

Extra

**sources
of
wealth**



The Rivers State

NIGERIA • NIGERIA

**SOURCES
OF
WEALTH**

The Rivers State

NIGERIA • NIGERIA

Published by the Information Unit, Office of the Governor, Rivers
State and Printed by the Nigerian National Press Limited, Apapa

Contents

	<i>Page</i>
Introduction	5
Fishing	8
Inter-state trade	10
Map showing prawn catches	11
Forest Resources	12
Oil-palm	17
History of Oil-palm in Rivers State	19
Rubber	22
Coco-nut	26
Raphia palms	31
Palm-wine	32
Raphia fibre	34
Food crops	37
Rice	38
Cocoa	39
Cashew	41

PREFACE

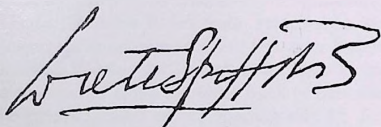
The Rivers State is situated in the Rain Forest of the Federal Republic of Nigeria and various food and cash crops *e.g.* rubber, oil-palm, groundnuts, plantains, cassava and cocoa, grow profusely in the area.

The initiative of the people of the Rivers State is directed towards encouraging business-men and investors with vision to visit the Rivers State and familiarize themselves with the potentially valuable but undeveloped resources to be found in the soil, in the forest and in the rivers of the State.

The development of the State's resources is one to which the Government of the State intends to devote immediate attention because this is the mainstay of the economy of the Rivers State. While the pamphlet—*The Oil-Rich Rivers State*—gives an expert account of mineral oil exploitation and production in the Rivers State, this one—*Sources of Wealth: The Rivers State*—spotlights some of the agricultural products that are available in the State. Although it is not possible to describe all the agricultural products in such a small pamphlet, attempts have been made to mention some of the most important ones.

Entrepreneurs and investors, upon their coming to the Rivers State, will find that practical men who are experts in such fields as agriculture, transportation, fishing, or forestry have already inaugurated pilot projects in their respective branches. Such pilot projects, if carried through by investors, will provide the revenue upon which the State can build a sound economy for the future.

I commend this pamphlet to all business-men and investors who may find interest in developing the agricultural products of the Rivers State.



Lt.-Commander A. P. Diete-Spiff, N.N.
Military Governor, Rivers State.

INTRODUCTION

The Rivers State is made up of the following Political Divisions:

- (i) Ahoada Division with an area of 1,977 square miles and a population of 506,577.
- (ii) Brass Division with an area of 3,350 square miles and a population of 309,716.
- (iii) Degema Division with an area of 1,250 square miles and a population of 400,740.
- (iv) Ogoni Division with an area of 404 square miles and a population of 231,513.
- (v) Port Harcourt Division with an area of about seventeen square miles and a population of 95,768.

The area of the Rivers State is 7,008 square miles with a total population of 1,544,314. It is one of the most viable States being blessed with natural resources and mineral oil deposits.

Brass and Degema Divisions and the southern part of Port Harcourt Division are within the Mangrove Forest Belt of the tropical Rain Forest while Ahoada and Ogoni Divisions are within the Tropical Rain Forest Belt. Rainfall is very heavy in all the divisions.

The inhabitants of Brass and Degema Divisions in particular and the south of Port Harcourt Division to a certain extent live mainly by trading and fishing with little farming. Some of the men who are not engaged in the above occupations interest themselves in canoe-carving, palm-wine tapping, and the collection of palm fruits from wild palm groves or some local crafts such as wood-carving and building.

The inhabitants of Ahoada and Ogoni Divisions on the other hand are principally farmers with few traders and fishermen. The last two divisions and the upland areas of Port Harcourt Division have a good farming population with good tradition in agriculture.

Peasant agriculture is the rule in the Rivers State, practised on the basis of strifling cultivation. In areas of lowland or low river basins which are liable to periodical flooding during high water levels in the rains, huge bunds are constructed along the water bank to hold the water thus keeping the parcels of land on the opposite side dry for cultivation. More land is therefore made available for cultivation and food production. In some areas such swampy lands are used for rice cultivation.

The main food crops cultivated are yams, cocoyams, cassava, rice,

plantains and bananas, groundnuts, sugar-cane, vegetables and fruits.

Tree-crop farming is rather new in the State as most of the farmers depend upon exploiting wild oil-palms or raphia palms for their produce. A few holdings of badly planted, tapped and maintained rubber could be found scattered in the State together with small holdings of coco-nuts, oil-palm and cocoa.

Although there exist great potentialities and possibilities for good oil-palm, rubber, coco-nut and raphia plantations for economic benefits of the State, much has not been done in these fields.

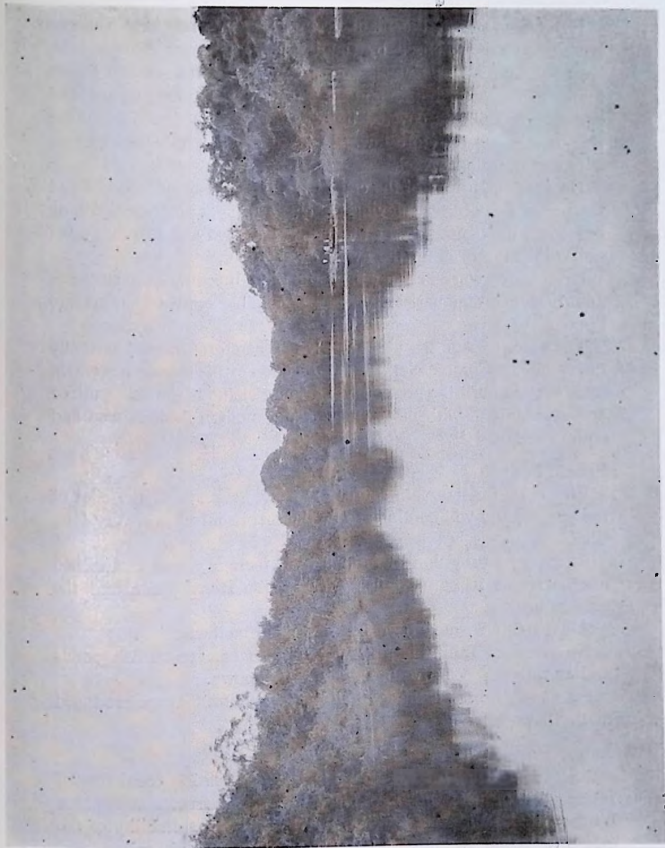
Apart from the State's rich wealth of mineral oil already discussed in the publication entitled *The Oil-Rich Rivers State*, the State is also very rich in natural resources from the land and sea which, when developed and exploited, would earn for the State the much desired foreign exchange or earnings from inter-state trade. It will also yield additional wealth required for providing the social services of the State and at the same time raising the standard of living of the population.

The development of these natural resources will in addition to the above earnings provide employment opportunities for a good number of the population either in the primary processing industries or the many Agro-industries for which the necessary raw materials would be available.

A wide range of food crops and tree crops can be produced in this part of the country, but attention has been directed in this publication to the major crops with great economic potentialities, that would attract local or foreign investments for their exploitation. The same applies to the other natural resources of the Rivers State.

The production of crops such as citrus, avocado pears, mangoes, pine-apples and pawpaw will for a long time be geared to meet local demands.

The chapters that follow treat the major resources describing their present position, main uses, possibilities and prospects.



A Scene of the Rivers State. Rivers and rivulets dividing and subdividing and intercrossing not only with each other but with branches of other streams.

FISHING

Fishing is one of the main occupations in Brass and Degema Divisions. It is practised by small fishermen in the shallow seas, rivers, the numerous rivulets and streams that permeate the Rivers State, using very simple and inefficient local fishing gears and equipment. The area covered by a fisherman in a day is negligible and catches are therefore low. The local canoe with a paddle constitutes the fishing vessel.

No deep sea fishing of the coast is at the moment undertaken and the use of modern fast moving vessels with modern efficient fishing gears and appliances are at the moment unused and in most cases not within the reach of the average fisherman.

No research work or study on population, breeding characteristics and breeding sanctuaries, types and possible annual outputs are known.

The resources of the sea and rivers therefore remain virtually unexploited. Commercial fish production will therefore remain undeveloped until the present systems and methods are reorganized and mechanized, with more efficient and modern fishing gears and equipment.

Present Position

Fish is by far the main source of protein supply for the diet of the people, and will continue to be the main source for a very long time.

Besides the provision of protein diet, there is a well established internal trade in smoked fish between the Rivers State and the neighbouring states.

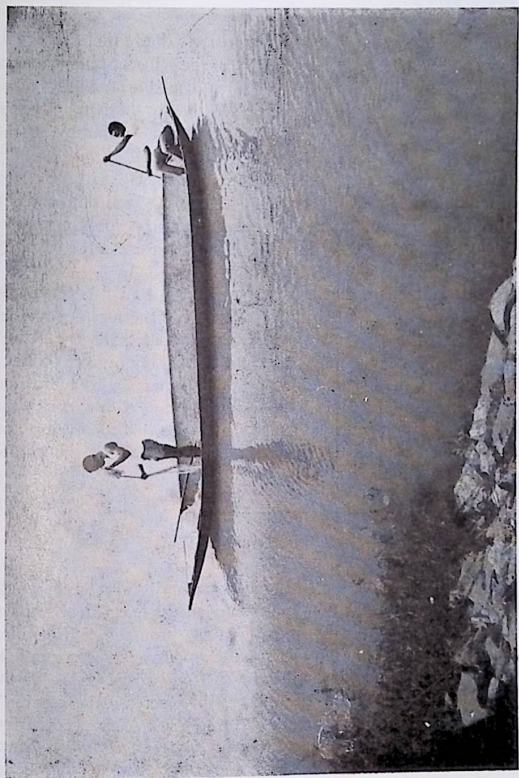
All the catches have been by traditional methods.

No deep sea fishing is practised at the moment and fish ponds and culture and selective breeding are unknown.

Practically no use is made of all the fish wastes that are produced in the Rivers State.

Future Prospects and Possibilities of Fishing Industry

An experimental brackishwater fish culture station consisting of fifteen acres of fish ponds have recently been constructed at Buguma by the Federal Fisheries Services for studying the suitability of the extensive saline swamps of the Rivers State for fish culture and prawn production.



Fishing by cast-net from a canoe. Catches are usually low as area covered is relatively small

The above study will reveal the most suitable species of fish for raising in the brackish ponds, their breeding habits and yields and will also evolve most useful management techniques for maximum yields.

If the above trials should succeed, there is no doubt that this would open new and wonderful opportunities for the Rivers State as over a million acres of brackish swamp now available for any other economic production would be converted to fish ponds for modern fish farming and prawn production to boost the economy of the State.

Salt water prawns are found in reasonable quantities in the estuaries of the State and already command a good market in the country and abroad. The development of a prawn industry would considerably yield revenue for the State and the foreign exchange capacity of the Federation.

Modernization of the fishing systems of the local fishermen and their better organization into co-operative fishermen's societies with motorized vessels and modern gears would make the Rivers State a great fish producing area second only in importance to Lake Chad if not the most important fish producing area of the Federation.

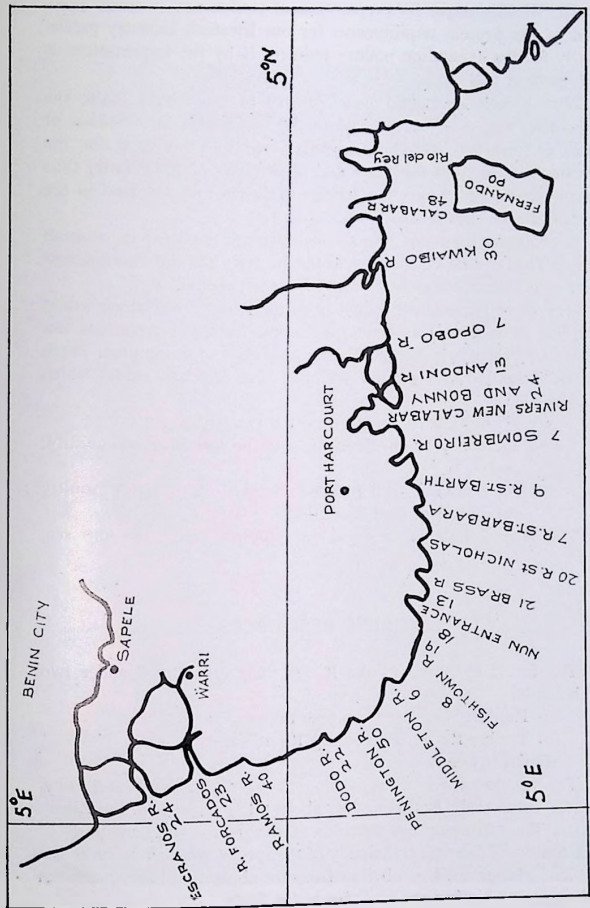
Either through local capital or foreign investment or through the combination of both sources of capital it is possible to develop and exploit the deep seas off the coast of the Rivers State by the use of trawlers.

INTER-STATE TRADE

Increased fish production in the above described methods would lead to increased internal inter-state trade in fresh iced fish or smoked fish and may even supply raw materials for a profitable fish canning industry which will not only increase the employment opportunities for the people but cut down the present foreign exchange for the importation of tinned fish or even possibly increase the country's foreign exchange earnings by exportation to other African countries.

Page eleven shows the coast-line of the Niger Delta with Prawn Catch Figures.

For very many years the entire Federation depended upon rich protein feeds for its livestock industry upon the blood meal from the Northern slaughter houses. Although rich in protein the blood meal



MAP OF NIGER DELTA COAST-FIGURES SHOW PRAWN CATCH IN WHOLE WEIGHT (lbs) PER HOUR
Federal Fisheries Service Map

had its disadvantages for preparation of feed meals. In recent years part of the protein requirements for our livestock industry particularly for the expanding poultry industry is by the importation of fish-meal at high cost.

With a well developed fish industry in the Rivers State, the fish offals and other wastes and catches unsuitable for smoking or sales as fresh fish would be manufactured into fish-meal for the livestock industry of the State and other states of the country thus saving whole or in part the foreign exchange now involved in the importation of fish-meal.

A company tried last year to manufacture fish-meal on a small scale. This is a new field that would be open for full development and exploitation either with local or foreign capital.

One more important product from the Rivers State which would require development is lime production from the numerous sea shells such as oyster and periwinkle that abound in the area. These shells if roasted and ground will give lime (calcium oxide) which can be used as:

- (i) Whitewash for houses and for sanitary work.
- (ii) Lime as a form of manure and for correcting soil acidity;
and
- (iii) As a mineral feed to livestock particularly laying poultry for good egg shell formation.

The Rivers State is very rich in resources from land and sea.

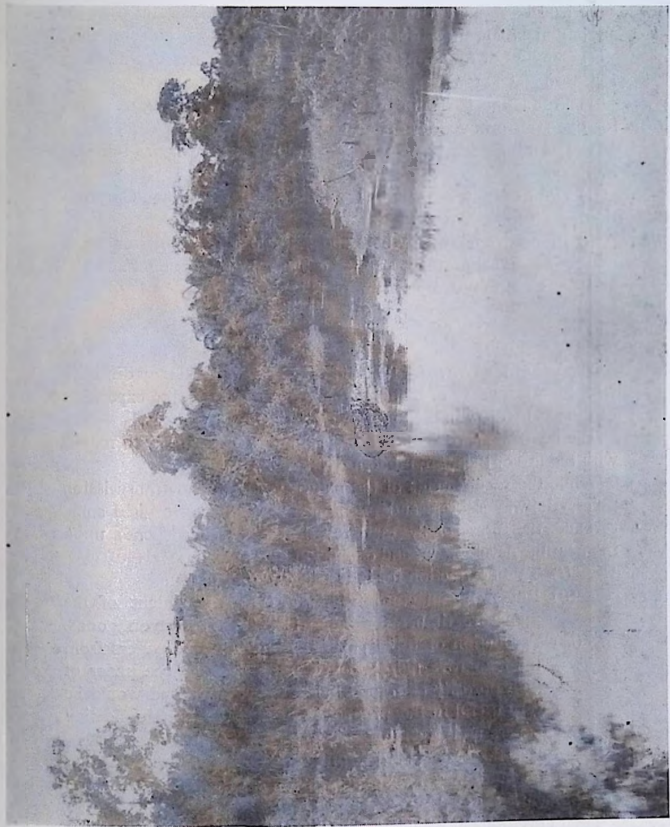
FOREST RESOURCES

The forest resources of the Rivers State are treated under two sub-heads:

- (a) Resources of the Mangrove Forests.
- (b) Timber Resources from the Rain Forest.

'A' Mangrove Forest

The mangrove forest, consisting of tall trees, scrub and some barren areas together account for about thirty per cent of the Rivers State. The tall mangrove forest is unique in the southern parts of the State and consists principally of the species *Rhizophora arcemosa* or Red Mangrove. It is obvious from the above that large quantities of mangrove timber are available in the State.



A Mangrove forest in the Rivers State. Approximately ten thousand million cubic feet of standing mangrove timber are available in the State.

Present Uses

- (i) As the main source of fuel and domestic firewood.
- (ii) Local production of charcoal for various domestic uses for minor and cottage industries such as blacksmithing and goldsmithing.
- (iii) Supplies of Pit Props for the Enugu Coal Mines. As much as 15,000 to 20,000 tons.
- (iv) Production of Tanin from the bark of felled mangrove trees for dye stuff production for local dye industries.
- (v) Use of mangrove poles for scaffolding in the house-building industry.
- (vi) Use as Railway sleepers for the Nigerian Railway Corporation.
- (vii) Mangrove poles may be found suitable as transmission poles and for use as support of over-head cable and wires for the P. and T. and the Electricity Corporation of Nigeria.

Future Prospects

The use of mangrove for fuel and domestic firewood may diminish with high standards of living of the people and with the expansion of the gas industry in the State which is rich in natural gas.

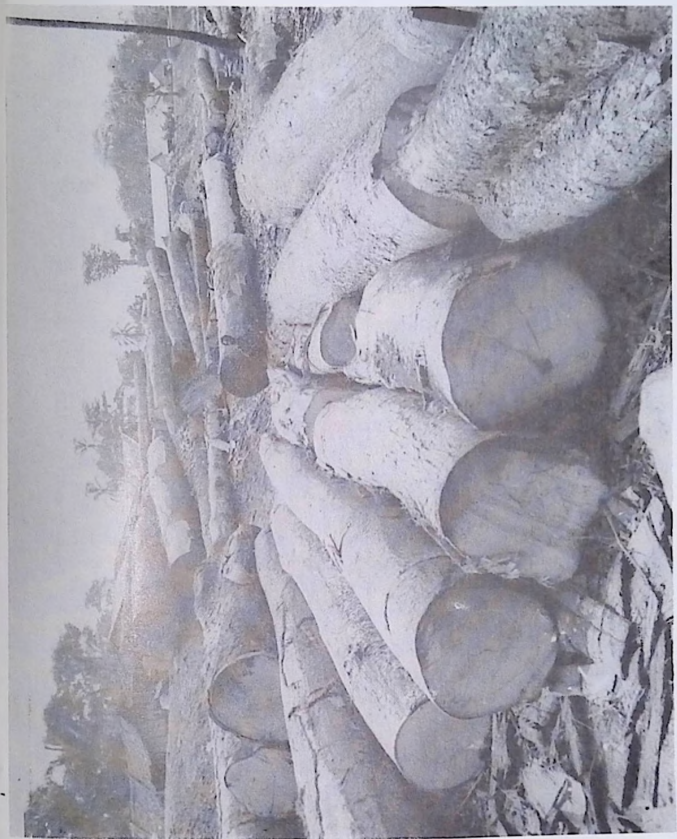
The use of mangrove timber for scaffolding is also likely to reduce with the use of the more modern steel scaffolding.

While the requirements of the mangrove timber for transmission poles, Railway sleepers and pit-props may continue to yield some revenue, the future of the mangrove forest actually depends upon the possible development and expansion of its uses in:

- (i) Tanin extraction for industrial dye production.
- (ii) Rayon manufacture from the cellulose content of the mangrove timber for industries producing rayon goods.
- (iii) Production of toilet papers and other tissue papers from the mangrove pulp which is known to produce paper of high porosity and good bulking properties, and would be very useful in the production of absorbent or duplicating papers and other bookbinding papers.

These last three commercial propositions would need further investigation and may require foreign participation for their full development.

Their development would no doubt increase employment prospects in the State and either increase the foreign exchange earnings or



Abura Timber in the Rivers State. Present methods of cutting and extraction are haphazard and wasteful

reduce our further importation of some of these products thus saving the country's foreign exchange.

There are approximately ten thousand million cubic feet of standing timber and at twenty-eight cubic feet to the ton this would give about thirty-four million long tons.

The estimated annual yield is between 600,000 and 1,000,000 long tons. That means that at least 600,000 tons could be cut each year in perpetuity without diminishing the total mangrove resources.

'B' Rain Forest

The Rivers State is rich in timber of all types but the exploitation so far has been unorganized or controlled and therefore very wasteful.

A systematically controlled organization would prevent the existing wasteful exploitation to the benefit of the State and the Timber Industry.

Present Uses

The Rivers State is at the moment self-sufficient with all types of timber such as Iroko, Mahogany, Terminalia and Abura, for all its building programmes and furniture and in fact exports large quantities of Mahogany and Abura to overseas markets.

There is also a very good internal trade in timber between the Rivers State particularly Ahoada Division and the neighbouring Central Eastern State.

The various types of timber also provide materials for the local canoe industry which produces large numbers of various sizes of canoes for personal uses and passenger services all over the creeks.

It is hoped that with the improvement in the system of forest management and exploitation a very lucrative trade in timber particularly Mahogany and Abura would develop rapidly to increase our foreign earnings. Little of terminalia is exported, the bulk of that species of timber is used in the local building industry.

Utility Timber

The characteristic tree of the freshwater swamp forests of the Rivers State is Abura or Bah which yields a utility timber for which there is considerable export demand. These stocks of timber undoubtedly constitute a resource of considerable value but the present methods of cutting and extraction are haphazard and wasteful.

This is one of the cheapest timbers exported.

It competes abroad with Beech and Spruce. The timber is light pinkish brown and sometimes greenish yellow. The sapwood is normally indistinguishable from the heartwood. It has uniform grain and even texture. Occasionally it is figured, with short curled grain or with an eccentric heart.

Good Substitute for Alder

Abura is easy to work with hand and machine tools, though its silica content has a blunting effect on machine-tools and other tool edges. It takes stains easily. It is a good substitute for Alder, and better in many respects than Beech. It seasons rapidly and easily with very little degrade, weighs thirty-two pounds per cubic feet (air-dried), and is not durable but very permeable to preservatives.

Abura is reported as the most suitable species for small moulding, clean-borings and model building. If well seasoned, it is a good insulator suitable for radio-box fittings and electric switch-boards. Owing to its resistance to acids, it is good material for battery and accumulator boxes, laboratory fitments, containers for chemicals and fertilizers.

Greatest Use

Its greatest use is in joinery and cheap furniture. Fair quantities are converted to plywood, flooring-blocks, toys and turnery.

Export logs are usually less than thirty inches diameter and minor fungal infection should not be regarded as serious defects.

OIL-PALM

One of the most important agricultural products in the Rivers State is palm produce—Palm-Oil and Palm-Kernel.

At the moment majority of the people depend upon wild palm groves for the supply of palm produce.

Tall wild palm groves are very common in all parts of the State and form the picturesque scenery in the rain forests.

They grow very tall, up to fifty feet or more in some places, and are very variable in age, appearance, yield and other generic characters.

The harvesting and processing appear laborious and unattractive to the younger generation. Carrying the bunches over long distances



Uncultivated wild palms in the Rivers State. In 1964, Abonema produced 3,480 tons of produce, Yenagoa 1,000 tons, Nembe 560 tons, Ekowe 450 tons, Amassoma 400 tons, and Abobiri 400 tons. It is assumed that half the production of Abonema originates from other towns and half from the periphery of the delta. For the whole delta, it is estimated that 8,000-9,000 tons palm-kernels per year are produced.

from the forest to processing mills or sheds also create problems and difficulties in the industry.

Yielding capacity of these wild unselected palms are low and as variable as the palm trees in the groves are.

Many farmers in the State have not come to regard the oil-palm as a plantation crop. An encouraging beginning has however been made as shown by the sales of improved oil-palm seedlings from nurseries in some of the towns. A few scattered plantations of one or two acres can be seen in some isolated places. However, a 5,795-acre plantation of the former Eastern Nigeria Development Corporation came into production from 1965 at Elele. This plantation is bound to form a nucleus plantation around which future commercial plantation production is largely to be built.

The exact production of oil-palm produce in the Rivers State is not yet known but the estimated average annual production in the three States that made up the former Eastern Region was in the order of 300,000 tons of palm-oil. Out of this estimated total, about 140,000 tons of palm-oil was purchased by the Marketing Board for export in 1963 and 1964 leaving about 160,000 tons for national trade or local consumption. There is a well established internal trade in palm-oil between the Eastern and Northern States and to a certain extent to the West and Lagos, and possibly to other neighbouring countries. Local consumption in the three Eastern States is estimated at 140,000 tons per annum as palm-oil forms the main cooking oil or fat in the diet of the people.

History of Oil-Palm in the Rivers State

The Rivers State has a long and interesting history in connection with its palm produce trade.

Palm-oil and palm-kernels were some of the early products experimented with in its early trade with Europeans to replace the foreign exchange lost through the abolition of the slave trade. Other products experimented with included gold dust, pepper, ivory, rice, timber including cam-wood, and red-wood.

Palm produce eventually became by far the most important export produce in the area thus earning for itself the name 'Oil Rivers' and the area eventually became known politically as the Oil Rivers Protectorate.

Exports of palm-oil in the year 1808 (the year following the abolition of the Slave Trade) amounted to only one or two hundred

tons according to Macgregor Laird but by 1837 the tonnage had reached 14,000 tons. The export figures continued to rise gradually over the years.

Uses of Oil-Palm Produce

- (i) Palm-oil constitutes the main cooking oil or vegetable fat for the people and would remain so for a very long time. It is very rich in Vitamin A and is therefore a good source of that vitamin;
- (ii) In some remote villages it still forms the main item of fuel for lighting their houses at night;
- (iii) For local soap manufacture for internal trade;
- (iv) Export trade to provide foreign exchange earnings and to serve as raw material for the manufacture of soaps, margarine, etc.
- (v) The palm-kernels are also exported to earn foreign exchange. The oil is extracted and used for the manufacture of various goods such as soap, margarine and confectionaries while the palm-kernel cake is used for livestock feed;
- (vi) The palm fronds are used for fencing and for various temporary roofing;
- (vii) The bunch refuse is very rich in Potash and is a very valuable organic manure applied as mulch. Potash can be extracted from the bunch refuse after burning.
- (viii) Palm-wine is another important local product of value obtained from the oil-palm.

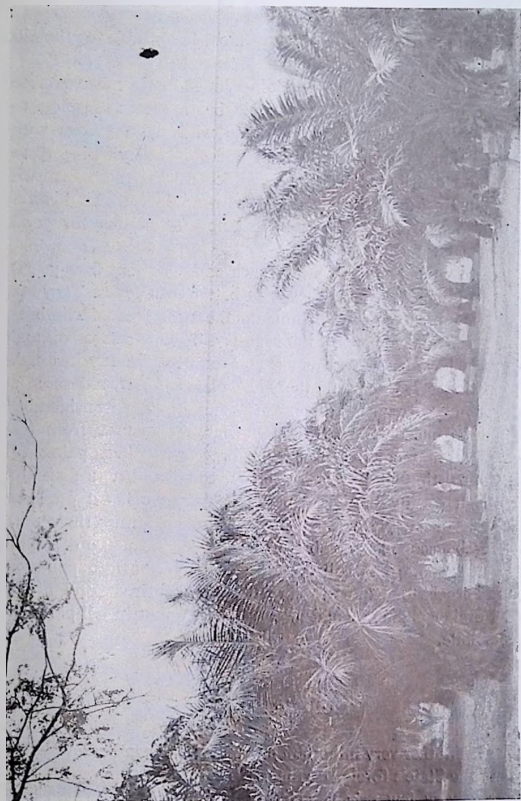
Present Trends and Problems

The present problems limiting the economic value of the oil-palm industry are many. The existing wild palms are poor and very variable yielders. Yields are declining fast in most groves and their considerable height deter harvesting limiting the exploitation to a few specialized climbers. Transportation from forest groves to mills also creates problems.

In some areas the fruits are sold to processing mills which may be Pioneer Mill or Hand Press. Where mechanical processing mills are unavailable the local tedious methods with low efficiency have to be used.

The quality of the oil produced in many areas is poor due to lack of education on processing and storage techniques.

In some localities the industry is dying out in view of the



Plantation Palms

Palm-trees are planted in rows at correct spacings. They come into yield much earlier in life and remain short for easy harvesting. Yields are also high as seeds are obtained from selected high yielding types.

recent low Marketing Board prices and in response to the rising demand for palm-wine from palm trees.

Feature Prospects and Possibilities

The climatic and soil conditions are most favourable for the oil-palm industry in the Rivers State.

Prospects for developing a good oil-palm industry are therefore bright. One of the main methods would be to get the farmers to gradually replace the poor and variable wild palm groves with plantation palms raised from seeds of selected high yielding types produced and distributed by the Quasi-Federal Nigerian Institute for Oil-Palm Research with Headquarters near Benin. This Institution has also evolved the best maintenance techniques for good plantation management.

Planted palms come into bearing much earlier (about four years) and produce much larger bunches with better fruit types. They are low and therefore completely eliminate the problems of climbing which frighten many men off the industry. Their yields of oil and palm-kernels have better returns per acre or per man-day invested.

The existing 5,795 acres of the Elele plantation would serve a nucleus for future expansion and peasant plantations of considerable size could be encouraged to develop. Farmers distant from the nucleus plantation could also be encouraged to plant palms to replace the existing wild groves. Such farmers could also assist to produce high quality produce using the hydraulic hand press in co-operation or simply where acreages would warrant their use.

Considerable scope is available for the expansion of the oil-palm industry to increase palm-oil for local consumption and palm-oil and palm-kernels for export to earn the much desired foreign exchange. Foreign planters could also gainfully invest in oil-palm in the Rivers State.

RUBBER

Rubber is another very important cash crop that can be developed to increase the State's foreign earnings.

There are very few private plantations in the State. These are poorly planted with poor yielding local varieties, with very close spacings thus giving too many plants per acre. The result of this



*Rubber Tapping
Plantation Rubber being tapped for latex collection.*

faulty planting is tall and slender trees with thin back, irregularly spaced all over the plantation.

Maintenance of these plantations is poor and tapping is generally very badly done leading to untimely deaths of many plants or destroyed tapping panels.

In some places the trees are not normally tapped by the farmers, but are hired out to itinerant tappers who slaughter these trees as they have no real interest or stake in the plantation and are only out to get the maximum latex during the period of temporary occupation.

Rubber is the fourth largest export money earner in Nigeria after groundnuts, cocoa and palm produce. The Mid-West State is by far the largest exporter of this crop at the moment. Most of the rubber trees in the Rivers State were planted after the First World War and during the Second World War.

The rubber latex is processed and exported as smoked sheets or blanket sheets while the scraps and wastes are exported as crepe rubber.

Unlike the oil-palm and coco-nut palm, the product is not locally consumed as food in any way. All have to be exported or sold to local industries to earn cash.

Present Problems

- (i) Use of poor yielding local planting materials
- (ii) Poor and irregular spacing leading to too many trees per acre with poorly developed back
- (iii) Poor maintenance practice
- (iv) Poor tapping techniques
- (v) Poor processing leading to low quality produce.

Uses of Rubber

Natural rubber is still in great demand despite the competition from synthetic rubber as some articles are best produced from natural rubber,

Rubber is used in the production of tyres and tubes, for surgical goods, many general purpose utility goods, plastics, foams, etc.

For some of these goods requiring high resilience and low hysteresis with low heat building up, natural rubber appears better than synthetic rubber e.g., Tyre side walls and large aeroplane tyres.

In Nigeria tyre manufacture (Michelin and Dunlop Tyres) have



Rubber Budded Stumps

High yielding budded and pollis clonal stumps ready for field planting. Establishment is by clonal seedlings or by budded clonal stumps.

been started, a good business in tyre rethreading and shoe manufacture have also developed in various parts of the Federation. Production of foams from latex for the manufacture of cushions, foam mattresses and various goods are also developing fast.

Future Prospects

Climatic and ecological factors in the Rivers State are very favourable for rubber production, rainfall in all cases exceed ninety inches per year and very evenly distributed. The temperature range is between 70°F and 90°F and soil conditions are also suitable in many parts.

With a possible expanding market and demand for natural rubber either for local industries or for export trade the Rivers State has opportunities for developing the rubber industry to increase its foreign exchange earnings.

There already exists in north east of Ahoada Division a former E.N.D.C. plantation of over 3,000 acres. This will form a good nucleus plantation for future expansion or for developing a number of good peasant farms around this nucleus plantation to supply latex to the Plantation's Processing Factory.

For high yields farmers should be encouraged to use only high yielding clones as clonal seeds or budded stumps with correct spacings.

The farmers have to be guided and educated to plant cover crops, use the appropriate types and rates of fertilizers and practice all other improved management techniques. They should also be taught to process their latex properly in modern plantation factories or small farmers processing factories to take full advantage of premium prices for quality.

Small processing factories could be developed on co-operative basis or by individuals where the acreages warrant them in the areas far from the nucleus plantation.

For the full development of this industry local or foreign capital in some proportions would be necessary.

COCO-NUT (*Cocos nucifera*)

In the mangrove swamp belt of Brass and Degema divisions, the coco-nut tree forms the most common scenery along the coast.



Copra Production
Sun drying of Copra is one of the commonest and natural methods of Copra Production.

fringes of the numerous islands, replacing the mangrove of the brackish swamps and the oil-palm of the rain forest belt.

A number of scattered small plantations of the coco-nut palm can be found in the interior of most of these islands. These plantations have been poorly planted and maintained and yields are generally low.

Although this crop is very widely distributed throughout the Rivers State, much has not been done to exploit its products for commercial purposes.

Very little export trade exists in copra which is at the moment produced by few farmers who collect the nuts and dry the meat by natural means or over kitchen fires by means of platforms erected over these fire places. Proper drying kilns are non-existent.

Besides the small export trade in copra described above most of the coco-nuts produced in the State are used directly as food within the State or sold for food to neighbouring States.

Coco-nut oil is also extracted in the Rivers State for the production of edible or cooking oil. Some of the coco-nut oil so produced is used for lubrication of small machines and plants.

Recently coco-nuts have been used in the preparation of some delicacies such as coco-nut rice or coco-nut biscuit for cake, and desiccated coco-nut pieces are therefore becoming of increasing importance in local trade for the manufacture of coco-nut biscuits and confectionaries. The local demand is increasing steadily.

At the moment not much use is made of the coco-nut fibre. It is used as fuel in a few places but by far the most important commercial use at the moment is the use of the husk for stuffing in mattresses and upholstery production and to a less extent in foot-mat production.

Retting for coir production for the fibre is not widely practised.

Main Uses of Coco-nut Products

(i) Directly as item of food; the mature flesh or meat is much relished and used.

(ii) *Coco-nut oil extraction.* The oil is at the moment extracted on a small scale for cooking and lubrication. There are great possibilities of large scale production of copra for export trade or large scale coco-nut oil extraction industry to produce the oil for export, or for various industries such as soap, margarine, beauty cream preparation and perfumeries, etc.

Coco-nut oil is a very high quality vegetable oil for the manufacture

of superior quality soaps and perfumeries. With the increase in the standards of living of the population there is bound to be changes in the demand for higher quality products in soaps, creams and perfumeries thus increasing the demand for coco-nut products.

(iii) *Production of desiccated coco-nuts and coco-nut chips for the confectionary and baking trades.* The demand for these products is increasing locally and also in the United Kingdom, United States, West German Republic, Canada and Australia. The local demand for the manufacture of coco-nut biscuits and other confectionaries at the moment varies from twenty to thirty tons per annum, and is bound to increase considerably with future developments in the country.

(iv) *Coco-nut cake production for livestock feed from the residue of the copra or meat or pared brown skin resulting from the production of desiccated coco-nuts.*

(v) *The milk of the young nuts provide very delicious drinks while the immature flesh or meat can be scooped and eaten as desert.*

(vi) *Coir and coir products for various Agro-industries or cottage industries.*

Coir is a very valuable raw material for many industries in the production of foot-mats, brushes, brooms, spinning into yarns for producing ropes, mats, mattings, rugs, carpets, belting, bags, nets, etc.

Coir ropes are very suitable for boats and ships as the coir can withstand prolonged action of sea water and is therefore particularly useful in the Rivers State for our water transport industry.

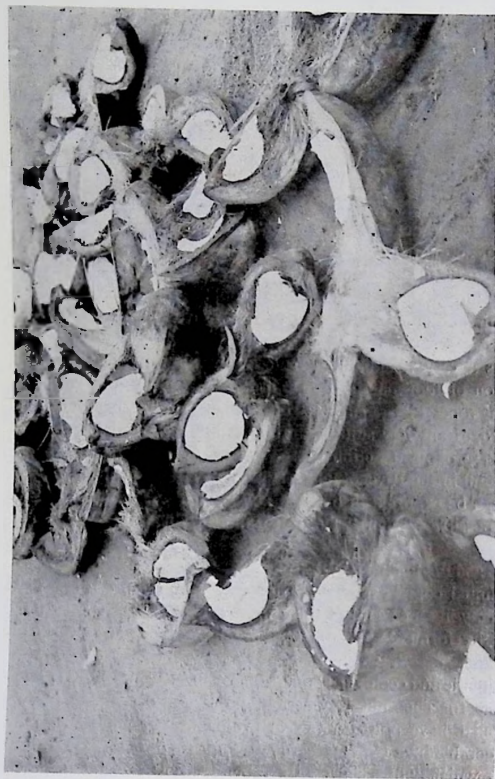
Coir can be exported in bales to U.K. or U.S.A. and is therefore another possible foreign exchange earning product.

Prospects and Possibilities

The annual copra export from Nigeria is about 400 tons. More than seventy-five per cent of this export comes from Badagry Division of the former Western Region and now forms part of the Lagos State.

The climatic and ecological conditions of the Rivers State are most favourable for coco-nut production. Brass and Degema Divisions in particular have potentialities of producing coco-nuts.

Considerable investments are required for the development of this industry, which will earn considerable foreign exchange for the country in addition to opening up profitable employment or occupation for large numbers of men and women in the number of Agro-



Coco-Nuts
- Copra production: Splitting open the coco-nuts to extract the nuts for drying into copra.

The last named is not of great importance except for providing additional source of food (protective food) for the people. The fruit is boiled and eaten by some people of the Rivers State.

I.—PALM-WINE

Palm-wine is the fermentable sap of the raphia palm or oil-palm. By far the most important source of palm-wine in the Rivers State is the fermentable sap of the Raphia Palm, *R. vinifera* or *wine-palm*.

Palm-wine can also be obtained from the stalk of the male flower or from the stalk of immature flowers or soft top part of the stem of the oil-palm. The yield from these latter sources is however limited.

From the large numbers of Raphia palm groves in the fresh water swamps of the Rivers State, it is estimated that the potential yield of alcohol which is the principal economic product of palm-wine to be near 100 million gallons a year.

Palm-wine owes its white milky appearance to a suspension of yeast in it. This yeast is also an important produce for the bakery industry or as medical treatment in view of its rich Vitamin B content.

Palm-wine is used at the moment as a delicious beverage or soft drink when fresh and unfermented to very strong alcoholic drinks depending upon its state of fermentation.

The fermented palm-wine is also used for local distillation of gin.

When palm-wine is stored, fermentation proceeds immediately producing alcohol and carbon dioxide. The rate of fermentation depends upon the temperature and the final amount of alcohol produced depends upon the sugar content of the palm-wine. The carbon dioxide produced during the process of fermentation can cause violent explosions if not allowed to escape freely into the air. It is never therefore advisable to store palm-wine in tightly corked or crown-corked bottles.

There exists a great internal trade in palm-wine within the States of the Federation, and palm-wine during normal times is carried as far as the Northern States for sale.

Future Prospects and Possibilities

The Raphia Palm with its palm-wine offers vast potentialities and prospects for the economic development of the Rivers State.



Various species of palm of the genus RAPHIA grow in the Rivers State. Palm-wine is tapped from these and they are abundant in the State.

Besides the expansion of the crop to provide increased palm-wine for local and inter-state consumption to give the desired satisfaction and happiness desired in the social life of the people, increased palm-wine production offers new agro-industries to increase the earnings of the State and offers more employment opportunities. The following agro-industries are possible either with local capital, or foreign capital or by the combination of both sources of capital:

- (1) Palm-wine preservation and bottling industry for larger storage and distribution to the distant parts of the Federation.
- (2) *Alcohol Industry*.—Alcohol distillery for the production of Ethyle Alcohol on commercial basis for laboratory and other uses thus saving the present foreign exchange in the importation of alcohol.
- (3) Dry yeast extraction from palm-wine, to meet the needs of bakers in Nigeria and also for medical uses.
- (4) *Gin Production*.—A gin factory to produce gin locally and cheaply to improve the present system of distillation which produces large quantities in the State.

Revenue is bound to increase through Excise duties and Company taxes from these industries.

II.—RAPHIA FIBRE

This is an important leaf fibre derived from the upper surface layer of the leaves of various species of *Raphia* palms.

The fibres can be dyed to various colours and used for weaving into cloths, cushion covers, and various household materials.

Raphia cloth weaving was of great importance in the Rivers State up to the early 1930s when various *raphia* cloths were produced and used by women. The industry died when the demand for *Raphia* cloths declined sharply.

A virile *Raphia* cottage industry can be built up to produce various articles of trade, to absorb and usefully engage a number of young boys and girls who are unable to complete their primary schools. *Raphia* fibre can also be exported to earn foreign exchange as Madagasca at the moment forms the most important exporting Country to England and other European Countries.

III.—PIASSAVA

This is the best fibre of commercial importance obtained from the leaf bases of *Raphia Palm* (*R. vinifera*) and used for the manufacture of brooms, brushes and cords.

Locally it is used for tying and building particularly mud and wattle type of local houses and for cordage.

There is considerable possibility of developing a very good cottage industry in the manufacture of cords, brooms and brushes using the piassava as raw material.

The piassava fibre has a high market value because of its texture, weight and flexibility. The two last qualities make it a very suitable material for heavy duty work such as brooms and rotary sweepers in industry.

IV.—BAMBOO POLES

These are the long leaf stalks of the *Raphia Palm* and they sometimes grow as long as thirty-forty feet. These poles are very useful being used as ceiling materials for houses, for fencing, for connecting timber rafts or palm-oil casks. They are also used for propelling canoes or rafts in shallow seas and rivers.

The hard outer bark is used for baskets, fish-traps and fencing sheets while the soft inner pith is used for mat-making and wide-brimmed hats for rain. The mats made from the bamboo pole have some special uses such as for drying produce, roofing of trade canoes, protection of produce from rain and in recent years for lining strips before loading of produce.

V.—RAPHIA LEAVES OR THATCH

The older leaves are used for making thatches for roofing of houses.

It is obvious that besides the main uses *Raphia Palm* is only of local value and is most likely to be replaced with more modern materials.

OTHER FIBRE YIELDING PLANTS

The most important fibres of economic potentials have been dealt with under the crops from which they are produced, *e.g.*,

Raphia and *Piassava* from the *Raphia*.

Palm and coir or coco-nut fibre from the coco-nut palm. Besides these fibres there are other fibres of interest either for local trade or raw materials for valuable cottage industries. Many of these fibres are produced from some cultivated fibre plants or wild plants which grow abundantly in the rain forest belt of the Rivers State. A few of the most promising fibres are.—

1. SISAL HEMP (*Agave Sisalana*)

Sisal Hemp grows well in most parts of the State and produces very valuable leaf fibre but is not actually cultivated on large scale at the moment for its fibre.

Local retting is practised in some areas and the resulting fibre made into rope for local use.

2. PINE-APPLES (*Ananas Spp*)

Some varieties of pine-apples which grow in the State produce very good leaf fibres when retted and are used for local consumption.

3. CANE (*Calamus Spp.*)

This is a long limbing palm which grows in many of the tropical rain forests twining on tall trees and growing to considerable lengths.

The hard back is used as rope for binding or tying rafts, for baskets, fans, etc. The main potentialities of this fibre lie in its use for the production of cane-chair, cane-tables, cane-baby cots, etc., which could be developed into a very lucrative cottage industry in the State for inter-state trade or export trade.

SCREW PINE (*Pandanus utilis*)

This is a shrub which grows luxuriantly in the fresh water swamps and brackish swamps with low salinity.

KAPOK OR SILK COTTON (*Evisdendron Spp*)

These are large or moderate sized branching trees which are quick growing. They are deciduous trees that produce pods which ripen

into black-pea like seeds surrounded by creamy white floss (Kapok) or unicellular hairs varying from half to one inch.

The hair or silk cotton is a very useful stuffing fibre used for stuffing pillows, cushions, mattresses, life-buoys, etc. The young leaves of this plant are used for mat-making but the prop-roots yield very good fibre used for tying, mat-making and as local rope.

HIBISCUS *SPP*

Various fibres from hibiscus species are produced in the State for various local rope production.

SEED FIBRES

Cotton is not an important crop in the Rivers State in view of the heavy rainfall. A few perennial cotton plants however grow in some parts producing low yields of cotton-wool for stuffing and limited local spinning and for the development of a life-buoy or life jacket industry for the benefit of the river transport system of the State.

FOOD CROPS

The two most important food crops that have any good potentials for large scale development or for production of raw materials for cottage industries or agro-industries are cassava and rice.

CASSAVA

Cassava grows luxuriantly in all parts of the Rivers State. Yields are however low at the moment because of the present use of low yielding local varieties and poor cultural practices. Present yields vary from two to four tons per acre.

Cassava production in the Rivers State can be considerably stepped up to give high outputs by the use of high yielding varieties, better cultural practices such as optimum spacing and plant population per acre and use of varieties with high starch content.

Cassava is a very important staple food in the whole country and items of food such as gari (the most common staple carbo-

hydrate food), 'foofoo', tapioca and starch, are produced from cassava.

A number of sweet varieties exist in many parts with low hydrocyanic acid content (poison) which can be boiled and eaten. Varieties with yields of ten to twelve tons per acre with about thirty per cent starch content have been evolved by the Federal Agricultural Research Department and are available for distribution to farmers.

Expansion of the industry by the use of the high yielding varieties and increasing acreages under the cultivation of the crop would supply raw materials for cottage industries in gari, tapioca and starch production.

Starch presently used in Nigeria either for domestic use or in the textile industries is at the moment imported into the country. The development of starch cottage industries in the Rivers State would not only increase employment opportunities for young school leavers, but would increase the earnings in the State and reduce the present foreign exchange of the Federation in the importation of foreign starch. The State will also be self-sufficient in its gari requirements if not develop an internal trade in gari with other states of the Federation.

RICE

The Rivers State has great potentialities for the production of swamp or wet rice and upland rice. These potentials have not yet been exploited and would require considerable investment to fully develop a rice industry in the State. The investments so needed for the expansion and mechanization of this industry could either come from abroad or from local sources.

The development of a rice industry will yield the following benefits:

- (i) Produce all the rice needed for feeding the people of the Rivers State.
- (ii) Develop an inter-state trade in rice between the Rivers State and other non-producing States of the Federation.
- (iii) Possibly open a new line of export trade in rice to increase the country's foreign earning and reduce the foreign exchange now involved in the importation of rice to the country.
- (iv) Open up new opportunities in agro-industries in rice processing, packaging, etc., for export and a possible manufacture of rice crispice.

- (v) Rice bran production for livestock feed for internal trade and possible export to neighbouring African countries.

COCOA

Cocoa may not be an important crop in the Rivers State in view of the highly unsuitable climatic and soil conditions of the area.

There are, however, a few isolated private plantations of the crop in the State with very poor maintenance and consequent low yields.

We are, however, discussing this crop here because of our proud association with one of the rival stories of the introduction of this valuable crop into the country.

SQUISS BANEGO OF BONNY

There is as much mystery about the date of the first plantings of cocoa in Nigeria and the people responsible as there is in Ghana. If you ask about the beginnings of cocoa in that country you will be told the story of Tetteh Quarshie, the labourer from Mampong, who worked on a cocoa plantation in Fernando Po and smuggled a few beans home when his contract was finished. Tetteh planted his beans and the story recounts how he made money by selling the pods at £1 each. There are other claims that Tetteh was not the first. So it is in Nigeria. One authority says that cocoa came to Nigeria through a chief named 'Squiss Banego' who established a plantation in 1874 in the Bonny district of the Rivers State with beans brought again from Fernando Po. From that first farm it is said that the trading firms became interested and set up their own farms.

Another story gives the credit to a Mr Ogunwole who became interested in cocoa when he was serving with the Dahomean expedition and visited Porto Novo. Mr Ogunwole served for six years in that area and learned about the planting, growing and harvesting of cocoa and something of the processes of fermentation. When he returned to Nigeria he brought a supply of pods to Ebute-Metta and planted them at Agbakin and Idiapo near Agodi, a few miles from Ibadan.



A Cocoa plantation. There are very few of these in the State. The first cocoa-beans were smuggled to Nigeria from Fernando Po by a Rivers man.

BOTANICAL GARDEN AT EBUTE-METTA

There is some verification for this because Ebute-Metta was the site of a botanical garden which had been established by Government in 1887 and it seemed probable that experiments were conducted there with the new plant. It is certain that by 1892 beans for planting were being distributed on a small scale from the garden, although it was left entirely to Nigerian farmers to decide whether or not they would plant and wait for the tree to mature.

Progress during the first twenty years was very slow and although Nigeria's first shipment of cocoa in 1895 was greater than from Ghana (twenty-one tons as compared with thirteen tons) thereafter we lagged behind the rapid strides made in our sister territory which was soon to become the most important cocoa producing country in the world. It was not until 1908 that more than 1,000 tons were exported from Nigeria and it was 1914 before a figure of just over 5,000 tons was reached.

Since that date there has been a steady rise in production. The 50,000 tons mark was reached in 1930 and since 1940 production has been around 100,000 tons per year which makes Nigeria the third most important world producer of cocoa, giving place only to Ghana and Brazil.

CASHEW

This is a crop that grows well on very poor soils—very sandy or gravelly soils which are no use for the production of other crops like Oil-Palm, Rubber, Cocoa, etc. It therefore does not compete with these crops in good agricultural lands.

There are in many parts of the Rivers State some very sandy and leached soils which will apparently not be suitable for other crop production. Advantage would be taken of the unique soil requirements of this plant to use such apparent waste lands for useful production of cashew fruits and nuts.

The cashew crop produced in these very poor soils will not only help to increase the cash earnings of the farmers but will also increase the foreign exchange earnings of the country and also help to diversify the agriculture of the state. The cashew trees will also help to provide cover for such sandy soils and therefore reduce erosion.

Present Situation

Only isolated stands of cashew plants can be found in parts of the Rivers State particularly in school compounds and old Missionary establishments for the production of cashew fruits for local consumption. No commercial use is made of the nuts in most cases.

Future Possibilities

Considerable acreages of this crop can be developed on the very poor, sandy and badly leached or eroded soils of the State to produce reasonable quantities of cashew fruits and cashew-nuts for internal trade to increase the income of the farmers of the State who could otherwise not have raised any cash crops on such lands. The nuts could be exported to foreign markets to increase the foreign exchange earnings of the Federation.

The development of large acreages would open new employment opportunities to a number of men and women of the State.

