaya*). The Lagos silk rubber tree, *Funtumia elastica*, is also found in small quantities within the Reserve.

#### *Jebu-Ode Forest.*

6. After leaving the Oshun River Reserve we marched northwards to Ikeri, moving more or less parallel to the river

at a few miles' distance from it. The first portion of the journey was through hilly country well clothed with high, evergreen forest, in which a few very fine examples of both the long capsuled mahogany *Endendrophragma Condelli* and *Khaya grandifolia* were seen. This part of the district is very well watered, and, as there are no villages close by it, should be reserved. Further northwards the forests gradually merged into the "mixed, deciduous" type, which, in its turn, gave place close to Ikeri to the younger growth that springs up on abandoned farms. Between the towns of Ikeri and Ife we crossed a narrow belt of "dry, open forest," which, however, increases in area northwards towards Oshogbo, and is the prevailing type in that locality.

#### *Ife and Ilesha Forests.*

7. After crossing this belt the road passes over fairly wooded hilly country that is cut up here and there with farms. Both *Khaya grandifolia* and the long capsuled mahogany, *Endendrophragma Condelli*, are far from uncommon in these forests, which also contain other valuable timber trees such as *Ricinodendron Heudelotii*, *Pterocarpus tinctorius*, *Piptadenia africana*, *Chlorophora excelsa*, and a species of *Sterculia*. The silk rubber tree is quite common about here, and these forests are perhaps richer in that species than are any others in the Province. The Ilesha District contains some very extensive forests rich in plants of economic importance, and as the country is rather sparsely populated there is plenty of wooded land available for reservation. The district is well watered with several large streams that rise in the densely wooded range known as the Efon Hills and the isolated block of Oke Mesi. It is of the utmost importance that the forests at the sources of these streams, which eventually become large rivers near the coast, should be strictly reserved and protected against farming.

#### *Dry Forest between Ede and Iwo.*

8. A return was made to Ibadan by the northern road through the town of Oshogbo. Here, again, the Oshun River forms a sharp line of demarcation between the evergreen forests on the east bank and the more open, dry, deciduous forests on the western side. Between the large towns of Iwo and Ede a very dry bit of forest is met with growing on poor, rocky soil. Shea butter trees are plentiful here, as are also other species such as *Acacia catechu*, *Entada soudanica*, *Lophira alata*, species of *Vitex*, *Parinarium anonon senegalensis*, the "chew stick" tree, *Anogeissus leiocarpus*, the "balsam copaiba" tree, *Daniellia thurifera*, and the palm *Borassus flabelliformis* var. *Aethiopica*.

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9. From Iwo to Ibadan the road passes through open, well-farmed country with some fine examples of the Iroko tree scattered about it.

## CENTRAL PROVINCE.

10. In the Central Province frequent visits of inspection were made by the Provincial Forest Officers to the licensed timber areas and to the numerous rubber plantations scattered over the Province. In addition, the swamp forests between the Forcados, Ramos, and Dodo rivers were examined for the first time by a Forest Officer, and it was ascertained that the mahogany growing in that part of the country was *Khaya Panchii*. Some fine belts of high evergreen forest are met with along the banks of these creeks wherever firm, solid ground is to be found. The bulk of the vegetation, however, belongs to the mangrove swamp type.

## EASTERN PROVINCE.

11. The Provincial Forest Officer visited some unexplored country to the north of the Cross River. He remarks on the forests met with as follows:—

“The forests examined during the year with a view to their reservation were (1) the disconnected forest belts on a portion of the chain of hills (not shown on the map) running in a north-easterly direction from the eastern boundary of the Akaju country, east of the Oweyon River, to the north-eastern boundary corner of the Colony where Northern Nigeria's southern, Southern Nigeria's northern, and the Kameruns' western boundaries meet; (2) The continuous forests clothing the Oban Hills within the area bounded by lines connecting Oban with Ukpot, Ukpot with Ibun, Ibun with Obung, and Obung with Oban.

“(ii.) Each of these hilly localities is an important water divide. Feeders and rivers taking their rise in the former flow from north to south into the Cross River, and from south to north into the Benue. Feeders and rivers taking their rise in the latter flow from north to south into the Calabar and Kwa rivers, and from south to north into the Cross River. The irregular belts of well-stocked forest on the chain of hills first alluded to invariably occur on the summits and declivitous slopes of the bolder hills, and also in the depressions dividing them. The vegetation is more open on the lesser or foot hills, increasing in patchiness till it merges into rolling grassed country, which is scantily wooded by narrow belts of vegetation margining the banks of streams and rivers. *Funtumias (elastica and africanas)*, *Landolphia*, “Irokos,” and long capsuled mahoganies are fairly plentiful; the *Butyrospermum Parkii* (shea butter tree) is numerously distributed in the belts of forest clothing

the bolder hills forming water divide No. 1. Although this was inspected with a view to its reservation, I refrained from recommending the establishment of a forest reserve because the country is under doubtful control owing to its distance from Okuni and its contiguity to the Southern Munshi country. When a new district is established north of Okuni and the country is under close administrative control, I suggest that no time should be lost in creating a forest reserve of the entire chain of hills in this water divide, if only to inexpensively conserve the belts of forest by natural regeneration to maintain the existing rainfall, which ensures the navigability of the Oweyon River for five months in the year, and adds a considerable volume of water to the Cross River, besides copiously feeding the Katsena River and adding volume to the Benue in Northern Nigeria. The area of this proposed reserve will be considerable. Even an approximate guess at it is impossible till the country is brought under administrative control and is safer to travel in.

“(iii.) A forest reserve has been proposed in water divide No. 2, the Oban Hills, where the forests are well stocked with healthy trees grading from first to third class, indicative of normal natural regeneration. The most important economic plants in the proposed reserve are *Funtumias* (*elastica* and *africana*), *Landolphia*, a rubber-yielding apocynaceous climber, *Endendrophragma Condelli*, *Chlorophora excelsa*, *Alstonia digitata*, a species of *Diospyrus* (ebony), *Irvingia Barterii*, *Pentaclethra macrophylla*, the camwood tree, and the long-fruited leguminous plant yielding African greenheart. The area within the suggested boundaries of this reserve is approximately 480 square miles. The land outside the boundaries has been farmed principally for yams, corn (maize), and ground-nuts, by quinquennial rotation. The area in this reserve has practically not been cultivated, hence the proprietary rights of villages outside the boundaries are doubtful; nevertheless, inquiries are being made with a view to acquiring the area as a forest reserve from the villages of Oban, Aking, Owo, Ofong, Ukpot, Ibun, and Obung.”

## II. ALTERATION OF AREA.

### RESERVES.

#### *Western Province.*

12. During the year under review the area of reserved forests in the Western Province has not been added to, though some forests in the Jebu-Ode and Ilesha Districts were examined with a view to such reservation. The process of acquiring reserves in the Western Province is, however,



a long and tedious one as the inhabitants are very suspicious of any interference with their rights to the land and the produce growing on it.

13. In this connection the Ibadan authorities are to be congratulated on having already for some years past put aside an area, known as the Ibadan State Reserve, for this purpose.

*Central Province.*

14. The council of native chiefs in Benin City passed a law reserving the forests for 1,000 yards back along both banks of all the rivers in that district, and the same laws have been passed by native councils in the Warri, Sapele, Agbor, and Ifon Districts of the Central Province.

This is a very important move in the right direction, and not only ensures the protection and regulation of the water supply of the country, but also reserves to the natives the most accessible and easily exploitable areas for the production of large timber.

15. The proposed elephant reserve near Gilli-Gilli had not been formed before the close of the year, but it has since been declared a game reserve. Reserves for the permanent supply of fuel to launches plying up and down the Niger are also in process of formation, but the necessary procedure in connection with them was not completed during 1906.

*Eastern Province.*

16. In the Eastern Province proposals were put forward for a large tract of forest, on the Oban block of hills, being taken up both as a forest and a game reserve. The reservation has not been completed, and some difficulty is being experienced in getting the natives to agree to the proposals.

Other areas on the ranges of hills north of the Cross River were inspected and selected for reservation by the Provincial Forest Officer; owing, however, to their inaccessibility to direct administrative control, it is doubtful whether they can be taken up as reserves for some years yet.

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### III. FOREST PROTECTION.

#### GENERAL.

17. The protection afforded at present to the forests is far from satisfactory; with the increased areas that will eventually be brought under reservation it is hoped that matters will improve and that a more efficient system will be introduced.

In the case of timber concessions and leased areas a certain amount of protection is afforded against the indiscriminate felling of timber for trade purposes, but the greatest danger of all, viz., the extermination of the forests by excessive and wasteful farming, has still to be dealt with. Much good will be done by the judicious selection of reserves and their strict protection, but this is a matter of time; meanwhile, the destruction of the forests continues and, unless checked, it will eventually necessitate the wooded areas being augmented by the creation of forest plantations, a long and costly operation. Fires do a lot of damage to vegetation in the "dry zone," the forests of which belong chiefly to the "deciduous type." Not only are the young trees cut back annually by these fires, and thus stunted in their growth whilst others are wiped out altogether, but the spread of grass into the wooded areas is considerably assisted at the expense of other species. The wooded country thus gets gradually converted into the "open grass lands" of the hinterland. This process is, of course, hastened by the indiscriminate felling of the forests for farming purposes.

In districts subject to a heavy rainfall such as those situated in the deltas of the Benin, Niger, and Cross rivers, fires can make but little headway, and the general vegetation, which is evergreen in these localities, is capable of successfully competing with the grasses; but the case is different in the inland district with an annual rainfall not exceeding 50 inches. Here the forests are deciduous; they shed their leaves annually during the dry season, thus furnishing a layer of very inflammable material, and the grasses, thanks to their underground stems (rhizomes), rapid growth, and their extraordinary recuperative powers, can then, with the help of the much greater damage done to other deciduous vegetation by the annual fires, take complete possession of the soil. The latter gets exposed annually to the sun at the time that the fires are most prevalent, the ashes get washed away into the streams by the early rains, and the soil thus gradually deteriorates and eventually becomes incapable of growing anything except the coarser varieties of grass.

The encroachment of the grass lands on the wooded areas is proceeding at a rapid pace, and its prevention by means of proper fire protection is one of the most important functions that the Forest Department has to undertake.

#### FOREST OFFENCES.

##### *Western Province.*

18. In the Western Province, the four Government Reserves, viz., the Ilaro, Olokemeji, Mamu, and Oshun River Reserves, as well as the Ibadan State Reserve, were more or

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less protected as far as it was possible to do so under the law of trespass, which appears at present to be the only law applicable to such areas. Special rules for the protection of Government Reserves have been proposed, and when passed it is to be hoped that more effective measures will be available for this purpose.

*Olokemeji Reserve.*

19. Fire protection had to be adopted in the case of the Olokemeji Reserve which is situated within the "dry zone" area, and is, therefore, specially exposed to damage from the annual fires. It was, however, only possible to include a very small portion of the reserve, viz., the area on which plantations exist, within the fire-trace belt.

*Ilaro Reserve.*

20. Regarding the Ilaro Reserve the Acting Provincial Forest Officer writes as follows:—

"The protection of the Reserve has been strictly maintained throughout the year. There have been several arrests of persons trespassing and damaging trees, but very few convictions have been obtained. The Ilobi people continue to show bad feeling against this forest, and frequently make raids into it for the sole purpose of causing annoyance."

*Central Province.*

21. In the Central Province there was one prosecution under Rule 12, Section 2 of the Timber Rules, R. No. 6 of 1905, and nine prosecutions under the Rubber Rules, R. No. 7 of 1905; of the persons implicated four were discharged, the rest being imprisoned for periods of from two to six months.

22. Both the timber and rubber rules are now working very smoothly in the Central Province, more especially in that portion that comprised the old Western Division of Southern Nigeria. The chiefs have taken an active interest in protecting their forests, and the inhabitants are becoming very law-abiding in this respect. Of course, forest organisation has reached a higher level here than in the other Provinces. Nevertheless, this satisfactory state of affairs shows what can be done by means of proper organisation and enlisting the sympathies and confidence of the native communities. The Provincial Forest Officers are to be congratulated on the way in which they have educated the native communities up to realising the importance of taking an active part in forest protection.

*Eastern Province.*

23. The illicit tapping of rubber continues on a large scale in the Eastern Province where the densely wooded country, the want of good roads, general inaccessibility of the forests, and the paucity of the establishment maintained for the purpose of enforcing the laws, all contribute towards such a state of affairs.

The difficulty is further increased by the fact that the Province is inhabited by a large number of different clans with little or no system of organized Government amongst them; it is thus very difficult to work through the chiefs who have scarcely any real control over their subjects.

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 IV. REGENERATION OF FORESTS.

## NATURAL REGENERATION OF FORESTS.

24. There is nothing of great importance to record under this head. Mahogany growing in the evergreen forests seeds well and plenty of young plants sprout up, but, owing to the dense cover overhead, they become suppressed, and the majority die before ever reaching the sapling stage.

25. Under the new timber rules lease-holders have the option of either planting out a certain number of plants to replace the old ones that have been felled, or they can, by thinning, weeding, &c., "tend" the naturally grown seedlings. Large numbers of the latter have thus been freed from dominant growth and, as a rule, look much healthier than those raised artificially from seed. The opportunity is also taken by Forest Officers when travelling through mahogany forests to employ their carriers, during the days on which they halt, in freeing the young seedlings from excessive shade and weeds.

26. In the open deciduous forests the different species tend to grow gregariously in small groups, and here natural regeneration is, as a rule, much more satisfactory.

The following species are most prolific in this respect:—*Anogeissus leiocarpus*, the chew-stick tree; *Lophira alata*, the dwarf ironwood; *Daniellia thurifera*, the balsam copaiba tree; *Butryospermum Parkii*, shea butter; *Acacia catechu*, the cutch tree; *Mimusops multinervis*; *Diospyrus mespiliformis*, one of the ebonies; *Crossopteryx Kotschyana*, species of *Pseudocedrela*; *Brachystegia spiciformis*; *Azelia africana*; and the palm, *Borassus flabelliformis*.

## PLANTATIONS.

## (a.) PLANTATIONS IN RESERVED FORESTS.

*Western Province.*

27. In the Western Province the planting up of the Ilaro, Olokemeji, Mamu, and Oshun River Reserves, with the Ire rubber tree (*Funtumia elastica*) was continued during the year. This was more particularly the case with the Mamu Reserve, where extensive plantations, probably the best of their kind on the coast, now exist. The reserve has been divided systematically into compartments, some of which are taken in hand annually and planted up with that species. Estimates based on very low figures for each compartment give the present stock of rubber plants at just over half a million, several thousands of which will very shortly be ready for tapping.

The planting is done under forests that have been thinned so as to afford ample space and light for the young plants. The method has proved very successful, is far cheaper than clear fellings, and approximates more to the natural conditions under which the species grows.

28. The Acting Provincial Forest Officer of the Province reports as follows on the planting done in the four Government Reserves, and also supplies some interesting figures regarding the growth of *Funtumia elastica*:—

## "MAMU GOVERNMENT RESERVE.

29. "In the early part of the year the first eighteen compartments, *i.e.*, B. to T. of No. 1 Plantation, were cleared of all undergrowth. The first six of these did not require any further planting, as they are entirely filled with rubber (*Funtumia elastica*), and should not require anything further doing to them except perhaps an occasional light brushing.

"During May, June, and July the latter twelve compartments, *i.e.*, H. to T., were filled up. These will have to be cleared once or twice during the coming year, but should not require any further planting. In February and March a ten-acre plot was entirely cleared of forest growth, and in June this was planted up with Para rubber (*Hevea brasiliensis*). Bananas were planted between the rows of rubber to give the young plants shade during the first dry season. These young rubber plants are growing remarkably well and there are very few failures.

"The cost of the plantation up to 31st December is as follows:—

	£	s.	d.
Cost of clearing 10 acres of all trees and undergrowth ... ..	26	8	6
Cost of planting, weeding, and general maintenance ... ..	25	5	4
	£51 14 0		

“ The latter portion of the year has been spent in clearing compartments for next year's planting and in brushing those already planted up.

“ A large number of Ire rubber plants were raised and distributed to the farmers in the Government Forest and the Ibadan State Reserve.

“ As mentioned above, the first six compartments are now sufficiently full of *Funtumia elastica*, and a count has recently been made of the trees in each; one hundred representative trees have also been measured in each compartment. The figures obtained are as follows:—

Table I.

Compartment.	Number of trees.	Average height.	Average girth at four feet from base.
		feet.	inches.
B ... ..	7,891	13·72	7·29
C ... ..	19,175	12·72	6·13
D ... ..	16,927	11·25	4·75
E ... ..	16,230	10·76	4·49
F ... ..	8,364	10·55	4·64
G ... ..	13,102	11·46	4·78
Total ... ..	83,689	70·46	32·08
Averages ... ..	—	11·743	5·346

“ Thus there are in the six compartments 83,689 trees of an average height of 11·743 feet and an average girth of 5·346 inches.

“ In 1901 one hundred *Funtumia elastica* trees were marked and the *diameter* measured at four feet from the base; these have been measured every year since, and I now give the figures obtained. Unfortunately five of the trees have died in the interim, so that the figures given below represent the average of 95 only:—

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Table II.

Totals.	Average of 95 trees.	Average increment.
	inches.	inches.
1901 ... ..	5.36	—
1902 ... ..	5.65	0.27
1903 ... ..	5.88	0.23
1904 ... ..	6.05	0.17
1905 ... ..	6.13	0.08
1906 ... ..	6.62	0.49
Average growth in five years ... ..		1.24
Average annual increment of growth for five years		.248

“All of these trees had been very severely tapped previous to our taking over the forest from the native authorities, therefore the figures do not represent normal growth.

“For comparison with these I give below figures of measurements of 50 untapped young trees in the Mamu nursery taken over a period of four years, *i.e.*, 1903 to 1906:—

Table III.

Year.	Average diameter of trees.	Average increment of growth of 50 trees.
	inches.	inches.
1903 ... ..	2.33	—
1904 ... ..	3.20	0.87
1905 ... ..	3.995	0.795
1906 ... ..	4.980	0.985
Average growth of 50 trees in three years ...		2.650
Average annual increment of growth for three years		0.883

“It will be seen that the annual increment of growth of untapped trees is greater by over half an inch than that of tapped trees, thus showing that the trees referred to in Table II. have not yet recovered from the effects of a tapping which took place eight or nine years ago.

## “Olokemeji Government Forest.

30. “During the early part of the year the boundaries of this reserve were cleared, and cement pillars were erected at the corners and at intervals along the line to replace the old wooden boundary marks. The protection work is carried out by a Forest Ranger and a staff of forest guards. It is

a very difficult reserve to guard as there are so many villages in it and the villagers require constant watching to prevent them from cutting timber, &c.

“Another feature of this reserve is that a great portion of it is open grass land, which in the dry season is very difficult to protect from fire. The sale of timber and chew-stick trees during the year has not been great, but a larger demand may be looked for in the near future, as the available timber outside of the reserve is becoming very scarce. The amount realised from timber sales is given in another portion of this report.

“With regard to planting, it is considered that the soil and climate of Olokemeji is not suitable for Para or the indigenous rubber. The farmers have, therefore, been encouraged to plant up Iroko, shea butter, and other trees more suited to the locality.

“In addition to this planting done by the farmers many disused farms and other vacant areas have been planted up by the forest staff. The plantations of Iroko and *Ficus elastica* begun in 1905 have been looked after and added to. In all, about 9,000 plants of Iroko, shea butter, and *Ficus elastica* have been put in.

#### “ILARO FOREST RESERVE.

31. “During the rains about six acres of land, which had been cleared in the early part of the year, were planted up with *Funtumia elastica*, and all vacancies in former plantings were made good. In all about 11,800 plants were put down. There are now a large number of very fine rubber trees in the Ilugburo portion of the reserve, many of them being between 8 and 10 inches in diameter.”

32. The figures given in Tables II. and III. of Mr. Foster's report appear to indicate that *Funtumia elastica* takes some years to recover from the effects of tapping as compared with the high recuperative powers of the Brazilian plant, *Hevea brasiliensis*. However, only experiments carried out on a very large number of Ire rubber trees can conclusively decide this point.

#### PARA RUBBER PLANTATIONS.

33. In addition to the small plantation of this species in the Mamu Reserve referred to in the extract from the Provincial Forest Officer's report given above, another plantation was started during the latter part of last year at Agege, but, owing to an exceptionally poor rainfall, quite 50 per cent. of the young plants succumbed out of the 2,000 put down. The survivors have now, however, become thoroughly established and are showing fairly good growth.



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The cost of planting up the 26 acres with this species amounted to—

	£	s.	d.
Clearing the land ... ..	96	11	3
Planting and maintenance ... ..	65	19	3
Total ... ..	£162	10	6

which works out to an average of £6 5s. per acre.

*Rate of growth, Para rubber.*

34. Measurements have been taken of the Para rubber trees growing at Ebute-Metta and Olokemeji. The figures are as follows:—*Ebute-Metta*, 6 trees planted in 1895, average girth at three feet from the base, 29.33 inches; largest tree, 43 inches. *Olokemeji*, 25 trees planted in 1902, average girth at three feet from ground, 11.74 inches; largest tree, 16½ inches.

*Central Province.*

35. Steady progress continues to be made in the establishment of *Funtumia elastica* plantations all over the Central Province, and it is very gratifying to see that the natives, more especially of the Benin City District, are now going in for small *private* plantations of their own as distinguished from communal ones. This is, of course, in addition to the large number of plantations of the latter kind that have been created during the year.

There are now 916 plantations containing 678,000 plants in that Province as well as 134 plantations containing 80,000 plants in the old Central Division.

36. During 1906, rubber plantations, 369 in number, containing 167,135 plants, were made in the Benin Districts, and 134 plantations, 40,320 plants, in the Niger region, as compared with 119,800 and 31,832 plants respectively for the previous year.

37. The Provincial Forest Officer reports as follows on the plantation work of the Province:—

“The feature of the year, however, has been the number of small private plantations made by individual natives, although it is difficult to say exactly how many have been made. There is no doubt that the natives of the Benin Districts of this Province are, with a few exceptions, now thoroughly alive to the value of looking after their rubber trees. . . . The Sobos showed signs of interest in the planting of rubber, but they were too much engaged in road-making to make many plantations. It is a question as to whether they should be encouraged in this matter. My experience tends to prove

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that where natives have taken up the rubber trade they have invariably dropped that in palm oil."

38. This is a point that should not be lost sight of when introducing new industries into Southern Nigeria. The trade in palm oil and kernels is the mainstay of the country, which practically has a monopoly in it, consequently any industries likely to seriously compete or interfere with it ought to be introduced with great caution, otherwise a practical monopoly will be replaced by industries over which this coast can never hope to have the same exclusive control as it has in the case of palm oil.

*Rate of growth of Funtumia elastica.*

39. During the year a large number of rubber trees in the different plantations were measured, and the following average girths were recorded for the different ages:—

Planted previous to 1902	(girth)	1 foot 2 inches.
" during 1902	(girth)	7·4 "
" " 1903	(girth)	6·6 "
" " 1904	(girth)	4·8 "

PARA RUBBER PLANTATIONS.

40. The interest in Para rubber continues, and Messrs. Alexander Miller Brothers, who were the first to go in for a plantation of this species in the Central Province, procured 30,000 more seeds, out of which 16,356 had germinated up to the end of the year. The Provincial Forest Officer reports as follows on this subject:—

*"Para Rubber.*

"The African Association's Rubber Plantation at Warri was inspected in September and November, and the plants appeared to be making fair progress, but this firm does not appear to wish to do more than experiment.

"One hundred and sixty plants were planted 16 feet apart. Since then this firm has received 2,000 seeds, but no report on these has been sent in.

"Messrs. Alexander Miller Brother & Company have gone whole-heartedly into the work. In January some 6,800 and in June 7,740 plants were planted out.

"Thirty acres cleared of all roots were planted with seedlings three feet apart. Sixty acres part cleared but with roots left in, and part with lines merely cleared, were planted with seedlings 15 feet apart.

"Some of these plants appear to have outgrown their strength and have had to be supported, some are regular, while those nearest the swamp look somewhat stunted.

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"This energetic firm has since received 30,000 seeds, 16,356 of which have germinated.

"In November some 8,837 seeds were received in Benin City and a nursery made; only 2,801 seeds, however, germinated.

"In December a nursery was made in Sapele, and out of 1,756 seeds 543 germinated.

"It has been noted that the packages of seeds sent forward in open baskets are in far worse condition than those sent in wooden cases screwed down tight.

"The Para plants planted in the forestry compound on the 5th May, 1905, are growing steadily and are now 12 to 15 feet high."

*Eastern Province.*

41. In the Eastern Province little has been done in the way of making plantations of rubber. A few of the European trading firms have small areas planted up with *Funtumia elastica* and *Ficus elastica*, but there has been little active interest taken in the matter by the natives, who as a rule are fully engaged in the palm oil trade. Rubber trees have been planted in most of the district stations and along some of the main roads in Calabar. A large number of seeds of the Para rubber tree were imported and sown in the Botanical Gardens, from where the young plants are being gradually distributed as required. This Province has suffered a good deal for want of supervision by an European Forest Officer, and has frequently been without one for months at a stretch. The claims of the other two Provinces in which forest organization has made greater progress have received first consideration when the department becomes short-handed by losses from death and the absence of officers on leave.

## PLANTATIONS IN TIMBER CONCESSIONS AND LICENSED AREAS.

*Western Province.*

42. The timber concessions in the Western Province are not under the control of this Department, and I am unable to say whether any young plants have been put down to replace the mature trees felled.

*Central Province.*

43. The Provincial Forest Officer of the Central Province reports that rather over 35,000 seedlings of mahoganies (*Khaya*, *Pseudocedrela* and *Endendrophragma*) were planted out by timber leaseholders, and that this number was largely supplemented by freeing from dominant growth suppressed

seedlings growing naturally in the forests. Such seedlings as a rule turn out stronger plants than those raised in nurseries and afterwards transplanted out in the forests. See Return No. 3.

*Eastern Province.*

44. For the reasons mentioned in paragraph 41 of this report, under the heading Rubber Plantations, little or no planting of other species has been carried out in the Eastern Province.

V. EXPLOITATION OF MAJOR FOREST PRODUCE,  
(TIMBER.)

GENERAL.

45. The number of logs exported from Southern Nigeria during 1906 was 20,274, valued *locally* at £68,718, as against 13,442 logs, valued at £49,557, of the previous year. The increase is mainly due to the better prices offered in the home markets during the year, and the consequent impetus given to the export trade. The bulk of the timber was procured from West African mahoganies belonging to the genera *Khaya*, *Pseudocedrela*, and *Endendrophragma* of the natural order *Meliaceæ*; a fair number of logs were also cut from a species of *Gaurea*, and realised good prices in Europe.

The exports are divided up amongst the three Provinces as follows:—

Western Province.		Central Province.		Eastern Province.	
Logs.	Value.	Logs.	Value.	Logs.	Value.
5,673	£ 19,184	14,627	£ 49,028	120	£ 506

46. A large quantity of timber felled in the Western Province is exported through Central Province ports, so the figures from the latter really refer in part to both Provinces. Data regarding the exact number of logs felled in the former Province are not available, and as the timber felled in one year is very often not shipped to Europe till the ensuing year it is difficult to ascertain how many logs cut in any one year are exported during that year.

*Western Province.*

47. In the Western Province the control of timber concessions rests with the District Commissioners, though the Forestry Department is sometimes asked for advice regarding the terms under which such concessions should be granted.

48. The Provincial Forest Officer in his report for 1906 states:—

*"Forests, General.*

*"Timber.*—The exploitation of timber is rapidly increasing, and in consequence the available supply, *i.e.*, that near lines of transport is becoming exhausted. There are large numbers of concessions in the Province mostly worked by Europeans. These concessions are not at present under the control of the Forestry Department, but are usually accorded a sort of general supervision by the District Commissioner in whose district they happen to be.

"The terms on which concessions are granted vary in each district. The rule in the Ondo District seems to be that the concessionaire pays £1 per square mile for the area taken up and 10s. per tree royalty on all trees cut. In Badagry nothing is paid for the concession, and the royalty varies from 12s. to £1 per tree, according to the district in which it is cut.

"In Ibadan and Egba no concessions are given, but people are allowed to cut timber on payment of 5s. per tree. These people often cut half-grown trees, and unless something is done to prevent this promiscuous cutting, the supply of useful timbers will soon be exhausted.

"The large and increasing demand for Iroko (*Chlorophora excelsa*) for local purposes would seem to render it advisable to increase the planting of this useful tree."

*Central Province.*

49. As regards the Central Province it is possible to give fuller details of the year's exploitation.

Timber was extracted during 1906 from 27 licensed areas in which 3,111 trees were felled, yielding 7,426 logs, measuring in all 687,447 cubic feet; these figures compare favourably with those of previous years, and 540 more trees were felled than in 1905.

50. The revenue derived from this timber amounted to £9,156, of which £1,505 were paid to the chiefs as royalty, compared with a total revenue of £6,302 received during 1905.

*Firms engaged in the Timber Trade.*

51. The following firms were engaged in timber exploitation during the year:—

- Messrs. Alexander Miller Brothers.
- „ W. B. McIver & Company.
- „ McNeil & Scott.
- „ Pinnock Stores, Limited.
- „ J. G. M. Cranstoun & Company.
- „ Bey & Zimmer.
- „ The Nigerian Mahogany and Trading Company.
- „ I. T. Palmer & Company.

*Returns of Timber Exploitation.*

52. Details of the areas worked, number of trees felled, &c., by each of these firms are given in returns numbered 4, 5, and 6.

A good deal of “red-wood” (*Pterocarpus tinctorius*) was exported to Lagos during the year *viâ* the Ogba River.

*Concessions and Licensed Areas not Exploited.*

53. Thirty-five of the small areas (of nine square miles each) granted under the old rules, R.N.O. 4 of 1901, were not worked in 1906 owing to the large timber in them having become exhausted. Five other small areas, though still dealt with at the end of the year. *See* returns, numbers exploited last year.

*Applications for Timber Licence.*

54. Applications for 31 licences were made, and out of these 13 were provisionally granted, leaving a balance of 18 to be still dealt with at the end of the year. *See* returns, numbers 7 and 8. The procedure connected with the granting of these licences is of necessity a long one, the titles of the grantors to the land have to be enquired into, their consent obtained, and the financial stability of the applicants ascertained. Again the applications themselves are very often not in order, and they frequently partially or wholly overlap areas already granted; new applications are then made and the whole process gone through again. This involves a deal of correspondence which in the event of the applicants residing in distant countries means a matter of some months' delay before the provisional sanction can be granted.

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If all applicants were to appoint properly accredited agents out here to look after their interests there is no doubt that such delays could be considerably shortened.

55. On the whole the work was carried out in harmony with the native communities concerned, but the disputes that occur between native contractors and labourers is still an unsatisfactory feature of this large industry. More European supervision on the part of the firms engaged in the timber trade appears necessary, and the payments should in the case of ration money, at all events, be made by them direct to the labourers and not to the contractors. It is usually this ration money that is diverted by the latter for other purposes. There have been a few boundary disputes between some of the firms, but these were settled privately by them.

*Eastern Province.*

56. In the Eastern Province there are seven licensed areas for which provisional sanction to begin work has been granted. Two are situated in the Brass District, one in the Degama, one in the Okuni, and three in the Calabar District. Attempts have been made to exploit only three of the seven areas. The two in the Brass District had to be abandoned after an energetic start was made, in deference to the wishes of the natives who require the timber growing there for the manufacture of trade canoes. The remaining area is situated in the Calabar District, and has been worked by Chief Effion Otu Ekom, with more or less success since he, with the Provincial Forest Officer's advice, adopted the system of shipping his logs home direct instead of through a local agent.

In all, 120 logs were exported, and the year under review is the first in which timber exploitation for the home market was undertaken in this Province.

57. Applications for three licences to fell timber were received during the year. Two of these were for areas situated in the Brass District and could not be considered owing to the attitude of the natives, and the remaining one was for a tract of country in the Calabar District. Provisional sanction has not yet been granted for this area, as the power of attorney given to the local agent of the firm who applied for the licence is not in order.

*Efforts to place West African Woods on the European Market.*

58. Further efforts were made during the year to place other kinds of African woods on the European market. The firm of Messrs. Alexander Miller Brothers were most energetic in this respect, and deserve great credit for the enterprise shown by them.

*Chief Timbers exported from Southern Nigeria.*

59. At present the chief timbers exported from Southern Nigeria are:—

(1.) Mahoganies of the genus *Khaya*, known to the Benis as "gadeau" or "ogwangu." There are three species found in these forests, viz., *Khaya Senegalensis*, *Khaya grandifolia*, and *Khaya Punctata*, the latter being apparently confined to areas that are under water for several months of the year. The timbers of all three species are much in demand at home and have realized very good prices during the year. They are generally known in the trade as "Benin mahogany."

(2.) Mahoganies of the genus *Endendrophragma*, one identified species of which, viz., *Endendrophragma Condelli*, is known to the Benis as *Ikpwapobo*. It is the "unscented," long-capsuled mahogany, and furnishes a higher percentage of "figured" logs than the other species. The timber from this tree had a bad name last year (1904-1905) in the Liverpool market as it was said to be rather "gummy" and difficult to cut into thin pieces for veneering purposes. However, since (at the advice of this Department) the system of girdling the trees and thus allowing them to die off gradually and become properly seasoned has been adopted, the wood has regained its good name and realized higher average prices during 1906 than *Khaya* timber. It is most plentiful in the drainage areas of the Jamieson and Ethiope rivers of the Central Province.

(3.) Mahoganies of the genus *Pseudocedrela*.—There appear to be at least two unidentified species of this genus found in Southern Nigeria. The one generally exploited is known to the Benis as "Onomokyukyu," and in the Liverpool market as "Sapele mahogany." Since the adoption of the "girdling" method of seasoning, the timber has been sold in Europe at very good prices. The timber is scented like cedar and the tree has a long capsule similar to that of the *Endendrophragmas*. This species is perhaps most plentiful in the well-wooded valleys of the hinterland; in the moist zone it is confined to high, dry ground. The timber of another species of *Pseudocedrela*, known to the Benis as "Apobo," and "African walnut" in the trade, is also exported to Europe.

(4.) Timbers furnished by various species of *Gaurea*, only one of which, *Gaurea Thompsonii*, has so far been named. The two kinds exported to Europe are known by the Benis as "Obobonikwi" and "Obobonufwa." They have been exported to Europe under the general trade name of "cedar," "Benin mahogany." The species of *Gaurea* appear to be confined to the moist evergreen forests.



All the above-mentioned plants belong to the natural order *Meliaceae*, which also includes the Honduras or true American mahoganies and cedars of the genera *Sweitenia* and *Cedrela*.

*Timbers Recommended for the Export Trade.*

60. The following species should also be exploited in addition to those just mentioned, as they have been favourably reported on by timber brokers at home; they are—

(5.) The Okwen of the Benis, or *Ricinodendron Africana* (*Ricinodendron Heudelotii*) of botanists, belonging to the natural order *Euphorbiaceae*. This timber has been described as that of a "species of mahogany" and declared to be suitable for the European market. It is very common in the evergreen forests of this country, but does not reach such large dimensions as some of the *Khayas* and *Endendrophragmas*.

(6.) The Ainyesan, a yellow satinwood that has fetched as much as 6½*d.* per superficial foot at Liverpool. The timber, however, is of uncertain quality and only picked pieces have realized that price. It is fairly plentiful in the Benin Districts.

(7.) The Ugo of the Benis, *Atalla* of the Jekris—another unidentified species. It has been reported on as "a mahogany of mild texture and fairly good colour," and valued at 3*d.* to 6*d.* per superficial foot.

(8.) The Nikiba of the Benis, described as "a species of gummy mahogany," valued at from 2½*d.* to 3½*d.* per superficial foot. The botanical name is not yet known.

(9.) The Aganokwi, *Mimusops multinervis*, a tree yielding a good rich coloured hardwood resembling mahogany; it is frequently figured, and should command a ready sale in Europe. The species is very plentiful in some of the moist evergreen forests of the Protectorate and has a tendency to grow gregariously. It has been exported home under the general trade name of mahogany.

(10.) The Arachi, *Azelia Africana*, another tree that yields an excellent hardwood. It is quite plentiful in parts of the Onitsha Districts and again in the mixed forests of the Western Province. It is largely used in the Central Province for furniture and building purposes.

(11.) The Eba, or red iron-wood tree. This is known to botanists as *Lophira procera*, and, unlike its congener, *Lophira alata*, of the dry open forests, is confined to the fresh water swamps of the moist zone, where it is plentiful, more especially in parts of the Benin City District. The wood is very hard, close-grained, and heavy, and is said to resist the attacks of both white ants (Termites) and the *Toredo*

worm. It should prove suitable for all purposes where strength and great durability are required. The wood is, however, rather difficult to work. Experiments are being undertaken with a view to ascertaining its suitability for railway sleepers.

(12.) The Odonomokyukyu, of the Benis, a species of *Santeriopsis* (probably *Santeriopsis Klainei*) common in the evergreen forests of this country. The wood is much valued in the French and Belgian Congos, and is sometimes exported to Europe.

(13.) *Detarium Senegalensis*; a magnificent lofty leguminous tree, the wood of which has been exported in past years to Liverpool under the trade name of "African mahogany." It is confined to the evergreen forests and is rather uncommon.

(14.) The Agba, of the Benis, an unidentified tree with a light-coloured wood that has also been exported from the Benin District as a kind of mahogany. It is fairly common in some districts of the Central Province.

(15.) The Iroko, *Chlorophora excelsa*; one of the best timber trees of West Africa. It is most plentiful north of the evergreen belt, and its wood is extensively used on the coast for making furniture and for building purposes. The timber is very durable.

From the above list it will be seen that there is a large assortment of different kinds of wood available in Southern Nigeria for the export trade, and no doubt this list will be augmented from time to time as other species become known.

The "camwood" of Southern Nigeria is procured from two species of leguminous trees, viz., *Baphia nitida* and *Pterocarpus tinctorius*; the latter is a large tree confined to the moist evergreen forests. *Baphia nitida* is rather inclined to be shrubby, and appears to be extensively cultivated round villages. I do not think that it is found growing wild in the forests in any large numbers.

61. There are two other hard-wood trees found in the moist evergreen forests of the eastern portion of the Western Province and the southern portions of the Central Province deserving mention. They belong to the genus *Piptadenia* (natural order *Leguminosæ*) and attain large dimensions. The timbers of both are excessively hard and almost indestructible, as they contain an essential oil that protects them against attacks from insects. The larger species (Okan, of the Benis, is known locally as the African "Green-heart," and is used for house construction. The wood, however, being exceedingly hard, is difficult to work, and is consequently not as frequently employed as some of the softer and less durable kinds.

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The other species appears to be *Piptadenia Africana*, known to the Benis as the Ikhimi; the wood is much lighter in colour than that of the Okan, but is just as durable.

62. Of soft-wood trees there appears to be only one species, the Obeche of the Benis, that is likely to furnish timber suitable for the home market, or to replace locally the large quantities of pitch pine imported from Europe. The timber is fairly close-grained, light-coloured, easy to work, and very durable. It has been extensively used by the Public Works Department for building purposes along the Niger. The tree is either a species of *Sterculia* or a *Cola*, and has not yet been identified botanically. It reaches large dimensions, is fairly common, and has a tendency to grow gregariously; the natural regeneration is also good, and if the timber ever comes into general demand, there will not only be a large supply immediately available, but it will be a comparatively easy matter to get the age gradations into a more or less normal state for future demands.

63. An unnamed species of *Terminalia*, common in the mixed forests of the Central and Western Provinces, is also likely to furnish timber suitable for the home markets. It is a tree of lofty growth and exceptionally good "form figure," the girth being well maintained up to a great height. The Yoruba name of the tree is Epepe.

*Ebonies.*

64. The ebony exported from Southern Nigeria is furnished by two species of *Diospyros*, viz., *Diospyros mespiliformis* of the mixed forests and *Diospyros dendo* of the evergreen forests. The former is still fairly plentiful, but the majority of the large trees belonging to the latter species have been practically exhausted in the drainage areas of the Calabar and Cross rivers, from which the bulk of the Southern Nigeria ebony used to be exported. The natives have now taken to felling immature trees of this species, and the supply of large billets suitable for the home markets will rapidly diminish in the near future.

*Prospects of profitably exploiting West African timbers other than Mahoganies and Cedars.*

65. As regards the prospects of profitably exporting timber other than mahoganies and cedars to Europe, it may be mentioned that under the existing conditions of freight, labour, &c., it does not pay to export woods that realise less than 3*d.* per superficial foot. A large number of different kinds of West African timbers can easily command from 2*d.* to 2½*d.* a superficial foot in the Liverpool market if presented in the form of sound, carefully prepared, and seasoned logs, but, unfortunately, the expense of hauling the timber by

human labour is too great to admit of any profits being made from such prices.

*Mechanical Appliances and Draught Animals.*

66. The timber industry of Southern Nigeria can never be developed to its full extent unless human labour is replaced by mechanical appliances or by the employment of draught animals; supervision by European contractors skilled in the use of such appliances would also be necessary.

*Limit of Hauling Distance.*

67. The cost of hauling practically restricts the exploitation of the forests to within four miles of the banks of the larger rivers capable of floating logs; beyond that distance the cost becomes prohibitive. This in itself is not an unmixed evil, as a certain amount of protection (provided the forests are not destroyed for farming purposes—an ever-present danger) is thus afforded to the remoter forests, which will become available as a source of supply as soon as the conditions of the country have been sufficiently developed to permit the employment of improved methods of timber extraction.

*Condition of Growing Stock.*

68. As regards the condition of the growing stock, there is, generally speaking, with reference to the more important timber trees, a large deficiency in the girth classes of medium age, viz., between saplings and trees that have reached exploitable dimensions. This great gap in the age gradations shows that the forests are in a very irregular condition, one that requires careful treatment, and entails the lapse of a long transition period before it can become anything like normal.

69. There is, in fact, a surplus of mature timber, but, owing to the deficiency in the other classes, this surplus has to be carried and utilized over a very long period until such a time as the normal age gradations have been established. In accordance with this principle it has been found necessary, pending the introduction of more exact working plans, to limit the minimum felling girth of the more important economic trees to a very high figure—a rough and ready arrangement that at all events not only leaves a sufficient number of mature seed-bearers for the regeneration of the forests, but also provides for a supply of timber in the near future.

*Effect on Forests of Farming.*

70. In areas where farming has been carried out in the past, and practically the whole of the wooded portions of

the country have at some time or other been subjected to that treatment, the gaps between the two extreme age classes of young saplings and mature trees has been further emphasized, the mature plants having been left as standards from one farming rotation to another whilst the youngest growth, consisting mainly of coppice shoots, has frequently never had a chance of reaching a greater age than that of one farming rotation. Of course, owing to inter-tribal wars, the population of certain areas and the invasion of others by migratory tribes and clans, the period since some of these areas were last farmed varies considerably, so that in a few cases the secondary growth has been left intact long enough to have practically acquired the character of a "high forest."

*Practical Extermination of the Primeval Forests.*

But such instances are uncommon and, on the whole, not only have the primeval forests been exterminated, but the secondary ones that replaced them have very often changed their character. Species that regenerate themselves well by means of coppice and stool shoots have been favoured in the struggle for existence at the expense of those dependent mainly on regeneration by seeds. The result is that the forests consist, generally speaking, of more or less even aged woods with large "standards" left over from the different farming rotations; but the species thus favoured by the action of man are in general not those that happen at the present moment to be of economic importance.

The standards consist of trees which have escaped felling either on account of their size, the hardness of the wood, or by being considered sacred by the natives.

71. Efforts have been made in a few of the Government reserves to improve the condition of the growing stock by means of regeneration, felling, and forest plantations.

*The greatest danger threatening the forests of Southern Nigeria—extermination of the latter by the Native Farmers.*

72. The greatest danger threatening the forests of Southern Nigeria is that of their extermination for farming purposes. If a sustained supply of large timber for the future is to be realised it is imperative that this annual destruction of the forests be regulated and restricted to within reasonable limits. The system of farming adopted by the natives in the better-wooded portions of the country is one of the most wasteful known, so much so that, in the case of an exactly similar system in India the Government has been obliged to intervene by prohibiting it in certain areas and regulating it in others under the provisions of special laws passed for that

purpose. The method of cultivation employed by these natives necessitates the clearing of much larger areas of forest land than are required by any of the more modern systems, and it will easily be seen that when the population of the country increases, as it is bound to do under prolonged British rule, a time will come, and that at no very distant date, when the forests, as such, will cease to exist.

*Best methods of dealing with the danger.*

73. In the tropics and, indeed, almost universally, the most successful methods of dealing with this danger have proved to be—

- (a.) The establishment of forest reserves of a sufficient total area to ensure an adequate future supply of large timber and other forest produce. In countries where forest administration has been introduced on rational grounds it has been ascertained that at least from 20 to 25 per cent. of the wooded area is required for the purpose of such reservation;
- (b.) The adoption of modern methods of agriculture so that the maximum yield of produce can be obtained from the land. This leaves a larger proportion of wooded areas free for other purposes.

The measures indicated under (a) and (b) are always most successful when operating simultaneously.

*Danger not so imminent in moist zone, but great in arid regions of the interior.*

74. The danger of exterminating the forest from wasteful systems of cultivation is not so imminent in the case of areas situated along the sea-board where the rainfall is heavy and vegetation rampant, but it is otherwise in the interior where the moderate rainfall experienced is not sufficient to check the damage done by the annual fires or to prevent the grass lands from gradually encroaching on the wooded areas.

*Consequences following destruction of Forests.*

It is in such up-country districts also that the most serious consequences are likely to follow the destruction of the forests. Already large tracts of land have become unfertile from a long succession of annual fires followed by heavy showers in the tornado season that wash away the ashes and organic matter from the exposed soil and so render it unfit to support vegetation other than that of the coarser grasses and a few species of thorny shrubs adapted to such poor soils. These grasses, it may be remarked, so far from

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being seriously damaged by the annual fires appear to acquire renewed vigour when the first tornados of the dry season come with their showers of rain and cause the young shoots to sprout up with an extraordinary rapid growth.

It is this immunity from permanent damage by fires that enables the grasses as a group to successfully replace other species of plants by choking them out of existence.

## VI. EXPLOITATION OF MINOR FOREST PRODUCE.

## (A.) RUBBER.

75. The total output of rubber for 1906 amounted to 3,434,279 lbs., valued locally at £307,077, as compared with 3,109,707 lbs., valued at £249,043, of the previous year. These figures, of course, include the exports of Northern Nigeria.

The year's output for each Province is shown below:—

Province.	Quantity of rubber.	Local value of rubber.	Remarks.
Western Province... ..	lbs. 928,638	£ 91,260	Includes exports from Northern Nigeria.
Central Province ... ..	2,242,913	196,992	
Eastern Province ... ..	262,728	18,825	
Total ... ..	3,434,279	307,077	

76. The increase over last year's figures is mainly due to the opening of the Ilesha and other forests in the Western Province for rubber tapping. An inspection of the rich rubber forests of the Ilesha District proved that they had been very much overtapped, and it was found necessary to again close them. Licences much in excess of what the latter could stand were issued, and the tapping was carried out in complete disregard of the rules passed by the Ilesha Native Council, who apparently made no effort to supervise the operations until it was too late and the damage done. A large proportion of the *Funtumia elastica* trees that were tapped proved to be undersized, and the majority of them have been so much damaged that they are unlikely to recover from the treatment.

77. The number of licences issued in the Western Province is as follows:—

Ijebu-Ode District	...	200
Badagry District	... ..	1
Epe District	... ..	5
Ibadan State	... ..	101
Ondo District	... ..	4,713
Ilesha District	... ..	5,266
Total	...	<u>10,286</u>

In some districts, such as Badagry, in which only a few licences were issued, illicit tapping was carried out on a large scale. The difficulty experienced in obtaining convictions for cases taken into court has rendered it practically impossible to stop such breaches of the rules, which are often ignored by the very native councils who pass them.

*Central Province.*

78. The Provincial Forest Officer of the Central Province reports that 1,114 licences were issued in 1906, as against 847 of the previous year (*see* Return No. 9). The revenue realised from such licences during the period under review amounted to £671 10s., of which £557 was paid to Government and the balance of £114 10s. to the native chiefs.

*Eastern Province.*

79. The figures for the Eastern Province are 137 licences, which realised £68 10s. Here, again, illicit tapping must have been resorted to, as the output of rubber, *viz.*, 262,728 lbs., was much in excess of what 137 collectors could possibly obtain in the time.

*Smooth working of Licence System in Central Province.*

80. The licence system has worked very satisfactorily in the Benin Districts of the Central Province where the native communities take a lively interest in forestry matters and are fully alive to the importance of preserving the plants—an *annual* source of revenue to themselves. No doubt in time the inhabitants of other districts in the Protectorate will adopt the same attitude towards the licence system. However, as long as they are encouraged by the trade to ruthlessly destroy the rubber-yielding plants by getting as much as possible out of them in the shortest possible time and then to leave the rest to chance, I am afraid but little attention will be paid by them to more prudent advice.



*Protection of Rubber Plants not so much important in littoral districts with heavy rainfall.*

81. The question is not of such great importance in localities where Para rubber plants can be grown with success, as in the moist littoral districts having a rainfall sufficiently heavy for the successful cultivation of that species, but it has quite a different aspect in the hinterland where the indigenous plants are the only species, so far as we know, that are suited to the localities. Again, a long number of years must lapse before the annual output of plantation rubber can reach the present export figure of 1,533 tons, and it is only reasonable that steps should be taken pending the successful substitution of the indigenous rubber by plantation produce to protect the indigenous plants from the extermination that threatens them. When the planting industry out here has proved to be the success anticipated then it will be time enough to leave the wild plants to their fate.

*Methods of tapping suitable for wild plants.*

82. As regards the methods of collecting and preparing rubber employed by the natives of Southern Nigeria, it may be remarked that in the former case the danger threatening the wild plants is not so much the adoption of any one method in preference to another, but the fact that whatever system of tapping is introduced, it is, unless properly supervised, bound to be overdone to such an extent as to threaten the life of the plant. This is the main point at issue, and has been frequently overlooked when criticising West African methods of extracting the latex. Any one of the simple systems employed out in the East, except those based on "wound response," with a view to securing an increased yield of latex from *Hevea Brasiliensis* are suited to the *Funtumia elastica* plant if applied in moderation.

As this species appears to show little response by an increased flow of latex to repeated tapping at short intervals, the "herring bone" and "V" systems combined with the removal of thin slices of bark on alternate days should not be employed till further experiments carried out on a very large number of plants have definitely shown that the increased yield of latex, if any, is obtained at the expense of little or no permanent injury to the plant. Experience seems to point to the conclusion that *Funtumia elastica* shows much less recuperative powers towards tapping than the Brazilian plant does, and consequently such systems as mentioned above are not suited to it. On the whole the simple "half herring bone" method or the simple "V" one *applied very lightly* appear to be the most suitable for this plant. Dr. Unwin, Assistant Conservator of Forests, carried out some experiments with the spiral method and procured a

larger yield of latex than has so far been obtained by other systems, but the effect of such treatment on the growth of the trees experimented on has yet to be ascertained.

83. Refined and complicated methods of tapping, however suited they may be for plantations, are quite impracticable when applied to wild trees found scattered about the forests at long intervals. Moreover, the natives can hardly be expected to return at frequent intervals to the same plants for repeatedly carrying out tappings unless the increased yield of latex so obtained is commensurate with the extra labour involved.

#### "Root Rubber."

84. In the case of the so-called "root rubber" of the trade it may be advisable to point out that it is extracted by the natives from the true rubber-yielding vines as well as from those small *herbaceous* plants such as *Landolphia Thonningii* and *Carpodinus lanceolata*, that have acquired a strong rhizome development, and that the method of extraction adopted by the natives is only justifiable when applied to the latter mentioned plants whose rhizomes contain the bulk of the latex; *these two species are not found in Southern Nigeria*. In the true vines by far the greater portion of the latex is contained in the aerial stems, and these organs only of the plant should therefore be tapped. However, certain species of the true latex yielding vines, when growing in dry arid regions exposed to the annual fires, develop a strong rhizome at the expense of the aerial portions of the stem, and often acquire a shrubby habit. In such cases latex may be extracted from the rhizomes providing they are very lightly tapped by simple shallow incisions and are then covered up again with earth. This is the method employed by the French in Senegal and the Soudan for *Landolphia Heudelotii*. It is very different from the drastic measures adopted by the natives of Southern Nigeria, who grub the plant up root and stem and then pound these to pieces for the purpose of separating the latex from the crushed tissues, which is usually done by means of boiling water.

#### Objection to tapping vines for "Root Rubber."

Now the objection to this practice is that it is applied indiscriminately not only to plants with a large rhizome development but also to robust climbers capable of yielding an abundant supply of latex from the aerial stems; such treatment is fatal to the latter though it may not have so great an effect on the rhizome bearers which can easily and quickly reproduce themselves if even the smallest portion of the rhizome is left intact in the ground. Even here tapping

the rhizomes as opposed to grubbing them up is a much more rational system to adopt.

85. Our two best rubber-yielding vines, viz., *Landolphia owariensis* and *Clitandra elastica*, are frequently subjected to the drastic native method mentioned above in the more inaccessible portions of the Protectorate.

86. Some difficulty has been experienced in improving the quality of rubber prepared by the natives, but since the close of the year under review much progress has been made in this direction, and it is to be hoped that the European merchants will help the movement by paying substantially better prices for the superior product. It has been abundantly proved of late that the rubbers yielded by *Funtumia elastica*, *Landolphia owariensis*, and *Clitandra elastica*, if properly prepared are of the very best quality and capable of realising prices in the home market but little inferior to that of the best Para. Samples of *Funtumia elastica* prepared by members of this Department with the ordinary appliances available to the natives were valued at home at from 4s. 6d. to 4s. 8d. a lb. when "fine Para" was selling at 5s. 2d. a lb., and it is probable that when prepared with the same care and with the modern appliances found in up-to-date plantations it will fully hold its own in the markets with the Brazilian product. Perhaps the best of all the West African rubbers is that prepared from the latex of *Landolphia owariensis*.

*"Lagos and Benin Lumps."*

87. The bulk of the *Funtumia elastica* rubber is shipped home in the form of "Lagos and Benin lump," a product that contains a very large percentage of water and impurities. Efforts are being made to replace this "lump" by clean "biscuit" rubber, which is easier to dry and preserve from putrefactive changes.

*List of Rubber-Yielding Plants.*

88. The following is a complete list, brought up to date, of the latex-yielding plants of Southern Nigeria from which either good rubber or inferior products used for the purposes of adulteration are extracted by the natives.

*Plants Yielding Good Rubber.*

The plants yielding good rubber are—

(1) *Funtumia elastica*.—A small to medium sized tree, widely distributed in parts of the Ilesha, Ondo, and Benin Districts. The Ilesha forests are the richest in this respect of any I have seen. The species seeds most prolifically, but, unfortunately, the light seeds experience great difficulty in

reaching the soil through the thick layer of humus generally found in the moist evergreen forests where this plant most commonly grows. In fact, the proportion of seedlings to seeds is very small indeed, and the enormous number of seeds furnished by the species is an index of the difficulty it experiences in this respect.

Dry *Funtumia elastica* rubber contains on the average 80 per cent., by weight, of pure caoutchouc, and the latex yields about 60 per cent., by weight, of dry rubber. The latex coagulates spontaneously in from three days to one week (according to amount of dilution with water) if exposed to the air in shallow vessels.

The following coagulants can also be employed:—

*Heat.*—Either applied directly to the diluted latex or indirectly by placing a vessel filled with the fluid into boiling water.

*Alcohol.*

*Acetic acid.*

*Infusion (boiling) of the leaves of Bauhinia reticulata.*

This last method, however, is not generally convenient in practice, as the two plants inhabit different types of forest, *Bauhinia reticulata* being found in the open deciduous forests where the *Funtumia elastica* does not grow.

In *Southern Nigeria* coagulation by means of heat is most generally employed. If the resulting lumps of rubber are taken out, washed, and pressed into the form of biscuits as soon as coagulation occurs and then properly dried in an atmosphere containing smoke, the "biscuits" acquire a rich brown colour, and can realise about 4s. 6d. a lb. in Europe. Samples of rubber prepared from the spontaneously coagulated latex by members of this Department were valued in Europe at 4s. 8d. a lb. when fine Para was selling at 5s. 2d. a lb.

The produce is exported to Europe under the trade names of "Lagos, Benin, and Calabar lumps." The yield of rubber per tree is small, and varies from two to three ounces at a tapping.

(2.) *Landolphia owariensis*.—A very variable vine that, in the more open dry country where forest fires are prevalent, has a tendency towards shrubby growth and rhizome development. It is common in the Benin Districts and part of the Western Province. The plant is known to the Yorubas as Ibo tabong, to the Benis as Ubake, and to the Ibos as Ottoa fre fre.

Over 90 per cent. of the dry rubber consists of pure caoutchouc, and the proportion of rubber to latex is very high, as practically the whole of the latter coagulates. The

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percentage of resinous matter is very small. The rubber prepared from this plant is about the best of all the Southern Nigerian rubber.

The coagulants are:—

- (a.) *Heat*.—Coagulation sets in long before the boiling point is reached.
- (b.) *Spontaneously*.—The latex frequently coagulates on exposure to the air as soon as the cut is made and whilst it is exuding. The product is very white and highly elastic.
- (c.) *By hot smoke*.—This is a variation of (a).
- (d.) *Acids*.—Such as sulphuric, nitric, boracic, citric, oxalic, tartaric, and tannic.

It is curious to note that acetic and hydrochloric acid, which act so powerfully on the latex of the French *Landolphia Heudelotii*, have little or no effect on the milk of this plant.

- (e.) *Alkalis*.—Such as alum and salt. The use of the latter is objectionable as it absorbs moisture and keeps the rubber damp, and thus hastens putrefactive changes.

- (f.) *Alcohol*.

The methods usually employed by the natives are (a) and (b), and sometimes lime-juice and an infusion of the plant *Costus lucanusianus*.

The trade names of the rubber procured from this plant are 1st class "niggers," which consist of thin strips of rubber wound round each other like a skein of wool, and 2nd class "niggers" of various shapes. *Unfortunately the bulk of the so-called "root rubber" from the Niger Valley is also prepared from this valuable plant.*

Properly prepared *Landolphia owariensis* rubber from Lower French Guinea and the Ivory Coast fetches an average price of 4s. 6d. per lb.

The annual yield of rubber from a large vine varies from one-third to two-fifths of a lb.

The plant is of rather slow growth.

(3.) *Clitandra elastica*.—A long scrambling climber common in the moist evergreen forests of the Central and Western Provinces. It is not found in the dry open country. A large proportion of the rubber exported from Calabar is prepared from this plant. The yield of latex is copious, but reliable data are not yet available.

The natives employ heat as a coagulant; the latex, diluted with water, is boiled in an earthen pot and continually

stirred with a stick till coagulation sets in. During this process the freshly prepared rubber adheres to the stick in a spindle-shaped mass. The latter is then removed, crushed flat and taken to the nearest market. By straining the latex of impurities and subsequently thoroughly washing and pressing the freshly coagulated product into biscuits and then drying the latter in wood smoke a most excellent quality of rubber can be produced, and this with the simple appliances at hand and with very little extra trouble.

There is no doubt that with similar care in preparation the rubber produced from the above-mentioned three species of plants can easily be raised in value from the 2s. 8d. per lb. at present realised to an all-round average of something like 4s. 6d. per lb. Time, however, is required to spread this knowledge through the length and breadth of the land where rubber is prepared, and the hearty co-operation of the trading firms in the matter of paying better prices for the improved quality of produce, and the introduction of the Adulteration of Produce Ordinance is necessary before success can be achieved. Already much has been done in spreading this knowledge since the return to the Protectorate of the two pupils who were sent to the French School of Forestry at Bobo Dioulasso, in the Soudan, by His Excellency the Governor. In the Western Province the Provincial Forest Officers and Curators have given demonstrations to the Forest Guards and Garden Officials in improved methods of collecting and preparing rubber, and the Forest Establishment of the Ibadan State has been similarly instructed.

*Plants yielding inferior grades of Rubber; latex often used for adulterating better kinds.*

89. The following plants are those known to be utilised by the natives for the preparation of inferior, gummy, resinous grades of rubber, and their latices are also utilized in adulterating the better kinds of rubber mentioned above.

(4.) *Carpodinus hirsuta* (Ibo elekiti of the Yorubas) and *Carpodinus fulvus*.—These two robust vines yield an abundant supply of latex. They are common on the Niger, and are found in all three Provinces. In the Onitsha hinterland (Oka District), *Carpodinus hirsuta* has been practically exterminated by the practice of extracting "root rubber."

*"Paste Rubber."*

I have seen large quantities of the "paste" rubber, prepared from this plant, stored in the factories on the Anambra branch of the Niger. The two species are very similar to each other, and one is probably only a variety of the other.

The proportion of "paste" to latex is high.

Coagulation may be brought about by the action of most acids, especially hydrochloric acid, and by heat; in the latter case coagulation sets in before the boiling point is reached. The latex also coagulates spontaneously after several days' exposure to the air.

The resulting product, which is known to the trade as "paste," is of a white colour with a reddish tint; it becomes very sticky on exposure to the air and remains soft for months. The proportion of pure caoutchouc to resin is very small in this grade of rubber. It commands a ready sale in Europe and fetches from 8*d.* to 9½*d.* a lb.

(5.) *Landolphia senegalensis* (Yoruba name, Ibo Akitipa); *Landolphia Thompsonii* (Yoruba name, Ibo Giddi).—These two powerful climbers are fairly common in the Western Province, and yield a copious supply of latex which is difficult to coagulate by the action of the commoner acids and alkalis. After prolonged boiling, however, a resinous putty-like substance is formed which is sticky, and remains plastic for years. The price of this substance in the home markets varies from 8*d.* to 9*d.* per lb.

(6.) A similar substance, but one that hardens after exposure to the air, is prepared from the latex of *Ficus Vogellii*.

#### *Latices used as Adulterants.*

(7.) The latices of the following plants are used by the natives, more particularly those of the Western Province, to adulterate the latex of the good rubber-yielding plants Nos. (1) to (3):—

- (a.) *Funtumia africana*, a fairly large tree with abundant latex; very difficult to coagulate.
- (b.) *Holarrhena Wulfsbergii* and *Holarrhena africana*, ditto.
- (c.) *Alstonia congensis*, a lofty tree, common in the moist forests.
- (d.) *Omphalocarpum elatum* (tree) yields a kind of gutta or balata.
- (e.) *Couonopharyngia pachysiphon* (small tree).
- (f.) *Omphalagonum calophyllum*, a vine.

With the exception of (d.) these plants all belong to the natural order *Apocynaceae*.

#### (B.) Gums.

90. The export of gum copal in 1906 was 34,634 lbs., valued at £6,650, as compared with 33,207 lbs., valued at £3,967, in the previous year. A better quality of gum

appears to have been produced during the year. The plant furnishing this product is a lofty tree of the moist ever-green forests and is known to botanists as *Cyanothyrus ogea* (*Daniellia oblonga*). The trade in the so-called "balsam copaiba" of the Niger Districts has fallen off very much of late years; it is procured from *Daniellia thurifera*, a tree that is characteristic of the "dry zone" vegetation. It is common in the open forests of the hinterland. The prices paid for this produce in the European market have declined considerably of recent years, thus accounting for the falling off in the trade. Practically an unlimited supply can be obtained should a demand again arise for this product.

No gum Arabic is collected within the limits of Southern Nigeria.

#### (C.) FIBRES.

91. The trade in piassava fibre from the Eket District still continues. The export in 1906 amounted to 5,414 packages, valued at £3,210, as compared with 7,290 packages, valued at £4,052, for the previous year. Efforts are being made by some of the local agents of the trading firms established in the adjoining districts to encourage this industry as much as possible.

92. There are several good fibre-yielding plants to be found in this Protectorate, but the natives are very conservative, and it is difficult to get them to take up anything new. The plants are:—

*Honkenya ficifolia*, of the natural order of *Tiliaceæ*. It yields an excellent long fibre and is found growing wild in parts of the Calabar and Cross River Districts, and also in the Benin country.

*Urena lobata* (*Malvaceæ*).—Common on waste places round villages and in recently abandoned farms. By cultivation the length of fibre can be increased.

Several species of *Sidas* and *Triumfettas* also yield good fibres that could be lengthened by judicious cultivation. Some banana fibre prepared at Calabar has been well reported on by the Imperial Institute, and a large consignment is being prepared for the purpose of testing its value in the market.

The strong ropes used by the natives for binding up their bundles of kola nuts are prepared from the best fibres of a large tree (*Sterculia Barteri*). This plant is common in parts of the Western Province. The ropes made from it are very durable. Samples have been prepared for the Imperial Institute.

93. The samples of canes and walking sticks sent home a year ago have proved to be of no commercial value.



## (E.) OIL BEANS AND SEEDS.

94. The following plants indigenous to Southern Nigeria possess seeds that are more or less rich in vegetable oils and fats.

*Pentaclethra macrophylla*.—A small tree of the natural order *Leguminosæ*. It is very abundant throughout the moist evergreen forests. The seeds used to be regularly exported from the south coast some years ago, but the trade stopped when the prices at home became unremunerative.

The "wild mango" or "Dika nut" (*Irvingia barteri*)—confined to the moist evergreen forests and not so common as the former species. The seeds contain a high percentage of vegetable oil which is used by the natives for culinary purposes. A small trade was done during the year in the seeds of these two plants by some of the trading houses in the Eastern Province, but the prospects are not encouraging.

*Ricinodendron africana* (*Ricinodendron Heudelotii*).—A large tree common all over the moist zone. The seeds are rich in oil and have been mistaken for those of a species of *Aleurites*. The plant yields a good timber.

*Lophira alata*.—A small tree, confined to the dry open forests of the hinterland, where it is very plentiful. The seeds are rather small, but are said to be rich in oil. Its congener, *Lophira procera*, of the moist swampy forests near the coast, bears larger seeds.

Shea butter tree, *Baddia Parkii* (*Butyrospermum Parkii*).—This small tree is very plentiful in some parts of the Western Province hinterland such as the Oyo, Shaki, and Meko Districts. The export of shea butter and nuts during 1906 was 1,727 tons, valued at £13,917, as compared with 1,784 tons, valued at £22,184, in 1905. Efforts are being made to interest the Yorubas in this trade, which is confined to regions in which the oil palm does not grow. The shea butter tree is generally found in poor soils hardly capable of supporting agricultural crops without the expenditure of a great deal of labour and money. This renders of some value tracts of country otherwise practically worthless to the natives.

## VII. AGRICULTURE.

## WESTERN PROVINCE.

95. From the Western Province the Provincial Forest Officer reports a number of crops were grown during the year at Olokemeji, some experimentally, some as fodder, and others in the ordinary routine of farm cultivation, perhaps the most important being cotton, rice, and jute.

*Cotton.*—The results of the experiments are shown in the statement attached as Return No. 10 to this report. The Provincial Forest Officer remarks, "It will be seen that No. 4, Eponkon, a native cotton, has given the best yield, but this is a brown cotton of a very inferior grade, besides which the percentage of lint is very small. Next to this in yield comes the other native variety, Ogodo, a white cotton valued last year at 6*d.* per lb.; this also shows a poor percentage of lint.

"As will be seen from the table when considering yield, together with percentages of lint, &c., the best results are given by—

"(a.) *Kidney*, with 340 lbs. to the acre and 41 per cent. of lint;

"(b.) *Abassi*, with 320 lbs. to the acre and 34 per cent. of lint;

"(c.) *Ashmoni*, with 300 lbs. to the acre and 33 per cent. of lint;

"(d.) *Janovitch*, with 240 lbs. to the acre and 33 per cent. of lint.

"Samples of all these cottons are being sent to England for valuation and report; it will then be possible to judge which varieties are worthy of future experimental cultivation."

96. The native cotton grown in the Meko District is apparently the best of the local varieties. Experiments are being undertaken with a view to improving the best native varieties by selective cultivation.

97. "*Rice.*—Seven varieties of rice were obtained from Sierra Leone; a portion of each variety was distributed, but enough was retained here for the purpose of trial. This was sown on the 21st July in plots of one-tenth of an acre each of the seven varieties, the first two yielding the most satisfactory results about here.

"Five of the seven varieties were to all intents and purposes failures; the other two did rather well, yielding at the rate of 840 lbs. per acre. The following are the names of the seven varieties, the first two yielding the most satisfactory results:—

"(1.) Ferewry;	"(5.) Obongboh;
"(2.) Bouzonic;	"(6.) Merican;
"(3.) Jobboy;	"(7.) Goroyombocy."
"(4.) Manemic;	

98. *Jute* was sown at Agege as well as in various districts of the Western Province; the plants in the former place showed good growth and some fibre was prepared from them, and forwarded to the Imperial Institute for valuation and

report. The result proved unsatisfactory, probably owing to faulty preparation. Further experiments are to be carried out with this plant.

99. "In addition to the above, other crops, such as arrow-root, ginger, maize, guinea corn, lucerne, &c., have been grown experimentally with varying results. The first two were cultivated for distribution and the others as rotation and fodder crops.

"In October 50 suckers of the Canary banana, *Musa Cavendishii*, were obtained from the Canary Islands through Messrs. Elder Dempster's agent there. These are doing well, and it is to be hoped that some suckers will be available for sale during the coming year."

#### CENTRAL PROVINCE.

100. As regards the Central Province several experiments in the cultivation of cotton, tobacco, castor oil, and leguminous crops were carried out in the Onitsha plantations.

The Curator reports that in the case of *Cotton* the 16 half-acre plots would in all probability have yielded much better results (average, 133½ lbs. per acre) if the cotton had been planted a month or even six weeks later than was actually done. Fully developed bolls were hanging on the plants for nearly a month before they got a sufficient amount of sunshine to open them, and they fell an easy prey to boll worm and other insects owing to their being exposed for such a long time to the moist atmosphere. The experiments show that June is too early for planting this crop, and that the middle of July promises more favourable results.

*Tobacco*.—American, some varieties gave good results both as to growth and yield.

*Castor Oil*.—The two-year old plants on the experimental plots proved a failure, but the Curator thinks that the experiments should be persevered with. Some 250 lbs. of the best local varieties of castor oil seed such as that from Oka, Asaba, and Agulari, are being sent home for valuation with a view to ascertaining the variety to improve by selective cultivation in the future.

*Leguminous crops*.—A large series of experiments were carried out with crops of cow peas, pigeon peas, Akpakapakera beans, Bonavista beans, &c. These have given good results and not only enriched the soil but kept down weeds, &c.

101. A detailed list of the experiments carried out at Onitsha is given in Return No. 11 to this report. Many of the sample plots were treated with various kinds of manure, and this fact makes it difficult to ascertain the respective

merits of the different combinations of crops. More attention will be given to this latter point and the use of expensive manures which the natives are hardly likely ever to employ will be discontinued.

#### PROGRESS OF AGRICULTURE IN WESTERN PROVINCE.

102. Agriculture appears to have made the most rapid strides in the Western Province, where the cultivation of cotton, maize, ground-nuts, and cocoa has shown a very satisfactory increase during the year. The Yorubas, as a race, are keen agriculturists and quick compared with other natives of Southern Nigeria to take advantage of any improvements in cultivation and recommendations brought to their notice. The increased facilities for transport due to the extension of the railway and the construction of feeder roads have also contributed towards an increased output.

#### *Agege Farmers.*

103. The farmers at Agege are well advanced in agricultural practice, and have always taken the lead in adopting any desirable changes. They deserve great credit for the enterprise shown by them, and should be given every encouragement in their efforts to improve the agriculture generally of the Province. I understand that they are forming a local agricultural union of their own in connection with the periodical issue of a journal (in the Yoruba language) dealing with such matters.

104. *Cotton.*—The increased output of this produce is a very satisfactory feature of the year. In the Western Province the figures for 1906 are 6,038 bales (380 lbs. to a bale), valued at £30,715, against 2,775 bales, valued at £15,591, of the previous year; the corresponding figures for the Central Province being 2,229 bales (380 lbs. to a bale), valued at £10,848, against 535 bales valued at £245 in 1905. The exports from the Eastern Province are nil.

The establishment of ginneries by the British Cotton Growing Association at Ibadan, Aro, Lafenwa, and Eruwa Road has no doubt greatly contributed towards inducing the natives to grow more cotton for the export trade. Besides those mentioned above, two more ginneries are being erected at Iwo and Oyo; this should result in further additions to the areas planted up with this crop.

105. *Maize.*—The exports have so far been confined to the Western Province, but there is no reason why it should not be extended to the other two Provinces, where it is extensively grown by the natives for their own consumption. The local variety known as "white maize" is grown in both these Provinces.

The figures during 1906 for the Western Province are 13,074 packages, valued at £37,386, as compared with 9,385 packages, valued at £32,503, of the previous year. Improved methods of harvesting and shipping the produce should be introduced at an early date if the corn is to hold its own in the home market. There has already been deterioration in quality, and lower prices are being offered in consequence.

106. *Ground-Nuts*.—The exports of this produce have rapidly increased during the last four years, but not, considering the value of the oil in the home markets and the importance of the crop as a fertiliser, to the extent that they might have done. This is a most useful crop to interpolate in any system of rotation of crops, and should be extensively cultivated on the comparatively poor open soils of the interior where the organic constituents are generally deficient.

There is ample scope for building up a large and profitable industry in this product, and the native farmers should pay more attention to it than they have in the past, more especially in the Western Province, where the extension of the railway and the construction of good feeder roads provide easy lines of transport to the nearest markets.

The export of ground-nuts during 1906 was 33,216 cwts., valued at £13,486, as compared with 15,800 cwt., valued at £6,956, of the previous year.

107. *Cocoa*.—The influence of the Agege farmers has been most felt in the remarkable impetus that has lately attended the cultivation of this product in the Western Province. The total output has increased from 663,508 lbs., valued at £10,898, in 1905, to 1,153,439 lbs., valued at £20,893, for the year under review, and this has been attained in a locality where the climatic conditions are not so favourable for the cultivation of this plant as they are in extensive areas situated further eastwards in the Central and Eastern Provinces. In the latter more especially should its cultivation be pushed, as the conditions are very favourable. The export of cocoa from the Central and Eastern Provinces was 388,499 lbs., valued at £6,019, in 1905, as compared with 466,548 lbs., valued at £6,151, in 1906.

108. The very successful Agricultural Show held at Lagos towards the end of the year has no doubt greatly stimulated the interest taken by the natives in agriculture and enlarged their views on such subjects.

## VIII. BOTANICAL GARDENS.

## WESTERN PROVINCE.

109. In the Western Province a large number of plants of economic importance were distributed during the year from the Olokemeji Gardens to farmers and others interested in their cultivation. Details of the distribution are shown in Return No. 12. The totals are 25,944 plants; 1,996 suckers; 624 lbs., 116 packets, and 1 box of seeds; 140 lbs. and 36 baskets of tubers; and 38 bundles of grass.

*Pupils attached to Olokemeji Gardens Course of Instruction.*

110. The Curator reports satisfactorily on the work of the pupils attached to the Gardens. They are given a course of instruction in the propagation of plants, their correct nomenclature, economic value, the essential conditions requisite for good growth, and the advantages of pruning, &c. A little elementary botany is also taught them. From the Gardens the pupils, excepting such as show special aptitude for botanical work, are transferred to the farms and from thence to the forest, so that the full course of three years enables them to acquire a general practical knowledge of gardening, agriculture, and forest plantations.

111. The introduction of wild, indigenous plants into the Gardens has been continued with a view to furnishing easily get-at-able living specimens for identification and study. Those that flower from time to time are properly identified and labelled. This method is of great importance where the instruction of natives is concerned, and it also enables visitors to gain a general idea of the vegetation of the country without their having to undertake extensive journeys into the forests for that purpose.

*Herbarium.*

112. The excellent herbarium has been augmented by something like 200 specimens which have been properly mounted, dried, and duplicates sent to Kew for identification. This collection is of great scientific value as it contains several type specimens, and it should be ultimately placed in a suitable building at Lagos.

113. Some fifty members of the Ibadan Agricultural Society, amongst whom were the Resident of Ibadan, the Commercial Intelligence Officer, and the Otum Bale, visited the Gardens last October. After inspecting the Gardens and farm, a meeting was held at which various questions dealing with agriculture were discussed.

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114. The Gardens were well maintained and several improvements in the drainage, laying out of new roads, &c., made.

*Plants received.*

115. Thanks to the generosity of His Excellency the Governor, the Curators of Botanical Gardens from various parts of the world, and to societies and private individuals, a number of valuable additions were made to the Gardens during the year. For details see Return No. 13.

*Budding Experiments.*

116. Successful budding was carried out in the case of grape fruit, the buds being transferred to stocks of the bitter orange. Similar experiments with the buds of the Navel orange proved a failure.

117. Nagpur oranges have been grown from seeds imported from India and are doing well. The seeds that germinated were got from fruit sent over here as samples.

118. Excellent pineapples and bananas are now grown in the Gardens in addition to the ordinary tropical fruit.

*Fibre Plants.*

119. Plants of sisal hemp (*Agave rigida* var. *Sisalana*) and Mauritius hemp (*Furcraea gigantea*) are all well established in the Garden and have been propagated. Fibres procured from these as well as from indigenous plants were exhibited at the Agricultural Show. See Return No. 14 for exhibits prepared by this Department.

*Rubber Plants.*

120. There are at the present time various species of rubber plants, such as *Hevea, braziliensis, Ficus elastica, Funtumia elastica*, and different species of *Landolphia*s established in the Garden. With the exception of the latter, however, they are not doing very well, the climate being unsuitable.

121. The American logwood (*Haematoxylon campechianum*) has grown well here and furnished a large number of seeds from which plants are being raised.

122. Seeds of a hybrid cotton (*Thomatis carnavonica*) of variety Sea Island parentage, were received from Kew. Out of these, eighteen young plants were raised and established.

*Meteorological Results.*

123. The rainfall for the year was eleven inches less than in 1905. Rain fell on 114 days as compared with 92 days in 1904 and 108 days in 1905. Some high temperatures were

recorded in March, when 105° F. in the shade was reached as a maximum, the average for the month being 100·09° F. The average daily maximum for the year, viz., 90·85° F., is the highest ever taken at Olokemeji. See Return No. 15.

124. The Ebute Metta Garden has been abandoned as a distributing centre, and is now kept up mainly as an ornamental one. The valuable plants established there are, however, still being tended. The Para trees in the Garden furnished 3,826 seeds, of which 77½ per cent. germinated.

125. A garden was formed in the Ibadan Rest House ground during the year.

#### CENTRAL PROVINCE.

126. In the Central Province a fair amount of plant distribution was done from the Onitsha Garden and Plantations, seeds of cocoa, cow peas, tobacco, pigeon peas, and jute being distributed. The locality, however, is not a good one for this purpose; it is too dry and far from the centres where the cultivation of crops such as cocoa, Para rubber, &c., can be successfully undertaken.

#### *Vegetable Garden.*

127. The Curator reports that the kitchen garden was well maintained, and the results show that with a little assistance as regards shading and watering some very acceptable vegetables such as cabbages, turnips, cucumbers, tomatoes, &c., can be grown.

#### *Ornamental Flowering Plants.*

128. Ornamental flowering plants of various kinds, such as Oleander, Bougainvillea, Ixora, Allamanda, Zinnias, French Marigold, Roses, Hibiscus, Crotons, Acalyphas, Verbena, Creopsis, Lilies of several kinds, Solanums, and Clerodendrons have been grown with success there.

#### *Stock Farm.*

129. The stock farm at Onitsha was abandoned and the cattle either transferred to other districts or sold. Past experience has shown that this locality is too much infested with flies (*Glossina* sp.) for any success to be attained with breeding experiments. Most of the imported cattle had to be kept in fly-proof houses.

130. The hydraulic ram continues to work satisfactorily.

131. Necessary repairs to buildings and roads and the extension of the latter were carried out. All the houses are now in good condition.



*Expenditure on Gardens.*

132. The expenditure incurred on the plantations, gardens, and stock farm amounted to £1,075 during 1906.

## EASTERN PROVINCE.

133. As regards the Eastern Province, the Botanical Gardens at Calabar were fairly well maintained, but they are capable of much improvement if they are to serve the real purpose of such gardens. Matters have much improved of late, and a fair number of coconuts and Para rubber plants have been distributed to native farmers and others interested in agriculture.

*Fruit Trees.*

134. During the year considerable additions were made to the stock of economic plants growing in the Gardens, more especially as regards tropical fruits. Those, such as the mangosteen, lichi, pomegranates, &c., introduced by His Excellency the Governor during 1906, are doing well.

*Sago and Nipa Palms.*

135. The Sago palms planted in the hollow in the Gardens are in excellent condition, and the Nipa plantation across the river also appears to be established.

*Extension of Gardens.*

136. The Gardens were considerably extended in the direction of the new barracks and the area planted up with rubber plants such as *Functumia*, *Ficus*, *Castilloa*, and Para. The latter have made excellent growth and average about 12 feet in height. Plots of land were also planted up with fibre-yielding plants such as jute, *Honckenia foifolia*, *Urena lobata*, and *Boehmeria nivea* (Ramie). The jute has shown very poor growth.

137. The plots under cinnamon are doing well.

*Attacks of Insects.*

138. The Curator reports that insect attacks on the eugenias and plants of the citrus genus are numerous, but are being kept in check. The *Castilloa* rubber-yielding plants are not doing at all well, several having died; they, moreover, suffer severely from the attacks of a borer.

139. Most of the roads round Calabar have been planted with shade and ornamental trees, and on the whole with success.

*Stock Farm.—Calabar.*

140. A stock farm was started at Calabar early in the year with a view to establishing a local dairy. For this purpose three cows and some bull calves were imported from the Canary Islands. Unfortunately two of the former and one of the latter died during the year. The cause of death amongst the cows was reported by the Medical Officer to be hypertrophic serosis of the liver in one case and intestinal obstruction in the other. The blood of the calf that died was examined by the District Medical Officer, and was found to contain parasites similar to those found in the Indian disease (human) known as Kala-azar. In no case was trypanosomiasis infection detected.

141. The Provincial Forest Officer reports that the remaining cow was not in good condition at the end of the year, but the bull calves were in robust health, and as they have been frequently permitted to graze in the open and, so far, apparently, without any bad results, it is to be hoped that they will become immune to the attacks of the parasite mentioned above and, when fully grown, serve the purpose of gradually improving the breed of native cattle.

142. Copies of the interesting reports on the Stock Farm are attached as appendices to this report.\*

## IX. GAME LAWS.

143. With the exception of elephants I am afraid but little progress has been made in protecting the game animals of Southern Nigeria.

To successfully enforce the laws an enormous staff of men will have to be employed, and considerable friction will arise with the inhabitants of the country, more especially in the hinterland.

144. Difficulty has been experienced even in restricting hunting in the *forest reserves*, where the inhabitants appear to consider they possess unrestricted rights to forest produce as well as to the chase, an attitude for which they are not alone to blame.

145. The only outcome of the present legislation has been to limit the shooting of a few *bonâ fide* European sportsmen whilst the constant drain of animal life caused by literally tens of thousands of native hunters who shoot everything they see, in season and out of season, throughout the year remains unchecked.

146. Some game reserves are being taken up and it is to be hoped that shooting in them will be absolutely prohibited,

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\* Not printed.

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so that a few areas at least will serve as sanctuaries for wild animals in the true sense of the word.

*Elephant Shooting Licence.*

147. Five licences for shooting elephants were issued in the Central Province during the year, as against six in 1905.

## X. ESTABLISHMENTS AND CHANGES OF STAFF.

148. The Conservatorship of the combined Administration was held by me from the 1st January, 1906, to the 11th June, 1906.

From that date the Deputy Conservator of Forests, Mr. N. C. McLeod, acted for me until the end of the year. I proceeded on leave to Europe on the 17th June, 1906, and returned to Lagos on the night of the 31st December, 1906.

The Deputy Conservator of Forests, Mr. N. C. McLeod has been absent on leave from the 12th March.

## WESTERN PROVINCE.

149. The Western Province was held by—

(1) Mr. Farquhar, Assistant Conservator of Forests, First Grade, from the 1st January, 1906, till the 14th March, 1906;

(2) Mr. E. W. Foster, Assistant Conservator of Forests, Second Grade, from the 18th March, 1906, till the 14th October, 1906;

(3) Mr. Farquhar, from the 15th October, 1906, till the 30th November, 1906;

(4) Mr. Foster, from the 5th December to the 31st December, 1906.

Mr. Farquhar was absent on leave from the 18th March to the 14th October, 1906.

Mr. Williams was in charge as Curator of the Botanical Gardens, Olokemeji, from the 8th May to the end of the year.

## CENTRAL PROVINCE.

150. The Central Province was in charge of Mr. R. E. Dennett, Assistant Conservator of Forests, First Grade, from the 1st January, 1906, to the 11th May, 1906;

(2) Of Dr. A. H. Unwin, Assistant Conservator of Forests, First Grade, from the 12th May to the 21st November, 1906;

(3) Of Mr. Dennett, from the 21st November to the end of the year.

Mr. Dennett was absent on leave to Europe from the 16th May to the 21st November, 1906, and Dr. Unwin from the 1st December to the end of the year.

I have much regret in reporting the death from fever of Mr. Phillip Wales, Assistant Conservator of Forests, Second Grade, which occurred at Onitsha early in the year.

Mr. Dodd, Curator, was in charge of the Botanical Gardens, Onitsha, from the 25th August, 1906, till the end of the year.

#### EASTERN PROVINCE.

151. The Eastern Province was held by Mr. N. C. McLeod, then Assistant Conservator of Forests, First Grade, from the 1st January to the 20th January, 1906;

(2) By Mr. P. Hitchens, Assistant Conservator of Forests, First Grade, from the 21st January to the 17th December, 1906;

(3) By Mr. Farquhar, from the 18th December to the end of the year.

Mr. Hitchens was absent on leave from the 20th December to the end of the year.

The Botanical Gardens at Calabar were in charge of Mr. Don, Curator, from the 1st January to the 15th November, 1906. The latter officer was absent on leave from the 15th November, 1906, to the end of the year.

152. I have much regret in reporting the death of another officer of the Department, Mr. J. W. Sherriff, Assistant Conservator of Forests, Second Grade, which took place at Brass on the 16th September, 1906. He was in charge of the old Eastern Division from the 1st January to the 15th September, 1906.

## XI. BUILDINGS.

### REPAIRS AND ADDITIONS TO BUILDINGS.

153. Repairs and additions to existing buildings were carried out at Olokemeji, Benin City, and Onitsha. At the former place a store-house was erected and the quarters of the Provincial Forest Officer and Curator altered so as to make them rain and sun proof. The compound of the forestry buildings at Benin City has been levelled, unsightly holes filled in, and an extra underground tank added, whilst the buildings themselves have been painted and necessary repairs undertaken.

## XII. FINANCIAL RESULTS.

154. The expenditure for the three Provinces during the year was—

		£
Western Province	...	7,846
Central Province	...	4,275
Eastern Province	...	5,281
Total	...	<u>£17,402</u>

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against a total revenue of £12,439. towards which the Central Province contributed £9,827. The expenditure thus exceeds the revenue by £4,963.

155. As a matter of fact, however, the purely Forestry Branch of the Department is self-supporting, the excess expenditure being due partly to the cost of upkeep of the four botanical gardens, which amounted to £4,138, and partly to the grant of £1,500 to the British Cotton Growing Association, and an expenditure of £714 on the free carriage of cotton.

156. The Gardens cannot from the nature of things be expected to bring in any large *direct* returns, and the same holds good with reference to expenditure on cotton. No doubt the indirect returns from the import duties levied on goods used for the purchase of agricultural and forest produce more than cover any such deficit.

### XIII. COLLECTION OF PLANTS AND WILD PRODUCTS.

157. During the year the collection of plant specimens and products was continued from both the Western and Central Provinces, whilst some small collections were also made in the Eastern Province. Return No. 16 gives a complete list of plants identified during the year from such collections, the majority of which have been forwarded to Kew.

#### BOTANICAL SURVEY.

158. The importance of pushing on the botanical survey of Southern Nigeria has been kept in mind and every opportunity is being taken to procure as complete a collection of specimens of the more important timber trees and other plants of economic importance as possible from each of the Provinces.

### XIV. MISCELLANEOUS.

159. The following is a list of the Appendices and Returns attached to this report for the year 1906:—

#### APPENDICES.

- I. Descriptive Notes on the Forests of Southern Nigeria.
- II. Report on the Stock Farm, Calabar.\*
- III. Veterinary Report on Stock by Dr. J. P. Fagan, Senior Medical Officer.\*
- IV. Notes on the Climate of Southern Nigeria by Captain Beverley, Staff Officer for Intelligence to West African Frontier Force.

\* Not printed.

## RETURNS.

No. 1. Criminal cases held under the Forestry Proclamation in the Western Province.

No. 2. Return of rubber plantations in the Central Province (Western Division).

No. 3. Return of mahogany seedlings planted in the Central Province.

No. 4. Return of timber concessions and licensed areas exploited in the Central Province.

No. 5. Return of trees felled in timber concessions and licensed areas of Central Province.

No. 6. Return of unworked timber areas in the Central Province.

No. 7. Return of timber areas provisionally granted in the Central Province.

No. 8. Return of areas applied for in the Central Province but not yet provisionally granted.

No. 9. Return of rubber licences issued in the Central Province.

No. 10. Details of experiments carried out with cotton cultivation at Olokemeji.

No. 11. Details of experiments carried out at Onitsha.

No. 12. Details of plant distribution from Olokemeji Gardens.

No. 13. List of plants presented to the Botanical Gardens of the Western Province.

No. 14. List of exhibits shown by the Forestry Department, Western Province, at the Lagos Agricultural Show.

No. 15. Meteorological observations made in the Olokemeji Garden.

No. 16. List of identified native plants in the Western Province.

No. 17. List of botanical and other literature presented to the Department, Western Province.

No. 18. List of plants purchased for the botanical gardens of the Western Province.

(Signed) H. N. THOMPSON,

Conservator of Forests.

Conservator's Office,

18th October, 1907.

## APPENDIX I.

DESCRIPTIVE NOTES ON THE FORESTS OF  
SOUTHERN NIGERIA.

## A.—CLASSIFICATION AND DESCRIPTION OF FORESTS.

The forests of the Colony and Protectorate of Southern Nigeria may be classified as follows:—

*(a.) The Mangrove Forests.*

These consist of large areas of forest situated along the coastline, more especially in the deltas of the Benue, Niger, Qua, Ibo, Calabar, and Kwa rivers, wherever the land is inundated with sea-water at high tide. The species forming these forests are gregarious in the extreme, and consist of those that have successfully adapted themselves to withstand the prolonged immersion of their roots in salt water. The mangrove forests are the nearest approach we possess on the West Coast of Africa to the type known to foresters as "pure" forests. The dominant species are *Rhizophora*, such as *Rhizophora Mangle*, *Rhizophora racemosa*, *Anisophyllea laurina*, and a verbenaceous shrub *Avicennia africana*. The two former yield excellent firewood and their bark contains a fairly high percentage of tannin. The latter is frequently cut down, burnt, and the ashes used by the natives as a substitute for salt.

*(b.) The Fresh-water Swamp Forests.*

As we proceed inwards from the sea towards the high land of the interior, we gradually leave the brackish-water swamps behind and pass on to the fresh-water ones. These swamps occur chiefly in the vicinity of the larger rivers, and are often caused by the overflow of the latter.

The vegetation most partial to these localities contains amongst the trees such species as *Lophira procera*, the red ironwood tree; *Nitrogyna macrophylla*, of the natural order *Eubiaceae*; and *Alstonia congensis*, a lofty tree, of the natural order *Apocynaceae*, that yields a latex which is frequently used for the purpose of adulterating the better qualities of rubber. The natural order *Leguminosae* is represented by arboreal forms, such as a species of *Parkia*, several species of *Albizia*, *Macrolobium palisoti*, *Macrolobium stipulacum*, *Cynometra afzeli*, *Cynometra Nannii*, *Brachystegia spicaformis*, a lofty hard-wood tree, the bark being distinguished by its yielding a good fibre and the young foliage a conspicuous reddish colour, and *Pterocarpus esculentus*.

Amongst the *Artocarpus* we have *Treculia africana*, whilst the *Meliaceae* are represented by a species of *Khaya*

(mahogany) that appears to be confined to such swampy localities. Amongst the *Loganiaceæ* we have several fine species of *Anthocleista scandent*. Palms are confined to the genus *Calamus*, whilst the arboreal forms are represented by *Raphia vinifera*, the Tombo palm, from the leaf-sheaths of which piassava fibre is prepared. This species is extremely abundant in some of the fresh-water swamps of Southern Nigeria. *Pandanus candelabrum* and *Pandanus Heudelotianus* represent the screw-pine; whilst various species of *Dracaena* (Dragon's blood tree) form the arboreal representatives of the natural order *Liliaceæ*. The shrubby and herbaceous vegetation of these swamps belong chiefly to the natural order *Rubiaceæ*; the most conspicuous examples met with being *Sarcocephalus russeggoria*, *Urophyllum hirtellum*, *Stipularia africana*, *Macrosphyra longistyla*, and *Oxyanthus tubiflorus*, the two latter species having very ornamental flowers.

Another pretty plant is the small aquatic balsam *Impatiens Irvingii*. The *Anonaceæ* are represented by *Anona palustris*, and the *Nymphaeaceæ* by *Nymphaea lotus* and *Nymphaea stellata*, both of them with very pretty flowers.

Amongst the aquatic *Amaryllideæ* we have two ornamental species, *Crinum purpurascens* and *Crinum natans*, whilst the most conspicuous orchids belong to the genus *Lissochilus*, two species of which, *Lissochilus longifolius* and *Lissochilus roseus*, are commonly met with.

The *Aroideæ* have several representatives partial to the fresh-water swamps and rivers. One species, *Pistia stratiotes*, the so-called West African "sudd or cabbage weed," is so plentiful in certain localities as to seriously interfere with navigation. *Anchomanes dubius* and *Cyrtosperma senegalense* are striking plants with remarkably large glossy leaves supported at the ends of stout spiny petioles. The transition from the salt-water to the fresh-water swamps is often very gradual, and one frequently finds certain species that are typically representative of one or the other type of environment growing together on the common border land, as it were.

(c.) *The Evergreen Tropical Forests of the Plains.*

These form the bulk of the arboreal vegetation met with between the swampy coast forests and the dry deciduous ones of the interior. Their most conspicuous characteristic is the marked predominance of evergreen plants, though a few species with deciduous foliage, such as *Pentaclethra macrophylla*, *Bombax buonopozense*, *Eriodendron anfractuosum*, and two species of *Endenrophragma*, are also to be met with. They contain the majority of the most valuable economic trees of Southern Nigeria, and are hence of great importance to the forester. The number of different species found growing together in such forests is immense,



and much in excess of what one finds in the mixed forests of the temperate zone. They frequently reach the figure of several hundred distinct species to the square mile. Under the dense shade of these tropical forests a deep accumulation of vegetable humus and mould has been formed; this, together with the rich alluvial soils so prevalent in the well-wooded districts, has induced a remarkably lofty tree growth, reaching, in the case of some mahoganies, a height of 250 to 300 feet.

As a rule, the annual rainfall of the areas covered with these evergreen forests exceeds 70 inches, and this latter factor appears, other things being equal, to determine the zones of vegetation. A reduced rainfall, say, of 70 inches and less, is almost invariably associated with the presence of "mixed forests" (*i.e.*, of deciduous leaved and evergreen species in more or less equal proportions) which gradually give place to the "dry deciduous forests" of the interior, where the rainfall rarely exceeds an annual average of 30 to 40 inches.

Forest fires, which are so prevalent in the two latter types of forest are practically absent from the moist evergreen ones, and persons acquainted only with this kind of forest are often surprised at hearing that fire protection is a very necessary measure and must figure prominently in the administrative programme of any attempts at Forest Conservancy in the hinterland.

Taken as a whole and compared with the forests of Eastern Tropical Asia, it cannot be stated that Southern Nigeria is at the present time overstocked with high forests, though it undoubtedly was once extensively wooded with primeval forest.

The wasteful system of farming in vogue in the moist zone, the extensive migrations into it of tribes from the interior, and the constant local shiftings of the inhabited areas on account of internecine warfare has resulted in a general transformation of the forests from the primeval type, to which they once belonged, to the irregular, patchy condition in which they are now found.

Excepting the mangrove swamps on the coast, the fresh-water swamp forests and some of the hill forests, all of which are growing in localities too difficult to cultivate, it may be said that there is not at the present time any extensive patch of primeval forest to be found within the limits of the Colony and Protectorate; that is to say, extensive forests like those met with in the moist zone of Burma, through which the forester can wander for days without coming across the traces of human habitation. It is true that persons may, by merely travelling along the native roads and paths, come to an opposite conclusion, but they have only to strike out to the right and left of such lines for

a short distance to find that the belts of forest left alongside the roads quickly give place to farm-lands.

The bulk of vegetation in these evergreen forests consists of secondary growth that has sprung up since the native farms were last abandoned. The age of this vegetation, of course, varies with the time that has elapsed since that was done, and, in some places, where, owing to intertribal warfare or other causes, the country has become depopulated and the land lain fallow for a long number of years, the growth has almost acquired the character of a "high forest"; but such examples are not very numerous, and the majority of the wooded areas consist of a comparatively low, dense, secondary growth, topped here and there with large trees which have, on account of their size and consequent difficulty met with in felling, been left as "standards" when the land was cultivated. It can easily be understood that such interference of their growth by man has left the forests in a very irregular condition, and that the well graded age classes so essential for the production of a *sustained* supply of produce are, in the case of the more important economic trees, practically absent.

The clearing of the land for farms and their subsequent abandonment has, in general, resulted in giving a favourable start in the struggle for existence to species other than those that happen at the present moment to be of value to man.

Owing to the extreme richness in species of these evergreen forests, it is only possible to give here a very sketchy outline of their contents.

To commence with the more important economic timber trees, we have three species of mahogany of the genus *Khaya*; they are *Khaya senegalensis*, *Khaya grandifolia*, and *Khaya Panchii*, the timber from all of which is exported to Europe under the name of African mahogany. In addition, two species of the genus *Entandrophragma*, viz., *Entandrophragma Condellii* and an unnamed one; and at least one species of *Pseudocedrela*, the woods of which are known generally to the trade as "scented mahogany," are also found in these forests, more especially in the drainage area of the Jamieson River, near Sapoba. All these mahoganies attain a lofty growth in favourable localities, and, on account of their size, have usually been left alone by the natives when cutting the forests for their farms. Some of the biggest *Entandrophragmas* attain an enormous size, and, having survived for centuries through various vicissitudes and alternations in the quantity of light and shade to which their stems have been exposed by repetitions of fellings of the surrounding forest for farms and its subsequent re-growth, the efforts made by the dormant buds in their stems to throw out side-shoots during the periods of free exposure to light has resulted in the formation of that "figure"

in the wood that is so much valued by the trade. Similar "figuring" in the timber is found, but more rarely, in the case of those *Khayas* exposed to like conditions.

The state of the age gradations amongst the mahoganies is extremely unsatisfactory. Very large trees and small saplings are not uncommon, but individuals of an intermediate age are practically absent (generally speaking, the youngest plants rarely survive the next farming rotation, so this unsatisfactory condition continues; the new crop of young mahoganies is mainly due to the seed dropped from the "standards," and this young crop is felled again before it has had time to pass the sapling stage, and so on), hence it has been found necessary to fix the minimum felling girth of these trees at the unprecedentedly high figure of 12 feet at a distance of 10 feet from the ground; this arrangement provides for a reserve of standards for the future regeneration of the forests. The latter, however, is a makeshift arrangement, and no permanent good can be expected until the richest forests have been reserved and strictly protected against the depredations and damage done by the native farmers.

Other valuable trees belonging to the same natural order (*Meliaceae*) as the mahoganies are species of *Guarea*, such as *Guarea Thompsonii*, &c., and *Trichilia*, the timbers of which have been exported home under the general trade names of "cedar" and "walnut."

The natural order *Euphorbiaceae* is represented by one good timber-yielding species, viz., *Ricinodendron africana* (*Heudelotii* syn), fairly common in the southern portions of the Benin District, and known to those natives as the "Okwen." The timber has been well reported on in the home market, and the fruit is rich in fatty oils. Besides these, there are three unnamed species of trees from that district yielding good timbers; they are the "Ainyesan" of the Benis, of a timber like yellow satin-wood, good examples of which have fetched as much as 6*d.* per superficial foot in Liverpool; the "Ugu" of the Benis ("Atalla" of the Jekris), the timber of which is described as a "mahogany of mild texture and good colour," valued at 3*d.* to 6*d.* per superficial foot; and the "Nikiba" of the Benis. The wood of this species has been described by brokers at home as a "species of gummy mahogany," and valued at from 2½*d.* to 3½*d.* per superficial foot.

Under existing conditions it pays to export any timber that realises 3*d.* and upwards per superficial foot in the home markets. The wood of species on which the incidence of taxation is less than that payable on the mahoganies and cedars can be exported profitably at much lower market rates.

Generally speaking, the natural regeneration and the condition of the age classes is more satisfactory in the case of *Ricinodendron africana* and the "Ainyesan" than it is with the mahoganies. Besides the trees mentioned above, there are some species the woods of which have not been tried in the home markets, or, if tried, have failed to establish themselves there, but which, nevertheless, have a good reputation locally.

Those from the evergreen forests are the *Iroko*, *Chlorophora excelsa*, of the natural order *Urticaceæ*—a magnificent, lofty tree, the wood of which is the favourite on the coast for house building and furniture. When properly seasoned it is undoubtedly one of the best of African timbers. This species is also common to the "mixed forest" type of vegetation to be next described. The "Odonomokyukyu" (Beni name); a species of *Santiriopsis*, natural order *Burseraceæ*. This wood is much prized in the French and Belgian Congos.

Amongst plants that are valued for products other than large timber, these forests contain,—the Southern Nigeria camwood trees, *Baphia nitida* and *Pterocarpus tinctorius*; the ebony, *Diospyros mespiliformis* and *Diospyros dendo*; the Dika nut tree, *Iringia Barteri*; the oil bean tree, *Pentaclethra macrophylla*; the butter or tallow tree, *Pentadesma butyracea*; the Ire or silk rubber tree, *Funtumia elastica*; and the rubber vines, *Landolphia owariensis* and *Clitandra elastica*, both of which yield rubber of the first quality; whilst the lofty tree, *Cyanothyrsus ogea*, produces the "gum copal" of the Benin Territories. The valuable oil palm is most plentiful in this type of forest. *Xylopiæ aethiopica* produces a pungent fruit which is eaten by the natives as a condiment. Other edible fruits are produced by various species of *Canarium* and *Pachylobus*, *Tetrapleura Thonningii*, *Chrysophyllum prunifolium* and *Chrysophyllum africanum*, the two latter of which are the West African representatives of the West Indian star apple.

The evergreen forests gradually merge into the next type as we proceed towards the interior, but they frequently extend far into the drier portions of the country by following the moist courses of the larger rivers, so that the dry forest zones are often intersected here and there by narrow belts of the evergreen type. As a rule, however, the latter generally contain a larger proportion of deciduous leaved species than similar forests confined to the moister climate near the sea.

#### (d.) *The Mixed Forests.*

As the name indicates, these forests are composed of a mixture, roughly in about equal proportions, of evergreen species with those that shed their leaves during the dry

season. Most of the evergreens are represented by practically the same species as those found in the evergreen forests just described. They are generally found growing in the moist soils close to the banks of streams, or in sheltered ravines and on the northern aspect of the hills, whilst the deciduous leaved species occupy mainly the drier soils further back from the rivers and the exposed southern and western aspect. True mixtures of the two, however, are frequently met with, and the general appearance of these forests as seen from a distance and in the hot dry season, when the deciduous leaved species are conspicuous, amply justifies the name.

Amongst the evergreens we have *Musanga Smithii*, the cork-wood tree, a very rapid grower and one of the first to occupy abandoned farmland. It is extensively used as a "nurse" in plantations further south. A similar looking plant, but belonging to a different natural order (*Urticaceæ*), is *Myrianthus arborescens*; it abounds in these forests. Others are: *Haronga madagascariensis*; *Oncoba spinosa*; *Carpolobia lutea*; the monkey kola, *Cola afzelii*; *Sterculia tragacantha*; and the huge *Sterculia cordifolia*, with its conspicuous heart-shaped leaves; *Xanthoxylon senegalensis*, a small, spiny, yellow-wooded tree; *Paullinia pinnata*; *Deinbollia insignis*; and *Blighia sapida*; the last three of the natural order *Sapindaceæ*; *Detarium senegalense*, a very lofty tree, the timber of which has been sometimes exported home under the general trade name of "mahogany"; *Piptadenia africana*, another fine hard-wood tree; and *Mimusops lacera*; the timber of the latter is very pretty and has also been sent home as mahogany; *Mimosa asperata*, the sensitive plant found along the banks of the streams; *Caesalpinia bonducella*, *Accacia pinnata*, and *Accacia Ataxacantha* are scrambling thorny plants often forming impenetrable thickets.

The *Apocynaceæ* are represented by the beautiful poisonous climbers *Strophanthus gratus*, *Strophanthus sarmentosus*, and others, as well as trees such as *Holarrhena africana* and *Holarrhena Wulfsbergii*, the latex from which is used by the natives for adulterating better kinds, as is likewise the case with the similar product extracted from *Funtumia africana*, *Alstonia scholaris*, *Rauwolfia vomitoria*, the climber *Alafia landolphioides*, the shrubs *Conopharyngia pachysipon* and *Voacanga africana*; all belonging to the same natural order as *Funtumia elastica*. The Ire rubber tree is also found in the moister patches of forest. Amongst the *Loganiaceæ* we have *Usteria guineensis*.

The *Bignoniaceæ* are represented by the "sausage fruit" tree *Kigelia pinnata*; and the *Verbenaceæ* by the trees *Vitex Negaphylla* and *Vitex Cuneata*.

Several undescribed species of *Ficus* are also found in these forests.

As regards the deciduous leaved species we have the two silk cotton trees, *Bombax buonopozense* and *Eriodendron anfracatuosum*, which, although found in the evergreen forests of the plains are more plentiful in the type now being described. The *Sterculiaceæ* are represented by the beautiful trees *Sterculia tomentosa* and *Sterculia Barterii*, the latter of which yields a most excellent rope fibre extensively employed by the natives for tying up their large bundles of cola nuts. Another undescribed species, with leaves like a maple, yields a soft white timber that might replace pitch pine for local house building. A large number of leguminous plants exist in these forests. Amongst them the pretty *Erythrina tomentosa* and *Erythrina senegalense* may be mentioned, as well as *Erythrophlacum guineense*, the "Sasswood" tree; *Lonchocarpus cyanescens*, an indigo-yielding shrub or small tree; *Dialium guineense*, the Senegal tamarind tree (not the same as the true tamarind); several species of *Dalbergias*, *Bauhinia reticulata*, *Albizia Brownii*, *Albizia rhombifolia*, and *Brachystegia spicaeformis*, a large tree that is usually more commonly met with in certain mixed forests than in the evergreen ones.

The Iroko tree, *Chlorophora excelsa*, is common to both types of forest, whilst *Azelia africana*, a good timber tree, a large species of *Terminalia*, which also yields a good wood, the beautiful *Monodora myristica*, *Masrua aethiopica*, and the curious fruited *Schrebera golumgensis* are chiefly confined to this "mixed" type.

#### (c.) *The Dry Open Forests.*

These occupy the dry arid soils of the interior where the rainfall is small and localities at some distance from the influence of the perennial streams. Almost all the species composing this type lose their leaves in the dry season. These forests are very open, with an undergrowth chiefly of grass, and suffer much from the annual jungle fires that sweep through them.

The species characteristic of this type of forest are, amongst trees, *Daniellia thurifera*, from which the produce known to the trade as "balsam copaiba" is extracted; *Accacia catechu*; *Lophira alata*, with fruit rich in oils; *Accacia sieberiana*, *Entada soudanica*, *Parkia filicoides*, the West African locust-bean tree; *Pterocarpus erinaceus*, the West African rosewood tree; *Adansonia digitata*, the Baobab tree, from which a fibre valued in the home market at £9 a ton is extracted; *Parinarium curatellaefolium* and *Parinarium mobala*, bearing edible fruit; *Anogeissus leiocarpus*, the roots of which are used as "chew-stick" by the natives for the

## FOREST ADMINISTRATION OF SOUTHERN NIGERIA, 1906. 63

purpose of cleaning their teeth, and the wood ashes as a mordant for fixing dyes; *Pseudocedrela Kotschyi*, a tree with a very pretty wood; *Eugenia owariensis*; *Crossopteryx Kotschyana*; *Strychnos emarginata*; *Zizyphus mucronata*; and, in the more open poor soils, the daleb palm, *Borassus flabelliformis* var. *Aethiopica*, the wood of which is much prized by the natives for house building and bridge erecting, &c. These forests also contain the wild date palm *Phoenix spinosus*, and the shea butter tree *Butyrospermum Parkii*. Various species of leguminous plants belonging to genera *Indigofera*, *Tephrosia*, and *Crotalaria*, form the undergrowth here and there, whilst ground orchids such as *Lissochilus Heudelotii* and others of the same genus, as well as some species of *Crinum*, belonging to the natural order *Amaryllidea*, give a pleasing aspect to the open grassy glades.

(f.) *The Evergreen Forests of the Hills.*

These consist of lofty tree growth occupying the hills above an altitude of 3,000 feet; in such localities not only is the rainfall greater as a rule than that met with in the adjacent plains, but the fall in temperature due to the altitude has a marked influence on the vegetation and accounts for the presence of species not met with in the plains. These hill forests have been up to date imperfectly explored in Southern Nigeria, and require further study before their characteristic type of vegetation can be described.

In conclusion, it is advisable to mention the fact that rainfall (moisture) and quality of soil are the two most important factors governing the distribution of the different types of forests noted above. Where, for instance, the presence of high isolated ranges of hills in the hinterland causes a greater precipitation of moisture than occurs in the surrounding plains, there the evergreen forests will reappear as isolated blocks in the midst of deciduous vegetation or the open grass lands. The latter occupy a good deal of the interior and are practically destitute of tree growth.

The extensive destruction of the wooded areas in the drier localities for farming purposes and the prevalence of fierce jungle fires during the dry season are together gradually converting a great deal of the deciduous forests into the open grass country, and which is slowly encroaching on the wooded areas. In the absence of fire protection this process will continue till the moister regions near the coast are reached, where, owing to the inability of the fires to make much headway, the further spread of the grassy vegetation will be checked.

## (B.) THE DISTRIBUTION OF THE VARIOUS TYPES OF FORESTS.

Within the limits of Southern Nigeria the situation of the various types of forest described above can only be given in a very general manner.

To begin with the *mangrove forests*, these are confined to the deltas of the larger rivers and along the shores of the lagoons. The Central and Eastern Provinces contain extensive forests of this type, in which the component species often attain a good height and appear as dense walls of vegetation along the seaboard.

The *fresh-water swamp forests* are confined mainly to the vicinity of the larger perennial streams. In the Western Province they replace the mangrove forests as one follows the rivers inland from the shores of the lagoons, and are most prevalent along the lower basins of the Oshun, Oni, and Olowa rivers. In the Central Province extensive fresh-water swamps occur in the Sapele, Warri, Agberri, and the southern portions of the Benin District, whilst in the Eastern Province they are, if anything, even more extensive, and occupy large areas in the Brass, Degama, and Opobo Districts. Further eastwards practically all the low-lying littoral portions of the country above the influence of the tides are occupied by this type of vegetation, more especially along the valleys of the Kwa, Ibo, Cross, and Calabar rivers.

The *evergreen tropical forests of the plains* occupy the southern portions of the *Western Province* south of the 7th parallel of north latitude, except in the north-eastern portion where the presence of high hills and a heavy rainfall have enabled them to occupy areas as far north as the Ilesha District. The most extensive forests of this type are, in fact, situated to the east of the Oshun River where, between that and the Oni River, they occupy large uninhabited areas and stretch right across the Ondo District to the borders of the Central Province. To the west a few forests are found in the Badagry District, but the bulk of these have been exterminated for farming purposes, more especially within the limits of the Colony.

The *Central Province* contains some fairly extensive forests of this type in the southern portions of the Benin District and along the moist valleys of the Siluko, Osse, and Ogbesi rivers. In the Sapele District they are found along the upper reaches of the Jamieson River. From here they follow the Ossiommo River above the swamp belt right across the Agbor District into the Asaba hinterland. A few forests of this type are found in the Agberri District, but the bulk of that country is occupied with fresh-water swamps.

In the *Eastern Province* these forests are found chiefly in the Calabar and Cross River Divisions, more especially along the water partings between the Calabar and Kwa rivers and the Cross and Calabar rivers. The lower slopes (below 3,000 feet) of the extensive block of Oban Hills are also clothed with these evergreen forests. Other portions of the Province are, where wooded, inundated for several months of the year and occupied with swamp forests, whilst several



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districts have been practically denuded of forest and the soil devoted to the cultivation of agricultural crops and the oil palm.

*The mixed forests* are found in the hinterland of the Western Province in localities where the rainfall is less than 70 inches. An extensive forest of this type has recently been discovered between Olokemeji and Oyo to the south-west of Ijaye. Other examples are the forests to the south of Ibadan, near Mamu, the Oshun River Reserve, the forests along the Oda Oban River, and the upper reaches of the Oshun River.

In the Central Province the wooded areas in the Ifon District, some distance from the valleys of the Osse and Ogbesi rivers, belong to this type, as do some patches of forest in the Asaba District along the Alabeta creek and Anambra River, as well as those in the country to the west of Idah.

These forests are practically absent from the explored portions of the Eastern Province, though a few patches are met with in the Afikpo District, and possibly larger areas may be found in the country further north towards the Cross River and Benue water-parting.

*The Dry Open Forests.*—These are characteristic of the remoter and driest portions of the hinterland, where the rainfall rarely exceeds 30 to 40 inches during the year. They are sometimes associated further south with laterite and other poor soils that require a very heavy rainfall in order to sustain luxurious vegetation. In the Western Province such a dry belt with laterite soil stretches across the Egba country to the eastern border of Dahomey between Egba and Meka.

In the Central Province these forests reappear in parts of the Ifon District, the Kukuruku country, and on the dry laterite soils to the west of Idah. The north-eastern portions of the Oka District also contain laterite plateaux that are clothed with this type of forest wherever the latter has not been exterminated by the inhabitants. Eastwards, it is believed, such forests are found in the extreme northern portions of the recently established District of Abakaliki.

*Exports of Forest Produce.*

The forest products exported from Southern Nigeria during the years 1903, 1904, and 1905 are shown below:—  
1903:—

	£
(a.) Timber, 460,446 superficial feet, valued at	32,028
(b.) Rubber, 1,177,803 lbs., valued at ... ..	61,816
(c.) Ebony, 1,048 tons, valued at ... ..	3,743
(d.) Fibre, 5,685 packages, valued at ... ..	3,226
	<hr/>
Total ... ..	£100,813
	<hr/>

1904:—

	£
(a.) Timber—	
642,545 cubic feet ... ..	30,519
8,767 logs ... ..	28,614
(b.) Rubber, 2,408,926 lbs. ... ..	158,991
(c.) Ebony, 321 tons ... ..	1,180
(d.) Fibre, 5,781 packages ... ..	3,678
Total ... ..	£222,982

1905:—

	£
(a.) Timber—	
Mahogany, 22,096 cubic feet ... ..	1,078
"    10,255 logs ... ..	35,237
Other timber, 32,021 cubic feet ... ..	1,252
"    359 logs ... ..	1,128
(b.) Rubber, 2,842,831 lbs. ... ..	226,387
(c.) Ebony, 388 tons ... ..	1,183
(d.) Fibre, 7,290 packages ... ..	4,052
Total ... ..	£270,317

The complete figures for 1906 are not yet available, but they show a general increase on those of 1905, and there is now no doubt whatever that forest products figure largely in the trade of the Colony and Protectorate. The largest increase is shown in the exports of rubber, that of timber depending on the fluctuations in prices at the home markets.

APPENDIX IV.

CLIMATE.

CLIMATE. MORTALITY. THE DRY AND WET ZONES. THE SEASONS. RAINFALL. TEMPERATURE.

*The Dry and Wet Zones.*

For the purposes of this section Southern Nigeria is roughly divided into the portion south of 6° 15' north latitude, termed the "wet zone," and the portion north of that parallel termed the "dry zone." Places having a total yearly rainfall of over 76 inches are considered as belonging to the former, and those having 76 inches and under to the latter.

It should be stated, however, that this yearly rainfall is based on the records for one year only, which nevertheless appears to be a normal one. See subsection "Rainfall."

*The Seasons.*

There are four seasons—the wet, the dry, and two tornado seasons. In the “dry zone” the dry season commences about the beginning of November and continues until the end of March; towards the end of December and during January, the Harmattan, common to both zones, blows; it is a cold, dry north-easterly wind accompanied by a fog formed of sand composed of broken crystals of quartz, diatoms, &c., and rises generally in the early morning. It is so dry that all leather articles shrivel up and crack. Towards the end of March tornadoes and occasional rains set in and continue till the end of April. The wet season begins in May and continues to the end of July, when there is a break until the end of August.

Light rains then start, lasting to the end of September, and are followed by the second tornado season which continues to the end of October.

In the “wet zone” the dry season commences about the beginning of December and lasts until the end of March; tornadoes then set in and continue through April and May. The wet season starts early in June and continues to the end of September with a break (as in the “dry” zone) in August. In October and November there are again tornadoes with occasional rain.

*Rainfall.*

In the Western Province systematic gaugings and registration have been carried out for some years past, and accurate statistics of the rainfall are, therefore, obtainable. This does not appear to be the case, however, with regard to the Central and Eastern Provinces, as the records in many cases are broken and unreliable. In 1907 the matter is receiving considerable attention, and monthly returns of meteorological observations for all three territorial divisions of Southern Nigeria are published in the Government “Gazette,” which will enable a trustworthy map of the rainfall to be compiled in the future.

With the imperfect data referred to above, it is impossible to do much more than to give figures and a diagram in order to convey a general idea of the distribution of rainfall throughout the year. Eighteen stations for which it was possible to obtain complete returns for the year 1906 have been arranged into a “dry zone” and a “wet zone” group. The “dry zone group” comprises those stations which had a total maximum rainfall for that year of 76 inches and under, while the “wet zone” group includes those for which the minimum exceeded 76 inches. The

details of both groups have been tabulated, and the following table, in addition to giving the names of stations, shows:—

- (a) The monthly rainfall for each station;
- (b) The total rainfall for the year at each place;
- (c) The monthly average rainfall for each group; and
- (d) The total average monthly rainfall for each group.

It will be seen that the maximum rainfall for the year in Group 1 was 74·76 inches at Lagos in the Western Province, while the minimum was 40·92 inches at Olokemeji in the same region. The monthly maximum and minimum were 22·30 inches in June at Lagos and ·63 inch in January at Olokemeji.

The total average monthly rainfall of the group was 53·16 inches.

Group 2 had a maximum fall of 251·49 inches at Opobo, and a minimum of 87·08 inches at Bendi. The monthly maximum and minimum were 56·70 inches at Opobo in June and ·20 inch in March at Afikpo. Opobo, Bendi, and Afikpo are all situated in the Eastern Province. The total average monthly rainfall for the group was 128·67 inches.

In the diagram plotted from the figures in the table the monthly average rainfall of both groups are compared, with the result that the "dry zone" has the highest and lowest mean of 9·26 inches in June and ·31 inch in January, against the highest and lowest mean of the "wet zone," which was 20·37 inches in July and ·28 inch in January.

It should be noticed that the break in the rains of both groups occurs in the month of August.

TABLE of RAINFALL for DRY and WET ZONES.

*Group 1.—(Dry Zone).*

1906.	Olokemeji, W. P.	Asaba, C. P.	Ibadan, W. P.	Oyo, W. P.	Oshogbo, W. P.	Opobo, W. P.	Orishaba, C. P.	Badagry, W. P.	Epe, W. P.	Lagos, W. P.	Average.
January ..	·03	Nil	·00	Nil	Nil	·14	Nil	·62	1·22	1·04	·81
February ..	·19	1·53	·00	Nil	Nil	1·09	1·41	5·28	2·78	2·18	1·64
March ..	1·71	Nil	2·35	3·40	1·47	5·13	·77	2·02	·77	1·11	1·70
April ..	2·10	4·48	5·15	5·10	0·89	4·01	5·05	5·72	4·10	4·00	4·76
May ..	3·01	2·49	7·03	7·79	5·53	7·88	0·69	13·62	14·50	10·02	9·26
June ..	0·43	3·58	4·22	5·89	5·22	8·70	4·03	11·32	10·03	22·30	8·77
July ..	0·83	1·79	0·69	5·69	10·40	12·43	4·74	8·02	0·01	15·90	8·40
August ..	1·02	4·20	2·83	1·59	1·76	4·77	15·00	·62	4·03	1·08	3·84
September ..	0·59	15·30	3·00	5·01	12·27	0·60	0·25	1·95	2·31	1·07	7·26
October ..	4·31	10·53	3·17	0·94	3·00	·78	0·85	4·26	4·55	0·01	5·17
November ..	1·97	·25	1·49	1·68	Nil	1·68	·27	2·21	·88	1·37	1·17
December ..	1·63	Nil	1·40	2·85	·27	·28	·15	2·30	Nil	·58	·84
Total ..	40·92	41·27	40·30	40·00	47·05	54·59	58·21	58·34	60·23	74·76	53·10

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## Group 2.—(Wet Zone).

1906.	Bendi, E. P.	Benin City, O. P.	Akko, E. P.	Forcados, O. P.	Sarda, O. P.	Benny, E. P.	Calabar, E. P.	Opobo, E. P.	Average.
January .. .. .	Nil	Nil	Nil	.80	Nil	.77	.40	.30	.28
February .. .. .	3.88	2.16	3.00	6.57	2.15	2.16	1.05	3.65	3.10
March .. .. .	2.08	4.95	.20	5.87	3.80	3.25	7.11	5.47	4.10
April .. .. .	11.19	3.85	6.81	4.48	9.21	9.82	14.73	12.07	9.02
May .. .. .	10.87	10.47	13.40	11.31	9.41	14.12	17.99	26.34	14.25
June .. .. .	10.13	3.06	4.70	8.14	15.55	19.37	13.10	66.70	16.34
July .. .. .	8.37	16.32	18.80	13.20	14.73	27.38	28.52	41.65	20.37
August .. .. .	17.66	12.31	19.19	13.35	14.78	6.68	18.37	26.81	16.13
September .. .. .	12.90	17.12	19.07	13.85	19.33	24.01	24.68	33.93	20.23
October .. .. .	9.52	17.07	8.63	13.65	17.24	15.30	19.34	25.28	15.75
November .. .. .	Nil	4.44	Nil	2.95	2.90	21.10	5.65	13.65	6.36
December .. .. .	.50	1.53	Nil	4.15	.50	4.40	5.70	5.18	2.74
Total .. .. .	87.08	93.30	93.86	98.33	100.69	142.26	156.61	251.49	128.67

NOTE.—W. P. signifies Western Province.  
O. P. signifies Central Province.  
E. P. signifies Eastern Province.

*Temperature.*

In the "wet zone," the hottest months are December, January, February, and March, and the coolest May, June, July, and August, the mean daily maximum temperature in the shade being 88° F., and the mean daily minimum in the shade 73° F.

In the rainy season at night, and when the Harmattan is blowing, the temperature often falls to 68° F., which brings a distinct feeling of chilliness both to natives and Europeans, and a desire for warmer clothing to the latter.

In the "dry zone" the range of temperature is greater, and it is hotter in the day and cooler at night, the range being normally between 95° F. and 54° F. The thermometer has been known, however, to have reached as high as 105° F., and to have fallen as low as 46° F.

RETURN No. 1.

Return of CRIMINAL CASES held under the FORESTRY PROCLAMATION during the Year 1906.

Central Province.

No.	District.	Defendant. (a)	Charge. (b)	Judgment. (c)	Remarks and date. (d)
1.	Benin City	Akele and Odiashe ...	Collecting rubber without licences	Akele, fined £1; Odiashe, six months' imprisonment.	16th March, 1906.
2.	Do.	Alode and Adonimi ...	Do. do. do. do.	Six months' imprisonment each.	1st June, 1906.
3.	Do.	Ojo ... ..	Do. do. do. do.	Discharged (no evidence).	1st June, 1906.
4.	Do.	Malam ... ..	Do. do. do. do.	Six months' imprisonment.	11th July, 1906.
5.	Do.	Otutu and two others ...	Do. do. do. do.	Do. do.	18th July, 1906.
6.	Do.	Oni ... ..	(1) Obstructing a forest guard. (2) Using his licence to collect rubber in another village.	Do. do.	25th July, 1906.
7.	Ifon ...	Ajomale ... ..	Collecting rubber without licence.	Two months' imprisonment (hard labour).	31st July, 1906.
8.	Do.	Belo ... ..	Do. do. do. do.	Discharged (no evidence).	31st July, 1906.
9.	Do.	Oguntimehin, Agagbala and two others.	Collecting rubber without licence and offering bribe of 10s. to Government messenger.	Oguntimehin, not guilty of collecting rubber; Agagbala, sentence for six weeks' imprisonment for giving messenger 10s.	31st July, 1906.

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COLONIAL REPORTS—MISCELLANEOUS.

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## RETURN No. 2.

RETURN of RUBBER PLANTATION made during the Year 1906.

*Central Province (W.D.).*

No.	District and Roads.	No. of Plantation.	No. of Seedlings Transplanted.	Remarks.
1.	Sapoba ... ..	76	30,804	
2.	Gilli Gilli and Agba ... ..	34	9,072	
3.	Siluko ... ..	32	11,314	
4.	Utte ... ..	17	7,920	
5.	Uspion ... ..	26	7,825	
6.	Ifon ... ..	50	23,199	
7.	Owo ... ..	9	910	
8.	Jeduma Road ... ..	26	7,160	
9.	Ishan ... ..	46	38,415	
10.	Asaba Road ... ..	15	5,836	
11.	Agbake ... ..	16	17,320	
12.	Issi ... ..	22	7,360	
		369	167,135	

## RETURN No. 3.

RETURN of MAHOGANY SEEDLINGS planted during the Year 1906.

*Central Province.*

No.	Name of Lease-holder.	No. of Seedlings Transplanted.	Remarks.
1.	Alex. Miller, Brother & Co. ... ..	650	
2.	McNeil, Scott & Co. ... ..	3,900	
3.	I. T. Palmer & Co. ... ..	3,000	
4.	Boy and Zimmer ... ..	2,960	
5.	W. B. McIvor & Co. ... ..	10,930	
6.	Nigerian Mahogany and Trading Company.	5,000	
7.	Pinnock Stores, Ltd. ... ..	—	Nursery made.
8.	J. G. M. Cranstoun & Co. ... ..	9,000	
	Total ... ..	35,440	

RETURN No. 4, 1906.  
Central Province.

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COLONIAL REPORTS—MISCELLANEOUS.

No.	Name of Concessionaire. (a)	Concession Number.	Area of Concession. (b)	Regulation under which it has been granted.	Trees Felled.	District.
			Square miles.			
1.	McNeil, Scott & Co....	2/1	9	Rule 4/1901	Nil	Benin City.
2.	Do. do. ....	3/1	9	" 4/1901	"	Do.
3.	Alexander Miller, Brother & Co. ....	4/1	9	" 4/1901	"	Do.
4.	Do. do. do. ....	5/1	9	" 4/1901	"	Do.
5.	McNeil, Scott & Co....	6/1	9	" 4/1901	"	Do.
6.	Do. do. ....	7/1	9	" 4/1901	"	Do.
7.	Alexander Miller, Brother & Co. ....	8/1	9	" 4/1901	"	Do.
8.	African Association (A.M.B.) ....	9/1	9	" 4/1901	70	Do.
9.	McNeil, Scott & Co....	11/1	9	" 4/1901	Nil	Do.
10.	Alexander Miller, Brother & Co. ....	13/1	72	" 6/1905	"	Do.
11.	Do. do. do. ....	14/1	?	"	"	"
12.	McNeil, Scott & Co....	7/2	9	" 4/1901	"	Do.
13.	Alexander Miller, Brother & Co. ....	8/2	9	" 4/1901	"	Do.
14.	African Association ...	9/2	9	" 4/1901	"	Do.
15.	McNeil, Scott & Co....	11/2	9	" 4/1901	"	Do.
16.	Bey and Zimmer ...	13/2	100	" 6/1905	103	Do.
17.	Alexander Miller, Brother & Co. ....	10/3	9	" 4/1901	Nil	Do.
18.	Bey and Zimmer ...	11/3	9	" 14/1903	11	Do.
19.	Alexander Miller, Brother & Co. ....	1/3	80	" 6/1905	140	Do.
20.	Do. do. do. ....	2/3	100	" 6/1905	Nil	Do.
21.	Do. do. do. ....	3/3	96	" 6/1905	214*	Do.
21.	McNeil, Scott & Co....	4	60	" 4/1901	32	Do.

\* 30 out of these were not felled.



22.	W. B. McIver & Co....	...	...	...	5	25	"	4/1901	Nil	Do.
23.	Alexander Miller, Brother & Co. ...	...	...	...	2/6	9	"	4/1901	"	Do.
24.	Thompson, Blois & Co. (now Nigerian Mahogany and Trading Company).	...	...	...	6	9	"	14/1903	242	Do.
25.	McNeil, Scott & Co....	...	...	...	7	150	"	14/1903	424	Do.
26.	Alexander Miller, Brother & Co. ...	...	...	...	1/8	9	"	4/1901	Nil	Do.
27.	McNeil, Scott & Co. ...	...	...	...	2/8	9	"	4/1901	"	Do.
28.	Alexander Miller, Brother & Co. ...	...	...	...	3/8	9	"	4/1901	"	Do.
29.	Do. do. do. ...	...	...	...	6/8	9	"	4/1901	75 <sup>c</sup>	Do.
30.	Do. do. do. ...	...	...	...	7/8	9	"	4/1901	20	Do.
31.	Do. do. do. ...	...	...	...	8/8	9	"	4/1901	26	Do.
32.	Do. do. do. ...	...	...	...	8	80	"	6/1905	Nil	Do.
33.	Do. do. do. ...	...	...	...	4/9	9	"	4/1901	"	Do.
34.	Do. do. do. ...	...	...	...	6/9	9	"	4/1901	"	Do.
35.	Do. do. do. ...	...	...	...	7/9	9	"	4/1901	"	Do.
36.	Do. do. do. ...	...	...	...	9	9	"	4/1901	"	Do.
37.	McNeil, Scott & Co. ...	...	...	...	11	150	"	6/1905	180	Do.
38.	Do. do. ...	...	...	...	12	100	"	6/1905	Nil	Do.
39.	Alexander Miller, Brother & Co. ...	...	...	...	8/13	9	"	4/1901	" †	Do.
40.	Do. do. do. ...	...	...	...	13	30	"	6/1905	"	Do.
41.	Bey and Zimmer ...	...	...	...	14	60	"	14/1903	65	Do.
42.	Alexander Miller, Brother & Co. ...	...	...	...	10/15	9	"	4/1901	Nil	Do.
43.	Bey and Zimmer ...	...	...	...	15	250	"	14/1903	13	Do.
44.	Alexander Miller, Brother & Co. ...	...	...	...	16	200	"	4/1901	Nil	Do.
45.	W. B. McIver & Co. ...	...	...	...	17	230	"	4/1901	20	Do.
46.	Do. ...	...	...	...	1/18	100	"	6/1905	70	Do.
47.	I. T. Palmer & Co. ...	...	...	...	2/18	100	"	6/1905	Nil	Do.
48.	Alexander Miller, Brother & Co. ...	...	...	...	1/19, 6/19, 5/19, 7/19, 9/19	9	"	4/1901	" †	Do.
49.	J. G. M. Cranstoun ...	...	...	...	4/19	9	"	4/1901	122	Do.
50.	Alexander Miller, Brother & Co. ...	...	...	...	5/19	9	"	4/1901	60	Do.
51.	Do. do. do. ...	...	...	...	19	54	"	4/1901	Nil	Do.
52.	W. B. McIver & Co. ...	...	...	...	1/20	9	"	4/1901	227§	Do.

\* This area is now included in area No. 8

† Now included in area No. 13.  
§ All were not felled.

‡ These areas are now included in area No. 19.

RETURN No. 4—continued.

No.	Name of Concessionaire.	Concession Number.	Area of Concession.	Regulation under which it has been granted.	Trees felled.	District.
			Square miles.			
53.	I. T. Palmer & Co. ... ..	2/20	9	Rule 4/1901	296	Benin City.
54.	J. G. M. Cranstoun ... ..	3/20	9	" 4/1901	146	Do.
55.	W. B. McIver & Co.... ..	4/20	9	" 4/1901	20	Do.
56.	Alexander Miller, Brother & Co. ... ..	5/20	9	" 4/1901	Nil	Do.
57.	W. B. McIver & Co. ... ..	20	350	" 4/1901	160	Do.
58.	J. G. M. Cranstoun ... ..	2/21	9	" 4/1901	54	Do.
59.	W. B. McIver & Co. ... ..	3/21	9	" 4/1901	Nil	Do.
60.	J. G. M. Cranstoun ... ..	21	100	" 6/1905	73	Do.
61.	I. T. Palmer & Co. ... ..	1/22	100	" 6/1905	118	Agbor.
62.	W. F. Bartlett ... ..	23	100	" 6/1905	Nil	Do.
63.	W. B. McIver & Co. ... ..	26	60	" 6/1905	"	Brass.
64.	Pinnock Stores, Ltd. ... ..	1/27	100	" 6/1905	237	Ifon.
65.	Alexander Miller, Brother & Co. ... ..	2/27	100	" 6/1905	237	Do.
66.	J. S. Bleasby... ..	28	100	" 6/1905	Nil	Do.
67.	Pinnock Stores, Ltd. ... ..	29	100	" 6/1905	"	Do.
68.	I. T. Palmer & Co. ... ..	30	100	" 6/1905	100	Do.
69.	Do. ... ..	31	100	" 6/1905	Nil	Warri.
70.	A. Strohm ... ..	32	100	" 6/1905	"	Do.
71.	McNeil, Scott & Co.... ..	39	100	" 6/1905	"	Benin City and Ishan.
72.	Alexander Miller, Brother & Co. ... ..	40	100	" 6/1905	"	Benin City.
73.	Richard Parks ... ..	43	100	" 6/1905	"	Brass District.
74.	W. B. McIver & Co. ... ..	63	100	" 6/1905	"	Agberri.
75.	Taylor and C. A. Oni ... ..	64	100	" 6/1905	"	Do.
				Total of trees	3,318	

COLONIAL REPORTS—MISCELLANEOUS.

*Eastern Province, 1906.*

No.	Name of Concessionaire.	Area of Concession.	Regulation under which it has been granted.	Number of trees felled.	District.
		Square miles.			
1.	R. M. Naylor, Esq. ... ..	100	Rule 6 of 1905	Nil	Ayama Concession (Brass District).
2.	Do. ... ..	100	Do.	80	Taylor Creek (Brass District).
3.	Nigerian Mahogany and Trading Company.	100	Do.	Nil	Engenni Concession (Degama District).
4.	Do. do. do. do.	280	Do.	"	Cross River (Okuni District).
5.	Do. do. do. do.	100	Do.	"	Kwa River (Calabar District).
6.	R. B. Maltby, Esq. ... ..	90	Do.	"	Calabar River Falls (Calabar District).
7.	Chief Effion Otu Ekom ... ..	60	Do.	40	Uwet (Calabar District).
			Total ...	120	

NOTE.—With the exception of No. 3, the other concessions of the Nigerian Mahogany and Trading Company have been cancelled, as work was not started on them within the prescribed time limit.

H. N. THOMPSON,  
Conservator of Forests.

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RETURN No. 5.  
RETURN of TREES FELLED during the Year 1906,  
*Central Province.*

Under Rule.		No. of Trees felled.	Revenue.	Royalties to Chiefs and Villages.	Forestry Fund.
I.	Rule No. 0 of 1905 .. .. .	2,489	£ 5,747 14 0	£ 1,000 0 0	£ 70 16 0
II.	" " Royalties on trees felled on King's land (381 trees).		70 15 0	—	—
III.	" " Rebate .. .. .	17	3 8 0	8 10 0	—
IV.	Rule No. 14, 1903—Inspection fees—Customs	173	34 12 0	80 10 0	—
V.	One tree felled in making canoes .. .. .	1	0 4 0	0 0 0	—
VI.	Rule No. 4 of 1901—Customs .. .. .	639	1,341 18 0	319 10 0	—
Total .. .. .		3,329	7,570 17 0	1,564 10 0	70 16 0

RETURN No. 6.  
RETURN of AREAS NOT BEING WORKED during the  
Year 1906.  
*Central Province.*

No.	Name of Lease-holder.	Area No.
1.	Alexander Miller, Brother & Co.	4/1, 5/1, 8/1, 9/1, 8/2, 9/2, 10/15, 1/8, 3/8, 4/8, 5/8, 10/3, 8, 2/6, 2/3, 5/20, 4/9, 7/9, 8/13, 1/9, 6/9, 5/19, 6/19, 7/19, 9, 16, 13, 2/27.
2.	McNeil, Scott & Co. ... ..	2/1, 3/1, 6/1, 7/1, 7/2, 11/2, 2/8, 11/1.
3.	W. B. McIver & Co. ... ..	5, 3/21.
4.	I. T. Palmer & Co. ... ..	2/18, 31.

RETURN No. 7.  
RETURN of TIMBER AREAS PROVISIONALLY GRANTED  
during the Year 1906.  
*Central Province.*

No.	Name of Lease-holder.	Area No.	Remarks.
3.	McNeil, Scott & Co. ... ..	11, 12, 39	No. 11 already being worked.
1.	W. B. McIver & Co. ... ..	26	
1.	Alexander Miller, Brother & Co.	40	
1.	W. F. Bartlett ... ..	23	
2.	I. T. Palmer & Co. ... ..	30, 31	
1.	A. Strohm ... ..	32	
1.	J. G. M. Cranstoun & Co. ...	21	
1.	J. S. Bieashy ... ..	28	
1.	Pinnock Stores, Ltd. ... ..	29	
1.	Richard Parks ... ..	44	

## FOREST ADMINISTRATION OF SOUTHERN NIGERIA, 1906. 77

## RETURN No. 8.

## RETURN OF AREAS APPLIED FOR AND NOT YET PROVISIONALLY GRANTED.

*Central Province.*

No.	Name of Lease-holder.	Area No	—
	R. J. Robinson ... ..	25. Application with- drawn 13th January, 1906.	Reapplied for by M. J. Hughes.
	i. McNeil, Scott & Co. ...	} 33	
	ii. Nigerian Mahogany and Trading Company.		
	iii. Pinnock Stores, Ltd. ...		
8.	Nigerian Mahogany and Trading Company.	31, 35, and 6 more areas on the Ogbesi and Alla rivers.	
3.	I. T. Palmer & Co. ...	36, 51, Abo.	
1.	J. G. M. Cranstoun & Co.	37	
2.	McNeil, Scott & Co. ...	38. Oioji creek.	
6.	Richard Parks ... ..	41, 42, 43, 48-50, 12½.	
3.	Pinnock Stores, Ltd. ...	45, 46, 52	
3.	M. J. Hughes ... ..	47. Okpara and Adofi rivers.	
2.	W. F. Bartlett ... ..	Niger and Warri district.	
1.	Chief Okoro Dudu ...	Brass creek	

## RETURN No. 9.

## RETURN OF RUBBER LICENCES issued during the Year 1906.

*Central Province (W.D.).*

District.	No. of Licences issued to Natives.	No. of Licences issued to Foreigners.	Total.	Revenue.	Royalties to Chief and Villages.
Benin City ... ..	645	91	736	£ s. d. 268 0 0	£ s. d. 89 10 0
Ifon ... ..	328	50	378	189 0 0	25 0 0
Total ... ..	973	141	1,114	457 0 0	114 10 0

RETURN No. 10.

TABLE SHOWING RESULTS OF COTTON EXPERIMENTS carried out at OLOKE MEJI during the Season 1906-7.

No.	Name.	Seed from	Size of Plot.	When Sown.	Germination.	Yield.	Yield per acre in lbs.	Analysis.			Remarks.
								Lint.	Seed.	Waste.	
1.	Black Rattler ...	Oloke Meji	Acre. $\frac{1}{2}$	May 15th.	Poor.	—	—	Per cent. —	Per cent. —	Per cent. —	Entire failure owing to being sown too early.
2.	Do. ...	Do.	$\frac{1}{8}$	August 7th.	Do.	8.25	82.50	36.39	60.6	3.04	
3.	Richmond ...	Do.	$\frac{1}{8}$	Do.	Do.	42.00	140.00	28.50	67.0	4.5	Native brown cotton.
4.	Eponkon ...	Do.	$\frac{1}{2}$	Do.	Good.	105.00	525.00	24.7	72.3	3.0	
5.	Abassi ...	Do.	$\frac{1}{8}$	Do.	Poor.	21.00	210.00	31.0	67.0	2.0	
6.	Ashmoni ...	Do.	$\frac{1}{8}$	Do.	Good.	30.00	300.00	33.3	63.3	3.4	
7.	Janovitch ...	Do.	$\frac{1}{8}$	Do.	Very bad.	12.00	120.00	33.3	58.3	8.4	
8.	Kidney ...	Do.	$\frac{1}{8}$	Do.	Good.	34.00	340.00	41.0	53.0	6.0	
9.	Georgia ...	Do.	$\frac{1}{8}$	Do.	Poor.	15.00	150.00	36.0	60.0	3.4	Native white cotton.
10.	Ogodo ...	Do.	$\frac{1}{8}$	Do.	Do.	49.00	490.00	28.5	69.5	2.0	
11.	Sea Islands...	Do.	$\frac{1}{8}$	August 8th.	Very bad.	6.00	60.00	33.3	58.3	8.4	
12.	Allen's improved ...	B. C. G. A.	$\frac{1}{8}$	August 2nd.	Good.	19.50	195.00	30.7	66.6	2.7	
13.	Culp... ..	Do.	$\frac{1}{8}$	Do.	Do.	15.00	150.00	33.3	60.0	6.7	
14.	Janovitch ...	Do.	$\frac{1}{8}$	August 1st.	Do.	24.00	240.00	33.3	62.5	4.2	
15.	Peruvian ...	Do.	$\frac{1}{8}$	Do.	Do.	40.00	400.00	17.5	80.0	2.5	
16.	Abassi ...	Do.	$\frac{1}{8}$	Do.	Do.	32.00	320.00	34.4	62.5	3.1	
17.	Jones' improved ...	Do.	$\frac{1}{8}$	July 31st.	Bad.	8.25	8.50	36.6	60.6	3.04	
18.	Russell's big bowl...	Do.	$\frac{1}{8}$	August 3rd.	Very bad.	—	—	—	—	—	
19.	Hawkins' extra prolific.	Do.	$\frac{1}{8}$	August 4th.	Do.	—	—	—	—	—	
20.	Sun flower long staple.	Do.	$\frac{1}{8}$	Do.	Do.	—	—	—	—	—	

## RETURN No. 11.

## ONITSHA PLANTATIONS.

*Plot 1.* American Cotton.—Planted 15th June, 1906, on ridges; applied 1 cwt. of lime and 56 lbs. of the following mixture: sulphate of ammonia, 2; sulphate of potash, 1. Result, 139½ lbs. of cotton.

*Plot 2.* American Cotton.—Planted 23rd June on the flat; applied 1 cwt. of lime and 56 lbs. of the following mixture: sulphate of ammonia, 1; dissolved bones, 2; sulphate of potash, 1. Result, 143 lbs.

*Plot 3.* American Cotton.—Planted 15th June on ridges; applied 1 cwt. of lime and 56 lbs. of the following mixture: sulphate of ammonia, 2; sulphate of potash, 1. Result, 95 lbs.

*Plot 4.* Agege Cotton (Lagos hybrid).—Planted 7th of June. No manure. This plot suffered greatly from leaf blister mite. Result, 18½ lbs.

*Plot 5.* Turkish Tobacco.—Planted out seedlings 28th June; applied 15 lbs. of sulphate of potash. Result, between 200 and 300 heads.

*Plot 6.* Guinea corn and cow peas.—Planted cow peas 7th April. Forked in cow peas and planted guinea corn 11th August. No manure. Result, 120 lbs. unthreshed.

*Plot 7.* Millet and cow peas.—Forked in cow peas and planted millet 7th July. No manure. Result, 10 lbs. of seed.

*Plot 8.* Native Cotton.—Planted 7th June; applied 1 cwt. of sulphate of lime on 29th July and 56 lbs. of the following mixture: sulphate of ammonia, 1; sulphate of potash, 1; dissolved bones, 1, on the 16th June. Result, 30 lbs.

*Plot 9.* Indigo.—Grown for seed; planted 2nd May. No manure. Result, 18 lbs. of unshelled seed.

*Plot 10.* Left in pigeons' peas from previous year. No manure. Seed not ready for picking.

*Plot 11.* Ditto.

*Plot 12.* Sugar cane.—Two years on plot; applied 75 lbs. of sulphate of ammonia on the 2nd July. Result, £2 realized on local sales.

*Plot 13.* Left in pigeon peas. No manure. Result, 150 lbs. of unshelled seed.

*Plot 14.* American Cotton, var. Jones's improved.—Applied 20 cwt. of farmyard manure 17th April; planted cotton 23rd June; applied 1 cwt. of lime 12th July, and, on the 24th July, 56 lbs. of the following mixture: sulphate of ammonia, 1; sulphate of potash, 1; dissolved bones, 2. Result, 47 lbs.

*Plot 15.* Cow peas and  $3\frac{1}{2}$  rows of English potatoes.—Applied 70 cwt. of farmyard manure; potatoes a failure. Yielded about 2 lbs.

*Plot 16.* Left in pigeon peas; no manure. Result, 250 lbs. of unshelled seed.

*Plot 17.* Agege Cotton (Lagos hybrid).—This plot was very heavily manured with 155 cwt. of farmyard manure, 1 cwt. of superphosphate of lime, and  $\frac{1}{2}$  cwt. of Peruvian guano. Result,  $38\frac{1}{2}$  lbs.

*Plot 18.* Cow peas. No manure.

*Plot 19.* Barbados beans.—No manure. Result, a good supply of seed, which was used for planting up various other plots.

*Plot 20.* Akpakapakera beans.—No manure. Result, 46 lbs. of unshelled seed.

*Plot 21.* Akpakapakera beans.— $\frac{1}{2}$  plot; no manure. Result, 39 lbs. of unshelled seed.

*Plot 22.* Igara (Black-eyed peas).—Forked into ground.

*Plot 23.* Ditto.

*Plot 24.* Agege Cotton (Lagos hybrid).—Planted 26th June on the flat; no manure. Result, 128 lbs.

*Plot 25.* American Cotton.—Planted 15th June on ridges; no manure. Result, 119 lbs.

*Plot 26.* American Cotton.—Planted 15th June on ridges; applied 1 cwt. of lime 10th July, and, on the 27th July, 56 lbs. of the following mixture: sulphate of ammonia, 1; sulphate of potash, 1; dissolved bones, 2. Result,  $114\frac{1}{2}$  lbs.

*Plot 27.* Virginia Tobacco.—Applied 60 cwt. of farmyard manure on 13th April; planted out seedlings on the 27th June; applied 28 lbs. of sulphate of potash on 9th July. This crop did not do much.

*Plot 28.* Kentucky Tobacco.—Applied 50 cwt. of farmyard manure on the 12th April; planted out on the 24th June; applied 28 lbs. of sulphate of potash on the 9th July. Result, 400 heads of tobacco.

*Plot 29.* Maryland Tobacco.—Applied 30 cwt. of farmyard manure the 24th May; planted out on the 4th June; applied 26 lbs. of sulphate of potash on the 9th July. Result, a few heads only were taken off this plot.

*Plot 30.* Glauca Tobacco.—The leaf of this tobacco is far too small to be of any use in the local market.

*Plot 31.* Native Cotton.—Applied 50 cwt. of farmyard manure in the middle of May; planted seed on ridges 7th June. Result, 12 lbs.

*Plot 32.* Agege Cotton (Lagos hybrid).—Applied 50 cwt. of farmyard manure on the 11th April; planted seed on ridges



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7th June; applied 1 cwt. of lime on 28th June, and 56 lbs. of the following mixture on 16th July: sulphate of ammonia, 1; sulphate of potash, 1; dissolved bones, 2. Result, 19½ lbs.

*Plot 33.* American Cotton, var. Hawkins's Prolific.—Planted 23rd June; applied 1 cwt. of sulphate of lime 24th July, and 56 lbs. of the following mixture: sulphate of ammonia, 1; sulphate of potash, 1; dissolved bones, 2. Result, 27 lbs.

*Plot 34.* Cow peas.

*Plot 35.* American Cotton, var. Culpeppers' Big Boll.—Planted 23rd June; applied 1 cwt. of sulphate of lime on 25th July and 56 lbs. of the following mixture on the 10th August: sulphate of ammonia, 2; sulphate of potash, 1. Result, 31 lbs.

*Plot 36.* American Cotton, var. Russell's Big Boll.—Planted 23rd June; applied 1 cwt. of sulphate of lime on 25th July, and 56 lbs. of the following mixture: sulphate of ammonia, 1; sulphate of potash, 1; dissolved bones, 2. Result, 42½ lbs.

*Plot 37.* American Cotton, var. "Sunflower."—Planted 23rd June; applied 1 cwt. of lime 25th July, and 56 lbs. of the following mixture on 10th August: sulphate of ammonia, 2; sulphate of potash, 1. Result, 59 lbs.

*Plots 38, 39, 40, 41, 42, 43, and 44* were occupied with two-years old castor-oil plants. Having very little seed on, "about 3 lbs.," I cleared the ground and planted cow peas, &c., to be dug into ground.

*Plot 45.* Yams and Ground-Nuts.—Planted yams on the 17th May and ground-nuts on the 19th May between rows; no manure. Yield of yams, a trifle over 3,000 lbs.; yield of ground-nuts, 200 lbs.

## RETURN No. 12.

PLANTS, &amp;c. distributed during 1906.

*Western Province.*

No.	Name of plants, &c.	Sold.	Presented.
1.	Glanja Kola ... ..	7,293	—
2.	Abata Kola ... ..	114	—
3.	Ire Rubber ... ..	1,000 and 7 lbs. (seed)	5,629 and 1 box (seed)
4.	Para Rubber ... ..	2,816	—
5.	Ficus elastica... ..	24	190
6.	Nutmeg ... ..	291	—
7.	Cocoa ... ..	705	—
8.	Mango... ..	30	—
9.	Pine-apple ... ..	284	24 suckers
10.	Banana ... ..	350	1,338
11.	Arabian coffee ... ..	116	—
12.	Miscellaneous fruit trees ... ..	613	112
13.	Shade trees ... ..	278	—
14.	Ornamental plants ... ..	2,345 and 16 (packets seed)	684
15.	Flower and vegetable (seed).	23 packets	44
16.	Bahama grass ... ..	26 bundles	12 bundles
17.	Iroko ... ..	—	2,504
18.	Shea butter ... ..	—	1,200
19.	Arrowroot ... ..	—	61 baskets and 115 lbs. tubers.
20.	Ginger... ..	—	8 baskets and 25 lbs. tubers.
21.	Yams (Fiji) ... ..	—	25 lbs.
22.	Jute ... ..	—	589 lbs. (seed)
23.	Rice ... ..	—	45 lbs. (seed)
24.	Orango seed ... ..	—	1 lb.
25.	Native seed ... ..	—	33 packets (seed)

TOTALS.—25,944 plants, 1,996 suckers (624 lbs., 116 packets and 1 box seed), 36 baskets and 140 lbs. tubers and 38 bundles. Amount realised—£75 5s. 1d.

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## RETURN No. 13.

List of PLANTS, &c. presented to the BOTANIC GARDENS  
of the W.P.

Western Province.

From where received.	Name.	Seeds.	Plants.
His Excellency the Governor, Southern Nigeria.	<i>Eugenia cambosa</i> ... ..	1 packet	
Do. ...	<i>Eugenia moluccensis</i> (2 varieties).	2 packets	
Do. ...	<i>Averrhoa carambola</i> (Carumbola tree).	1 packet	
Do. ...	<i>Averrhoa Bilimbi</i> (Bilimbi tree).	1 packet	
Do. ...	<i>Paspalum dilatatum</i> (South American fodder grass).	1 packet	
Do. ...	Vegetable and flower seed (various).	—	
H. N. Thompson, Esq. ...	Orange seed from India and Burma.	—	
J. H. Black, Esq....	<i>Acacia Baileyana</i> (Gold Wattle).	1 packet	
Do. ...	<i>Passiflora edulis</i> (Passion fruit).	1 packet	
Do. ...	<i>Persea gratissima</i> (avocado part).	—	2
P. G. Thompson, Esq. ...	<i>Passiflora quadrangularis</i> ...	12	
Botanic Gardens (Jamaica)	<i>Juniperus babardensis</i> (Juniper cedar).	1 packet	
Do. do.	<i>Oreodoxa olivacea</i> (Cabbage palm).	1 packet	
Do. do.	<i>Geonoma Swortzii</i> (Long Thatch palm).	1 packet	
Botanic Gardens (Tobago)	<i>Cissia marginata</i> ... ..	1 packet	
Botanic Gardens (British Guiana).	<i>Mangifera indica</i> (Mango) ...	79	
Curator (Sierra Leone) ...	<i>Oryza sativa</i> (Var.) Rice ...	—	
Corporation (City of Cape Town).	<i>Carrisa arduina</i> ... ..	1 packet	
Do. do.	<i>Asparagus sprengeri</i> ... ..	1 packet	
Do. do.	<i>Opuntia</i> sp. ... ..	1 packet	
Do. do.	<i>Pologula myrtifolia</i> ... ..	1 packet	
Do. do.	<i>Aberia caffra</i> ... ..	1 packet	
Do. do.	<i>Diosma crenulata</i> ... ..	1 packet	

## RETURN No. 14.

## WESTERN PROVINCE.

LIST of EXHIBITS shown by the Forestry Department, Western Province, at the Lagos Agricultural Show.

*Timber.*

- No. 1. Emi Gbegi, *Entandropragma* sp.
- No. 2. Apa, *Azelia africana*.
- No. 3. Oro, *Antiaris toxicaria*, var. *africana*.
- No. 4. Irewe, botanical name unknown.
- No. 5. Ishin Jeje, *Cupania akeesia*.
- No. 7. Ayinretta, *Albizia fastigiata*.
- No. 9. Opon Oro, botanical name unknown.
- No. 10. Emido, *Mimusops lacera*.
- No. 10A. Section of the same species as No. 10.
- No. 10B. Seasoned plank out of the same tree as No. 10A.
- No. 12. Idi Igbo, botanical name unknown.
- No. 13. Ayinre Langara, *Albizia* sp.?
- No. 14. Ishin Oko, botanical name unknown.
- No. 15. Awin, *Dialium guineense*.
- No. 16. Ireno, *Holarrhena Wulfsbergii*.
- No. 17. Iya Odan, *Daniellia thurifera*.
- No. 18. Ayin, *Anogeissus leiocarpus*.
- No. 19. Emigidi, *Butryspermum Parkii*.
- No. 20. Atta, *Zanthoxylon guineense*.
- No. 22. Idi Odan, botanical name unknown.
- No. 23. Osandan, botanical name unknown.
- No. 24. Irugba, *Parkia filicoidea*.
- No. 25. Aridan, *Tetrapleura Thonningii*.
- No. 26. Ayinre Bona-Bona, *Albizia Brownei*.
- No. 26A. Seasoned log of No. 26.
- No. 27. Ako Ayo, botanical name unknown.
- No. 28. Ashasha, botanical name unknown.
- No. 29. Arere, *Sterculia* sp.?
- No. 30. Apará, *Pentaclethra macrophylla*.
- No. 31. Oro, botanical name unknown.
- No. 32. Emigbo, botanical name unknown.

*Fibres.*

Ramie (*Boehmeria nivea*). —

Sisal hemp (*Agave rigida*, var. *Sisalana*).

Mauritius hemp (*Furcraea gigantea*).

*Sanseveria guineensis*.

Bolobolo (*Urena lobata*).

Esho (*Sterculia Barteri*).

*Hibiscus* sp.?

Arrowroot.—(Prepared).

Cocoa.—(Prepared and ripe pods).

Cotton.—Egyptian and native varieties.

Fruits.—Grape fruit.

Rubber.—Prepared samples of Ire (*Funtumia elastica*), Ibo-Tabong (*Landolphia owariensis*), Ibo gidi (*Landolphia florida*), Ibo Akitipa (*Landolphia* sp.), Ibo Elikiti (*Carpodinus hirsuta*).

RETURN No. 15.

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METEOROLOGICAL OBSERVATIONS, 1906, OLOKE MEJI.

—	Air Temperature.									Humidity.			Rainfall.			
	9 a.m.	Means of absolute Maximum and Minimum.						Greatest Diurnal Variation.		Vapour Tension.	Percentage Humidity.	Dew Point.	Total for month.	Max. on one Day.	Date.	Rain fell on days.
		Max.	Min.	Max.	Day.	Min.	Day.	Variation.	Date.							
January ..	79°8	96°09	67°1	100°	19th	50°	10th & 11th	44	11th	797	77	72	inches. 003	inches. 003	29th	1
February ..	83°6	98°2	73°8	103°	10th	68°	23rd	32	9th	761	70	72·6	0·19	0·17	7th	2
March ..	85	100°09	74°8	105°	23rd	67°	6th	34	6th	822	68	73·2	1·71	0·61	18th	6
April ..	83°1	95°1	73°8	100°	4th	61°	24th	31	24th	904	78	75·6	2·1	0·53	21st	12
May ..	80°9	89°1	73°3	94°	7th	66°	5th	24	5th	909	88	78·4	8·01	3·01	5th	17
June.. ..	78°3	86°4	71°9	90°	3rd & 5th	69°	5th & 30th	21	5th	801	67	72·5	6·43	1·43	29th	13
July .. ..	76°8	83°2	71°7	87°	20th	70°	9th & 26th	15	10th & 26th	774	87	71·5	6·93	1·66	22nd	15
August ..	75°3	83°6	70°9	88°	29th	68°	6th	18	18th	743	84	70·3	1·02	·24	9th	10
September	75°7	84°7	71·4	91°	6th	69°	21st	17	6th & 27th	757	85	71	6·59	2·6	16th	19
October ..	77°3	87°8	72°3	92°	6th	69°	23rd	20	6th	778	82	71·7	4·31	1·04	25th	12
November..	80°5	92°2	73°0	96°	13th	67°	9th	26	9th	807	78	72·7	1·97	1·63	25th	2
December..	80°5	93°8	73°2	97°	24th	62°	29th	31	29th	816	79	73·2	1·63	·85	12th	5
Year ..	79°6	90°85	72°26	—	—	—	—	—	—	805	78	72·7	40·89	—	—	114

COLONIAL REPORTS—MISCELLANEOUS.

FOREST ADMINISTRATION OF SOUTHERN NIGERIA, 1906. 87

## RETURN No. 16.

List of NATIVE PLANTS identified during the Year 1906.

Western Province.

No.	Name of plant.	No.	Name of plant.
1.	<i>Mimusops Cacara.</i>	45.	<i>Glyphaca grewioides.</i>
2.	<i>Ficus asperifolia.</i>	46.	<i>Triaspis stipulata.</i>
3.	<i>Randia mallifera.</i>	47.	<i>Impatiens Irvingii.</i>
4.	<i>Pterocarpus esculentus.</i>	48.	<i>Zanthoxylon senegalensis.</i>
5.	<i>Mazrusa aethiopica.</i>	49.	<i>Balsam odendron africana.</i>
6.	<i>Pterocarpus tinctorius.</i>	50.	<i>Khaya grandifolia.</i>
7.	<i>Engenia owariensis.</i>	51.	<i>Khaya Panchii.</i>
8.	<i>Strophantus gratus.</i>	52.	<i>Khaya senegalensis.</i>
9.	<i>Macrosphyra longistyla.</i>	53.	<i>Curaya guinensis.</i>
10.	<i>Oxyanthus tubiflorus.</i>	54.	<i>Brachystegia spicaeformis.</i>
11.	<i>Cremaspora africana.</i>	55.	<i>Delarum senegalensis.</i>
12.	<i>Ekbergia Rupelliana.</i>	56.	<i>Erythrophloeum guinense.</i>
13.	<i>Albizia rhombifolia.</i>	57.	<i>Parkia filicoidea.</i>
14.	<i>A. Brownii.</i>	58.	<i>Pentaclethra macrophylla.</i>
15.	<i>A. fastigiata.</i>	59.	<i>Entada Sudanica.</i>
16.	<i>Bauhinia reticulata.</i>	60.	<i>E. scandens.</i>
17.	<i>Mitragyna macrophylla.</i>	61.	<i>Tetrapleura Thoningii.</i>
18.	<i>Cynometra Mannii.</i>	62.	<i>Mimosa asperata.</i>
19.	<i>Acacia sieberiana.</i>	63.	<i>Leucaena glauca.</i>
20.	<i>A. catechu.</i>	64.	<i>Anogeissus leucocarpus.</i>
21.	<i>A. pennata.</i>	65.	<i>Combretum bicemosum.</i>
22.	<i>A. ataxacantha.</i>	66.	<i>Quisqualis indica.</i>
23.	<i>A. arabica.</i>	67.	<i>Napoleona imperialis.</i>
24.	<i>Parinarium curatellaefolium.</i>	68.	<i>Polyaloe umbellata.</i>
25.	<i>Parinarium mohola.</i>	69.	<i>Smeathmannia pubescens.</i>
26.	<i>Crossopteryx Kotschyana.</i>	70.	<i>Zizyphus mucronata.</i>
27.	<i>Rhizophora racemosum.</i>	71.	<i>Cardiospermum halicacabum.</i>
28.	<i>Avicenni africana.</i>	72.	<i>Paulinia pinata.</i>
29.	<i>Caesalpinia bonducella.</i>	73.	<i>Blightia sapida.</i>
30.	<i>Berlinii acuminata.</i>	74.	<i>Deinbollia insignis.</i>
31.	<i>Landolphia scandens.</i>	75.	<i>Spondias lutea.</i>
32.	<i>Carpodinus Barteri.</i>	76.	<i>Anoni senegalensis.</i>
33.	<i>Omphalogramma calophyllum.</i>	77.	<i>Uvaria picta.</i>
34.	<i>Erythrina senegalensis.</i>	78.	<i>Se res era colungensis.</i>
35.	<i>Harongia Madagascariensis.</i>	79.	<i>Monodora myristica.</i>
36.	<i>Hibiscus vitifolius.</i>	80.	<i>Monodora tenuifolia.</i>
37.	<i>Hibiscus surrattensis.</i>	81.	<i>Ar. emone mexicana.</i>
38.	<i>Bombax buonopozense.</i>	82.	<i>Andropogon pentaphylla.</i>
39.	<i>Sterculia tomentosa.</i>	83.	<i>Oncoba glauca.</i>
40.	<i>Sterculia tragacantha.</i>	84.	<i>Oncoba sinuata.</i>
41.	<i>Sterculia Barteri.</i>	85.	<i>Carpolobia lutea.</i>
42.	<i>Sterculia cordifolia.</i>	86.	<i>Lophira alata.</i>
43.	<i>Cola cauliflora.</i>	87.	<i>Lophira procera.</i>
44.	<i>Cola Afzelii.</i>		

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NEW IDENTIFICATION (and NATIVE NAMES) of SPECIMENS  
sent during the Year 1906.

Central Province.

No.	Benin name.	Ibo name.	Botanical name.	Where found.
1.	—	Otta.	<i>Baisea</i> or <i>Alafa</i> sp.	Ogoda, Feb., 1906.
2.	Ubake.	Utapaboku.	<i>Landolphia</i> sp.; near <i>L. owariensis</i> . Beauv.	Illa, Feb., 1906.
3.	Ibbu.	Obbo.	<i>Ficus</i> sp. possibly <i>Ferobotryoides</i> . <i>Kunth</i> and <i>Bouche</i> , a very imperfectly known species of which we have no authentic material.	
4.	Ubanikwi.	Ottogwi.	<i>Carpodinus hirsuta</i> hua?	
5.	Ubamiogon.	Ottairifredi.	<i>Landolphia owariensis</i> Beauv.	Near Illushi.
6.	Do.	Do.	<i>Landolphia scandens</i> Dedr.	Ibuza, Jan., 1906.
7.	Do.	Do.	<i>Alafa Landolphia</i> K. Schum.	Illushi, Feb., 1906.
8.	Akhe.	Ottaekwari Ottarniaha.	<i>Carpodinus Barteri</i> Stapf.	Anwai river.
9.	—	Ottanfrifredi.	<i>Landolphia owariensis</i> Beauv or sp. n.?	Do.
10.	—	Ottapabeku.	<i>Landolphia scandens</i> Dedr.	Do.
11.	—	—	Do. do. do.	Do.
12.	—	Otopoi.	<i>Landolphia bracteata</i> , Dew.	Near Asaba, 1906.
18.	Allerle.	—	<i>Oncinotis gracilis</i> , Stapf.?	Ogoda, 1906.
14.	—	Otonta.	<i>Landolphia scandens</i> , Didr.	Okoko, Jan., 1906.
16.	—	Uborohaha.	<i>Clitandra barteri</i> , Stapf.?	Asaba, Feb., 1906.
16.	—	Otopoi.	<i>Landolphia scandens</i> , Didr.	Do.
17.	Ogwangu.	Eggo.	<i>Khaya</i> n. sp. nr. <i>K. PUNCHII</i> , Stapf.	
18.	Do.	Do.	<i>Khaya PUNCHII</i> , Stapf.*	
19.	Onumkyukyu.	Ugbi.	<i>Santecopsis</i> .	
20.	Obschi.	—	<i>Triplochiton</i> n. sp.	
21.	Ohka.	Akbo.	<i>Eriodendron anfractuosum</i> , D.C.	
22.	Inyi.	Inyi.	<i>Erythrophloeum</i> sp.	
23.	Ozin.	Ozala.	<i>Daniella thurifera</i> , Oliv.	
24.	Ositot.	Abossi.	<i>Millettia</i> sp.	
25.	Ibegogo.	—	<i>Carapa</i> sp. n.	
26.	Osu.	—	<i>Polyadon Umbellata</i> stapf.	
27.	Ukpi Nufwa.	Okwikwiro.	<i>Blighia Sapida</i> Koen.	
28.	(Ikpa wudu Utantan).	Abontosa.	<i>Albizzia</i> sp. nr. <i>A. (Brownei Walp)</i> .	
29.	—	Utolokpa.	<i>Leguminosa</i> (indch).	
30.	Igmiafia.	Osshosha.	<i>Tetrapleura Thomsonii</i> , Benth.	
31.	Okpeiga.	—	<i>Leguminosa</i> ol.	
32.	Akata.	—	<i>Rauwolfia Vomitoria</i> Aft.	
33.	Alolo.	—	<i>Notandra Guineensis</i> D. C. <i>Balpt.</i>	
34.	Aswan.	—	<i>Baphia</i> sp.	
35.	Ovala.	—	<i>Trichilia Heudlotii</i> Planch.	
36.	Popripo.	—	<i>Sterculia Tragacantha</i> Himdl.	
37.	Owewe.	—	<i>Passifloracea</i> nr. <i>Soyanxia</i> .	
38.	Ebuhawa.	—	<i>Mallotus Oppositifolius</i> Nullarg cf.	
39.	Uwenuwen.	—	<i>Lepidobasus Baziflorus</i> Benth. cf.	
40.	Ihego.	—	<i>Nyrianthus arboreus</i> Beauv.	
41.	Onumu.	—	<i>Pachylobus Edulisci</i> Don.	
42.	Orosorsor.	—	<i>Croton</i> sp.	
43.	Orkwe.	—	<i>Manniophyly</i> cf.	
44.	Olwa.	—	<i>Baphia</i> sp.	
45.	Ukposu.	—	<i>Monodora</i> sp.	
46.	Uwehoyota.	—	<i>Glyphaea Grewioedes</i> Hook fil.	
47.	Oriri.	—	<i>Vitex Grandifolia</i> Guke.	
48.	Ukpa.	—	<i>Homalium</i> sp.	
49.	Ora.	—	<i>Alafa Barteri</i> ol.	



## FOREST ADMINISTRATION OF SOUTHERN NIGERIA, 1906. 89

*Kew Identification (and Native Names) of Specimens sent during the Year 1906—continued.*

No.	Benin name.	Ibo name.	Botanical name.	Where found.
50.	Ameme.	—	<i>Leguminosa.</i>	
51.	Ubaka.	—	<i>Clitandra Virgata Hallfil.</i>	
52.	Ebegogogbo.	—	<i>Dunbolla Pinnata Sch and Thom.</i>	
53.	Ikeri-Oha.	—	<i>Hustera Parvifolia sp.</i>	
54.	Owewe.	—	<i>Combretacea.</i>	
55.	Eve.	—	<i>Cola sp.</i>	
56.	—	—	<i>Pleoceras Barteri Baill.</i>	
28.	again? Utan-tan.	—	<i>Lecaniodiscus Bannioides planch.</i>	
29.	" Ogaba.	—	<i>Macarobium Palisoti Benth.</i>	
30.	" Iyokojo.	—	<i>Alseodia sp. nr. A. Brachy-petala Turcz.</i>	

## RETURN No. 17.

## WESTERN PROVINCE.

The thanks of the Department are due to the various Departments, publishers, &c., who have contributed the following periodical reports, &c., during the year to the library of the Department:—

- The Agricultural Bulletin, Straits Settlements.
- The Tropical Life, London.
- The Agricultural News, Barbados.
- The Agricultural Bulletin, Jamaica.
- The Tropical Agriculturist, Ceylon.
- The Agricultural Ledger, Calcutta.
- Journal of Institute of Commercial Research, Liverpool.
- Proceedings of Agricultural and Horticultural Society, Madras.
- Miscellaneous Pamphlets, India.
- Ditto, Jamaica.
- Experimental Plots, St. Lucia.
- Agricultural Education, St. Kitts-Nevis.
- Ditto, Antigua.
- Cultivation and Curing of Cocoa, India.
- Planting and Manufacturing Tobacco, India.
- Experimental Tapping of Para Rubber, Singapore.

RETURN No. 17—*continued.**Western Province—continued.*

Vegetable Growing, Porto Rico.

List of Seeds for Exchange, Dublin.

Report on Cocoa and Kola Industries, Gold Coast.

Annual Reports of Botanic Gardens, &amp;c. :—

India.	Tortola (Virgin Islands)
Singapore and Penang.	Grenada.
Hong Kong.	St. Vincent.
Montserrat.	Gold Coast.
Uganda.	Dominica.
St. Lucia.	St. Kitts-Nevis.
Antigua.	

## RETURN No. 18.

List of PLANTS purchased for BOTANIC GARDENS, 1906.

*Western Province.*

From where received.	Name.	Seeds.	Plants.
Christy & Co. ... ..	<i>Boehmeria nivea</i> (Ramio).	3 lbs.	50
Gold Coast... ..	<i>Cola Vera</i> (Gbanja kola).	15,000.	
Straits Settlements ... ..	<i>Porea Braziliensis</i> (Para).	33,000.	
Agege ... ..	<i>Theobroma Cacao</i> (Cocon).	200 pods.	
Canary Islands ... ..	<i>Musa Cavendishii</i> .	—	
Botanic Gardens, Singapore.	<i>Nipa fruticans</i> (Nipa).	1 case.	
Director of Agriculture (India).	<i>Corchorus capsularis</i> (Jute).	621 lbs.	
Botanic Gardens (Calcutta).	<i>Smilax macrophylla</i> .	$\frac{1}{2}$ lb.	
	<i>Dendrocalamus strictus</i> .	$\frac{1}{2}$ lb.	
	<i>Phanix humilis</i> .	$\frac{1}{2}$ lb.	
Royal Botanic Gardens (Kew).	<i>Thomatis carnavonica</i> (Wool c. t. o.).	1 packet.	
Botanic Gardens (Gold Coast).	<i>Citrullus Vulgaris</i> .	21.	

## COLONIAL REPORTS.

The following recent reports relating to His Majesty's Colonial Possessions have been issued, and may be obtained from the sources indicated on the title page :—

ANNUAL.							
No.	Colony.						Year.
524	Jamaica	...	...	...	...	...	1905-1906
525	Uganda	...	...	...	...	...	"
526	St. Helena	...	...	...	...	...	1906
527	Ceylon	...	...	...	...	...	"
528	Bermuda	...	...	...	...	...	"
529	Gibraltar	...	...	...	...	...	"
530	Northern Territories of the Gold Coast	...	...	...	...	...	"
531	Sierra Leone	...	...	...	...	...	"
532	Colonial Survey Committee	...	...	...	...	...	1906-1907
533	Weihaiwei	...	...	...	...	...	1906
534	Gold Coast	...	...	...	...	...	"
535	Malta	...	...	...	...	...	1906-1907
536	Gambia	...	...	...	...	...	1906
537	British Central Africa Protectorate	...	...	...	...	...	1906-1907
538	Bechuanaaland Protectorate	...	...	...	...	...	"
539	Leeward Islands	...	...	...	...	...	"
540	Straits Settlements	...	...	...	...	...	1906
541	Turks and Caicos Islands	...	...	...	...	...	"
542	Somaliland Protectorate	...	...	...	...	...	1906-1907
543	Bahamas	...	...	...	...	...	"
544	Barbados	...	...	...	...	...	"
545	Trinidad and Tobago	...	...	...	...	...	"
546	Grenada	...	...	...	...	...	"
547	Mauritius	...	...	...	...	...	1906
548	Fiji	...	...	...	...	...	"
549	Jamaica	...	...	...	...	...	1906-1907
550	British Guiana	...	...	...	...	...	"
551	Northern Nigeria	...	...	...	...	...	"
552	British Honduras	...	...	...	...	...	1906
553	St. Lucia	...	...	...	...	...	1906-1907
554	Southern Nigeria	...	...	...	...	...	1906
555	St. Vincent	...	...	...	...	...	1906-1907
556	Basutoland	...	...	...	...	...	"

MISCELLANEOUS.				
No.	Colony, &c.			Subject.
42	Ceylon...	...	...	Mineral Survey, 1905-6.
43	Caicos Islands	...	...	Fibre.
44	East Africa Protectorate	...	...	Survey Department.
45	Do. do.	...	...	Geology.
46	Northern Nigeria	...	...	Mineral Survey, 1904-5.
47	Do. do.	...	...	Do. 1905-6.
48	Nyasaland Protectorate	...	...	Do.
49	East Africa Protectorate	...	...	Veterinary Department.
50	British Colonies	...	...	Cotton Cultivation.

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1908.