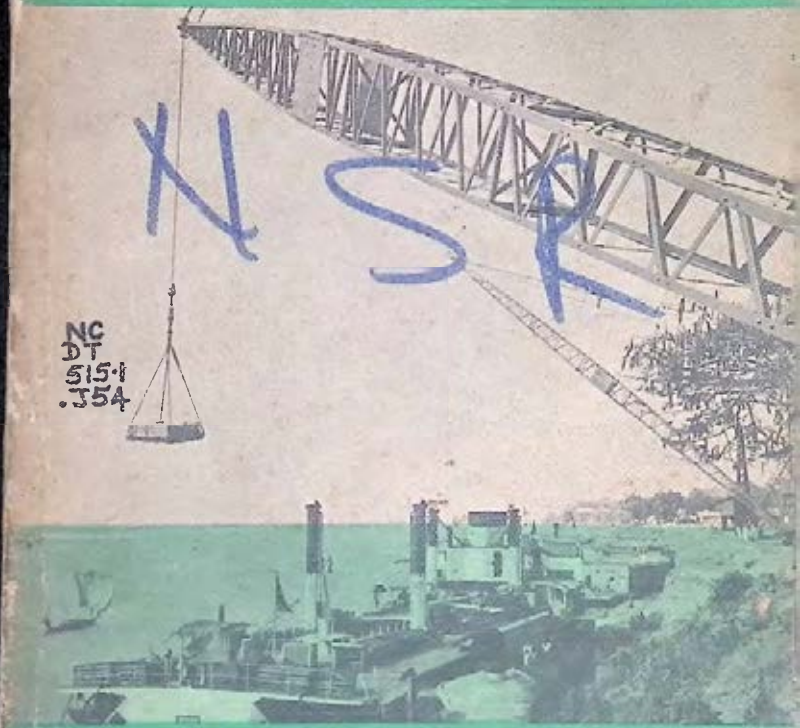
A Geography of the Eastern Provinces of Nigeria

J. H. Jennings & S. O. Oduah



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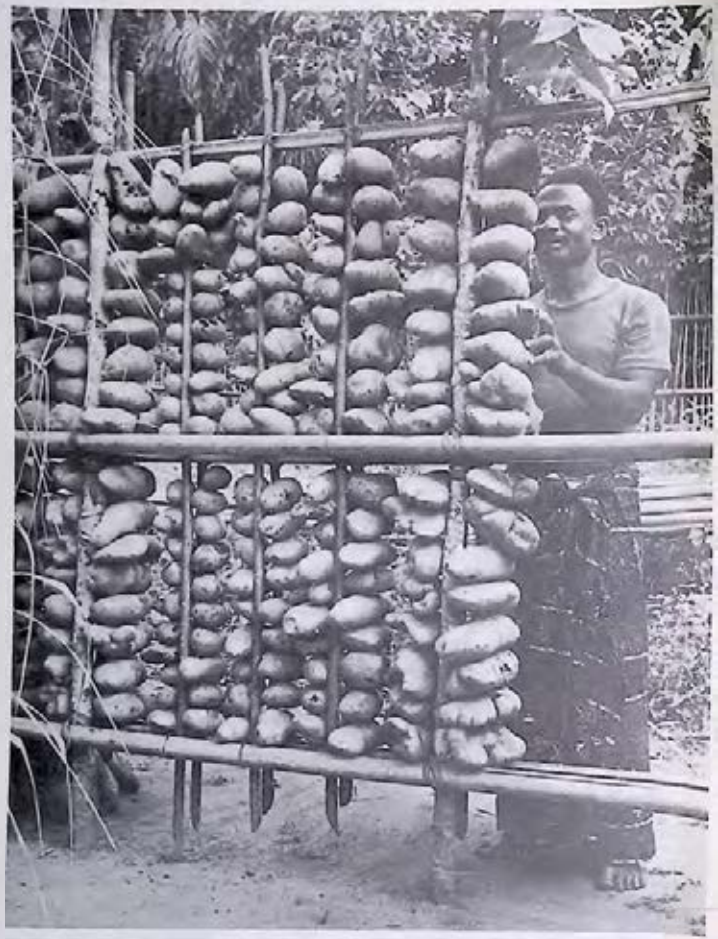

Frontispiece: A yam store at Umuahia

J. H. JENNINGS AND
S. O. ODUAH

A Geography of

THE EASTERN PROVINCES OF NIGERIA

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Contents

Preface

This book attempts to study the geography of the eastern provinces of Nigeria in a realistic way. It does this by means of an imaginary journey, during which geographical facts and relationships are described as they arise. Basic concepts are given early treatment while the more difficult topics have been left till later.

This imaginary journey begins in Ogidi, near Onitsha. Since any study of the home country should begin with a study of the students' own home district, we suggest that classes conduct a study of a family, its farms and its villages in their own area, parallel to the first four chapters of this book and then continue with the tour in the order we use.

The text allows for the wide range of ability and experience that there will be amongst the likely users of this book. Simple exercises are intended to draw attention to the important parts of the text, and to make the writing of lengthy notes unnecessary. Exercises lead to written answers, to photographic interpretation and to the drawing of maps. Some, for more advanced pupils, have been designed to provoke thought about national problems. Where possible, exercises attempt to link the text back to the local neighbourhood of the school. The book has been written with the junior classes of secondary schools in mind; it may also be found useful in primary schools, and in teacher training colleges. People outside Nigeria may welcome the book as giving a more detailed and lively picture of the country than could easily be obtained elsewhere.

In writing this book we have laid a twofold emphasis. The traditional patterns of life of the people are considered very important, and this has been our starting point and a theme to which we have often returned. We have also stressed the 'how' and the 'where' of the changes that are altering the face of the country, in towns and in the countryside. The book has also been written in the belief that geography in Nigerian schools aims to give a firm grounding in the special insights of the subject, and to introduce the pupil to the social and physical sciences. Sight has not been lost of the overall aim, namely that geography should play its part in educating the country's future citizens.

The authors apologize for many imperfections. Facts go quickly out of date. Our journey method unfortunately gives little or no attention to many important parts of the east; for instance we hope that schools in the central Ibo country of Orlu-Afikpo-Umuahia will fill the gap by field studies of their own.

The authors wish to acknowledge the help given by many private individuals, by government departments and by commercial firms. In particular they are indebted to Mr. C. Obichuku of Ogidi, to Mr. S. J. T. Faafa of Ikolo, to the Eastern Nigeria Development Corporation, to the Enugu Town Planning Authority and to Palm Line Limited.

Dr. R. K. Udo provided much material for Chapter 16 and gave valuable advice about the book as a whole, and Mr. J. A. P. Grant gave timely criticism and encouragement, as well as much of the substance of Chapters 10 and 11.

Acknowledgement is also made to the following for permission to reproduce photographs: 'Nigeria' Magazine for the frontispiece and Figs. 54, 80, 94 and 95; Mr. Jack Barker and the United Africa Company Limited for the cover photograph (which is also Fig. 26) and Figs. 8, 19, 25, 30, 31, 32, 33, 34, 37, 38, 39, 41, 47, 53, 64, 82 and 86; the Shell Photographic Unit, London, for Figs. 57 and 58; the Shell–BP Petroleum Development Company of Nigeria Limited, Owerri, for Fig. 73; Skyfotos, Lympne Airport, for Fig. 68; the Federation of Nigeria Federal Information Service for Figs. 78, 111 and 124; and the Taylor Woodrow Group for Fig. 63.

J. H. J.
S. O. O.

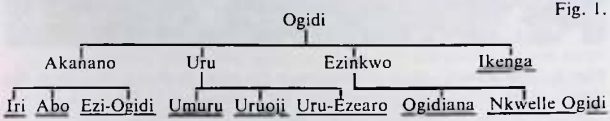
1 · An Ibo Town

Ogidi Ebo Teghete

Our journey round the eastern provinces of Nigeria begins in Ogidi, an important Ibo town which lies between Onitsha on the one side and Nri, the traditional ancestral home of the Northern Ibo people, on the other side.

Our title for this section means that Ogidi is made up of nine villages founded, according to tradition, by the sons and grandsons of the man Ogidi.

Fig. 1.



The nine villages are as underlined—the names Akanano, Uru and Ezinkwo are also used to refer to the appropriate groups of villages. In time they were able to extend their boundaries, especially those with Azu-Ogbunike and Nkpor. About 1900, the king of Ogidi, Igwe Amobi I, moved from Uru in the east to a place in the west of Ogidi territory now known as Iyi-Enu, meaning a spring, so helping to keep hostile neighbours on this side in check.

In passing, note that Ogidi, like many other places in Nigeria, is not pronounced in the strictly correct manner, probably because the first Europeans in the district mispronounced the name, and we have followed the wrong pronunciation. Here it should be Ógìdì, meaning 'rock', but it will sound odd, so let us continue with Ógídí.

Ogidi, like many other similar places in Eastern Nigeria, is known by the people as a 'town'. Yet this is really a group of villages belonging together, and not at all like a place usually called a **town** in English, a place of trade, such as Onitsha. But let us continue with 'town'.

The Ogidi scene

Ogidi extends over an area measuring about five miles by three. Within this area live some 12,000 people or more (1953 Census

Fig. 2. The annual Ofala celebration is the great formal gathering of the Ogidi people when they acknowledge their allegiance to the Igwe Amobi. This is a colourful occasion when everybody puts on their best robes and masquerades are performed. The land behind, with its large numbers of trees, is compound land.

11,231, estimated ten years later at 18,000). Even on the 1953 figure it was the largest town of the Onitsha Northern District Council, and held the Council headquarters at Iyi-Enu.

The land is not flat. There are many small hills and valleys; some are quite steep. We describe this sort of countryside as **undulating.** Because the undulations are quite small ones and because the area is a sandy one where rain-water easily sinks underground, there are no streams in the valley bottoms, except after heavy rains.

Compounds line the road, usually about fifty yards apart from each other. Every compound seems to be filled with trees and plants. Oil palms, paw-paws, bananas and fruit trees of many kinds can be seen, while food crops such as yams, cassava, maize and vegetables grow below. Oil palms are so common that the houses seem buried beneath them, and even the road seems like a giant channel cut in a straight line through the bush. This is the type of countryside we shall see for mile upon mile of our journey through the Onitsha and Owerri provinces.

Away from the road the compounds are further apart. By the road nearly all houses are built of cement blocks and pan roofs. Away

from it we see a few of the old type of house, made of mats and thatch, though *uno anyinya*, the most primitive type of grass house, are hardly ever seen. In the past, all compounds used to be walled in, but this practice is now dying out.

The main road

Everybody seems to want to have his house on the road. If it cannot be the main road, then there are the side roads. Houses built alongside roads have these advantages:

1. They are well exposed, for people want their fine modern houses to be seen.
2. Roadside shops can be attached to the houses, and we see many of these along the main road.
3. It is generally more convenient. Cars and trucks can reach the house, cycling is easier, and it is quicker to get to the important points in the town, which are also on the roads.

At some places along the main road we can see points which have become particularly important. For instance at Mile 7 (from Onitsha) a small road branches off leading to Nkwelle Provincial Farm and Umunya. Here is a shop owned by one Ogbujuogwugwu, and the location takes his name. Petrol is sold here; this is an important junction, and other shops are springing up near by.

Further east along the road we come to other points which are as, or more, important. First there is the location of the Eke Akpakaogwe 8-day market. Beyond this we find Afor Ezumezu, sometimes called the new Afor Igwe, Ogidi's largest market, held every other *Afo*, as the name suggests. (*Note:* The Ibo week, *Eke* to *Eke*, consists of four days, *Eke*, *Oye*, *Afo* and *Nkwo*.) Here the branch roads, one from Ogbunike and one from Ogidiana, join the main road and a large number of roadside shops have been set up. There is some trading at Afor Ezumezu daily, though the market is only full on the appointed days.

Markets

The markets have always been the main centres of the villages, where everyone comes to trade and talk, on the appointed days. The positions of the markets are very important to the people in any part of Nigeria, in your own home district and here in Ogidi. We have seen two of Ogidi's markets on the main road. Others are to be found off the main road, but on or near one of the side roads. Two of the group are held every fourth day, and the other four every

eighth day. This cycle of sessions is known as a market ring (see Figure 3).

Iyi-Enu

In addition a small daily market has grown up at Iyi-Enu for special reasons. We have already seen that Iyi-Enu is an important place near the western boundary of Ogidi, having the Igwe Amobi's compound, and the headquarters of the O.N.D.C. Here, just 5 miles from Onitsha, near a fine spring, the C.M.S. founded a pioneer hospital, which became well known throughout the Ibo lands. Today a regular micro-bus service from Onitsha brings hundreds of passengers daily. Water from the spring is now pumped to a hill-top reservoir which supplies most of Ogidi.

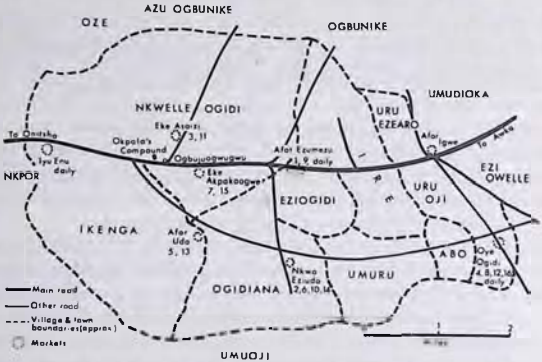


Fig. 3. Ogidi, showing villages, markets, roads and neighbours. Numbers under markets refer to days in each 16-day period (4 native weeks).

Growth

In the past, the west end of Ogidi had few compounds, especially along the boundary with Nkpor. Now, many new buildings are going up. Nkpor also is growing, but on the Onitsha side. Onitsha itself is growing faster than Ogidi or Nkpor. Perhaps it will not be long before Onitsha, Nkpor and Ogidi form one continuous settlement.

Exercises

1. (*a*) How have the different villages of Ogidi got their names?
   (*b*) How have the different villages in your own home district got their names?

(*c*) Is it possible to construct a genealogical table for your own group of villages (table of traditional ancestors)?

2. (*a*) What are the two types of places known as 'towns' in Eastern Nigeria?
   (*b*) If Ogidi and Onitsha are examples from the two types can you think of two more?
3. (*a*) What is the meaning of 'undulating'?
   (*b*) How is it different from 'hilly'?
4. Why are compounds closer together and houses better by the main road?
5. (*a*) Can you name an important road junction trading point, like Ogbujuogwugwu, in your own district?
   (*b*) If so, make a small sketch-map of it showing the roads and footpaths meeting and the places reached by the roads and paths named. Show also the position of any buildings used for trade.
6. (*a*) Why has Afor Ezumezu become such an important place in Ogidi?
   (*b*) Can you name a similar place in your own home town?
7. (*a*) What is a market ring?
   (*b*) Can you describe one away from Ogidi?
8. (*a*) In what part of Ogidi territory is the town growing?
   (*b*) Why do you think this is?

For more advanced students

9. Make a list of the important points for trade, including important road junctions and markets, in your home or school district. Draw a map showing their correct positions in relation to each other.

Fig. 4. A water pump near Ogbujuogwugwu, Ogidi.

2 · Family and Farm

The Okonkwo family

The villages of Ogidi are really made up of smaller family units, so we have chosen to study one family, the Okonkwo family, in Nkwelle Ogidi. Their family compound is one of those lining the main road very near the place Ogbujuogwugwu mentioned in the previous chapter (see Figure 3). Figure 5 introduces you to the whole family of four generations (*umunna*). It is also known as an 'extended family' because there are several closely related families living in one group.

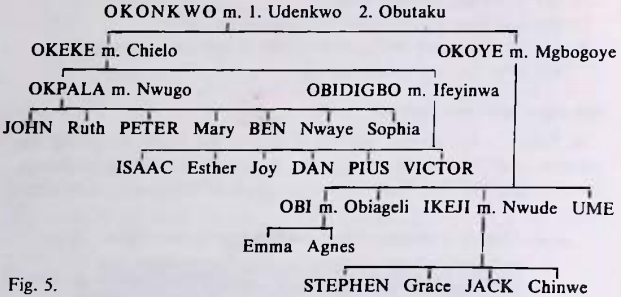


Fig. 5.

In this family Okonkwo, the great grandparent, and his wives, have died. Okeke and his wife, and Okoye, grandparents, have all died, but Okoye's wife Mgbogoye is still alive. She is in good health and does some farming and some trading. You will see that the family at the time of our study is twenty-nine strong.

About half of the members live away from home. Obidigbo is a contractor at Aba and his wife, Ifeyinwa, is a trader there. Obi is a Co-operative Society Clerk at Onitsha and his wife Obiageli trades. Ume, who is unmarried, is a clerk in the Board of Internal Revenue, Enugu. Okpala's eldest son, John, is a clerk in the Coal Corporation, Enugu, and his second son, Peter, is at Abu learning a trade,

weaving. Ikeji, who lives at home, works as a messenger at Iyi-Enu.

Of the children, nearly all are at school, at home or away from home. Three, Sophia, Victor and Chinwe, are below school age. John and Peter have left school and are away from home as we know. Esther has just left school; she too is looking for a job and may leave home soon. This leaves very few people to carry on the traditional work of the family, farming. Some of the children help when they are home from school. Mgbogoye, who farms and trades, is an old woman of well over forty years of age. Nwude, Ikeji's wife, also farms and trades, as does Nwugo, Okpala's wife. The only man of the family who farms is Okpala, and it is his work, and that of his wife Nwugo, that we will go on to study.

Farming is still the most important occupation of Ogidi people, as it is of Nigeria as a whole. Fifty years back a man like Okpala would have made a very prosperous farmer. He would have had his wife and all his children to assist him, and would have worked alongside the other men of his *umunna*. Perhaps we are reminded of another Okonkwo, the tragic hero of Chinua Achebe's novel *Things Fall Apart*, who used to live in Umuofia, a thinly disguised Ogidi. For all his faults he was a most successful farmer. But now

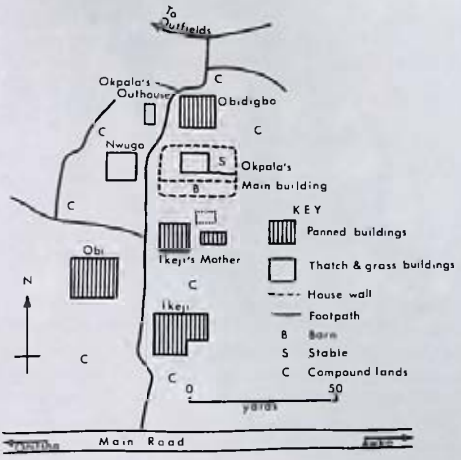


Fig. 6. The Okonkwo compound. Compound lands are intensively farmed.

Okpala works almost alone. He gets some help from his wife Nwugo, but her trading takes up much of her time. Let us now follow the farming activities of Okpala.

The farm lands

The plan given in Figure 6 shows where the Okonkwo family lives, with eight buildings, of which five are panned, two are mat thatched and one grass thatched. The buildings are close together, but there are still spaces in between them, and there is land round about. These grounds are called compound lands (*mbubo*).

Okpala also has compound land in another part of Nkwelle Ogidi. This might seem strange to someone who does not know the local customs, but in the villages of Ogidi and elsewhere in Eastern Nigeria

Fig. 7. Compound land at Oraukwu, south of Ogidi.

a farmer's compound lands are often scattered. This has come about as follows. On the father's death the house and a share of surrounding compound land are given to the eldest son. Other sons look for plots anywhere within the village. Sometimes a younger son may come from his new home to cultivate his compound land on the old site. Compound lands gradually become more and more divided.

Another kind of farm owned by Okpala is an outfield (*agu*). Outfields may be half a mile away from the house, or any distance up to three miles. Outfields as far as six miles away from the owner's house are found east of Ogidi, in Awka Division.

Of the two kinds of land, compound land and outfield, compound land is by far the richer, because of the care it receives. You will see from Figure 6 that Okpala's house is walled right round. Part of this enclosure is cut off for domestic animals, goats and sheep. The animals are not let out, in case they damage crops on the unfenced compound lands. Instead they are fed in their building. Manure is taken from here and used along with kitchen refuse to spread over the land to keep it fertile. And so the soil remains rich, and can be described as a **loam**, that is, a mixture of sands and finer materials.

In the outfields soils are more sandy. How to keep them fertile is a problem which we shall have to study in the next chapter. In some parts of Eastern Nigeria sheep are taken to the outfields and tethered to a post. The post is usually moved at midday so that the sheep can graze a different section of pasture. In the evening the animals are brought back to the compound. Okpala has not enough helpers to afford time to do this.

Clearing the farms

Okpala's farming year begins with the clearing of the farms in February, at the time when the first rains are expected to soften the ground. When rains fail to come early enough some of this work is delayed until April. The compound lands have only a low grass cover so clearing is easy with an ordinary hoe. The outfields, with tall grass and woody plants, are a bigger problem, and these lands are fired to help the clearing. The ashes that result are spread over the farm to make the soil more fertile. This work can be wasted if strong winds carry the ashes away.

The farmers sometimes tell stories of farming in the past. Then outfields lay within high forest. When that was the condition the clearing began earlier, in early February, so that the farmer could burn off the twigs and leaves before the coming of the rains. But today such huge trees no longer exist. Repeated clearing of the same

Fig. 8. Clearing and burning. In the background you can see tall forest trees and some oil palms. The bush being cleared is farming land of just a few years fallow. How can you tell?

land has changed the outfield vegetation into something more like a grassland than a forest.

Some shrubs can be useful on the farm. Okpala is able to find most of his yam sticks from the farm plots. The araba (*acio bateri*) is a useful shrub for this. If more sticks are needed he has to buy them, or make use of bamboo stands. Bamboo is a plant which does well in poor areas of sandy soils. It is becoming more and more important in the east, for providing yam sticks and also for holding the soil together to prevent the rains washing it away. We shall return to this problem of the loss of soil in Chapter 5.

The planting

Planting follows the clearing, in April and May. On Okpala's land yams are the main concern. In both compound lands and outfields mounds are built with light hoes. The mounds are particularly small in the outfields. The reasons for this are not difficult to see:

1. Here there is no danger of waterlogging. Because the soil is sandy water does not lie in pools after the rains. Yams need well-drained soil in which to grow successfully.

2. The uncultivated sandy soil is soft, and young yams can grow downwards even below the mounds.

3. The yam setts are generally small.

However, this is not to say that this is the best method; we are here only describing what happens on Okpala's farm. Yam mounds in West Africa are usually bigger than those found at Ogidi, and most people would say that they were better for being bigger.

Cultivating in horizontal ridges is now favoured more and more in order to prevent loss of soil in the streamlets during the rains. This is particularly important if we remember that many of the farms are found on the sides of hills, places avoided by the compounds.

Types of yams

Two types of yam are planted in the outfields. These are the seed yams which yield yams (*ogbe ji*) for food and the split yams (*awa ji*) which yield yam setts (*nkpulu*) for planting in the following year. The yam setts bring Okpala a lot of money during the planting season. He takes them himself to the local market and at times to Onitsha. In the compound land only the first type of yam is planted.

Yams are traditionally the most important crop of most parts of Southern Nigeria, and there are many different varieties, different names for yams, and different methods of growing them. Compare Okpala's methods as described here with those in your home village.

The intercrops

Between the yams on compound land and also in the outfield we notice that other crops are planted. Apart from some cassava, some coco-yams and some maize there is a big variety of vegetables. These are often known as intercrops ('inter' = between). Important here are beans, melons, okro, pumpkins, egg plants (*anara*), peppers, tomatoes, greens, *nkerenkere* and *arira*. All intercrops except maize are women's crops.

Okpala's wife is interested in her husband's farm mainly because of these vegetables. During the season, that is, the rainy season, she often harvests the vegetables and takes them into Onitsha, only 15 minutes away by bus. The fact that there is a big town so close, where vegetables fetch a good price, encourages Okpala's wife and others like her to grow more vegetables for sale. When vegetables are produced specially for sale in a near-by town, the practice is called **market gardening.**

One crop in particular gets special treatment on this farm—tomatoes. Instead of growing them as intercrops Nwugo prepares separate gardens with beautiful ridges for them. Tomatoes need careful handling. Those who take the trouble to support the plants with sticks can harvest unbruised fruits.

The fruit trees

Compound lands in Ogidi have many trees. They are mostly fruit trees. Our list includes oil palms, orange trees, pear trees (avocadoes), mangoes, African apple (*udala*), African bread fruit (*ukwa*), paw-paw, coconut palms, kola nut trees, oil bean trees, bananas and plantains. These form a perennial crop, that is, they bear fruit for several years in succession. Most of these fruit trees would be killed by a long dry season. As it is, their long roots enable them to live through the two months of dry season which Ogidi has each year.

Some of these fruits, paw-paw, bananas and plantain, ripen at all times of the year. Some, oranges, African apples and African fruits, ripen in the dry season, at Christmas time. Others, such as pears, ripen in the rainy season along with maize. For an Ibo, pears and maize make a delicious meal, generally enjoyed by the fireside.

Okpala's wife has a share of the fruit trees. Okpala has given her some, others she has planted herself. She now has 20 oil palms, 2 orange trees and 1 kola nut tree.

The value of fruit has risen in recent years. Oranges cost ten to fifteen times as much as they did twenty years previously.

The most valuable crop for sale is the oil palm. Okpala has about thirty palms, in addition to his wife's twenty. These are scattered all over his compound lands, including those at his other site. You will learn more about this valuable crop in Chapters 8 and 9.

General care of the farm

About three weeks after the planting of the yams the shoots appear; some may already be too long to stay erect. When this begins to happen Okpala knows that it is time to stake the yams.

At the same time there is weeding to be done. Okpala and his wife use small hoes and cutlasses. Where the land is very fertile, this may be weeded three times in the year. From this time on Okpala's attention to his yams is limited to such odd jobs as trailing the vines, and opening the yam mounds to make sure that the yams are not being attacked by pests.

Cassava

Cassava is a women's crop, but because of its increasing importance Okpala helps his wife to grow it. Every farmer in Ogidi cultivates cassava, which is now a popular crop because:

1. It is easy to grow. The farmer simply sows the stem in a ridge or mound (one cassava stem may be cut into 4 or 5 pieces). There is no staking. As an intercrop, after the yams have been harvested, he has to weed it only once more.
2. The stems cost the farmer nothing. He can get enough from his old plants.
3. However poor the soil, there is some yield, even if small.
4. It can be harvested at any time.
5. It is eaten in different ways. People who do not like 'wet cassava' can take it as *gari* or cassava flour.

But cassava is a 'soil killer'. After it has been cultivated on a piece of land for a number of years that land should be rested so that the soil may recover its fertility.

The harvesting

There is some harvesting all the year round, more so when farms are situated close to a good water supply. Fruit harvest has already been mentioned. Most vegetables are harvested all the year round, but become very scarce and expensive in the dry season. Only the biennials (living for two years) such as peppers and fluted pumpkins, and the perennials such as 'bitter leaf', are easily obtainable in this season.

The maize is ready within three months, so its harvest begins in June. Yams on the other hand stay in the soil at least five months, until a September or October harvest. The earlier harvest comes from the compound land.

A New Yam Festival, known as *Iwa ji*, at the end of August and beginning of September marks the beginning of eating new yams. In practice, new yams are eaten as early as July when the farmers of Atani and Anam, by the river Niger, bring yams to Onitsha market. Ogidi people and others from the uplands call these yams *obum kolu*, meaning that these are not their own yams, and so they can be eaten before the festival without violating native law and custom.

The outfield yam harvest is slow and tedious work. Okpala's outfields are away from roads so that all yams have to be carried home

FIG. 9. THROUGH THE YEAR ON OKPALA'S FARMS
A FARMING CALENDAR

	Compound Lands	*Outfields*	*Principal Harvests of Fruits*
		Yam Harvest	Oil Palm
JANUARY	Tying up of Yams in the Barn		Oranges African Apples
	Period of rest		
FEBRUARY			African Rice Fruit
		Clearing and	
	Clearing	Burning	
MARCH			
	Planting of		
APRIL	Yams, also Maize and other intercrops		
		Planting of Yams,	
MAY	Weeding and Staking of Yams	also Maize and other intercrops	Mangoes
			African Pears
JUNE	Planting of Cocoyams		
		Weeding and	
JULY		Staking of Yams	
AUGUST	Maize harvest begins		
	Weeding, planting of Cassava, Coco-yams,	Planting of Coco-yams	
SEPTEMBER	as intercrops		
		Planting of	
OCTOBER	Early Yam harvest	Cassava	
		Weeding	
	Weeding		
NOVEMBER			Oil Palm
			Oranges
	Main Yam harvest		African Apples
DECEMBER		Yam harvest	

Paw Paws, Bananas and Plantains

by head. Here he needs all the help he can get from his wife and children. The yams are heaped in the barn and tied up. By the end of January Okpala's barn, situated inside his walls, is full of yams.

Figure 9 shows Okpala's farming activities month by month: a farming calendar. This should be studied, along with monthly rainfall figures (see page 26).

Exercises

1. What is an 'extended family'? Note the differences in words applied to families of different sizes in your own native language.
2. There are seven male members of the Okonkwo family alive and above school age. Make a list of them with their occupations. Is this family like others known to you in the occupations of the men?
3. In what way was farming easier in Ogidi 50 years ago?
4. How does it happen that a farmer's compound lands are scattered about the village?
5. Why has compound land richer soil than outfield land?
6. Describe the clearing of outfield land at Ogidi. Is it different in your own home district?
7. Why did the clearing of outfield land begin earlier in the season in the past?
8. Why are yam mounds in Ogidi small?
9. What are intercrops? Are there any important ones grown in your own home district which are not mentioned in this chapter?
10. Why does Ogidi's position near Onitsha make the growing and harvesting of fruit and intercrops a profitable occupation?
11. Make a calendar of fruit seasons. Use the information given in this chapter and fill in the details of months when the different fruits are available cheaply from your own experience.
12. What care do the crops need after planting and before the harvest?
13. Why is cassava a 'trouble free' crop?
14. How do Ogidi people get new yams before the New Yam Festival?

For exercises for more advanced students, see the end of the next chapter.

3 · More about Farming

Keeping the soil fertile

One problem the farmer always faces is that of keeping his soil fertile. Any soil will gradually become poorer and poorer if it is carelessly farmed, and this is tragic when it happens in such a crowded district as that of Ogidi.

Each crop takes some minerals from the soil, but not always of the same kind or at the same rate. We have learnt that cassava is a soil killer. At the other end of the scale, most of the vegetable plants improve the soil by putting back minerals that other crops have used up.

So Okpala does four things to keep the soil fertile.

1. He uses animal manure, night-soil and kitchen waste spread over the compound lands to give valuable substances, nitrogen particularly, to the soil.
2. He also spreads ash from twigs and leaves, for the same purpose, on all his lands.
3. He leaves land free of crops (fallow) at regular intervals of years.
4. He arranges his planting so that different crops are grown on the land in succeeding years: this is known as **crop rotation.**

Crop rotation

Okpala each year cultivates about one acre of compound land and two acres of outfield. In his compound land his system is as follows. He divides his compound lands into sections. In one section he will plant, in the first year, yams and some intercrops, including maize and vegetables. In the following year he may plant some coco-yams and intercrops, following these with a planting of cassava towards the middle of the year. In the third year he harvests the cassava, then leaves the land fallow for a fourth year, returning to his first year planting of yams in the fifth year. Other sections of the compound land follow the same order of planting in different years, so that in any one year he will always plant yams somewhere.

TABLE 1. OKPALA'S ROTATION ON COMPOUND LAND

	1st year	*2nd year*	*3rd year*	*4th year*
1st section	Yams & intercrops	Coco-yams & intercrops with cassava	Cassava	Fallow
2nd section	Fallow	Yams & intercrops	Coco-yams & intercrops with cassava	Cassava
3rd section	Cassava	Fallow	Yams & intercrops	Coco-yams & intercrops with cassava
4th section	Coco-yams & intercrops with cassava	Cassava	Fallow	Yams & intercrops

Other families in Ogidi may follow different systems. Table 2 shows some of these different types of crop rotation.

TABLE 2. TYPES OF ROTATION ON COMPOUND LAND

	1st year	*2nd year*	*3rd year*	*4th year*
Okpala's	Yams and intercrops	Coco-yams and intercrops with cassava	Cassava	Fallow
2nd type	Yams, coco-yams, cassava and intercrops	Cassava	Fallow	Fallow
3rd type	Yams, cassava, coco-yams and intercrops	Yams, cassava and coco-yams	Fallow	Fallow

Some compound lands are not planted with yams. These will be where the owners have found by experience that yams do not do well, probably due to poor soil or bad drainage. Such lands have coco-yams, cassava and intercrops in their rotations.

In the outfields the rotations are slightly different. Here the lands are less fertile and they receive little or no manure. So the number of years rest (fallow) is more. It is always at least three years, and has in the past been fifteen to twenty years to allow the land to regain its full fertility. By this time it will have been covered again by thick bush, even forest.

Table 3 shows the two types of rotation used by Ogidi farmers.

TABLE 3. OUTFIELD ROTATION

	1st year	*2nd year*	*3rd year*	*4th year*	*5th year*	*6th year*
Type 1	Yams, coco-yams, and intercrops	Cassava	Cassava	Fallow	Fallow	Fallow
Type 2	Yams, coco-yams, cassava and intercrops	Cassava	Fallow	Fallow	Fallow	Fallow

This system of farming is known as 'rotation of fields' or more commonly 'rotational bush fallow'. You may hear it spoken of as 'shifting cultivation' but it is better not to use this term but to keep that for another type of farming, found in some other parts of Africa, where the village itself is moved after some time in one place.

Shortage of land

Okpala and all other Ogidi farmers cannot possibly leave their outfields fallow for the full fifteen to twenty years. There is simply not enough land within the boundaries of Ogidi to let this happen. Moreover the population of Ogidi is increasing, and farms get smaller. This is why the length of fallow period is much shorter now than it used to be.

In some parts of southern Nigeria young men go away to places with more land to farm, renting land from the villagers, staying there for part of the year, or even several years, before coming back home. One example of this near to Ogidi is that of people from Awka and Agulu (*Agba Enu*) who move out to farm in the Anambra Plains, north of Onitsha, returning home after a few years. Other examples are noted in Chapters 10 and 21.

Labour problems

Shortage of farm labour is another problem. We have seen that Okpala cannot expect a lot of help from members of his family. Sometimes when the work is heavy, particularly at the clearing and planting time, Okpala may ask for help from young men who are among his friends or relatives. At other times he can hire labourers from the village for about five shillings per day. Despite the payment, this may be cheaper for him than the expense of entertaining voluntary helpers.

Pests and diseases

In the past an Ogidi farmer had to face the possible ruin of his crops by swarms of locusts or plagues of yam beetles. Locust swarms are no longer a danger, thanks to the work of government and international workers. Yam beetles, which attack seed yams and the new yam tubers, can be checked by the farmer himself, using specially prepared chemicals.

However, farmers still have their problems. Some plant diseases are common and only fought with difficulty. For instance, yellow leaves on yams and cassava often show that plants are seriously affected by disease and will give a poor yield or die.

Drought

Farmers are dependent upon the rains for the success of their crops. Late arrival of the rains can hinder their work very seriously. Yams planted under conditions of drought will not do well, and the farmer has the extra work of preparing a covering of leaves for each plant (known as a leaf mulch) to protect the plant from the intense heat, and to keep in any moisture there might happen to be in the soil.

Even when the rains arrive on time, if there is a small total of rainfall in the season or an unusually large one there will be poor crops that year.

Need for better farming methods

If you study the problems that Okpala and other farmers like him face you will see that farming, under present conditions in Ogidi, is not easy, and that to make a success of farming calls for hard work and skill. Yet it does seem that better farming methods than Okpala's, which are the traditional methods of the village, are needed. Perhaps different crop rotations are needed; perhaps more animal manure is needed, or other kinds of fertilizers. But each solution brings its own problems, and farming remains a task which calls for a person's utmost effort.

The family income

Okpala depends upon the proceeds of his farming for his livelihood. Most of his produce is for his own and his family's direct use, as it would have been a century ago before the modern growth of trade. Then each family grew almost all their needs. We call this type of farming **subsistence farming.**

However, today Okpala and farmers like him sell an important part of their produce for money, to buy clothes, medical treatment, the education of their children, travelling expenses, and so on. The more they sell their farm produce for cash, the nearer this occupation comes to the farming type known as cash crop or commercial farming, where all or almost all farming is for cash.

Cassava is an important cash crop on many farms. It now seems to be the main food of Ogidi people, more important even than yams, and you find cassava farms everywhere and at any season. Much of this goes into the local markets for sale to other people in the village. It is sold as cassava tubers, as 'wet cassava', and as cassava flakes (*edide*).

Most other crops, yams, coco-yams, vegetables and fruits, do find their way into the markets in small quantities, and Okpala also gets some money from the sale of sheep and goats, but Okpala's chief cash crop is the oil palm. The oil and kernels are sold to buyers who pass on these products for export (see Chapter 8).

Of Okpala's thirty oil palms he keeps seven for wine tapping. The wine is tapped either from the stem of the palm or from near the terminal bud. According to where the palm is tapped a different kind of wine is obtained, and a different amount of wine produced. Some palm trees produce two bottles of wine a day. Others produce less than one bottle. Some oil palms give wine for longer than a month at a time, others give it for less than a month. It is difficult to say how important the money from the sale of wine is to Okpala, but it does give him money at a time of year when he needs it.

The woman's work

We have seen that Nwugo, Okpala's wife, gives her husband help on his farms, looks after the intercrops, and has her own garden of tomatoes and her own palms. She also looks after some poultry. This is only part of her work. It is also Nwugo's duty to sell all the farm products, except for the yams and the wine, which Okpala takes to market himself.

Trading seems to take up more of Nwugo's time than her other tasks. She takes small quantities of produce to Afor Ezumezu, which she attends regularly. When she has more to sell she goes to Onitsha where she can usually get better prices. There her cassava tubers can be processed into flour in one of the many mills and sold to the Onitsha people. Her oranges may be bought by some big dealer who can send them to Enugu, possibly to be sent on the train into northern Nigeria. When Nwugo is in Onitsha she makes sure she

returns with a load of such goods as fish, or tobacco, which she then resells in whichever of the markets in the Ogidi ring is being held on that day. Her trading activities bring an important addition to the family income.

Fig. 10. Market scene, Eke Agu, Abatete.

When she is not trading or working on the farm, she is likely to be at the house, preparing food for the family. This is Nwugo's responsibility. Okpala merely provides yams when these are in the barn, or when he can afford to buy them at the local market. The only ocassions when she has time for rest are festivals, funerals or when important visitors come to the family.

The importance of farming

Farming provides the livelihood of most people living in Ogidi. Exceptions include the roadside shopkeepers, the village carpenters and blacksmiths, bicycle and watch repairers, shoemakers, tailors and the butchers. There are some men who have become local traders, but even here they will also have farms, leaving their wives and children to look after them, and working on them themselves in their spare time.

There is not much craft-working in Ogidi. Some brooms, ropes and baskets are made, as hobbies, and sold in the local markets, but these are very few. There are however some districts where crafts make up an important part of the income. At Awka, for instance,

there is black-smithery and wood carving, at Inyi (Achi district) there is pottery, at Ikot Ekpene raphia work (see Chapter 16). Even in these districts farming is still the first occupation.

The townspeople depend upon the farms for food. Onitsha depends very much on Ogidi and other near-by districts. Yet the young men who could be helping to improve farming to feed the growing population are leaving for the townships to search for work there.

It has been said that agriculture is the life blood of a nation; indeed no nation can do without it. History has many examples of risings of the people because of hunger; a hungry nation can be an angry nation. We have begun this tour of the eastern provinces with a close look at farming in a typical part of the country because we believe that it is urgent that the importance of farming to the country is recognized by all.

Exercises

1. What does Okpala do to keep his soil fertile? Are there many other things he could do?
2. What is the important difference between crop rotation on compound land and outfield land? Why should this be so?
3. What do you understand by 'shifting cultivation'?
4. Why has the length of the fallow period on outfield land been reduced?
5. Why do farmers often have a labour shortage?
6. (*a*) What are the principal pests attacking farm crops in your home area?
   (*b*) What plant diseases are common in your home area?
   (*c*) What measures are taken against them?
7. Ask farmers near your school or home what is the effect of
   (*a*) a late or poor start of the rainy season
   (*b*) a small amount of rain in the rainy season
   (*c*) a very wet rainy season

on their principal crops.

8. What is the difference between commercial farming and subsistence farming?
9. What is the chief crop on Okpala's farms?
10. Make a list of men's tasks and women's work on farms near to your home or school. Is it at all different from the division of labour between Okpala and Nwugo?
11. Why does Nwugo take farm products to Onitsha market when she can?

12. Whom do you think works the harder, Okpala or Nwugo?

13. What other work is there for a man to do in the village (Nkwelle Ogidi) apart from farming?

For more advanced students (Chapters 2 and 3)

14. Suggest ways in which the outfield land might be made more fertile.

15. Compare yams and cassava as main food crops of farming. What are the advantages and disadvantages of each crop?

16. Make a farming calendar for your own home village.

17. How can a farm be made into a profitable enterprise?

18. What are the advantages and disadvantages of the traditional division of farm work between men and women?

Class activity

19. Draw a plan of a village market showing stalls and traders. Use symbols (letters?) to show the different items for sale. Use one colour for locally produced goods and another for goods which you think have come from other districts or countries.

20. Study one family's farming near your school or home during the growing season. Make a plan showing the position of different plots of land. Draw a plan of some compound land showing the crops in it, and of some outfield land showing the crops growing in that.

4 · The Climate of Ogidi and Onitsha

Weather and climate

We have already seen that the farmer's work changes with the seasons. This yearly (annual) rhythm of the weather is so important that we will now give the whole of this chapter to its study.

It is not easy to tell anyone about the weather in Ogidi because it can be very changeable. Last year's weather was different from this year's. The best we can do is to try to say what it is usually like most of the time. This we would speak of as the **climate.**

Ogidi is only about seven miles from Onitsha, where good records of the weather have been kept for over half a century. The differences between the weather of the two places are slight, so we will often use the Onitsha records to help describe the Ogidi climate.

What is the Ogidi year really like? What are the conditions under which Okpala works? Here are some notes about the normal year. If you live near Onitsha, check them with what you know yourself. If you live in another part of Nigeria compare your own climate year with this, and look for the references to weather and climate in later chapters of this book.

The rainy season

1. Everyone waits for the rains to begin. We have seen their importance for the clearing and planting. The first rains are usually in storms (*abazu*). For a few hours the rain is torrential. Afterwards the ground is soft, everywhere is wet, and cool and fresh. But then the sun returns and people may wait weeks for the next rain, despite many black skies with much thunder and lightning. At Ogidi storms are possible even in January, but usually the storms begin to be frequent in March, sometimes April.

2. The time in between the storms is very hot and disagreeable. In the heat of the afternoon it is difficult to work. At this season farmers may rest in their huts, or go home at midday. At this time of year 'dust devils' (whirlwinds, called *ufejoku* after the God of yams and agriculture) are seen scattering the ashes from the burnings in the outfields. At night it remains hot. People stay outside their houses until midnight and go about half-naked.

In Onitsha it is worse than in Ogidi. The moisture rising from the river makes the heat harder to bear. A still night seems choking. One wonders whether to go inside or stay outside, for comfort.

3. From June until the end of September it is cloudier and cooler and most days have rain, steady rain, not storms.

4. During August, or occasionally the end of July, there is usually a break in the rains. It stays cloudy and it can be cold. People call this the 'August Break'.

5. The end of the rains comes in storms with much thunder and lightning, mostly in October.

The dry season

1. November and early December may be sunny, not too hot, and dry. The white birds, *ugbana* or cattle egrets, appear at this time and stay until about May. These are seen more in open country than at Ogidi. Cool nights may bring early morning mist.

2. In December the weather becomes very dry with a steady breeze. The sky turns white and everywhere loses its colour in the haze. This is the **harmattan** season.

Human skins go dry and people's skin may crack, especially on lips or feet. The nights are cold, and in the townships people cover themselves while they sleep. On cold mornings people may wear pullovers to keep warm.

In Ogidi people fight the cold in a different way. For example both Okpala and his wife sleep on bamboo racks; during the harmattan a fire is made underneath the racks, which stays alight till daybreak. In the morning members of the family may sit round a fire before beginning the day's work.

3. The harmattan disappears before the first rains and the end of the dry season is sunny and warm.

This completes our survey of the climate for the year. Remember that each year is different from the previous one, and such differences as when and how the rains come can be very important to the farmer.

The elements of climate

Reading through the account just given you will realize that climate is made up of many different parts. There is the wind—its strength and its direction; there is visibility—whether clear or hazy; there is temperature; there is cloudiness. These different parts are known as the **elements** of climate. Of all the elements, rainfall is the most important.

Rainfall

Rainfall is measured by a rain gauge, a container which collects the rain of a measured area. The rain collected over a period of time, usually 24 hours, is then poured into a glass container which has specially calculated marks on the side for measuring the rain. This is done in inches (English method) or millimetres (French method). One inch is approximately 25 millimetres.

The Onitsha rainfall averages for each month of the year are as follows:

	Jan.	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*	*Total*
ins.	0·8	1·2	2·7	6·2	8·3	10·2	11·5	9·9	12·9	9·8	2·0	0·8	76·3

In any one year it will be different. For instance in 1961 the actual totals (not averages) were as follows:

	Jan.	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*	*Total*
ins.	0·4	Nil	0·6	7·6	8·2	13·2	19·4	2·4	9·8	9·1	0·1	Nil	70.8

Notice that 1961 was a year with an unusually long dry season, and a very clear August break. June and July were wetter than usual, so the year ended up with a total not much below average.

Temperature

Temperatures are recorded in degrees Fahrenheit (°F) and degrees Centigrade (°C). The Fahrenheit scale is used in England, but even there it is giving way to the Centigrade scale, which is more widely used in the world. Nigerian temperature records are on the Fahrenheit scale, but it is useful to know how to convert them.

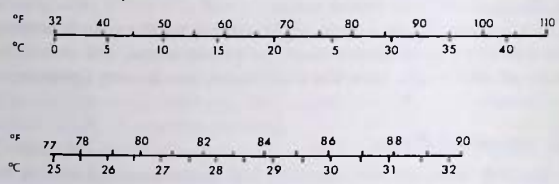


Fig. 11. Fahrenheit–Centigrade conversion tables.

No Onitsha temperature averages were available to use when this book was written, but some idea of the change of temperature throughout the year can be got from the figures for any single year.

In 1961 the mean temperatures for each month were:

	Jan.	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*	*Av. for yr.*
°F	82·3	83·3	87·1	83·6	82·9	80·3	79·1	78·6	79·3	80·1	83·3	80·2	81·7

Causes of the seasonal changes

Just why Ogidi and Onitsha have the climate they do have is not easy to understand. Scientists are still working on such problems, and the more they know about the causes of weather the better it will be for agricultural progress. In any case, whatever is known of the causes of weather is best studied when the student knows something of the geography of Africa, which is beyond the scope of this book.

However, we can be sure of some matters. The rains come in air that has reached us from over the sea. Usually the winds are from the south-west, though storms from the east are common in some parts of the eastern provinces. The harmattan comes from the deserts of the north. But it is often dry when there is no harmattan and when the air itself feels quite damp, as in the August break.

Climate and farming

The heat of March, April and May can shorten the farmers' working day, the winds ('African tornadoes') can blow the fruit off the trees, and lift roofs off houses, but it is the rains and how they come that really control the farmers' fortunes.

We have seen how the clearing and planting wait for the start of the rains. If a farmer plants too soon his crops may fail, if he plants late his crop will be a poor one.

Too much rain is bad for many crops. Yams are very quick to suffer if the soil is too wet. Under such conditions weeds threaten to choke the plants. Too little rain also makes for poor crops. Yam beetle grubs seem to attack the yams only when there is a drought.

A geographical calendar

We can show rainfall and temperature figures best by drawing them on graphs, as in Figure 12, showing temperature as a line which rises and falls with the season, and rainfall as columns with height according to the totals for each month.

We can then put down a record of farming activities month by month alongside these graphs so that we can see at a glance how the farm work changes with the season.

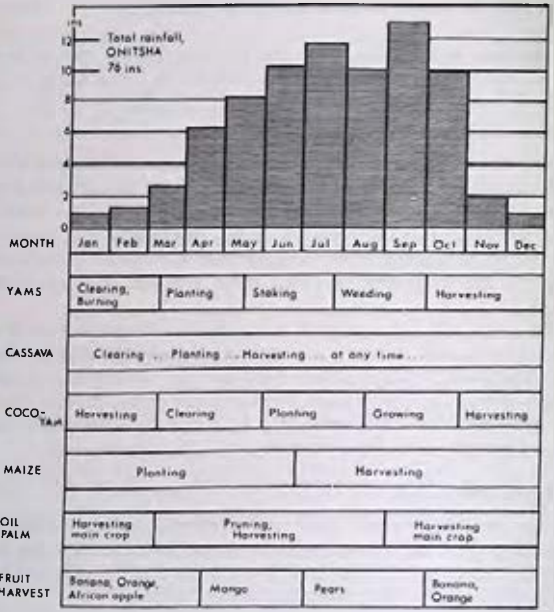


Fig. 12. Another farming calendar. This is a general one for all upland areas near Onitsha. You should compare it with the calendar at the end of Chapter 2 (Fig. 9).

Farming by the Niger

In the Anam and Atani districts by the Niger, only a few miles from Ogidi, farming is very different though the climate is similar. This is because of different soil conditions.

Here there is plenty of land available, but farming on the lowest lying land must be done in between the floods of the River Niger (see Figure 24). So hoeing begins here in November, immediately after the flood, and yams, quick growing ones, different from the types seen at Ogidi, are planted. If fresh land has to be cleared then there is no time for a food crop. Yam setts (*nkpulu* or *awana*) are planted and a main crop produced the following year.

This is a very different system of yam cultivation from that at Ogidi. Climate is important, but it is not the only thing controlling the farmers' activities.

Exercises

1. What does the word 'climate' mean?
2. In what month do the rain storms become frequent—in Ogidi and in your own home district?
3. What work will the farmers be doing at the beginning of the rains (Ogidi: March and April)?
4. Why is the early part of the rainy season unpleasant at Onitsha?
5. Write a short note on the harmattan.
6. On a table of the months of the year, make a list of signs of the seasons (e.g. egrets arrive) including those mentioned in this chapter, and others you can think of.
7. Make a list of the ways in which climate affects farming.
8. Why do the farming activities in Anam and Atani districts take place at different times of the year from those at Ogidi?

For more advanced students

9. In what ways did the rainfall of 1961 at Onitsha differ from the average?
10. Consider the causes of the two-season annual climatic rhythm at Onitsha in the light of your knowledge of the geography of West Africa.

Class activity

Keep simple rainfall records. Start recordings of the duration of rainfall and the type, whether torrential rain or light drizzle. A simple rain gauge and measuring cylinder can be made, with the help of the mathematics staff if necessary, and placed in the open, not too near to any buildings which might shelter the gauge, or on the roof of a building. Then begin to keep rainfall records, measuring once a day, and if possible during school holidays as well.

5 · A Visit to Agulu

Eastwards from Ogidi the land becomes hillier until we reach the uplands of Awka and Orlu Divisions, where the highest land reaches up to over 1,200 feet above sea-level. For comparison we should note here that Ogidi stands at between 400 and 500 feet above sea-level, and the Niger at Onitsha is only 150 feet above sea-level. These uplands have farming problems which are very much more serious than those of Ogidi.

The Idemili Valley

Our route from Ogidi takes the Abatete road. At Eke-Agu in Abatete the road descends to the Idemili Stream. In the dry season the Idemili is just a small stream. In the rainy season it grows to a fast flowing river, yellow with the mud and fine sand it carries along. When the floods go down again we see that the flat land in the bends of the river are covered with the sand brought along by the flood water. The cause of these sandy deposits will become clear later in this chapter.

The Idemili Valley is in many ways a good example of the river valleys found in the Ibo districts of Nigeria. Since the slopes are fairly steep they are avoided for building; people build higher up where land is more level. There are two important results of this:

1. The people have had to travel long distances to get water, making direct downhill paths. Government rural water schemes are gradually relieving the women of this heavy and time-taking task.
2. The valley slopes themselves are reserved for farming. Today, however, shortage of land is forcing people to use these slopes more and more. Using these slopes for building, or even for farming, can be dangerous, as we are about to see.

Seen from the Abatete side we get a very poor impression of the valley. The vegetation is poor. Poor grass and small bushes surround scattered stands of oil palms. The sandy soil shows up in bare patches through the grass. Poor crops of cassava, yams and coco-yams are seen. At intervals deep **gullies** (ditch-like valleys) cut down

the slope towards the river. These gullies are far too steep and sandy to be useful to the farmer.

The Agulu District

From the Idemili the road climbs steeply at first then more gently to Oraukwu. Eventually we reach Agulu. Here, south-east of the town, we find again the features we noticed in the Idemili Valley: very sandy soils, poor farms and gullies, but here they are much worse. The gullies (or **ravines**) are huge and awesome.

A short walk from the road brings us to gullies which bar our path. Looking down into them we see that they lead, with other gullies, into a wilderness of fantastic rocky pinnacles and gorges, yellow, orange and brown, stretching away into the distance until, several miles away and some 800 feet lower, we see once again the

Fig. 13. A soil erosion ravine near Agulu. Look for these features on the photograph:

1. The foreground, on which scarcely any plants grow.
2. The ravine, about 150 feet deep on this photograph.
3. The forest behind. This is actually compound land in Agulu.

Fig. 14. A large gully at Agulu.

green of farming country. It is a beautiful scene, but terrible when we think that these gullies are formed where once there were farms.

Many of the older people in Agulu will tell you of times when farms were lost as the wilderness grew in extent. Now the whole of the eastern slopes, and much of the western slopes around the towns of Agulu, Nanka, Oko and Ekwulawbia are stricken with this affliction, which causes the soil to be carried away and which we call **soil erosion.**

Soil erosion

1. **Soil** is the thin surface layer of earth lying usually on top of rock. It is formed slowly and naturally as the rock rots and breaks up with the passage of time. Plants help to break it up by sending their roots into it, and as they decay they become part of the soil itself.

2. **Erosion,** the carrying away of the soil by the rain and wind, is also natural and usually slow. It does not, as a rule, go on any faster than the soil can form.

3. **Soil erosion** happens when the soil is taken away by wind and rain faster than it can replace itself. The soil becomes thinner and poorer, and may finally disappear altogether.

Causes of soil erosion in Nigeria

If we want to understand how it is that so much land can become a wilderness through soil erosion we must realize that there are several conditions which help to make soil erosion possible. It is only when several or all of these conditions come together in one place that soil erosion starts.

(*This is not an easy section of the book, and you are asked to read it very carefully several times*)

1. There must be a fairly steep slope, otherwise the streams formed by the rains will flow away too slowly to carry much soil.

2. There must also be plenty of loose material to be carried away. This may seem too obvious to mention, but it is important. Frequent turning over of the soil by the farmer helps to keep it loose. If also the soil is a sandy one, as it is in the Agulu district, it is naturally loose and so easily carried away.

3. There must also be agents of erosion at work, in this case strong winds and heavy rains. The wind can only work powerfully when the ground is dry and soil can be blown away easily. After some weeks of harmattan this condition is there, though further south in Ibibio country, where the dry season is not so severe, this is not so.

The rains must be heavy. The violent storms which come at the beginning and end of the rains are heavy enough. These rains can fall so heavily that the water has no time to sink into the sandy soil, but runs away to the rivers carrying soil with it. This is the cause of the yellowness of the Idemili Stream and the Mamu River in the rainy season.

4. It must also be possible for the heavy rains and the strong winds to reach the soil. This is possible in the outfields of Agulu today, but would not have been possible in the past when the high forest trees still stood, and the bush grew thick in the long fallow period.

Types of soil erosion

We can see two main types of soil erosion as we look around.

1. There is the widespread kind which we call **sheet erosion.** This happens when part of the soil is removed from a whole slope. It may be blown away by the wind, or it may be washed away by the floods

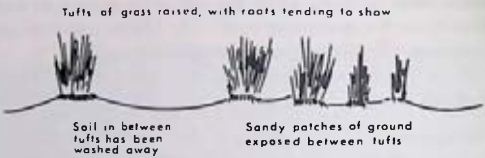


Fig. 15. Signs of sheet erosion.

at the height of a storm. The finer parts of the soil go easily and go first. This may be happening without people realizing it.

If we walk around by the road between Agulu and Nanka or in the Idemili Valley below Oraukwu we will see signs of this. The roots of small tufts of grass are exposed, showing that some soil has been lost since the grass grew from seed. In places, so much soil has been lost that no grass grows at all; there is just bare sand.

2. There is the more impressive kind, which we know as **gully erosion.** On steep slopes the flood waters from a storm are concentrated into channels. Further down the slope the channels deepen to gullies, and then to the ravines, several hundred feet deep. Eventually the gullies and ravines become so deep that the slope becomes longer and more even, so stopping the erosion. You can tell whether this has happened by looking to see whether trees grow in the bottoms of the ravines. In most of the ravines east of Agulu this is not happening yet.

Soil erosion at home

Whether your home or school is near enough to soil erosion areas to visit one or not you can watch these things happening on a small scale in your own district. Look out for slopes of freshly moved earth. The embankment of a newly made road is a good place to look, and look at it before and after heavy rain storms. You can

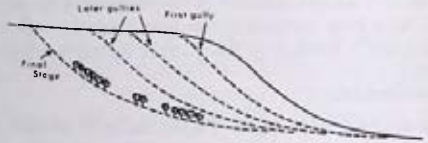


Fig. 16. Gullying on a slope. The first gully is short and steep; later gullies are longer and less steep. In the final stage, vegetation appears, showing that erosion is now slower.

see gullies forming. Go out in the storm to have a look! Notice how muddy is the water carrying away the finer pieces of earth. After the rain the surface will look much rougher, when only the larger pieces are left on the surface, showing that sheet erosion has been at work.

More about causes

Look back at the list of four causes of soil erosion on page 33. You will see that points 1 and 3, about the steepness of the ground and the force of the rains, are about natural causes. People could not alter these even if they wished. But points 2 and 4, about the looseness of the soil and the missing cover of thick bush and forest, have been brought about partly by the farming activities of the people.

The people of Agulu, Nanka, Oraukwu and near-by towns, really the parents and grandparents of the present farmers, will not have realized that their own farming was causing erosion. Experts who have studied this problem say that people have helped to start the soil erosion in the following ways:

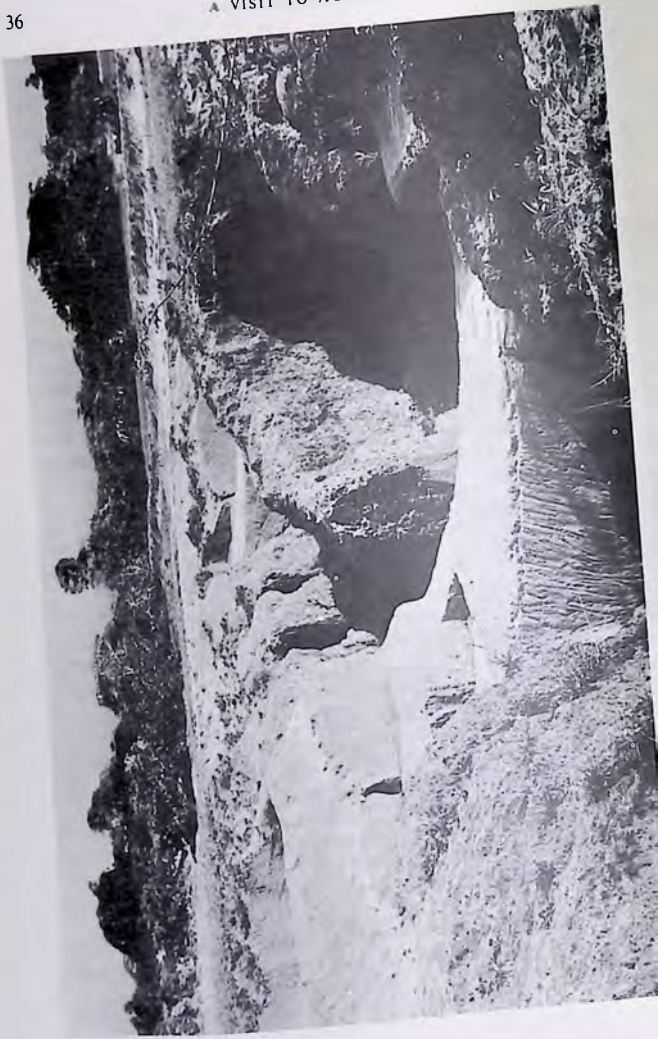
1. By not giving the outfield farms sufficient rest. We saw in Chapter 3 how this was happening in Okpala's fields. This is common in most Ibo districts because of shortage of land. But here in this sandy country with steep slopes it is particularly dangerous.

2. By firing the bush. This is an easy way of preparing farms for planting, but it means that bushes cannot grow easily to cover the soil. Bush-firing is also done for the purpose of hunting small animals, such as bush rats (*ogini*), cutting grass (*nchi*), rabbits (*ewi*), bush goats (*mgbada*) and bush fowl (*okwa*).

3. By the grazing of animals. If goats, sheep and cows are put out to graze on land where the grass is already poor they may destroy the grass even more, leaving the soil bare. This may have made soil erosion worse in some cases.

4. By cultivating downhill. If a farmer makes ridges or lines of mounds running up and down a slope this will help storm waters to rush downwards, starting gullies as they go. In the days before soil erosion this may have seemed wise, to give good drainage to the yams.

5. By making footpaths down the hillside. Maybe these were made by the women, going to fetch water, but gullies often form on such paths.



What the people can do to help

Farmers can help to keep the soil in the following ways:

1. They can see that the soil is kept covered. Instead of leaving it bare after crops they can plant what are known as cover crops. Pigeon pea and *mucuna* are examples of this. These plants also help to bring fertility back to the soil. In the villages open spaces should be kept covered with grass. Bahama grass is a good grass to plant.

2. They can help to keep the grass cover on outfield land by not firing the bush for hunting, and by limiting the grazing animals on it.

3. Cultivation can be done carefully to keep the soil from being washed away. Ridges should run across the hillside and not down so that gullies cannot easily form. Ploughs should not be used, as they expose the soil to the storms.

4. The soil itself should be fed as much as possible. Compound land, where manure and ashes are used to enrich the soil, does not usually suffer from soil erosion. If ways can be found to manure and fertilize the outfield land this will be very good.

5. In places where most of the soil has been lost it should be possible to plant bamboos, or *araba*, or cashew trees to hold the soil together and start the formation of fresh soils. Meanwhile these are useful bushes to have.

Government help

Over many years the government has been trying to find the best ways of stopping soil erosion in the Agulu district. Dams have been built across gullies to try to stop the water rushing down them, making them deeper. In places pits have been dug, known as **sumps,** to check the floodwaters as they run downhill and to encourage them to sink into the ground instead. The government has also been responsible for the planting of many trees, including cashew trees, to help keep the soil covered.

Conclusion

You can see from this 'visit' that soil erosion is a very serious problem. The gullies and ravines of Agulu add up to a very large space lost for farming. The poor soils of the districts affected by sheet erosion give only poor crops. Farmers need more land, yet the land is already in very short supply.

Opposite: Fig. 17. A check dam built across a gully, Agulu.

So every good citizen should help to fight soil erosion whenever there is a chance. Careful farming can often halt erosion and save further tragedies.

Exercises

1. How does the Idemili stream deposit sand on flat land in the bends of the river?
2. Why are there few buildings on the Idemili Valley sides?
3. Read carefully the definition of soil erosion on pages 32–33. Then explain what it is in your own words.
4. Why does soil erosion take place more easily on steeper slopes?
5. Why has the cutting down of the forest trees on the outfields helped soil erosion?
6. How can sheet erosion go on without being noticed? What signs would you look for?
7. How can you tell when gullies are no longer getting deeper each year?
8. Explain in your own words how the farming activities of the people have helped to cause soil erosion.
9. How can people living in areas where there has not been much soil erosion prevent it taking place? Answer in your own words. You should be able to find about eight different ways.

For more advanced students

10. The parts of the eastern provinces which have suffered serious soil erosion seem to be found only between Awka and Orlu and between Udi and Nsukka (see Chapter 21). Why do you think there are not bigger areas affected?
11. Make a comparison, with the help of sketches, of sheet and gully erosion.
12. People have called soil erosion a sickness of the land. Explain this.

Class activity

If you have suitable land in your school compound make a smooth fairly steep slope of earth before the first rains, then during and after storms examine it for traces of:
(*a*) sheet erosion, (*b*) gully erosion.

6 · City of Trade

Into Onitsha

Throughout the countryside described in the previous chapters, from Ogidi and from Agulu, important roads lead towards Onitsha, city of trade. In just 15 minutes by bus from Ogidi we reach the bus station in the heart of the township. A walk of some 300 yards along a busy street, crowded with people—men, women and children, walking, cycling, carrying head loads, pushing carts or selling all kinds of goods in the street—and we have reached Onitsha main market, the very centre of all activity.

Onitsha market

The street along which we came, Johnson Street, divides the market into two main sections. On our left the eastern half consists of two E-shaped buildings with high asbestos cement roofs. Beyond these buildings lies the taxi park and the Onitsha shops. On our right six long flat-roofed buildings stretch away towards the high bank of the River Niger.

In all, there is space under cover for about 3000 traders' stalls. Around the main market buildings are open stalls, eating houses, slaughter houses, a big water tank carrying water for use in the market, market offices, latrines and enclosures for refuse. The whole market covers about fifteen acres of land, about eight times as big as your football field.

We notice that it is clearly divided into different parts, each specializing in different things for sale. It is easy to see why this is. People who come to buy know where to find what they want, and can see all there is for sale in one part of the market. Traders know that the people who come to buy will find them in their part of the market. Also it is cleaner and more hygienic if different kinds of food are kept separate, and away from clothes stalls.

Figure 18 shows how the market is divided between different commodities for sale. You will notice that the western half, next to the Niger, is the food market. Since much of the food for sale comes in by boat this is clearly a good arrangement, as it cuts down the carrying that is needed.

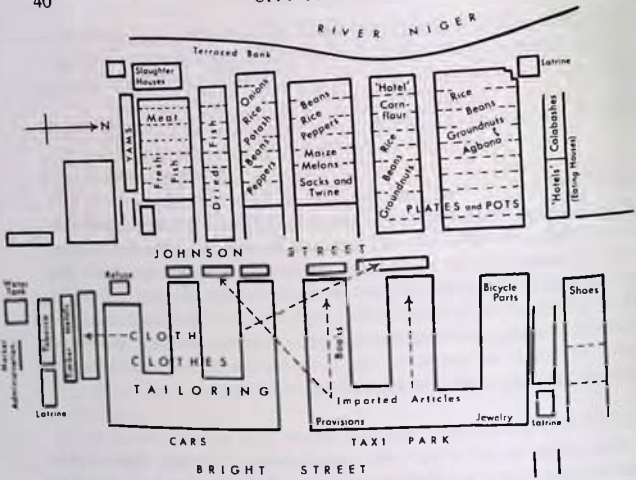


Fig. 18. Onitsha main market.

Food for sale

In the food market we notice that there is a big variety of foods for sale. Almost every kind of Nigerian food can be bought somewhere at these stalls.

Yams have a large section to themselves. Gari, palm oil, maize, beans, melons, *ogbono*, peppers and tomatoes are here, many of these being brought from the districts across the Niger. Another group of foods, including onions, beans, groundnuts, groundnut oil and rice, come from northern Nigeria.

Also in this section of the market we can see stalls selling plates, soup pots, calabashes, sacks and twine. This is a convenient arrangement for buyers of food. For instance you will remember from Chapter 3 that Nwugo always took back a supply of foods for resale in Ogidi markets.

Fish and meat

One striking feature of the food market is the large space reserved for the sale of fish. Some of this is dried imported fish, stockfish from Norway in Northern Europe. A large section is devoted to dried fish from other parts of Nigeria, from the land of the Ijaws

to the south, and from various parts of northern Nigeria. Finally much of the fish sold is fresh fish caught in the Niger that very day.

In the same area of the market close to the fish stalls meat is sold. These stalls are naturally in the corner next to the slaughter houses. This is a big business at Onitsha. About 200 men work in these slaughter houses, or abattoirs.

Health inspectors see that all animals brought for slaughter are healthy ones, and that all butchery is done under as clean conditions as possible to prevent the spread of disease. Another abattoir, at Afor-Igwe some ten miles away in Umudioka but on the eastern boundary of Ogidi, now also sends meat to the market stalls.

Factory goods

In the eastern half of the market we find stalls of a different character. One large section sells cloth and ready-to-wear clothing; here tailors have their stalls ready to carry out any clothing order to measure.

Another section sells foods in tins and packets imported from all corners of the world. In other sections one can find shoes, necklaces, books, pens, bicycle parts, nails, bolts, watches, etc. A long list would be very tedious, but it is the boast of the market that anything, anything at all, can be bought here somewhere!

Fig. 19. Market scenes.

Low prices

The market also claims that it is the cheapest township market in Nigeria. This is a bold claim, but people generally agree that it is true, and that it covers local produce as well as imported goods.

For local produce it seems to work like this: Onitsha is such a centre of trade that the market attracts goods from far and wide; there is no shortage of food for the traders to buy and prices stay low. There might even be so much food in Onitsha that at times prices are lower than in the country markets.

Imported goods are also very cheap, and it is difficult to see why they should be cheaper here than at the ports, Port Harcourt (see Chapter 12) and Lagos. It may be that there are so many traders wanting to sell that they are forced to sell very cheaply. Another point is that the rent traders pay for stalls is a very low one and so this helps them to keep prices low.

History of the market

The fine market buildings were opened in 1957, but the market was important long before that. It grew up under the name of 'Otu-Nkwo' ('Otu' means beach), and was held every Nkwo day. Gradually it grew into a daily market. It was to be found at Ose-Okwodu, by the present bus station, and was later moved twice before it settled in its present position.

Smaller markets

Now the trade of Onitsha market is too big for even the new market buildings and it seems to grow every year. Extra bamboo shelters spoil the neat appearance of the buildings and street traders choke the ways into the market. One result of this has been the growth in importance of other markets in Onitsha, which help the main market in two ways:

1. They act as 'feeder' markets, dealing mainly in local produce and often sending food into the main market.
2. They act as 'relief' markets, dealing in trade for which there is no room in the main market.

The Ose-Okwodu market, on the site of the original market, which moved in the time of Obi Chima Ogbuefi in about 1720, was one of these. Here there is trade in yams from the riverine districts, such as Anam and Atani, mentioned in Chapter 4, and from Abakaliki and Ogoja (see Chapter 17).

Fig. 20. A girl trader in Onitsha market.

Fish is important here also, for this market has a situation next to the river. Plantains, gari and 'wet cassava' are important among foodstuffs coming from the Asaba district, brought across on Niger ferry boats. Products of native crafts can be bought here, for example toys, raphia bags and horn carvings.

Other relief and feeder markets are at Fegge, Onitsha Inland Town and Ochanja. This last named market is interesting because it is situated near the motor-station and deals in goods brought in by lorry. A long list includes Abakaliki yams, palm oil, maize, fruits (oranges, pears, coconuts and bananas), raphia palm mid-rib (*ofolo*), oil palm and raphia palm wine (*tombo*), fan palm posts, iroko planks and joists, baskets, firewood, pots, fowls and guinea fowls, goats and sheep.

A section of this market caters for the needs of the lorries themselves, dealing in motor spare parts. Tinsmiths are found here, and another trade is in scrap metal for the steel works at Emene (see Chapter 18).

Shops

As we walk out from the main market towards the relief markets we notice that the whole town centre around the main market is also given over to trade. The individual shops sell in direct competition with the market traders.

Some of the smaller shops, such as those of Moore Street and Nottidge Street which deal in cloth and carpets, motor and electrical parts, and building materials including Nkalagu cement, seem very little different from the bigger market stalls. The book trade, centred on New Market Road where there are as many as forty separate bookshops, is also represented by an important book section in the main market.

Along near-by streets we find the shops belonging to big trading firms such as S.C.O.A., G. B. Ollivant Ltd., K. Chellaram Ltd., Bata and the United Africa Company. These also deal, in competition with the market stalls, in imported goods such as tinned foods, clothing and shoes and furniture. We shall take a look at such shops in Port Harcourt, where they seem more important. Here in Onitsha the trade of the market seems to overshadow them.

Exercises

1. The journey from Ogidi (Eke Akpakaogwe) to Onitsha (Ose-Okwodu) takes about fifteen minutes for seven miles. How long would it take before the days of roads and buses? Would Ogidi people have gone to market and returned in the same day?

2. Why is it that traders selling the same kinds of goods are likely to be found in the same part of the market? Can you think of a disadvantage in this arrangement?

Fig. 21. Onitsha: the central trading area.

3. What are the advantages in having the food market near the river?

4. Why is Onitsha market able to keep prices fairly low?

5. Why are there other markets in Onitsha besides the main one?

6. Find out if the traders in your nearest village market buy their produce in a township market. If you are in a township, visit the market to find out whether goods being bought are for re-sale in village markets.

7 · Onitsha's River

Onitsha is important for trade because it is easily reached by traders both by land and by water. By land, traders come from three main directions:

1. From the east, from Ogidi, Awka and the upland districts.
2. From the south-east, from Nnewi and districts towards Owerri.
3. From the west, from Western Ibo districts, to the opposite bank of the Niger at Asaba.

Fig. 22. This picture shows the steps leading down to the river from the side of the Onitsha market, looking upstream. Below the steps canoes are tied up and goods are unloaded from them. The waterside is always a place of great activity. The photograph was taken in July. (The positions of the shadows of the people would confirm that it was taken in the May–July period—how?) Behind the steps in the middle distance the loading cranes of the U.A.C. wharf can be seen. On the river some boats have sails up. If this picture was taken in mid-July, is the river nearer to its highest or its lowest level?

By water they come by the Niger and Anambra rivers to the north and by the many streams of the Niger to the south. We now visit the river bank to see something of the activity on the river.

The seasons on the Niger

From the space behind the food market a long flight of concrete steps leads down to the water. As the level of the river rises and falls so small boats can still tie up alongside the steps.

The river is always low at the close of the dry season between March and June and highest in September and October. Low level means that there may be only about eight feet of water in the main channels of the river. Small boats can operate easily on this, but larger boats have to make sure they are not too heavily loaded and even then their pilots have to search around for the best channels to use to avoid being grounded on sandbanks. If our visit to the waterside at Onitsha comes when the river is low, we can see one important advantage Onitsha has as a river port, that the deep channel of the Niger swings over to the eastern, or Onitsha bank at this point. Asaba is also well placed where the deep channel comes up against the western bank.

Fig. 23. This picture shows detail at the bottom left of the previous picture where the canoes tie up. The canoes are house-boats from northern Nigeria. Can you find any supporting evidence for this statement? How many different items of trade can you see in the picture?

At the time of the floods in September and October the river rises about thirty feet above its lowest level. Lands by the river north and south of Onitsha become covered with flood waters but the high bank at Onitsha, on which the town and market stands, remains well above the water level.

The graph below shows how the level of the Niger at Onitsha rose and fell through one year, 1955. Note:

1. a low season from December to June;
2. a flood season from June to December with October as the month with the highest level.

No two years are exactly alike. In most years there are small rises in the river level during the period March to May before the main flood rise. These are known as *afuyi* by the people of the Atani district, by the Niger south of Onitsha.

We have no complete averages for the Niger levels calculated over a long period of years. The river rises very much more in some years or groups of years than in other periods. In 1955 the river was high. In a very low year the water level would be 7 to 9 feet down on the 1955 levels.

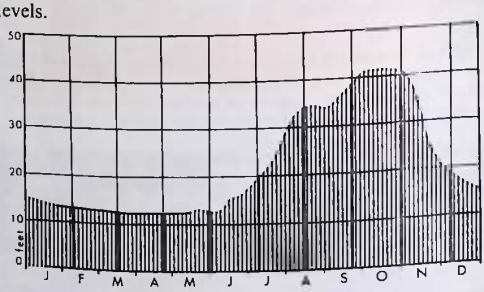


Fig. 24. The level of the Niger throughout one year, 1953. Measurements taken in one place at Onitsha.

The canoe traffic

The river, seen from the market, is a scene of great activity in canoes. A close inspection shows us that these canoes are of many different kinds. There are the open canoes, large and small, belonging to the Onitsha people and also to the people from the riverside districts near Onitsha such as Atani, Osamari and Oko. In these places almost every inhabitant owns a canoe.

Fig. 25. A heavily laden canoe at Oguta.

Ijaws come from their homeland in the Niger Delta (see Chapters 9 and 10) in larger roofed canoes loaded low with sugar cane, canes for tying work, fish, plantains, mats (*mkpala* and *agini*). In the flood season they come to sell their carved canoes.

The best known canoes are those of the Hausas. These are massive canoes, usually roofed with *ofolo* mats. They will have at least two men guiding them. The pilot is at the rear using a paddle with an enormous blade. At the front another man uses a pole. Well-manned canoes have two or three paddlers using short paddles for quick movement. If the wind is favourable they will put up a sail.

Hausas are renowned on the Niger for their paddling kept up over long distances. In spite of this their canoes move slowly, weighed down by their heavy cargoes of dried fish, groundnuts, onions, rice, guinea corn and millet, locust beans and earthen cooking pots.

One thing common to the Ijaw and Hausa traders on the Niger is that their canoes are virtually their homes. They work, eat and sleep on them for days. You will find their movements slow and unhurried.

Fishing

The Niger at Onitsha is very rich in fish and a walk along the banks of the river will show some of the ways in which fish are caught. The commonest method in use is that of the net thrown out into the river from a canoe and hauled back. The canoes used are small and able to move fast, following up any signs of shoals of fish. Some fish are caught by line and hook, some by baskets lowered into the water.

In the dry season the slopes of the sandbanks are lined with traps, wooden enclosures which have an open entrance sealed at the right moment to trap the fish. The mid-stream sandbanks in the river opposite Onitsha town are occupied by Hausas and Igalas, fishermen who make the banks their home each year until the floods drive them back on to the land.

Fig. 26. Cranes working at Onitsha wharf. Notice the large river boat in the foreground, and the sail-driven canoe on the left.

Fig. 27. Ports on the Niger River system. Dates show season of use for large boats.

Many fishermen do not sell their catches themselves. Traders, usually women, will row out to the middle of the Niger, or even downstream as far as Atani, to buy from the fishermen.

River steamers and barges

Canoes, and the power-driven canoes and motor boats which are becoming common at Onitsha, can tie up anywhere along the river bank. The larger boats, river steamers, need special platforms or wharves where they can tie up and be unloaded or loaded. These places have been built at several places on the riverside at Onitsha by the important companies owning the larger boats, of which the United Africa Company and Holt's Transport Ltd. are notable.

Boats come up from the Delta ports, Burutu and Warri. At Onitsha they may unload their cargoes of imported goods which will then be broken up into smaller loads, sold in Onitsha and taken on to distant parts by lorry or canoe. When the Niger is in flood the large river craft can go on upstream into northern Nigeria, to Lokoja and Baro on the Niger and to Makurdi and Yola on the Benue. Some boats get as far as Garua in the Cameroon Republic. These boats must time their arrival at Garua very carefully, arriving and leaving during August and early September, the only time in the year when there is enough depth of water in the river for these boats.

Local fishing, local trade, the all-the-year-round long-distance canoe trade, and the seasonal steamer and barge traffic make the Niger at Onitsha a great north–south highway.

Traffic across the river

In our look at the food markets we saw that a lot of the food for sale comes from the districts across the Niger. Apart from this local traffic across the river we have to note that Onitsha is at a point where the only east–west land route through southern Nigeria crosses the river. Any land traffic between Lagos, Ibadan and Benin on the one hand and the towns of the east on the other must cross the river at Onitsha. For this traffic the Niger is a great barrier, to be crossed only at great expense.

The crossing has been made by ferry boats. Cars and lorries were taken by one or other of the three government vehicle ferries. Passengers were also taken on these vehicle ferries and also on the smaller and faster passenger ferries.

Niger bridge

Meanwhile the trade of Onitsha grew and delays at the ferries became longer. To meet this situation a bridge has now been built. The bridge is about a mile long, one of the longest bridges in Africa and one of the engineering marvels of Nigeria. Traffic pays a toll to use the bridge, so it is likely that some passenger ferries will stay in business.

The growth and future of Onitsha

The 'cross-roads' position of Onitsha, on the Niger and between west and east, has made sure that the town has had a long history. The people of Onitsha have a tradition that their ancestors came from Benin about 300 years ago. The town soon became a vital link in the Niger trade to the ports of Brass, New Calabar and Bonny.

Missions, both Anglican and Roman Catholic, made the town their headquarters in this part of Nigeria during the last century, and this has had a big effect upon the sort of place Onitsha has become. The town has two fine cathedrals and at present is the seat of two archbishops in their respective churches.

The missionaries founded schools and some of these are now old foundations with long lists of famous past scholars. To have over twenty Secondary Schools in a population of about 100,000 (1953 Census: 76,921) is a very good record.

The growth of the town is also helped by the factories attracted

here. On our way into Onitsha we passed a mineral water factory ('Pepsi-Cola' and 'Mirinda'). Near the bridge two factories re-tread motor tyres. There is also a gramophone record factory and, more important, a new textile mill (see Chapter 14). Most important of all an iron and steel works is planned, which would in its turn lead to new industries using steel.

There seems no doubt that as Nigeria grows in prosperity so will Onitsha. Being so big a centre of trade in such a key position means that the city will surely face a great future.

Exercises

1. Why is Onitsha a very important market town?
2. Explain in your own words the two advantages of the high river bank and the deeper water beside the bank that the river port of Onitsha possesses.
3. During which five months in 1955 was the Niger in flood? Look at Figure 12. Which comes first—the first rainy month or the first flood month? Which comes last—the last rainy month or the last flood month? Which lasts longest—the rainy season or the flood season?
4. Describe the three kinds of canoe people seen at Onitsha and the trade they carry on.
5. Find two different and separate reasons why large numbers of fishermen fish in the Niger at Onitsha.
6. What are the advantages that river steamers have over canoes for trade? Have the canoes any advantages over river steamers?
7. Why has a bridge been built over the Niger at Onitsha?
8. Why do we think that Onitsha will become an even more important town in the future?

For more advanced students

9. Write an essay entitled 'The importance of the Niger to Onitsha'.
10. Draw a map to show the position of Onitsha as a meeting place of routes, and as a very convenient crossing point of the Niger.

8 · Into Oil Palm Country

Motor transport

From Onitsha we set out on our tour of the eastern provinces. An enquiry at the bus station tells us that there are a large number of buses leaving Onitsha daily for the south-east, for Owerri, Port Harcourt and Aba. Some of the larger vehicles work to a fixed timetable. Others, the micro-buses, carrying just fourteen passengers, leave when full and give a frequent service along the road.

Road transport in Nigeria is an important business but we soon see at the bus station, or at the lorry park, if we were to go there, that it is not very well organized. Vehicles are usually owned and operated by small firms or by individuals. Any small group of people may decide to buy a lorry and run it, maybe a wealthy trader, maybe a town union, e.g. Uga Youth Transport. Some are well managed but others are badly looked after and carelessly operated. 'Slow and Steady' may not justify its slogan if it speeds along at 60 m.p.h. stopping often to overload itself. It is common sense that when we look for transport for our journey we choose our vehicle with care.

By 10 a.m. every weekday the stations are a scene of great activity with drivers and their guards, porters, middlemen and passengers. Vehicles look deceptively full and ready to start. The middlemen, or 'ocho-passengers', collect passengers for the vehicles. They are paid commission on the number collected, and there is a long struggle for loads and for passengers, going even as far as dragging the passengers along. Sometimes passengers' luggage disappears in the tussle, or gets badly damaged. Onitsha might claim to offer more employment to these middlemen than any other motor station in the country.

But changes for the better are coming in. Lorries are being reserved more and more for goods whilst buses and micro-buses (mini-buses) are becoming the favoured way of passenger travel. As transport improves, and the roads used also improve, we can look forward to a better organization at the stations, an end to the 'ocho-passengers', and more buses working to a regular timetable.

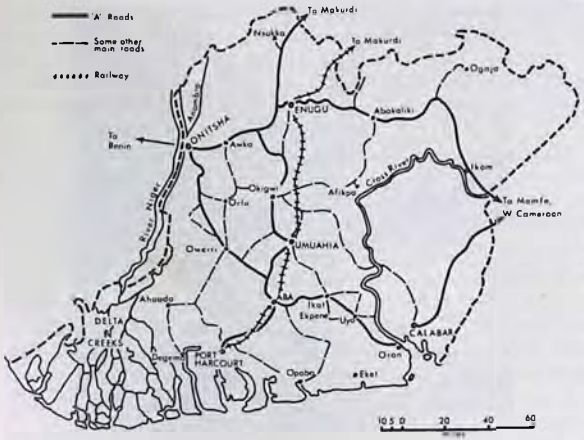


Fig. 28. Eastern Provinces of Nigeria: communications.

From Onitsha to Owerri

As our own bus leaves Onitsha we settle down to learn what we can from the journey. We soon see that the districts through which we pass are very like Ogidi with compounds, walled or open, set in a 'forest' of fruit trees with the oil palm to the fore.

Town signs show that as we leave one town we enter another. In turn we pass through Oba, Nnewi, Ozubulu, Okija, Ihiala, Uli, Mgbidi and Ogbaku, all places of local importance with separate villages, as in Ogidi. Only 30 miles of road separates Oba at one end from Ogbaku at the other.

Population density

To those of us who live in these districts between Onitsha and Owerri, or around Awka and Orlu, this may not seem unusual, but, as we shall see later on this journey, there are many areas which seem empty by comparison. The great differences in total population between some parts of the eastern provinces and others can be seen in Figure 130 (at the end of the book), which shows how population is distributed over the whole area. The part through which we are travelling is the most densely populated in southern Nigeria: it is in fact one of the most densely populated districts in the whole of Africa.

Fig. 29. An oil palm with fruit at Ogidi.

Most of the people, like Okpala and his family at Ogidi, farm the land to make a living. They have to produce enough food for themselves plus enough to provide a little money for their other expenses. This is not so easy when there are many people and farms are small. It seems as though the farm land is strained to its limit to produce enough food and other crops.

The oil palm

Oil palms grow all along our route, singly and in groves, in every town through which we pass. They are very important to the people here, and very important to Nigeria, making up a large part of the nation's exports. Because of this importance we must spend some time studying the tree and its products.

The oil palm (botanical name, *Elaeis Guineensis*) is a tree which grows well in areas which are hot and wet throughout the year. Any but the highest parts of Nigeria would be hot enough, but only some parts in the south have enough rain. The oil palm needs at least 50 inches of rain in the year, and preferably 80 to 100 inches. The trees produce the best fruit when every month is wet. This means that in the eastern provinces the tree is found almost everywhere, but in the northern parts, where the dry season is longer, it is not so important (see Figure 104).

The eastern provinces have large areas of sandy soils which often produce poor farm crops. The oil palm, even though it prefers a richer soil, does grow quite well on these sandy soils.

The first fruit appears after a few years of growth. In the better palms fruit comes in amounts worth harvesting after six or seven years. The fruit appears in bunches close to the trunk between the leaves or fronds. The fruits fall to the ground when ripe, but if the bunches are carefully cut and lowered down, the fruit receives less damage and is worth more.

A bunch of oil palm fruit is made up of a closely packed cluster of individual fruits. Each single fruit is about one and a half inches long and one inch thick; it has three main parts. The outside fibre cover from which the palm oil is obtained is called the pericarp. Inside the pericarp is a nut, which is the palm kernel protected by a shell. From the kernel palm kernel oil is extracted. The most valuable kinds of fruit have thin shells, so that much oil is produced, with very little waste.

Its uses

The oil palm is a very useful tree. The palm oil is very valuable in soup because it is one of the best sources of vitamin A. Everybody needs vitamin A in their food; if there is not enough in the food they eat they will fall ill. For instance, eye trouble, even blindness, can result from shortage of vitamin A. Palm oil is also used for lighting, for cooking, and in soap-making (see Chapter 9).

Palm kernel oil is used as an ointment, for skin treatment, and as a polish, but most of it is used industrially. The fronds are used as roof material and for brooms and baskets. The pericarp fibre and the shells make a useful fuel. The trunks are used as building posts.

We have seen, in Chapter 3, that the palm trunk can be tapped for palm wine, but that if it is done the fruit suffers. Okpala, at Ogidi, found it profitable to keep seven palms for wine tapping, and to give the rest to his wife for the fruit.

Palm oil extraction

The way in which palm oil is extracted varies from place to place. The fruit can be allowed to ferment, and then be pounded and squeezed, or else it can be pounded and boiled, and the oil skimmed off the surface of the boiled liquid.

Many women, including Okpala's wife from time to time, take fruit to the nearest hand press. These presses can be worked by two men. The common kind are strong metal barrels with the spars a little

Fig. 30. Skimming impurities off boiling palm oil.

apart. Into the barrels goes the boiled fruit—the press takes about $1\frac{1}{4}$ cwt. at a time. A heavy weight is then screwed down on to the fruit forcing palm oil out at the bottom. This method will get more oil from the fruit than by the traditional methods, and is the main method of extraction for the oil which is sold.

Fig. 31. Operating a hand press.

Fig. 32. Feeding nuts into a nut cracker.

Pioneer oil mills

Another type of oil extraction is that done by the Pioneer Oil Mills. These are really small factories, using the most modern methods of processing the fruit to do as much work as ten hand presses. Their use is more common in the south of the region; on our route to Aba we pass two by the roadside near Aba, though there are several others within a few miles of the road. In 1962 there were 96 Pioneer Mills in the whole of Eastern Nigeria.

The bunches of fruit are put into a thresher, which separates the fruit from the stalks. The stalks are pushed out of the machine but are not wasted. They can either be used as they are for fertilizer, or used in the same way after being burnt to ashes.

The fruit then passes into a digester where it is boiled and turned into a mixture of oil, fibre, nuts and water. This pulpy mass is carried to a press which separates the oil from the nuts and fibre. After being thoroughly cleaned in a purifier, the oil is pumped either into large storage tanks or into drums ready for transport to the coast.

From the press the nuts and fibre are taken to a separator where the fibre is taken out and used as fuel in the mill boiler. The nuts are

then cracked in the nut cracker, and the broken shells are also used as fuel for the boiler. The palm kernels are finally dried and cleaned before being packed in bags ready for export.

Nothing is wasted in these mills, in fact they can only hope to make a good profit if waste is eliminated, and also if they are kept working throughout the year. In recent years no more mills have been set up, some have been advertised for sale, and some have even been dismantled (see Chapter 16).

Palm oil quality

So far we have only considered the **amount** of oil that a farmer can get from the fruit. Hand presses produce more than the traditional methods of expressing oil can, and a Pioneer Oil Mill improves on hand press quantities.

For sale overseas **quality** matters more than **quantity.** If the fruit is picked ripe and unbruised, and it is boiled very soon after picking, a good quality oil can be produced. But if unripe or over-ripe fruits are used, or if the fruits are allowed to stand a day or more before being boiled, then a substance called 'free fatty acid' (f.f.a.) is formed. It cannot be separated from the oil, which is then less useful and worth less money.

The Eastern Nigeria Marketing Board

A very important part in trade is played by the Eastern Nigeria Marketing Board, which buys and sells all palm oil and palm kernels, and also cocoa and copra through agencies, such as Mandilas and Karaberis, Paterson Zochonis, U.A.C., etc. Even the agencies may not buy directly from the farmer. Middlemen usually do this and then sell to the agencies.

When the Board fixes the prices at which it is prepared to buy palm oil, it sets separate prices for different grades of oil according to the f.f.a. content. Special Palm Oil has under 4% f.f.a. and gets the highest price. Oils with more f.f.a. are described as Technical Palm Oil, and are bought at lower prices. This encourages the farmer to take care in harvesting the fruit and extracting oil to get the best price. This policy also gives Nigerian Special grade oil a good reputation with overseas buyers.

Even though Nigerian palm oil has a guaranteed quality the Marketing Board finds that the price it can get for its oil overseas changes from year to year. Yet farmers like to receive a steady price for their oil, and they certainly do not like to receive a very low

price. So the Boards are prepared to sell at a loss when the world prices are low and make up their losses by taking more profit from farmers another year, when world prices are high. By this method they keep the prices quoted to the farmer for the different grades of oil fairly steady from year to year.

The problems of farming

In the eastern provinces it has been mainly the export of palm oil and palm kernels which has provided the money to pay for roads, schools, hospitals and government. Yet the ordinary farmer cannot expect to become rich. Okpala's twenty trees might bring him an income of £30 in one year. Even with the money from other crops this does not seem to compare with what others may earn in trade or industry, or in government service. We must not forget, though, that Okpala grows so much of his own needs that he does not have to have so much money for buying goods as someone who does not farm.

Many boys do not want to farm, but instead to work in the towns where they think they have a better chance of becoming rich. But farming is still the mainstay of the country's prosperity, and intelligent young men must continue to go into farming if farm production is to increase. How to get the best from the land by attracting able young men into farming is perhaps Nigeria's biggest problem today. Those who do go to work on the farms should know that they are doing a very important job.

Exercises

1. What are 'ocho-passengers'? Are they necessary?
2. What improvements in road passenger services can be expected?
3. Draw a sketch map to show the main road between your two nearest townships. Mark on it any small towns or villages through which it passes and any important road junctions. State the approximate scale of the map.
4. Make a tracing of the map of administrative provinces (Figure 107); lay it over the map of population distribution so that you can see which provinces are the most densely populated. Divide the provinces into three categories—(*a*) the most densely populated, (*b*) moderately well populated, (*c*) the least densely populated.
5. What are the climatic and soil preferences of the oil palm?
6. What are the three chief methods of extracting oil from palm fruit?

7. How can good quality oil be obtained from palm fruit?

8. Why does the Eastern Nigeria Marketing Board give a better price for oil of a low f.f.a. content?

9. What is the advantage to the farmer of the Marketing Board's policy for palm oil price?

10. How much money per year does the average oil palm earn? (Answer this by enquiry in the school or home locality rather than by accepting the figure given in this chapter.)

Local investigations

11. *For a class or a group of students.* Take a count of traffic on your nearest main road at different hours of the day, or on near-by side roads as well at the same hour. Show your results on a graph in the first case, or a map in the second place.

12. Investigate the oil palm in the district near your home or school. Find out (*a*) the age when fruit first appears, (*b*) the age when the palm is considered fully productive, and (*c*) the age when the tree needs to be climbed for harvesting.

13. Make a list of the uses to which the various parts of an oil palm are put in your home district.

14. Find out what time of year is the best for the ripening of the fruit. Does any fruit go to a Pioneer Mill? If so, how far away is it? How much of the fruit from your local oil palms goes to a hand press, and how much is processed in the home?

15. Obtain some single fruits from different ripe branches from different palms. Cut them through to look at the relative thickness of pericarp, shell and kernel.

16. Visit a local hand press and make a drawing of it showing how it works. What weight of fruit can this particular press take?

17. If possible visit your nearest Pioneer Oil Mill and follow the stages in processing. Find out how big an area it serves. Find out whether there are any hand presses operating close to the mill, and if so why some people prefer to use them.

18. Find out about the operation of buyers of palm oil in your district. What prices for different grades are offered this year? Are they different from last year's prices? Where do the buyers take the oil to, and to whom do they sell it?

For exercises for more advanced students, see end of Chapter 9.

9 · Palm Products for Export

Fig. 33. A raft of palm oil drums.

Bulk oil

The Eastern Nigeria Marketing Board collects palm oil in depots throughout the region. One very important oil depot is at Aba. From the depots the oil is taken to a Bulk Oil Installation at the port, operated by another organization, the Nigerian Produce Marketing Company. These are the final collecting points for oil before shipment.

Here the oil is emptied from the drums into a machine called a centrifuge separator. This is a container which revolves at speed flinging any dirt in the oil to the outside. From the centrifuge the clean oil is led into storage tanks, where it stays until the ship comes in. Then the oil is pumped into special tanks in the ship's cargo space.

Ships carrying palm oil are either general cargo vessels, with some special tanks, such as the 'Badagry Palm' (see Chapter 13), or vegetable oil tankers designed to specialize in this type of traffic. They look rather like petroleum tankers (see Figure 56).

There are four Bulk Oil Installations in the eastern provinces. The

Fig. 34. At the Port Harcourt Bulk Oil Installation.

largest is at Port Harcourt (see Figure 55). There are smaller ones at Abonnema, Calabar (no longer as important in the palm oil trade as it used to be) and Opobo (the smallest, because only small coastal vessels can use this shallow port).

Port Harcourt is also the leading centre for palm kernel export. Some kernels go to Calabar, some to Abonnema, and some, from the Onitsha area, by river steamer to Burutu and Warri, the delta ports.

Factory uses

Palm oil has been used in the factories of Europe for over a hundred years. The first large shipment of palm oil was in 1806, to Liverpool. During the rest of the nineteenth century the trade grew, replacing the trade in slaves (see Chapter 14). The part of southern Nigeria around the River Niger became known as the 'Oil Rivers'.

The principal use for palm oil was in soap-making, and this, along with the making of glycerine (see Chapter 15), is still an important use in Europe and also in Nigeria. It is also used in the making of tin-plate, and sometimes in candle-making.

The Special Palm Oil is used in the making of margarine and cooking fats. More than half of the palm oil taken to Europe is of this kind, so the need for the farmer to produce high quality oil is clear.

The use of palm kernel oil was developed later, but it has become even more important in European industry than palm oil. Kernel oil is an oil quite distinct from palm oil (pericarp oil), but it is used in

Fig. 35. The movement of palm produce for export.

similar products. Most of it, about two-thirds, goes into food products, including ice-cream, salad cream, cakes, margarine and cooking fats. The remaining third goes into soap making. The solids which remain when the oil has been crushed out make a very good food for cattle.

Competition from other countries

Nigeria is not the only producer of oil palm products in the world. The Federal Republic accounts for between a third and a quarter of the world trade in palm oil. Most of the rest comes from two other main producing areas:

1. The Congo;
2. Indonesia and Malaya.

Nigeria produces over half of the palm kernels in the world's trade. Most of the rest comes from other parts of West Africa, especially Sierra Leone, Dahomey, Guinea and the Cameroon Republic, and from the Congo ('Leopoldville').

Another important point to remember is that the European factories can and do use oils from many other parts of the world in all their products. There are hundreds of different oil-bearing plants throughout the world. Only a few have been developed on a large scale for trade, and some of these are produced in Nigeria, including groundnut oil and benniseed oil.

Disadvantages of natural palmeries

Because of the competition which Nigeria meets in world trade when selling palm oil, it is very important that the whole oil palm

Fig. 36. World trade in oil palm products (average of 1961 and 1962 in metric tons).

production is well organized. The Federal Government particularly, through its research station at Benin, the regional governments and the commercial firms concerned, have given a lot of thought and effort to improving the oil palm itself.

Most of the oil palms growing semi-wild throughout the eastern provinces are not very profitable for one or more of the following reasons:

1. In many cases the fruit gives less oil than it should, because the pericarp is thin, and the shell, which is of little value, is thick.

2. Many trees are twelve or more years old before they give much fruit, by which time they are so tall that they have to be climbed to be harvested. Then each year they become higher and more difficult to climb. Climbing tall palms is laborious work, and needs a skill which is not so common as it used to be. Many young men are unwilling to take on this tricky job. For instance, Okpala's wife at Ogidi has no one in the family who can climb palms, so she has to hire the services of someone outside. This is costly and reduces the profit from the sale of the fruit.

3. In addition, oil palms are often scattered through the bush, so time is wasted in going to each palm.

All these disadvantages can be reduced or overcome if palms are grown according to the most modern methods. A modern palmery is called an Oil Palm Estate. If the **estate** is a big one it may be called a **plantation**. This is how we shall use the words in this book though often the words seem to mean the same.

Oil palm estates

To set up an estate means, in some parts of Nigeria, a complete change in the ownership of the land, so that the estate owner can have full control over the use of the land and have secure rights of ownership for the years ahead.

Many oil palm estates are to be found away from the densely peopled areas where it has been easier to find the land. There are some, however, in the area through which our route takes us. For instance, there is one estate, owned by the Eastern Nigeria Development Corporation, at Owerri; there are also some private oil palm estates in the Onitsha–Owerri districts.

New varieties of oil palm

In the oil palm research stations scientists working for the improvement of oil palms have produced new varieties of palm which are easier to harvest, and which give more oil than the 'wild' palms.

These palms have fruit with a much thicker pericarp and a thinner shell. They also give fruit earlier in their life, usually bearing the first fruit in their fourth year and reaching their best at ten years.

Fig. 37. Cultivated palm trees.

As they grow older they will be giving less oil and also be taller and more difficult to harvest. It is planned that they will be cut down when about thirty to thirty-five years old and replaced by young palms.

Fig. 38. Climbing a tall palm is laborious work.

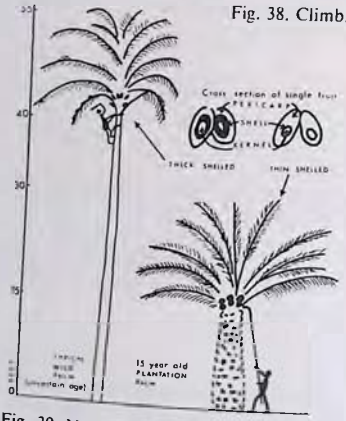


Fig. 39. Natural and plantation palms (from the United Africa Company's Statistical and Economic Review, March 1961).

Plantations

There are several extra large oil palm estates or plantations in the eastern provinces. The oldest, the Calabar plantation of Pamol Ltd., established in 1937, has 6,800 acres approximately and is fully developed. The Kwa Falls plantation has 6,000 acres and the Calaro plantation has 12,000 acres. Both of these belong to the E.N.D.C. and have been more recently established.

The programme of planting new palms goes on year by year and every year more palms come into production. It is expected that as a result of this, and of setting up new plantations (one is being established by the E.N.D.C. near Ahoada in Port Harcourt Province), the amount of palm oil coming from plantations will have increased fourfold in the ten years from 1962 to 1972.

In a plantation, and a good small estate, the palm seedlings are planted in regular lines 30 feet apart. This allows the plantation workers to cut down the undergrowth around the palm easily. If this is done the palm bears fruit earlier than it would otherwise, and it will also produce a thicker trunk, which grows upwards more

slowly. Harvesting can be carried out cheaply by working along the rows of palms, and fertilizers can easily be applied.

On a plantation, special nurseries for seedlings can be maintained which the small farmer has neither the money nor the knowledge to do. Another advantage that plantations have is that they can operate their own oil mills, of the same type, but bigger than, the Pioneer Mills.

So we can say that the result of growing oil palms by a plantation system is a better and more profitable production of oil than is possible from the small traditional farms. As there is unfarmed bush and waste land in the eastern provinces, especially in the Cross River basin, we can expect that plantations will become more and more important in the years to come. In the Congo, Indonesia and Malaya, nearly all palm oil production for export has always been from plantations.

Away from the plantations, much will depend upon the Government's Palm Grove Rehabilitation Scheme in which it is hoped to replace within eight years one-tenth of the wild palms with plantings of new varieties.

Exercises

1. What is the purpose of a Bulk Oil Installation? What happens there?
2. How are oil palm products used in industry?
3. What competition does Nigerian oil palm produce face in world trade?
4. Make a list of the reasons why a plantation palm is more profitable than the typical wild palm.
5. Why is it generally easier to set up an oil palm estate away from the densely populated areas?
6. Why is the undergrowth kept low in an oil palm plantation?
7. Why are plantations likely to become more important in Nigeria in the future?

For more advanced students

8. Why is it important for (*a*) an oil palm to give a high yield of fruit and oil and (*b*) the oil to be of a high grade (low f.f.a. content)? How can these aims be achieved?
9. Try to get the help of some local farming families in your district and work out some value for the total income per year that farmers with farms of different sizes and using traditional or modern methods may expect to receive. Do not forget to make allowances for crops grown and used in the home.

10 · The Delta of the Niger

The map of the delta

If you study the map opposite, you will see that south of Onitsha the Niger continues as a mighty river, over a mile wide for about fifty miles. At Osamari between Onitsha and Aboh, some Niger water leaves the left bank to join the Ulasi (Orashi) River. At Ndoni, opposite the town of Aboh, after the Niger has entered the Mid-West Region the Ndoni Creek leaves the left bank.

South of Aboh it becomes impossible to recognize the Niger as one river. It splits into many separate creeks which twist and turn, separate and reunite, and finally reach the sea in up to twenty different mouths between the Escravos River in the west and the Bonny River in the east. Notice also how the coastline makes a great bend out to sea along this stretch, with Brass and Akassa at the furthest point. This is the area which we know as the Niger Delta.

Into the delta

In Chapter 8 we took a bus from Onitsha to Owerri, and then left our textbook journey to take a closer look at the palm oil industry. Now we must get back on to our route. At Owerri, a small but busy township, the centre of an administrative province and an important route centre, we take another bus bound for Ahoada. But we must not expect to continue by bus through the land of the Niger Delta. This is impossible; there are scarcely any roads. For the sake of our journey you had better imagine that any means of transport are at our command: bus, kit car, Land Rover, canoe, motor launch and our own feet. We shall need all of them.

As we travel into the delta we notice that the countryside changes from the kind we were used to before Owerri. Compounds and villages are much further apart, tall forest trees become much more common. Here there are fewer people, though we are still in Ibo land. In these districts, young men from the overcrowded lands beyond Owerri come for a season to rent land on which to farm, and collect the oil palm fruit.

After Ahoada a new tarred road takes us on as far as Mbiama (Figure 40). Canoes are now our transport along the creeks of the

delta. Our change of transport also marks where we leave the Ibo country and enter the land of the Ijaws, a people who live entirely by or on the waterside. We will give up the rest of this chapter to a study of their homeland, the Niger Delta.

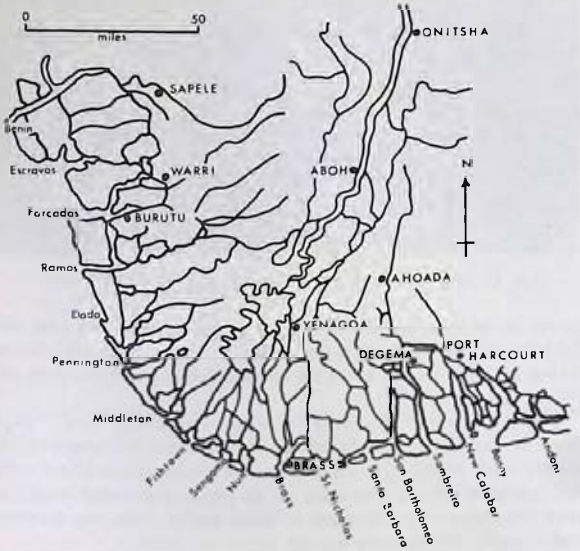


Fig. 40. The Niger Delta.

The freshwater swamp forest

In this northern part of the delta we are in what is known as a freshwater swamp forest. The waterways are edged by floating grass about three feet high. Behind this grass large ferns are found. Behind them are the raphia palms. These are usually fairly small, seldom taller than 40 feet. Behind the raphia palms there may be tall forest trees.

Of all the trees and plants of the freshwater swamp forest the most useful is the raphia palm. This palm gives 'tombo' wine and materials for mats and roofs. The mid-ribs of the large leaves are also broken to produce a stiff fibre known as piassava. This is very

Fig. 41. Mangrove swamps, showing the long roots above water.

useful for brooms, and can be sold for the export trade. Another useful tree growing near the water's edge is the Pandanus tree, whose leaves are used by the Ijaws for making sleeping mats, baskets and fishing tackle.

The land behind this fringe of freshwater swamp forest, away from the creeks, is usually fairly dry, at least that is true outside the wettest parts of the rainy season. Narrow winding paths connect the few scattered villages, and there are no properly surfaced roads yet; they would be very expensive to build and to maintain. Soils are rather sandy, and farming is poor.

The mangrove forest

In the south, nearer the sea, the vegetation changes. The creeks here are lined with mangroves, an unusual kind of tree which you will see illustrated in Figure 41.

The reason for the vegetation change is to be found in the water of the creeks. If we can bear to dip our hands into the dark-coloured water alongside the canoe and taste it, we will find it rather unpleasant and far from thirst-quenching. Near the coast the sea water comes up the creeks mixing with the Niger waters, so the water we taste contains some salt. We would describe it as 'brackish'. Brackish water supports an entirely different type of vegetation from fresh water, and by the Nigerian coast this principally means mangroves.

The red mangrove

The most common tree in the southern part of the delta is the red mangrove. It is a dark-leaved tree which, when fully grown, may reach a height of over a hundred feet. Unfortunately such giants are rarely seen nowadays because they have been cut down.

The bright-red wood is easily cut and burns well, so it has been a popular firewood. In the Enugu collieries red mangrove pit props last longer than those cut from teak, which is a very hard timber. The tree can yield cutch and tannin. Cutch is sometimes used by the Ijaws to preserve their fishing-nets. Tannin is a colourless substance extracted from the bark of the tree. It is used in the tanning and dyeing of hides and skins. Very little use is made of this source of tannin in Nigeria.

Tall mangroves still grow in the more remote parts of the delta. Near Port Harcourt, and in the Cross River Mangrove Swamp near Calabar, the finest trees have long since been cut. Now all that remains is a tangled mass of many small mangroves 30 to 40 feet high.

The red mangrove is a tree of great interest to botanists. Unlike any other kind of vegetation, the seeds germinate while they are on the tree. Each seed grows into a complete young plant with a long root which is thick and heavy towards the end. This root keeps the plant upright when it falls from the tree and penetrates the soft mud below. The young plant grows most successfully on the banks of the fine silt which lines the tidal estuaries. (These are coastal inlets where the tide rises and falls daily.)

New land for Nigeria

So far we have tasted the brackish water of the creeks and studied the red mangrove tree. Now we should look at the mud which we can see in little inlets between the mangrove trees. It is blue-black in colour. We are cautious about stepping out on to this mud for we could easily sink in it up to our knees. It is rather sticky and foul-smelling.

It may be hard to believe that this unpleasant stuff is the beginning of a new piece of Nigeria, but this is so. Every year the inland parts of the Niger Delta rise a little higher; every year the delta pushes out a little into the Gulf of Guinea. Such changes are too small to be noticed by the human eye, but nevertheless they do take place. Over a long period of time great changes have already occurred.

Look at Figure 40 again, or better still find a good atlas or wall

Fig. 42. Air view of the delta. From the air we see how the creeks follow winding courses, often lined by tall mangroves. Behind them are smaller mangrove trees.

map of the physical features of Nigeria. Can you believe that the River Niger once met the sea at the place where Onitsha now stands? Yet geologists will tell us that this is true. Trace with your finger a line from Onitsha to Forcados and then another from Onitsha to Bonny. All the land lying south of these lines is the gift of the River Niger. Measure the area of this land. You should make it about 10,000 square miles. This great and important addition to the land of Africa has come gradually over millions of years.

The lowering of the land

In Chapter 5 we visited the uplands of Agulu and Nanka and saw there that in the process called soil erosion the swollen rivers of the rainy season are carrying soil away. Some of this soil is dropped by the rivers a few miles further downstream, but some of it is carried on, into the Niger and southwards to the delta. Here it will be dropped, or deposited, helping to build the delta up very slightly.

But it is not just soil erosion that helps to form the Niger Delta. This is in fact just one very small part of the story. Look again at a map of physical features, this time of the whole of West Africa. See how big is the area of land drained by the River Niger and its tributaries. You will see that this includes most of northern Nigeria, some of the Cameroons, and a huge part of West Africa stretching westwards to the hills of Guinea.

Much of this is fairly level land standing at heights of one thousand to two thousand feet above sea-level. Only a few hilly districts are higher, but many millions of years ago there must have been much more high land, and the hills we see today would have been very much higher.

Take for example the Jos Plateau in northern Nigeria. This is today a tableland with a few ranges of hills rising up from it. Its sides, especially around the south, are steep; we call these steep slopes escarpments. Geologists will tell us that at one time, millions of years ago, the Jos Plateau was very much bigger, extending over a much bigger area, and with much higher hills maybe twice as high as the existing hills. This land has crumbled and been washed away over those millions of years.

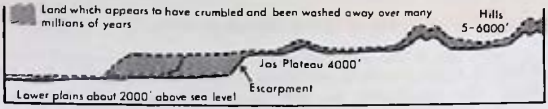


Fig. 43. The lowering of the Jos Plateau.

Add to this crumbling of hills and washing away of soil throughout the whole Niger Basin over that time and you will see that the Niger must have carried a lot of sand and mud to the sea. This 'lost' material built the Niger Delta. In other words the Niger Basin has lost height while Nigeria has gained in area along its coast; all this over the very long period of time.

How the land becomes lower

The process of crumbling away we call **weathering.** It happens as follows:

1. Rain-water soaks into the surface of the rocks and warmed by the sun it causes the rock to rot. The rain-water is really a weak acid slowly altering the rock and softening it.
2. Big changes of temperature, between the heat of the afternoon and the cool of the night, which occur in dry climates such as that of northern Nigeria help to break up the rocks.
3. Plants, animals and men help to break up the rocks even further and help to form the soil.

The rain-water will also carry the soil and small pieces of rock away into streams. This wearing and carrying process we call **erosion.**

In this case the streams reach the Niger, or join into rivers which flow into the Niger.

How the Niger Delta was formed

As the Niger approaches the sea it moves along more slowly. As a result it cannot carry all the silt, or fine sediment, that it has brought from the interior of West Africa. So it must drop the silt, a process we call **deposition.** Figure 44 shows how the delta was formed, by means of a side view.

Fig. 44. Formation of the delta.

When a river deposits sediment in its bed it makes the river shallow. The sandbanks we saw at Onitsha in the dry season are made of sediments brought by the Niger and deposited in its own bed. If there is a big load to deposit, then the river bed gets blocked and water escapes to the side forming smaller rivers. This is what happens to the Niger over and over again between Onitsha and the sea. Look again at Figure 40 and see the many different branches into which the Niger splits. These are known as distributaries.

Let us now sum up what the River Niger and its tributaries have done, and are still doing. Firstly, they erode the surface of West Africa and make it lower. Secondly, they transport millions of tons of sediment from the land to the sea every year. Thirdly, the River Niger deposits this sediment to form its delta. Here the largest quantities of Nigeria's newest rocks are found.

Unfortunately it has so far been very difficult for man to make full use of this extra land. Flooding is very extensive. Farming is only possible in the drier northern parts, or where the floods can be controlled. Communications are difficult and slow, as we have seen.

The climate of the delta

If our visit to the delta falls in December or January we should notice immediately that the dry season is less severe here than further inland. The harmattan does not seem as strong especially near the coast. People living near the coast can be sure of some rain even in these drier months, so even the higher ground above the level of the creek water does not get very dry.

If our visit falls at a different time of the year we should see how rainy the delta really is. Near the coast rain falls on most days of the year, and days when it rains for the whole day without a break, rare at Onitsha, are more frequent here. Brass, on the coast, has an average of a hundred inches of rain falling just in the six months from May to October, which is more than Onitsha gets in the whole year.

Another difference is that skies are very much cloudier than those at Onitsha, and without so much sunshine the temperatures never get very high, 95° F. being exceptionally hot and rarely encountered. On the other hand with this cloudiness at night comes warm sticky weather which makes sleeping uncomfortable. In the mangrove swamps, the bamboo poles which are used for the walls of houses and of rooms allow any slight breeze to move through the house and cool it a little.

At Yenagoa and other places inland the climate is drier than that at Brass but still wetter than at Onitsha. The following table gives the annual rainfall averages for several weather stations in and near the Niger Delta.

TABLE 4

Group A		*Group B*	
Bonny	172 inches	Degema	96 inches
Brass	149 inches	Port Harcourt	98 inches
Forcados	151 inches	Warri	109 inches

You will see that the stations in Group A get more rain than those in Group B. Find the location of the six stations on Figure 40. What is the difference in position between the stations of Group A and those of Group B? Now look at Figure 105, of annual rainfall totals in the eastern provinces, and see how these weather stations fit on to that map.

Finally we pick one of these stations, Port Harcourt, as a good climate station to represent the climate of the delta. Though it lies right on the edge of the delta it is a good station to choose because:

(*a*) it is of a kind half-way between the very wet coastal districts and the drier inland regions;

(*b*) it is a climate station where records have been kept for over forty years and so provides noteworthy averages.

You will notice that no season is really dry by Nigerian standards. This kind of climate, where rainfall is well spread throughout the year and where temperatures remain fairly steady, is known to

geographers as an **equatorial** type because it is only found near the Equator.

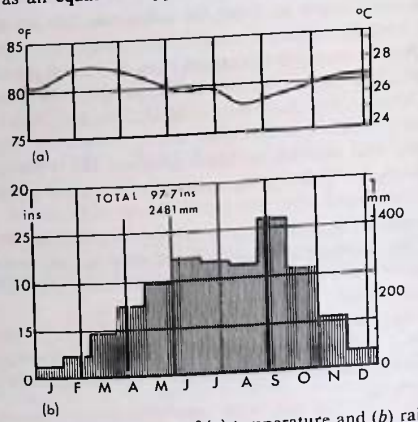


Fig. 45. Port Harcourt: graphs of (*a*) temperature and (*b*) rainfall.

Exercises

1. Name the two areas of sea into which the Niger Delta divides the Gulf of Guinea.

2. Name the three natural vegetation zones through which a traveller would pass on a journey from the mainland to the sea.

3. Name the different uses to which (*a*) the raphia palm and (*b*) the red mangrove tree are put in Nigeria.

4. List the following words and find their meanings: brackish, creeks, delta, profile, botanist, geologist, sediment.

5. (*a*) Study the maps of the continents of the world in an atlas and name several other rivers which have deltas.
   (*b*) Now name several rivers which do not have deltas. Give a geographical name for the mouths of non-deltaic rivers.

6. Look around your home area for examples of the way in which plants, animals and men are breaking up rocks and soil. Describe what is happening in each case in your notebook.

7. In what ways is the climate of Brass different from that of Onitsha?

8. Explain why the rainfall averages of Port Harcourt are considered trustworthy.

9. How far is Brass from the Equator (*a*) in degrees of latitude, (*b*) in miles? (Use an atlas.)

For more advanced students

10. Describe the two kinds of swamp forest mentioned in this chapter. Explain their differences.

11. What is meant by **weathering, erosion** and **deposition**?

12. With the aid of suitable diagrams, describe the formation of a delta. Mention at least four examples outside Nigeria, noting any differences.

13. Describe the type of climate experienced by the people of the Niger Delta, mentioning differences between coastal and inner districts.

14. Using the figures given below, draw a rainfall graph for Brass, then compare it with the graph for Port Harcourt.

RAINFALL FIGURES FOR BRASS

	Jan.	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*	*Total*
ins.	2·6	4·3	6·1	10·3	15·9	26·6	20·9	12·5	20·3	18·1	8·4	3·2	149·2

15. What do we mean by an **equatorial** type of climate?

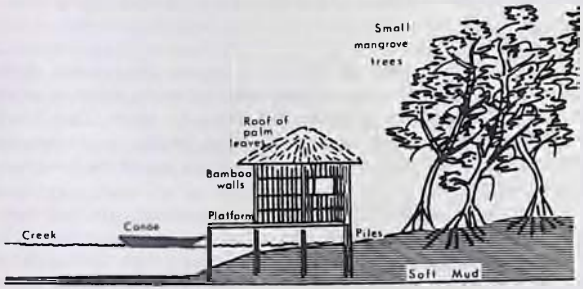


Fig. 46. A house on piles. (*See next chapter.*)

11 · Fishermen of the Delta

The emptiness of the delta

One thing about the delta that we will remember long after our visit is its silent emptiness; the contrast with Onitsha and Ogidi is very great. You will have noticed that the air photograph in the previous chapter (Figure 42) showed no sign of human activity at all. The mangrove forest creeks, immediately behind the coastline, are particularly empty. Here we can travel for 10 or 20 miles at a time without meeting people or seeing houses. Here we could lose ourselves in a maze of small creeks, where the twists of the waterway give us the feeling of getting nowhere very slowly. But in the same district an Ijaw pilot for our canoe would guide us to small villages, hidden away along minor creeks. Even so these are lonely places, where the next village may easily be 10 miles away, and where strangers are rarely seen.

Villages on piles

Villages in these southern delta districts are quite unlike those further north. Houses are normally made of wood, bamboo poles of raphia palm mid-ribs, and thatched with palm leaves. They stand on platforms which themselves rest on poles, or piles driven into the soft sand and mud. Figure 46 shows a typical house of the mangrove swamp region.

The piles are made from any suitable hardwood. The red mangrove does not supply good piles since the mangrove timber is eaten by shipworm. The piles are driven deeply into the soft earth until they stand firmly upright. They must be high enough to be above the highest level of water that the floods bring. This level the people know by experience.

Ijaw isolation

Ijaws are well known, even in Nigeria, for their friendliness and hospitality. Perhaps because of living in lonely isolated places they are always interested in the visitor, who will bring news of another place, or life and events outside the delta.

Fig. 47. A scene in the delta. How many different kinds of trees and boats can you identify?

Be that as it may, Ijaws are divided into many clans which, because they have lived apart from each other among the swamp forests, have developed many different dialects of the same language. Sometimes people from neighbouring villages may not understand each other's speech, though both tongues would be described by language specialists as being part of the Ijaw language. So it comes about that some of the Ijaw words which are quoted in this account may not seem correct even to some Ijaws who read this book. The following paragraphs show life as we might find it in the more northern parts of the delta region where most of the Ijaws live.

A village in the north of the delta

Our tour now takes us northwards, out of the mangrove forests with their creeks of brackish water back into the land of the fresh-water swamp forest which we passed through on our way south. Gradually the scene changes. Here in the north we are pleased to see a variety of trees lining the creeks. Here and there we see higher and drier ground appearing, ground only flooded in exceptionally wet years when the Niger is high. On one such area of comparatively dry ground (it would be a mistake to describe anywhere in the delta as dry!) lies the village of Ikolo, which we now visit. It lies near the

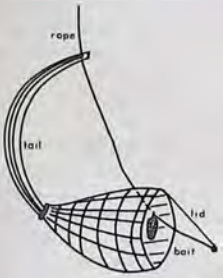
main tributary of the Niger, the River Nun, along a creek joining the left or eastern bank. About twelve miles to the west the boundary between Eastern Nigeria and the Mid-West Region cuts through uninhabited forest, across creeks large and small, separating village from village. The country doesn't change much across this boundary and the people are still Ijaws.

Ikolo is a large village, with perhaps 500 houses or more. The houses are mostly made with mud walls with roofs of raphia palm mats, in contrast to the bamboo houses on piles found further south and west nearer the sea. Here and there we notice a panned roof, a sign of new prosperity in the village.

Fishing

The people of Ikolo, like almost all delta people, live principally by fishing. On the beach we see their canoes, examples of their fishing nets and traps, frames of smoked fish awaiting a journey to market. A man's day's work will often be to visit his fish traps set along the creeks. Water here is strictly divided into sections with the fishing rights of each section belonging to a particular family. Just as in Ibo farming districts the most common disputes are those about land, so here where water is all-important fishing rights are very jealously guarded and are often the subject of a legal battle.

The ways in which Ikolo people fish vary according to the season. In the flood season, which lasts from some time in August to late November, fishermen will set traps which trail in the river. The diagrams opposite show two such traps in common use. The first one is called *agbaba* by Ikolo people. The long tail of the basket (see Figure 48) is bent and kept in place delicately by means of a bamboo pin carrying a bait. The bait may be a boiled maize cob or perhaps fresh snail meat. The lid of the basket is kept open by the cane from the tail. When a fish enters the basket to peck at the bait the pin is dislodged, the tail stretches and closes the basket lid to shut the fish in. The fish can then fatten itself up by eating the rest of the bait! The second diagram shows a trap known at Ikolo as *akpabukpem.* Here a pole is bent over and caught under water. At the end a large hook is used with worms or crayfish as bait. The method of setting the trap is almost the same as for the *agbaba* above. When the bait is taken a trigger releases the trap and the pole straightens itself, raising the fish out of the water. The same type of hook, *akpabu*, is used in other ways, such as tied to a string attached to a stick which is pinned to the bed of the river. *Akpabukpem*, whilst used most in the flood, is used all the year round.



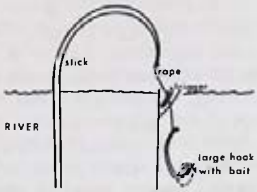


Fig. 48 (*left*). Agbaba: the rope hangs down into the water; maize for example acts as the bait or trigger then the tail stretches to close the mouth, shutting the fish in.

Fig. 49 (*right*). Akpabukpem: the stick stretches upright when the trigger is disturbed.

During the flood crayfish (*opuru*) are caught in close-meshed fishing baskets of the kind shown in Figure 50, called here *ikeli*. The baskets are placed at gaps in small bamboo fences built out from the shore down to waist-deep. The baskets face downstream, and are visited morning and evening.

During the rest of the year a common type of fish trap is that here called *isanga*. A large area of quiet water is fenced off, 50 or more square yards depending on the ability of the fisherman. Twigs are laid on the floor of the trap, attracting fish. When the fisherman judges that many fish are inside he closes the opening thus trapping the fish. The twigs are then removed and the walls of the trap drawn in.

Apart from trapping fish Ikolo people use drag nets, throwing nets, hooks and lines (used in various ways, see one example illustrated

Fig. 50. Ikeli: a close-meshed fishing basket for crayfish.

Fig. 51. Isanga: this trap has different sizes (¼ acre is common).

below), fishing baskets and spears. They also have fishing ponds which are drained when the floods have gone down, that is from January to March.

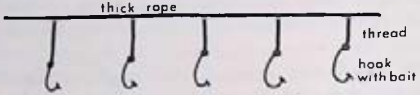


Fig. 52. Line and hook. Length varies from 50 yards to over 100 yards. Bait used can be gari, small crayfish or earthworms.

Apart from fishing the family's waters around the village there will also be more distant water to be fished. (Does this remind you of Okpala's farming activities which were divided between compound land close by, and outfield land at a distance?) The distant waters are usually fished by members of the family who stay away for a week or more at a time living in a fishing camp (at Ikolo called *igbenebeseni*, and at Amassama not far away called *indidougbene*). A fishing camp, which in some parts of the delta may be up to 20 miles away from the village, will consist of a collection of bamboo huts. Up to ten families may use a fishing camp and each family has a living hut and a separate hut for cooking, or smoking fish.

Ikolo people recognize dozens of different varieties of fish, with different sizes and different habits so that different methods of catching them are used. They include *ukolokolo, edo, ufegere, okpouto, odinki,* etc.; their names are far too numerous to make any useful list. Both men and women fish at Ikolo and other Ijaw villages, the women fishing at least as much as the men.

Even the proverbs of the people have fishy interpretations—*obem adiam*—the one who goes fishing is the one who gets enough to eat, others might say 'seek and ye shall find'; *die ukotumozaniza* can be thought of as a mother fish advising young ones always to look around before they go to the surface to take in air—good advice with Ijaw fishermen around. We might translate it as 'look before you leap'.

Forest products

If water is one part of the Ijaws' world, then forest seems to make up the rest of it, and Ijaws make good use of the forests behind their villages. Ikolo people collect twigs, canes and fibre for basket making, for ropes, for fishing nets, for posts. There is even a good trade in rattan canes (*apio*) which are cut by the women and sold to

traders who go north to Onitsha. Farmers of the Anam districts, mentioned at the end of Chapter 4, use a lot of these canes. Oil palms provide some welcome extra income. It is the man's job to harvest the fruit, and oil is extracted by pounding it with the feet in a wooden boat. But oil palms are unimportant here compared with the Ibo and Ibibio lands east of the delta.

One of the most important uses of the forest is to provide wood for canoes. Many different kinds of timber are used including iroko and mahogany. Canoe carving begins when the August floods arrive and fishing activities are reduced. It is very skilled work. Firstly, the inside of the selected log is chipped out with axes, some of which are curved to help hollow out the canoe. When the carving is nearly finished a fire is lit inside the canoe, using old roof mats or something similar, and while the canoe is still hot the sides are pulled out and cross bars are put in, to keep the canoe open and to provide seats. Or else before the fire is lit both sides of the canoe are tied firmly to pegs in the ground. As the wood becomes heated the ropes are continually tightened thus holding the sides apart.

Ijaws make many canoes. They themselves have many. Each member of the family will have one, and children learn to manage them on the creeks at a very early age. Some canoes are fishing canoes, light and fast moving; some canoes are trading canoes, stouter and capable of carrying heavy loads. We met Ijaw canoes on the Niger at Onitsha (see Chapter 7). Some canoes are made for sale and taken to large markets such as Onitsha, where a good canoe will sell for £10 or more. In the past large war canoes over 100 feet long and perhaps with a small cannon mounted in front, were built. These magnificent canoes are still made occasionally, for ceremonial purposes.

At the present day many canoes are fitted with outboard engines. These are better for trade on account of their speed, but they are not as useful in narrow creeks, so there is no danger that the Ijaws will lose their skill in paddling.

Markets

As in Ogidi, markets are an important part of the life of the people. Each village has a market which is held every fourth, eighth or even twelfth day. The Ikolo market, known as Afienkioyoyo, is held every twelfth day, with other markets each (4-day) week in between at neighbouring villages. Each group of villages has linked markets held on different days of the week, or as at Ikolo on the same day in different weeks. The fact that markets are fewer and

less frequent than at Ogidi is easily explained when you remember that these districts are very much less crowded than the latter.

Other differences that we notice between Afienkioyoyo market and, for example, Eke Akpakaogwe near Okpala's home in Ogidi would be mainly in the smaller range of goods sold. Manufactured goods here have to come by canoe or powered boat from Onitsha, or Warri, or Port Harcourt, whereas in Ogidi traders can arrive from Onitsha in under twenty minutes. Local products on sale are fewer than in Ogidi, though this obviously doesn't apply to the many kinds of smoked fish. Men and women traders are here. Men deal more with clothing and women with provisions.

This account would not be complete if we made no mention of another occupation which is important in Ikolo and many other districts, namely gin distilling. It is man's work, and many men find full time occupation in the business. Women and children lend a hand from time to time. This is an occupation which would not be seen on a casual visit such as our imaginary tour, because the distilling is not officially permitted.

Gin distilling is usually done in huts hidden away in the forest. Raphia palm wine is used to make the gin. Huts cannot be too far away from the village because of the carrying problems involved. The distilling apparatus is simple. A tin or drum of palm wine is heated, and the vapour passed through a pipe immersed in cold water to condense it. The distilled spirit, known as gin, is then collected in a bottle. This gin distilling and the associated trade was (1964) still illegal, but had grown to be of importance, the illicit gin being sold as far afield as Lagos. There are, however, strong hopes that the trade will be made legal.

Coastal Ijaw districts

On the seaward edge of the delta is a line of sand hills or dunes, where villages can be built above the danger level of flooding. Many Ijaws live along this coastal strip. Their main concern is with sea fishing using big canoes able to withstand the big waves of the open sea. They catch big fish known as bonga; others known as sole, moonfish, croaker and tarpon are found in their nets. Now that their canoes can be motor-driven these people find the prospects for sea fishing much better than they used to be.

A comparison with Ibo districts

Today the Ijaws have a problem which reminds us very much of the problems of the people of Agulu and Ogidi. With the coming of

peaceful times in the creeks the numbers of people have grown. At the same time the fish trade with the mainland peoples has grown and fish are not so plentiful as they once were. Fishing is not as profitable an occupation as many would like it to be. So many young men of Ikolo and other Ijaw villages leave home to find work in the townships. Many go to Lagos. Many take jobs with the shipping companies. We find them on the river steamers which travel up the Niger from Warri and Burutu to Onitsha and beyond. Others serve in the Nigerian Navy. Some work on the ocean-going ships which sail between Port Harcourt, Lagos and the countries of the world. Their skill and confidence on water make them valuable people aboard ship.

But it is not really to the advantage of Ikolo that it loses so many of its young men. True, they often send money back from the cities to their families, but it would be better if they could do well by staying at home.

This is likely to be an even bigger problem in the delta than it is at Ogidi as the following points show:

1. Communications are more difficult than on the mainland; roads can only be built at very great expense, and other means are slow. Thus a letter from Lagos to Ikolo currently takes about two weeks as against about three days or less to Port Harcourt.
2. Because the delta has so few people their markets, churches, schools, dispensaries are few and far between. Any factory or plantation would find it difficult to get workers in so sparsely populated an area.
3. Because there are few people here there is very little money raised in taxes for use in local development schemes.
4. The swampy conditions and humid climate make the job of fighting disease especially difficult.

But here, as in other parts of Nigeria, modern progress is changing the situation. We have already seen that the motor-powered canoe helps the sea fishermen, it also helps trade and communications. The discovery of oil, some of it in the rocks beneath the delta, gives the government more money with which to help the local people. This help could come for improving the fishing, and it could come for agriculture.

At Yenagoa, the administrative headquarters of the district including Ikolo and all neighbouring villages, the Eastern Nigeria Development Corporation is carrying out experiments in the growing of sugar and rice on land cleared from swamp forest. Sugar, it is true, is

Fig. 53. A motor launch among the coconut palms and the mangroves.

grown around villages like Ikolo, but on a small scale. If these efforts succeed and can be extended to many districts the future could be bright for the delta lands and their people. Time does not stand still.

Exercises

1. What is a traditional house of the mangrove swamp region made of? Why?
2. How is an Ijaw house of the mangrove swamp region built?
3. (*a*) Visit a traditional large house near your school. Draw a picture of it outside and make a plan of the inside. Describe what it is made from.
   (*b*) Visit a new house in modern style near your school and again draw a picture of the outside and a plan. What are the chief differences that you notice between the old and new styles of house in appearance, in shape and in building materials. Why have the changes been made?
4. How does it happen that Ijaws from different parts of the delta find it difficult to understand one another's speech?

5. Describe a walk through a village of the freshwater part of the delta, mentioning the appearance of the houses and the activities that you see going on out of doors.

6. Why are fish so important at Ikolo and in other parts of the delta?

7. What is the purpose of a fishing camp?

8. What are the chief items that the people of the fishing villages have for sale in local and distant markets?

9. What are the chief differences between markets at Ogidi and Ikolo?

10. Why do so many young men find work outside the delta?

11. What are the crops that the government encourages in the delta?

Exercises for more advanced students

12. Under the headings position and extent, the land, the vegetation, the climate, people, fishing, other activities, write a brief geographical account of the Niger Delta.

13. How do you suggest that money is used to help the people of the delta to greater prosperity?

Fig. 54. King William Dappa Pepple of Bonny. In his reign Bonny was the greatest trading port on the coast, firstly as an export centre for slaves, later as the biggest centre of the new trade in palm oil. (*See next chapter.*)

12 · Mineral Oil and the Revival of Bonny

The journey from Yenagoa to Port Harcourt by motor launch takes 15 hours. It may be that by the time you read this it will be possible to travel by tarred road whenever one pleases, a distance of about eighty miles taking perhaps two hours. Yenagoa will then seem like a different place.

Our route lies through Port Harcourt, but, before we look at this busy town and port, we will take a boat along the Bonny River as far as the town of Bonny. Bonny is Nigeria's newest port, built specially for the export of mineral oil and first used in 1961, but a glance at the town's interesting old buildings shows that the town has known other days of prosperity. The story of Bonny is a fascinating study in the changing fortunes of a port and so that story will now be briefly told.

Bonny in the past

About 200 years ago the only trade of importance along the coast was in slaves, an exchange of slaves for money and for guns. The slaves were brought to the creeks by Aro traders from Ibo country. The buyers were sea traders from many different European countries. In between the two, several towns grew to importance, their peoples acting as middlemen. The people of these towns were a mixture of tribes but mainly Ibos and Ijaws. They became known as the 'Ndi Mili Nnu' or 'People of the Salt Water'. Their strongholds were Brass, Akassa, New Calabar, Degema and, most powerful of them all, Bonny.

It is not for us here to consider the evils of the slave trade. People in those days did not think of it as wrong, and Bonny, under their kings, Opubu, who reigned from 1792 to 1830, and William Dappa Pepple (1830–54, 1861–6), grew rich on its profits. We can at least say that the rulers and people of Bonny traded fairly and with less bloodshed than at some places along the coast. During the reign of King Pepple the slave trade was suppressed and a profitable trade in

palm oil took its place. Bonny kept its prosperity, and, until the founding of Opobo as a rival port by some Bonny people (see Chapter 16), it remained the chief port.

Even after that setback Bonny kept some importance. In 1885 Britain chose it as the centre of government for the Oil Rivers Protectorate, and the port had an important passenger trade. But when, for reasons we shall see in the next chapter, Port Harcourt was founded, Bonny lost its trade and watched idly as the ships sailed right past and up the Bonny River. But, by 1961, the port was alive again.

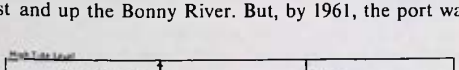


Fig. 55. The Bonny Bar. There is no horizontal scale here. See map in next chapter for width of bar.

New life at Bonny

Bonny's importance today is due partly to the coconut plantations of the Eastern Nigeria Development Corporation near by, but mostly to the new traffic in mineral oil. Bonny's position next to the open sea, sheltered by the sand dunes, and nearer to the firm ground of the mainland than other delta ports, has again been turned to advantage.

Pipelines have been constructed, bringing the oil across the mangrove swamps to Bonny, where the large ships known as oil-tankers can be supplied. Port Harcourt was not chosen as the oil port because:

1. It already had as much trade as it could manage.
2. (more important) Oil can be moved very cheaply by pipes, so good roads to the port are not needed.
3. Oil ports are normally kept apart from general cargo ports for safety reasons.
4. Bonny is nearer to the open sea than Port Harcourt, and so, with reasons 1, 2 and 3 in mind as well, it was preferred.

The Bonny Bar was an obstacle. This is an underwater ridge of sand at the mouth of the Bonny River. Its shallow water allowed only small ships and partly loaded ships through to Bonny and Port Harcourt. Now a deep channel has been dredged through the sandbanks which allows big ships to pass out from Bonny fully loaded. The type of ships used, oil-tankers, are illustrated below. The new depth is 29 feet; the cost was almost £1,000,000.

Fig. 56. Inside an oil-tanker.

The search for oil

Mineral oil is often called **petroleum**, which comes from two Latin words meaning 'rock oil' to distinguish it from the vegetable oils such as palm oil and groundnut oil. Finding oil in Nigeria was a long and very expensive task. It took fifteen years of active search before the oil company announced that they had found enough oil to make their search worthwhile. In that time £60,000,000 was spent. We must get used to thinking about large sums of money when studying the oil industry.

Petroleum may be formed when dead plants and animals collect in thick layers of mud over a period of millions of years; you will remember that in Chapter 10 we saw that the Niger Delta had been formed in this way. So geologists decided that the area of the Niger Delta and all surrounding parts of Nigeria would be a good place for an oil search.

Fig. 57. The oil terminal at Bonny, with an oil-tanker lying offshore in the Bonny River. In the distance the open sea is visible.

You may wonder how it was that it was so costly and took so long to find the oil. The oil search included many different activities:

1. Over the whole of the area in the exploration good maps had to be made. All information would have to be described exactly, and good maps were the first step.

2. Samples of rocks had to be collected. This meant studying rocks on the surface, and drilling deep down into the earth to bring other rocks up. All these rocks would be collected and studied so that geologists might say exactly where oil might be discovered.

3. Explosives would be used to shake the ground like an earthquake. Special instruments known as **seismographs** would record these shakings. These experiments would be repeated again and again all over the area of search, and the results studied for extra information about the rocks underground.

4. When decisions were taken about where oil would most likely be found drilling would take place in the hope of finding oil.

5. But before drilling could take place roads had to be built to the drilling sites, houses built for the workers, workshops built where

Fig. 58. Drilling for oil in the mangrove swamp forest of the Niger Delta. This well reached a depth of over 14,000 feet before being abandoned.

the machinery could be looked after, and supplies of water and supplies of electricity laid on.

The above points only give the bare outline of activities. They take no account of such matters as setting up training schools for skilled workers and managers, negotiating for the right to drill on land belonging to different towns, a slow and expensive business, and the office work of administering thousands of workers and large sums of money and large amounts of machinery.

Fig. 59. Oil wells and pipelines.

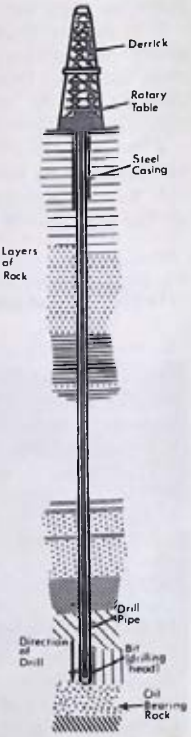


Fig. 60.
A drilling. Liquid is forced down through the drill pipe, and returns upwards, with the rock waste from the drilling between the pipe and the borehole wall.

In Nigeria the first deep test well was drilled in 1951 at Ihuo, near Owerri, but it proved to have no oil even though the well went down for 11,228 feet below the ground-level. Of the first seventy wells drilled forty-four had no oil at all. Even if oil was found, there was not usually enough to make it worthwhile digging a well big enough for oil production and laying a pipeline to carry it away. By 1962, after eleven years of expensive drillings, only five districts had been found to produce enough oil to make a pipeline worthwhile. But these five districts have already produced a lot of oil.

The distribution of these wells is shown in Figure 59. The first well to produce was at Oloibiri in the delta, Yenagoa Province, but this has not been as rich a well as was hoped. The richest district so far has proved to be Bomu, in Ogoni Division not far from Bori. Here, by 1961 thirteen producing wells had been drilled.

Shell-B.P. and other oil companies still hope to find more oil, in every region of Nigeria and even out to sea, off the coast of the delta. If you find this surprising, you should realize that the sea is quite shallow here. Another oil company is producing oil from under the sea-bed, still in the Niger Delta, near Burutu, Warri Province.

The production of mineral oil

The first cargo of Nigerian oil, from the Oloibiri wells, left Port Harcourt in 1958. Since then the amount produced has risen each year as more and more wells came into operation, and more pipelines were built. A big event was the opening of the port, or oil terminal, at Bonny. By the end of 1964 exports had risen to the rate of about 6,000,000 tons a year, and production is increasing rapidly.

This makes Nigeria an important producer of oil in the world, but not in the first rank with the United States, the Soviet Union, Venezuela and the Arab States. To look on the bright side, 5·78 million tons, produced in 1964, was worth £32,000,000, or about three-twentieths of Nigeria's exports. All of this oil is produced in and near the delta.

Its importance to Nigeria

Some of the money received from the sale of this oil abroad is spent by the oil company inside Nigeria. They spend it in wages to workers, over £2,000,000 each year. When you think of the workers spending this money in shops and markets around Port Harcourt you will realize the benefit to the trade of the area. There is money spent on education, with the lasting benefit people will get from this.

The oil company also spends hundreds of thousands of pounds each year on the making and repairing of roads, the repairing of existing roads, and the construction of new buildings. This provides work for many more people in the Port Harcourt area, and wages for those workers, not included in the £2,000,000 mentioned above.

The government also receives money direct from the oil company. It has been agreed that each year half of the company's profit from the sale of oil should go to the Federal Government to be divided as follows:

(*a*) 50% to the region of origin, in this case Eastern Nigeria,
(*b*) 20% to the Federal Government for its own use,
(*c*) 30% between all regions according to their size of population.

But whatever agreement is made a great benefit is felt by the people in the delta and near by provinces.

The government is able to spend more on such things as hospitals, education, progress in agriculture and industry, and the building and tarring of roads. So you see that it is partly because of the money that oil brings that the government is able to speed the progress of the problem areas, such as that of the delta itself, visited in the previous two chapters.

An oil refinery

Mineral oil, as it comes up from the deep well, is known as crude oil or petroleum. It cannot be used without further treatment. This is done in an **oil refinery**. Nigeria's first oil refinery opened in 1965.

The secret of an oil refinery is that, when heated, crude oil splits into its different parts. A fairly simple process, known as fractional distillation, splits the parts of crude oil which have different boiling temperatures. A more complicated process, called 'cracking', splits up the different parts further. Figure 61 shows you the different products of an oil refinery and also the many different uses that they have.

Our journey from Bonny to Port Harcourt, by water, can take us near the oil refinery site. It has been built at Alesa-Eleme, close to the old waterside market of Okrika. Okrika, incidentally, was a very important trading partner of the old Bonny in the days of its prosperity. Just south of Okrika a jetty is being built for coastal and ocean-going ships. The importance of the refinery to the country is mainly a double one:

1. By producing petrol and diesel oil for sale in Nigeria there is

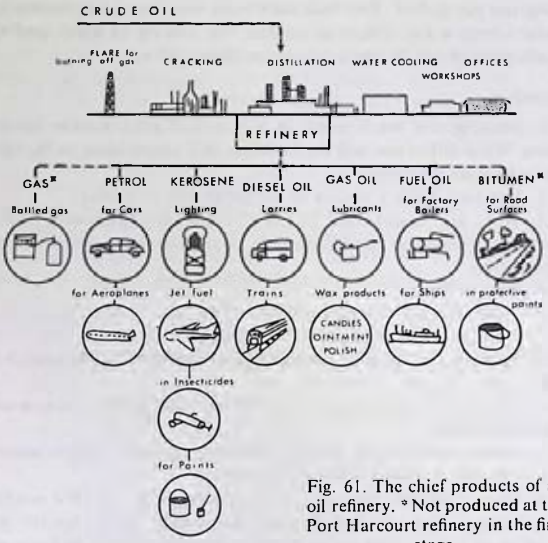


Fig. 61. The chief products of an oil refinery. * Not produced at the Port Harcourt refinery in the first stage.

no longer any need to buy as many petroleum products from other countries.

2. These products can be used in new industries. For example fertilizers, plastics, soapless detergents ('Omo' etc.), and nylon can be made from petroleum products. So the refinery may lead to more factories being built near by.

Natural gas

Finally mention must be made of another important result of the search for oil in Nigeria, the discovery of large stores of natural gas. Natural gas, or methane, is often found underground along with mineral oil, and this has proved to be so in Nigeria. It burns with a very hot flame, and can be transported along pipelines, like oil. Natural gas is now brought to the surface at Afam, 20 miles east of Port Harcourt. Some gas is now piped to Port Harcourt, and some is used to make electricity for Port Harcourt and Aba (see also Chapter 21). Here again it may be that new industries will grow up

using the gas as fuel. Two that have been mentioned as possible are those where a lot of heat is needed, the making of glass, and the production of salt by the evaporation of sea-water.

Exercises

1. Imagine you are a trader in Yenagoa or some similar isolated town. What difference will the building of a tarred road to the town make to your activities?
2. List four distinct phases in the prosperity of Bonny.
3. What are 'middlemen' in trade? Name any prominent trading companies acting as 'middlemen' in your school district or in your home town.
4. Why is Bonny
   (*a*) in a good position to be a port?
   (*b*) in a bad position to be a port?
5. Explain clearly why geologists are employed in the search for oil.
6. How is it that only a few of the oil wells drilled are now used to produce oil?
7. Give the meaning of the following: pipeline, dredge, sample, seismograph, terminal, refinery, detergent.
8. Over 5,000,000 tons of mineral oil produced in 1964 seems a large figure. Can you find, in any other book, figures for the production of other countries in Africa and in other parts of the world to compare with this figure?
9. What financial profit does Nigeria get from the production of oil (*a*) directly, received from the company, and (*b*) indirectly?
10. Briefly list the benefits received by Nigeria from the oil company's operations, as they are mentioned in this chapter.
11. Make a list of the chief products of an oil refinery from Figure 61. Against each product state whether it can be found on your school compound or round about in the neighbourhood. If so, state where you have seen it.
12. Explain how natural gas (methane) will be useful.

For more advanced students

13. Explain fully why it is that the search for oil is always conducted by big and rich companies, or by governments, and not by individuals or small companies.
14. In what way do you think that the discovery, production and refinement of oil helps, and will help, Nigeria's independence in trade?

13 · A Visit to a Seaport

The approach to Port Harcourt

In travelling up river to Port Harcourt from Bonny we take the approach used by ocean-going ships. About three or four ships each way per day sail along the wide estuary known as the Bonny River, following the deep channel marked at intervals by the floating signs known as 'marker buoys'. This waterway is not a true river, as the

Fig. 62. Port Harcourt and the Bonny River.

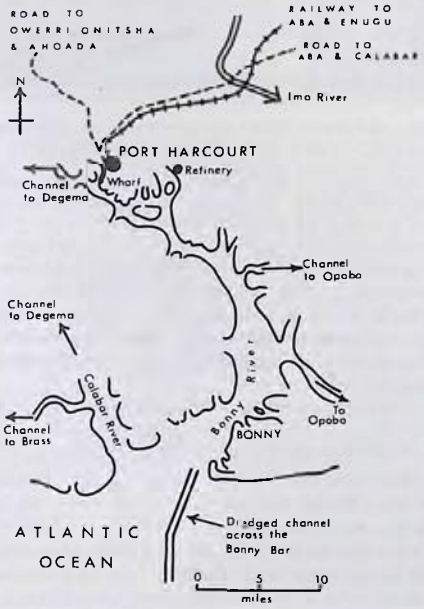


Fig. 63. This photograph shows the newer part of the wharf at Port Harcourt. Notice the rails embedded in the concrete along which the travelling cranes, seen in the background, can move. To the right are the transit warehouses for goods awaiting loading, or awaiting transport away from the wharf. To the left is a smaller motor vessel, in the background three general cargo ships.

Niger, but a creek, with mainly salt water. The word 'river' is used for all mouths of the Niger and also for creeks to west and east of the Niger Delta. The Bonny River marks the extreme eastern limit of the delta, and contains little or no water from the Niger itself, but creeks continue to the east through Opobo and Calabar and into West Cameroon.

The Bonny River is very like some of the larger creeks we saw on our tour of the delta, with brackish water, an edge lined with mangrove trees, and many small creeks leading off on either side. At the seaward end, around Bonny, however, it becomes 5 miles wide in places; only the Bonny Bar and the disappearance of the distant shore mark the change to open sea.

Port Harcourt lies some forty miles from the open sea and ships take several hours to travel this distance. You might think that this is a disadvantage for a port, to be so far inland, but in fact the

opposite is true. When ships sail so far inland they cut the heavier cost of road and railway transport for goods. Bonny, by the open sea, you will remember, depends not on road or rail but upon a pipeline for its land transport.

As Port Harcourt comes into view on a bend in the creek our impression is of big ships lining the side of the creek. The town of Port Harcourt is hidden away behind.

Activity at the wharf

The port activity at Port Harcourt is to be seen along a level concrete platform, the wharf or quay, against which the ships tie up. We saw small wharves alongside the Niger at Onitsha, used by the river fleets. Here the activity is very similar, but on a very much bigger scale. Across these quays (pronounced 'kees') moves an important part of all the trade of Nigeria—mostly from the eastern and northern provinces.

At any time of day or night the wharf is a scene of great activity as crates, sacks, steel drums and other items are loaded on to ships, or else discharged from them. This work is done by giant cranes

Fig. 64. Stockfish in bales in a wharf shed.

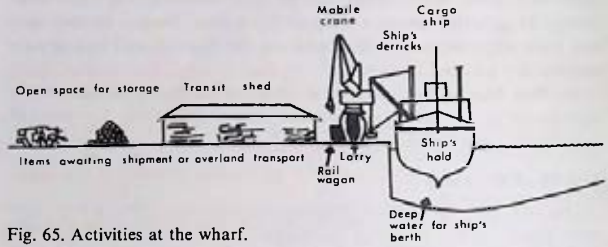


Fig. 65. Activities at the wharf.

which move up and down the quayside to wherever they are needed, helped by the ship's derricks, which are smaller cranes carried by cargo ships as part of their equipment.

Railway wagons and lorries can be brought on to the wharf ready for their goods to be loaded on to the ships. At the rear of the wharf are the storage sheds for goods awaiting movement.

Our visit to the wharf requires a permit from the port management, the Nigerian Ports Authority. The Nigerian Ports Authority is responsible to the Federal Government for the management of all Nigerian ports where ships come in from other countries. These are, in the east: Port Harcourt, Bonny, Degema and Calabar; and in other parts of Nigeria: Lagos, with Apapa, Warri, Sapele, Burutu and Koko, where a new wharf is now being built. These last four are known together as the Delta Ports. The following points about the relative importance of the various Nigerian ports should be noted:

1. That Lagos–Apapa is the biggest port in Nigeria.
2. That Port Harcourt and Bonny together handle about half as much trade as Lagos–Apapa.
3. That the Delta Ports together form a third group whose importance is growing since the dredging of the Escravos Bar.

The coal traffic

In addition, upstream from the wharf, there is a jetty which is used for loading coal. The coal traffic is not a very important part of the trade at Port Harcourt. Almost all the coal loaded here is loaded on to small coastal vessels bound for Lagos and other Nigerian ports. Since most of it does not leave the Republic it scarcely figures in the export trade at all.

We will be looking again at the coal business when our tour reaches Enugu, but we must notice the historical importance of this coal jetty. Port Harcourt was built, in the first place, to allow the sending of coal to Lagos for use on the railway. The railway from Enugu was built to this place at the edge of the delta because:

1. A railway route to Onitsha would have been difficult to build because of the hilly country in between.
2. The Bonny River, on which Port Harcourt stands, was a large and important creek.
3. The railway had to cross less swamp land to this point than to most other suitable places.

The site chosen was previously known as Obomutu. Building started in 1912 and the railway was opened and the first coal shipped in 1916. Port Harcourt was probably named after Sir William Harcourt, the British Colonial Secretary at the time.

Fishing

Another jetty, yet to be built, will be used exclusively for fishing. The boats using this jetty will not be the Ijaw canoes, even of the power driven kind, but larger fishing boats built to travel miles from land, going to sea for several days at a time. The method used will be **trawling,** using a net as shown in Figure 66. It is expected that a single trawler may land up to thirty tons of fish weekly, and that this catch will be packed in ice for transport to various towns and markets for sale as fresh fish.

Fig. 66. Trawling: the otter-boards keep the net open.

Other government schemes to help fishing in the eastern provinces include the packing in ice and marketing of fish caught by power-driven canoes at Opobo, and also the development of inland fresh-water fish ponds, based on experiments at the Umuna Fish Culture Station near Okigwi.

One ship's visit to the wharf

We now visit the quayside. As we arrive, six of the seven berths are full and at the seventh a ship is slowly edging its way in from the river. Moving inches in at a time, it seems an age before the

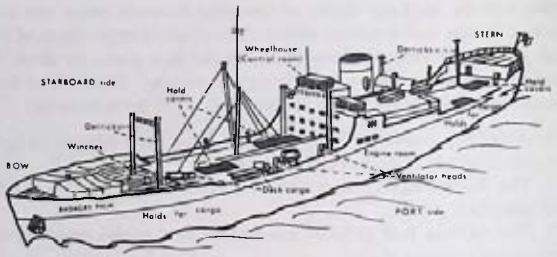


Fig. 67. The *Badagry Palm*.

great vessel is securely roped to the quay. A gangway is put out to allow people on and off the ship. Men go on to make arrangements for taking off the cargo, and soon others, members of the ship's crew, part European, in this case, British, and part Nigerian, with many Ijaws, come ashore, to take a few days' rest in Port Harcourt. Often the discharging and loading of ships' cargoes is under the control of men from the shore, whilst the crew enjoy a break after their long hours at sea.

This particular ship is the *Badagry Palm*, one of a fleet specializing in West Africa–Europe trade. The *Badagry Palm* is a typical general cargo vessel; you will see a photograph of the ship below, and a diagram above will help you to study the various parts of the ship as they can be seen on the photograph.

Fig. 68. The M.V. *Badagry Palm*.

Fig. 69. *Badagry Palm* voyage map: voyage 23, southbound.

On this voyage the *Badagry Palm* left London and called at Dakar and Lagos before reaching 'P.H.' We must now imagine that we are fortunate enough to come back to the wharf day by day to see what happens to the ship while it is in port. Each time we return we see that the discharging or loading of cargo is going on non-stop. Wharf cranes and ship's derricks seem to work continuously. In eight full days the operation is complete. Discharging, in this case, was spread over six days, 22–27 September. Loading began on the 25th so that

on three days loading was going on in one part of the ship while discharging was completed in another part.

Just as a lorry is a vehicle which its owner hopes to use to make a profit, so is a ship. Any time that the ship is not being used is a time of loss to the owner. Often a shipping company's profit depends upon how fast the discharging and loading of a ship can be finished, an operation called the 'turn-round' of a ship.

Eventually all outgoing cargo is safely aboard, the holds covered, and deck cargo securely tied. The ship moves off slowly at first, gathering speed in the river, sailing fairly slowly down river to the Bonny Bar. Safely over this obstacle the port's pilot leaves in a small boat for Bonny and the ship goes 'full steam ahead', in this case to call at Takoradi (Ghana), Freetown (Sierra Leone) for more cargo, Dakar (Senegal) for refuelling, and at Rotterdam (Netherlands) and London to discharge cargo. From leaving London until returning the *Badagry Palm* had been away just over two months, just in time to get ready for its next voyage, to Port Harcourt again. One voyage of the kind just described is shown in Figure 69. Only the southbound route is shown.

On this voyage *Badagry Palm* brought a varied cargo to Port Harcourt. The heaviest item was 312 tons of cement. But apart from this cars, tractors, machinery, nuts and bolts, medicines, foodstuffs, books and many other things were carried. The documents listed hundreds of separate items. The outgoing cargo was simpler: the full list can be seen below.

Cargo loaded on M.V. Badagry Palm *25–30 September, 1961*

3,042 tons palm kernels	
598 tons palm oil	for Rotterdam
507 tons groundnuts	
51 tons bones	
20 tons piassava	
30 tons hides	
12 tons personal effects	
2 tons sundries	
14 tons logs	for London
25 tons piassava	
42 tons rubber	
1 ton skins	
10 tons (1 vehicle)	
21 tons personal effects	

Imports

Look now at the paragraph above about the cargo discharges from M.V. *Badagry Palm.* You will scarcely find any item which does not come from a factory. If you look at Figure 70, you will see that this is the way with all cargoes coming into Nigeria. Nigeria depends very much on other countries to supply her with all kinds of manufactured goods.

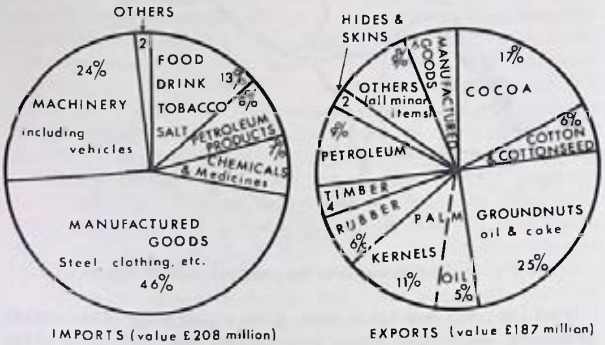


Fig. 70. The external trade of Nigeria, 1963. The larger the section, the more important the item. The numbers are percentages of the total.

Often these are goods which can best be made in those countries, but often they are goods which could just as easily be made in Nigeria. Setting up factories is a very costly business, but once they are set up they can help Nigeria to reduce her buying of manufactured goods abroad. If the goods can be made as cheaply in Nigeria, the country is better off. This is why, on our tour of the eastern provinces, and particularly in the next two chapters, we shall be paying special attention to the new industries in Port Harcourt and Aba.

Exports

Almost all exports, on the other hand, are not factory-made, but are from the trees, or from the farm, or in the case of minerals, from the mine. We call these goods 'raw materials'. Most of Nigeria's cocoa trade will be exported through Lagos. Otherwise Port Harcourt has an important share in all Nigerian exports.

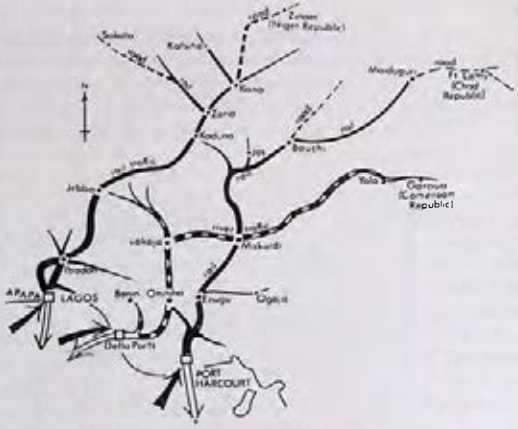


Fig. 71. Trading routes to the principal ports of Nigeria.

Port Harcourt now takes most of the export trade of the eastern provinces, and by the railway, an important part of the trade of the north, particularly in groundnuts, groundnut oil, benniseed and tin ore. The Bornu railway extension in northern Nigeria is, year by year, increasing the northern Nigerian export traffic to Port Harcourt. The area inland served by a port is known as its **hinterland.** The richer the hinterland the busier the ports serving it. The hinterlands of the principal Nigerian ports can be estimated from the sketch-map above.

The ports of the eastern provinces

Eastern Nigeria has a long coastline, and a number of places along its length where seaports have grown up. The map below gives the full list as far as we know it. Which are the important ports today?

Some ports have lost their former importance. Eket and Ikang once had a small share in the palm oil traffic. As ports they are now no more than a memory. Brass and Akassa were each important ports in their day. Brass, a powerful slave trading republic, became a port for the Niger River trade. It lost its prosperity, never to recover, when the newly formed United Africa Company transferred all activity to Akassa by 1885. Akassa also had its time of great

prosperity, but it was short lived, for by 1900 the U.A.C. again transferred its trade. This time it was to Burutu, where it still is.

One important reason for the decline of some ports has been the difficulty of keeping them open. All ports west of Calabar must be entered by ships crossing shallow water, a bar at the entrance to the river. As the ships using ports have grown bigger, needing deeper and deeper water, this has meant that ports with shallow entrances have been abandoned. The U.A.C. decision to transfer all trade from Akassa to Burutu was for this reason, as silt was accumulating at the Nun entrance to the Niger at Akassa.

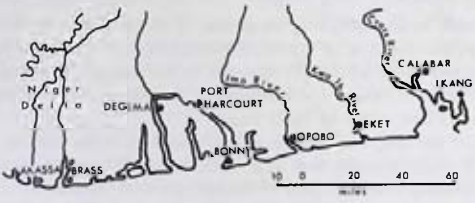


Fig. 72. Eastern Provinces: ports past and present.

Another reason for the decline of some ports is that the bigger ports, with better equipment at the waterside, prove more popular with the shipping companies. If cargoes can be handled easily and quickly this is a great advantage. So, even the once mighty Calabar now sees its trade threatened as Port Harcourt grows in importance.

Finally, we should be careful about making prophecies. Who would have said, twenty years earlier, that the port of Bonny, as dead then as Akassa and Brass, would by 1961 be living again, and serving the largest ships to come to Nigeria?

Exercises

1. Write two or more sentences describing the Bonny River.
2. Find two reasons why the main port of eastern Nigeria has arisen over forty miles from the open sea and not near the sea coast, as at Bonny?
3. In a paragraph give the meanings of the words, quay, wharf and jetty. Before writing down your answer look at each of them on Figures 63, 64, 65 and 68, and also look at the dictionary definitions.

4. Give three ways in which the government is helping the fishing business.

5. Why is a ship's cargo discharged and the next cargo taken on in as short a time as possible?

6. Make a list of the place of manufacture of all the manufactured goods you can find, in your schoolroom, in the school compound and near the school. Look at small items like boxes of chalk, tins of food and large items such as lorries and machines. See if the country and town of manufacture are printed on them. Divide the list into manufacturers of Nigerian origin, British origin, from other European countries and from other parts of the world, not Nigeria or Europe.

7. Look at the outgoing cargo list of the *Badagry Palm*. Which items would come from northern Nigeria? From which parts of the eastern provinces would the piassava be most likely to come? Most of this cargo is bound for Rotterdam. To which two countries will this Rotterdam cargo be likely to go?

8. List the stages in the journey of a sack of palm kernels, taking the first stage as collection at a Pioneer Oil Mill and the final stage as the journey from the port of Rotterdam to a vegetable oil mill in the Netherlands.

9. Where is the Bornu railway? From your atlas, if it is an up-to-date one, make a list of the towns served.

10. Make a map, similar to Figure 69, of the northbound journey of the *Badagry Palm*.

11. Look at the general cargo ship illustrated in this chapter, and at the oil-tanker illustrated in the previous chapter. What are the important differences that you see?

For more advanced students

12. Why is it likely that the sea trade of Port Harcourt will grow in the years to come. Can you think of any ways in which this expected growth would be held back?

13. Draw a sketch-map to show the positions of present-day ports of the eastern provinces.

14 · Port Harcourt: The Town and its Industries

Into the old town

The parts of the township near to the wharf are those which date from the early days, when Port Harcourt was a small place, built alongside the jetty and the wharf which gave it life. Many of the earliest houses, now half a century old, have been taken over for use as warehouses for the collection and storage of the goods traffic of the port. The closer to the wharf the warehouses are the more convenient they are.

In the same part of the township we can find the railway station, from which the trains leave for Enugu and the north. Here also are the offices of many trading companies built conveniently next to the company's warehouses and to the wharf itself.

Here also we find the principal shopping centre of Port Harcourt. You will remember we found that in Onitsha the shops seemed overshadowed by the huge market near by. Here in Port Harcourt we have a different situation. Markets at Port Harcourt are small and hidden away by the side of a creek or alongside a housing area. They deal mainly in food for the people, brought in from surrounding mainland districts and from the creeks.

On the other hand the many shops, including some very big ones, known as **supermarkets,** are very important. These supermarkets are usually tall buildings with several floors. They are organized in several different departments. In a food department one can buy, for instance, milk products from Denmark or Switzerland, frozen meat from Australia or Argentina. A clothing department sells dresses from China or shoes from Czecho-Slovakia. Another department will sell cameras from Japan, and radio sets from the Netherlands. The articles sold are usually expensive, and such large shops as these are only found in large towns where many people live.

The shape of the township

The township of Port Harcourt grew up on a small patch of dry land almost surrounded by swamps. For the first 30 years of its life

there was sufficient land for building round about. Gradually the long finger of land pointing into the swamps was filled with houses or other town building, and the shape of the township fitted the land available. No building took place on the swamps, it would have been very expensive to drain the land of water and to protect it from further flooding. The only direction in which the township grew was northwards. The result of this is that Port Harcourt is a town which is unusually long and narrow. On our journey out of Port Harcourt from the wharf on the Aba road we travel for 8 miles before we are clear of town houses. If we had started our journey across the township from the south-east corner known as Gborokiri, our route through the built-up area would have stretched over 12 miles. This unusual form makes Port Harcourt seem an even bigger place than in fact it is. The shape can best be seen from the air, or more simply, on a map such as Figure 74.

Fig. 73. An aerial view of Port Harcourt main town. Notice the right-angled pattern of the streets of the layout in the foreground. The broad central street is one of the shopping streets. Can you find evidence of this? In the background the Bonny River can be seen.

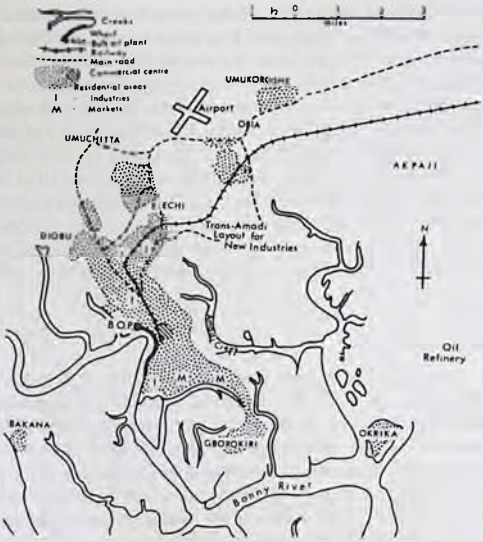


Fig. 74. Port Harcourt.

However, Port Harcourt is a big town, probably the biggest town in the eastern provinces. For the measurement of the size of any town in Nigeria we depend upon the count of population (the census) which should take place every ten years. At the time of writing the figures for the 1963 Census are not available, and the 1953 figures are badly out of date. The 1953 population of Port Harcourt was given as 58,846. This, unfortunately, we know to be inaccurate even for 1953 for two main reasons.

1. In a town such as Port Harcourt people are arriving and leaving for their home districts every day. Some people die each day, babies are born each day. The chances of the Census officials arriving at a number which is correct even on the day of the count, are very small. The best they can hope for is a figure which is nearly correct.
2. In 1953 some important districts which were partly connected with Port Harcourt, especially the district known as Diobu, then lay

outside the official boundaries of the town. Yet many Diobu inhabitants worked in Port Harcourt. It is usual to add the Diobu figures to reach a more realistic total. To the 59,000 of Port Harcourt we must add 13,000 for Diobu and other neighbouring districts.

Since 1953 Port Harcourt has grown rapidly. The new districts of Port Harcourt are in the north, in Diobu and beyond and along the Aba road. A big new residential area has grown up at Umukoroshe some four miles beyond Port Harcourt proper. In time all of this land will become connected to Port Harcourt by continuous building. The Umukoroshe residential area has been developed by the Shell-B.P. Company and here we must note that this area is situated mid-way between the Port Harcourt wharf and the site of the new oil refinery near Okrika.

Industrial boom

The large number of new houses being built on the outskirts of Port Harcourt show us that this is a town which is growing very quickly. The growth in trade at the port, and the operations of the oil company help to explain the increase in the town's population, but are not the whole story. Port Harcourt is also a rapidly growing centre of industry. A port is always an attractive place for certain kinds of industry, those which make use of imported items. At the time of writing there are several important industries already set up, and as many in the stage of planning or construction. The full list is given below, to show the sort of industries which are coming to Port Harcourt.

List of important industries, Port Harcourt 1964

Aluminium rolling mill and roof sheet manufacture
Bicycle assembly
Cement and cement paints
Cigarettes
Corrugated iron sheets
Enamelware
Flour mill
Food canning
Furniture
Glass bottles and containers
Metal windows and doors
Motor assembly
Oil refinery (see Chapter 12)

Oxygen and acetylene gases
Paint
Sack factory
Vehicle tyres

Smaller factories include lime works, using sea shells, saw mills, singlet factories and a bitumen processing factory.

Most of these industries use products from overseas. Look through the list and pick out any that do not do this, but are factories using Nigerian raw materials almost entirely. The furniture factory is one. The most important one is the oil refinery.

Because aluminium is light, free of rust and easily shaped in a factory, it has become the main metal used for cooking pots and pans. It is also used frequently in the making of ladders, the making of containers and in many other small metal articles. Car and aeroplane bodies contain a lot of aluminium. If you look around you will be sure to see something made of aluminium, which you will recognize as lighter and whiter than most other metals.

The first aluminium factory to be established in Port Harcourt (in 1960) makes corrugated sheets. It imports coils of aluminium sheets, flattens them, cuts them, corrugates them and sells them throughout the eastern provinces and in much of the north. The second and larger factory is an aluminium rolling mill. This carries the making of aluminium products one stage backward, by importing aluminium in blocks, known as ingots, and rolls them out into the sheets that the first factory uses. In Lagos one factory, at Ikeja, makes pans, and another, at Apapa, makes ladders and corrugated sheets. The first processes in the industry, those of obtaining aluminium from aluminium ore, known as **bauxite**, are very complicated and very expensive ones. The processing of bauxite is carried on in only a few countries, but Nigeria's neighbour, Cameroon, has a small aluminium smelter, at Edea, East Cameroon, and a larger one is being built at Tema, Ghana.

Industrial districts

There are three main districts in and around Port Harcourt where factories have been set up. These can be seen on Figure 74. One group is behind the new wharf extension, including the tobacco factory. Land here has all been taken up, and any new industries in this district will depend upon more land being drained and reclaimed from marsh. Another group is near the railway and two main roads in the north of the township, including the aluminium

industry. A large area of land has been reserved for factories across the Amadi Creek, known as the Trans-Amadi layout. Some factories are already in production on the new site. Often a firm is encouraged to start a factory if they know that land is ready with roads, water and electricity. The Emene Industrial Estate, outside Enugu, is a similar development.

Port Harcourt to Aba

Our route now lies in the direction of Aba, 40 miles to the north-east. On the way the road crosses a swampy area by means of causeways or embankments, so that the road itself stays above the worst floods that may come along. The roads and railway out of Port Harcourt have proved a challenge to the engineers who have built them. Repeatedly embankments have been weakened at the height of the rains and have collapsed, interrupting traffic into the port. As there are only three links between the port and the rest of Nigeria, the road to Aba, the railway to Aba and the road to Ahoada and Owerri, this has proved a serious problem for Port Harcourt. Lagos has the same problem. Over the last few years the road to Aba has been widened and the banks strengthened. With thorough maintenance it should now prove secure from these seasonal interruptions, though we cannot be absolutely sure; nature is strong.

We reach the Imo River before leaving the official boundaries of the Port Harcourt Planning Area, though the township has been left far back on the road. But the town, which has suffered from shortage of land in the past, will not be short again. Nevertheless two results of the shortage will always remain:

1. The peculiar shape of the older part of the township.
2. The growth of a rival industrial centre at Aba, where there have been no land problems. This town we now visit.

Exercises

1. What parts of Port Harcourt lie close to the wharf? Why?
2. What is a **supermarket**? Where are they found?
3. Why is Port Harcourt township unusually long for a town of its size? Draw a simple map to show the directions in which it has grown.
4. Why was Port Harcourt built in such a swampy district?
5. Why is it difficult to state the population of a town?
6. Make a diagram to show the populations of Kano, Lagos and Ibadan, compared with that of Port Harcourt.

7. Find out from other text-books, atlases, gazetteers or any other source which towns or cities in Africa are as big as, or bigger than, Ibadan.

8. How can a visitor to Port Harcourt tell that the township is growing rapidly? What are the reasons for its expansion?

9. What sort of industries are those growing up around Lagos, Port Harcourt and Tema?

10. Make a list of metal manufactured articles in and around your school. Try to see which metal they are made of, and note their country of origin wherever possible.

11. Why is aluminium so much in demand?

12. What is an 'industrial estate'?

For more advanced students

13. Why are ports relatively more important for industry in developing countries such as Nigeria, Ghana and Cameroon, than in the older industrial countries such as the United Kingdom and Germany?

15 · Aba: Inland Route Centre

Aba motor park

Our journey from Port Harcourt to Aba takes us about an hour by direct bus. The world of the swamps and creeks is soon left behind and from the Imo River into Aba we travel through well-farmed country, not as crowded with people as Ogidi, but where oil palms are even more obvious to the eye.

The motor park at Aba covers a very large area near to the centre of the township. When we arrive, it is, as usual, a place of noise and great activity. In one part of the park taxis and private cars come and go, in another buses collect their full loads of passengers. In another section lorries unload their goods for the market alongside. Other lorries load up with goods to take out to the smaller markets of the country round about. Some lorries are engaged in carrying single loads, such as drums of palm oil, from the villages and from the Pioneer Oil Mills to the factories here, and to Port Harcourt. Most of this traffic, however, does not appear in the motor park.

We can get some explanation of this great trading activity from the number of routes meeting in Aba. One road, by which we entered, comes in from Port Harcourt. Another very important road comes in from the north-west bringing traffic from Owerri and Onitsha, and also from Umuahia and Okigwi. The third main road comes in from the east, from Calabar, Ikot Ekpene and also from Opobo. Several more local routes also meet at Aba, and in addition the railway brings traffic from Port Harcourt on the one hand and Enugu and northern Nigeria on the other. The map opposite (Figure 75) gives a clear picture of this.

In passing you would do well to study how this map is drawn. It aims to show how Aba is a meeting place of routes. Aba is shown in the centre of the maps. All routes which meet at Aba are shown, and the three kinds are shown with different types of line to avoid confusion. Everything else, which might take our attention from what the map is trying to show, has been missed out. You will notice that rivers, creeks, boundaries of divisions, village names, have all been left off. There are no rules about how much information to include

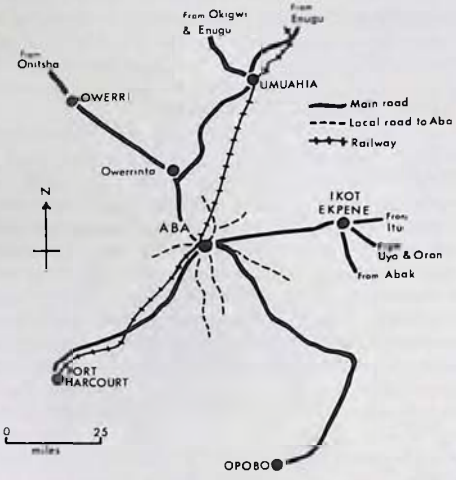


Fig. 75. Aba as a route centre.

or omit on a sketch-map, but remember that to be simple and brief is often to be clear and easily understood.

Other townships near by are also route centres, including some routes not shown on the map above. Owerri and Ikot Ekpene are also at important junctions, but they do not have the advantage of being on the railway. Umuahia is at a road junction. It also lies on the railway and is a busy township with some growing industries, but its roads have never been as crowded with traffic as those leading to Aba. The other near-by township, Port Harcourt, is, as we have seen, not a centre of land routes, its importance comes for quite different reasons. Aba remains the most important route centre of this part of Nigeria, and it is from this that its importance springs.

A new town

Like Port Harcourt and unlike Onitsha, it is a 'new' township. Before the building of the railway there was only a small centre of trade here, by a British military camp. One advantage Aba has by being a new town has been that right from the beginning it has grown

Fig. 76. Aba township, showing the different districts.

with a very clear and convenient pattern of streets, not forced into a distorted shape by creeks as at Port Harcourt but grouped close together. Nowhere in Aba is very far from the central road junction and motor park. The different districts of Aba are shown on the map above.

From the motor park our tour takes us on foot into the main part of the township where most of the residents live. Here we can find a hotel where we can stay if we have no friends or relations who will give us a bed. But it is far from being just a place where people eat and sleep. This principal 'layout' is an area of great interest.

We notice first of all that the streets are straight and, except for the main road, known as the Asa Road, are at right angles to each other. This tells us that the whole area was planned for building before the houses were built. In fact, if we go to the south-eastern edge of the township we will find roads marked out but not yet made, awaiting the time, not far off, when all that space will be needed to

house extra people. Other townships have districts of this kind, known as 'layouts', see for instance Figure 73, a photograph of such an area in Port Harcourt, and the map of Enugu (Figure 109) in Chapter 19. If you look at the map in Figure 76 you will see the street pattern of Aba.

Inside a typical layout

We make a quick survey of the buildings along one short stretch of road. What we find is set out in the street plan below. Along this street there are twelve buildings all well built with concrete blocks and pan roofs. Only two seem to us to be merely private dwellings. Each of the other ten advertises one or more activities. Some buildings are workshops carrying out repairs; in others we find printing, shoemaking and tailoring. This is typical of all streets in the neighbourhood. In other roads we would find more crafts such as carpentry, furniture making, metal-working, photography and watch-repairing. Other buildings in the street are hotels. There are also

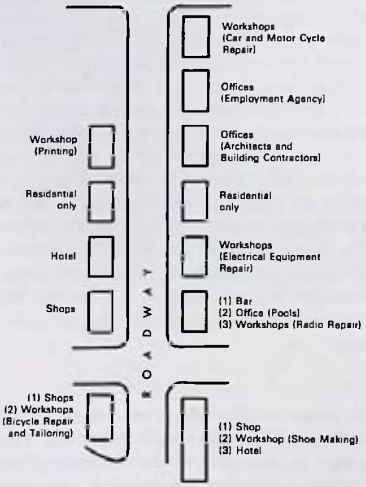


Fig. 77. Along a road in Aba township.

some shops selling a variety of goods, usually small items, foodstuffs, books, medicines, which are in great demand. Three buildings out of twelve act as offices of various kinds.

In neighbouring streets we would find some buildings in use as barbers' shops, maternity homes, warehouses, laundries and schools of various kinds. The repair of vehicles is particularly common, and the many shops selling spare parts for cars, lorries and motor-cycles can be seen as an important effect of Aba's being a principal route centre for road traffic.

This layout of Aba is, we find, a residential area, where people live, an industrial area, where small items are repaired, and a trading area, with shops and offices. Just as in Ogidi a house along or by the main road is a favourable position. Our small street, chosen for study, is in a good position for business, near the market.

A look at the Government Residential Area

A walk along the Owerri Road takes us into quite different parts of the township. Beyond the railway line the road passes through another layout which seems to us a different world from that along Asa Road. Here large houses stand well back from the road and apart from each other. The area between the houses is filled with shady ornamental trees, not usually useful trees such as we would find in Ogidi, but trees chosen for their beauty, often trees from other parts of the world—America, India and Australia. Compared with the Asa Road layout the quiet of this district is very noticeable. This is the area sometimes known as the Government Residential Area, or 'Senior Service Quarters'. In origin this is a layout designed for the British administrative officials, their families and their servants in the days of colonial rule. Now this area will still have some European residents, who may work in the many industrial and trading firms of Aba, and some Nigerians with similar work. Each township of Eastern Nigeria contains at least one such area within its boundaries, a lasting reminder of the previous stage in the country's history.

Textiles

The third section of Aba which we visit is the industrial area. Unlike at Onitsha and Port Harcourt important industries here are grouped together in one part of the township. The factories are found in the north of the township on either side of the railway.

One important industry is that of textiles. Though the chief factory is new the industry itself is not new to the area. In the

Akwete district, between Aba and Opobo, hand-woven cloth has been produced for hundreds of years by the women of the area using their own home-grown cotton mostly, but also sisal hemp (*ukpo*) and raphia. The cloth is well known in the east for its high standard of wearing and the beauty of its patterns. When Opobo was an important trading state the Akwete people became rich through the sale of their cloth and the women gave all their working time to weaving. Akwete cloth is still popular among Ibo and Ibibio peoples. Before the cotton mill was built there was one small factory in Aba weaving simple cloths for shirts, towels and curtains.

Fig. 78. A weaver at work, Akwete.

In the cotton mill itself the cotton is taken through the following stages:

1. Spinning—making the yarn from raw cotton, which may come from northern Nigeria.
2. Weaving—interlacing the yarn to form a cloth.
3. Bleaching—removing any existing colour. This can be done before or after weaving.

4. Dyeing—colouring the cloth by dipping it in dyes.
5. Printing—printing a colour pattern on the cloth.
6. Finishing—treating the cloth to give it extra value, such as making the colours firm in the wash, or preventing the cloth from shrinking.

This mill, and also the similar one at Onitsha, supplies cheap cloth for the clothing industries and tailors of this part of Nigeria, and makes it less necessary to import cloth from abroad. But cheap and good though its cloth will be it will not be able to match the hand-made Akwete cloth for quality and beauty. We must hope that enough people will prefer the traditional product to keep alive this outstanding example of Nigerian craft.

Soap

The manufacture of soap has a special place in the list of Aba's industries, because it has a longer history than other industries in Aba, or even in Eastern Nigeria, and because it is the most important industry employing the biggest number of workers.

Soap making is not a difficult task. It has been carried out for centuries in the villages. 'Sabro', or black soap, forms when ash made by burning plantain skins is added to hot palm oil. This soft black soap cleans quite well and is cheap to buy in the village markets. In parts of the country a long way from soap factories this soap is still used. Sometimes caustic soap is added instead of plantain ash and this produces a pale coloured soap, also soft and still fairly cheap.

Factory soap is made in similar ways. At the small factories, of which there are several in Aba, and others at Abiriba, Enugu and Umuahia, large open tanks of palm oil and caustic soda are kept mixed and heated, sometimes by the injection of steam. If this liquid were allowed to cool a good soap similar to some of the soap made in the villages would have been produced.

However, this soap also contains the valuable liquid called glycerine, as sabro does. Glycerine is needed in the manufacture of explosives, paints and varnishes, some medicines, sweets and cakes. Most of it is exported. It is separated by the addition of brine (salty water). The brine dissolves the glycerine and sinks to the bottom of the tank where a separate outlet takes it away from the soap.

The boiling with steam and 'washing' with brine goes on for many hours, and then the hot soap is allowed to settle. While the soap is still a warm liquid it is led off in pipes, later cooled in large blocks

and cut by wires into the bars we can buy in the market. It may take about four days to make soap in this way; the method is known as 'batch production'.

The Lever Brothers (Nigeria) Ltd. factory and the Alagbon Industries factory on the other side of the railway produce soap in larger quantities in only a few hours by a more modern method, known as 'continuous production'. This method uses many more and smaller closed tanks with lots of pipes. Anyone going into these big factories would not really see soap being made as they would in a smaller factory with open tanks. But the same materials, oils and caustic soda, with brine for removing glycerine, are used.

Soap can be made from any vegetable oil or animal fat. Different oils give different kinds of soap, and soap makers have found that if a little palm kernel oil is added to the palm oil a better soap is produced. Sometimes the more expensive toilet soap is produced; and in this case perfumes are added to the molten soap and a special method of cooling is used.

The first factory soap to be made in Nigeria was made at Apapa, Lagos, in 1923. This one factory was for a long time the only factory in the country, until manufacture was started in Aba and Kano. Soap manufacture in Aba owes a lot to the initiative of one man,

Fig. 79. On the Industrial Estate at Aba.

Mr. P. B. Nicholas, who started batch production in the 1940's. His factory was later taken over by Paterson, Zochonis and Company Ltd. and has grown into the Alagbon Factory, one of the two big soap factories in the township.

Other industries

Other factories in Aba are as follows:

1. A modern bakery producing thousands of loaves a day. All large townships have their own bakeries.
2. A large brewery producing about 1,000,000 bottles of beer each month and almost as many bottles of mineral waters.
3. Pharmaceutical (medicine) factories using, among other things, glycerine from the soap industry.
4. A modern shoe factory.

The importance of Aba

Before we leave Aba to continue our tour it is worthwhile recalling the reasons for its present prosperity. Any list must include:

1. The good position for trade on important inland routes.
2. The growth of manufacturing industry due to:
   (*a*) The good transport facilities, including nearness to Port Harcourt.
   (*b*) Good factory sites available in a modern township.
   (*c*) Local initiative and skills.

As a manufacturing centre it surpasses all other eastern towns in importance, with the exception of Port Harcourt. As a centre of trade it ranks high, but cannot compare with Onitsha, a town with an unrivalled position as a centre of land and water routes.

Opobo Town

An instructive contrast in towns can be seen when we pay a brief visit to Aba's neighbour Opobo, about sixty miles to the south-east (see Figure 75). We enjoy a smooth ride on a good road to Egwenga Opobo and then cross by ferry to Opobo Town. Opobo Town was founded on an island at the mouth of the Imo River by Jaja of Bonny and named after the famous King Opubu of Bonny. Within a few years Opobo became a richer centre of trade than Bonny itself. But before long King Jaja was in conflict with the British, a story well known in Nigerian history. At the centre of the town we see a monument with the following inscription:

Fig. 80. King Jaja's Palace at Opobo. This wooden prefabricated house, imported from England, reminds us of the short-lived greatness of Opobo.

HISTORIC MONUMENT
Erected to the memory of (His Late Majesty)
King Jaja of Opobo, Nigeria, West Africa, 1821–1891
Grandfather of
His Highness, the Amanyanabo of Opobo, Chief the Hon. Douglas Jaja. King Jaja was a great nationalist, soldier, diplomat. His story is inter-woven with the history of the early growth of trade and politics in Nigeria and with the founding of Opobo Town in 1870. He was the first monarch to oppose British Imperialism in West Africa. Defending the course of independence of his country he was kidnapped by British Imperialists in 1887 and died in harness in 1891 at Teneriffe.

Opobo Town is now a place that seems to live on its memories, or on fish, for that is the only source of livelihood for the inhabitants, who still live in family groups which recall the great days of the past, Ogolo House, Jaja House and Okonkwo House. There is no farm land anywhere near, only mangrove swamp, as in the Niger Delta.

It was not just the downfall of Jaja which led to the ruin of Opobo. Opobo had a good trading position as long as trade was carried on in small boats along the creeks and the Imo River. But when bigger boats became popular along the coast and overland trade routes developed, Opobo lost its advantages.

Egwenga Opobo

Back at the ferry point from the mainland some of Opobo's prosperity lives on. The United Africa Company kept the town alive with a small trade in palm oil, and there is still a small Bulk Oil Plant (see Chapter 9) in use here serving only the Opobo area. The U.A.C. has now left the town and only relics of their activities can be seen.

Opobo's chief claim to importance at the present day comes from the boatyards. The Federal Government has an experimental boatyard and the E.N.D.C. operates a commercial venture. Different kinds of boats are built, from the small dinghies, to large motor launches. The boats are winning a reputation for quality throughout the Federation. At present there is only a small demand for the building of boats, but it is hoped that the boatyard will ensure continued prosperity for the people of Egwenga Opobo. The government's help to the fishing industry at Opobo has been considered in the last chapter.

One interesting point to notice before we leave Opobo is that, although the mainland district is settled by Ibibio-speaking peoples, the inhabitants of Opobo Town itself speak Ibo (a corrupt Ibo, e.g. *ikem* means I), a result of their Bonny origin (see Chapter 12).

Exercises

1. Why is Aba a very important route centre?
2. Why are Aba and Port Harcourt described as new while Onitsha is considered old?
3. How do we know that the streets in the main parts of Aba were made before the houses were built?
4. Make a list of the different uses of houses revealed by the walk along the Aba street, grouping them together under the headings 'workshops', 'offices' and 'others'.
5. Go along a street near to the centre of your nearest township and make a note of the different uses of each house. Then make a list of uses and write a sentence comparing your own results with the street in Aba (Figure 77).
6. What are the differences between the layouts along the Asa and Owerri roads? Can you name layouts like these in another township, known to you?
7. What are the stages in the establishment of a cotton textile industry in Aba? Try to find out, by enquiry or from books, where

full textile industries have now been started in eastern Nigeria, and in other regions of the Federal Republic.

8. Why is Akwete a well-known name in the eastern provinces?

9. Is black soap made anywhere in your school or home district? If so find out exactly how it is made (you might try making some yourself). How does its selling price in your nearest market compare with that of Nigerian factory-made soap? If it is not made in your district find someone who can tell you when it was last made there, and how it was done.

10. How many different ways of making soap are described in this chapter? Describe them.

11. What are the stages in the history of Opobo?

12. Distinguish between Opobo Town and Egwenga Opobo.

Exercises for more advanced students

13. Explain why soap-making was one of the first factory industries to be established in Nigeria and why Aba is a particularly suitable location for it.

14. Compare Onitsha and Aba as centres of (*a*) trade, (*b*) industry.

15. Though Bonny and Opobo have each been very important in history Bonny has had the more lasting importance. Can you help to explain this by comparing the positions of the two towns?

16 · Journey to Calabar

An Ibibio village

The road eastwards out of Aba takes us through Ibibio country, a well-farmed landscape with as many oil palms as we shall see on our long journey around the eastern provinces. This is the most important area of palm oil and palm kernel production, which can be explained partly by the fact that this is the land where the oil palm seems most at home. This is because:

1. The soil, as in the Ibo districts near Onitsha, is sandy and well-drained. This favours the oil palm.
2. The dry season is shorter here than further north and the oil palms yield more fruit (see Figure 103).
3. The forest trees have been almost completely cut down by the farmers clearing the bush. Oil palms grow best in the open.

We are now travelling through one of the important farming regions of the east, in some ways different from that of Ogidi, so this is a good chance to look around an Ibibio district and study its farming and general appearance. The village of Ikot Abia lies approximately one mile north from the Umuahia–Ikot Ekpene road at Obot Akara. We reach it by a left turn off the Aba–Ikot Ekpene road at Ikot Ineme. The village has about a thousand inhabitants and is one of the largest in this district, known as Otoro District.

You will remember that in Ogidi we found that the land farmed was divided into compound land and outfield land. This is also the case at Ikot Abia. The people live in compounds fenced round with sticks and with short distances, say 20 to 200 yards, between each other. You can scarcely see the sticks however for the crops which grow all around. In the compound lands yams, coco-yams and vegetables (maize, okro, pepper, melon, etc.) are grown underneath tree crops, especially oil, raphia and coconut palms, plantains and paw-paws. The ground in between the compounds is farmed in the same way as compound land but, with fewer trees, crops from this land are rather better.

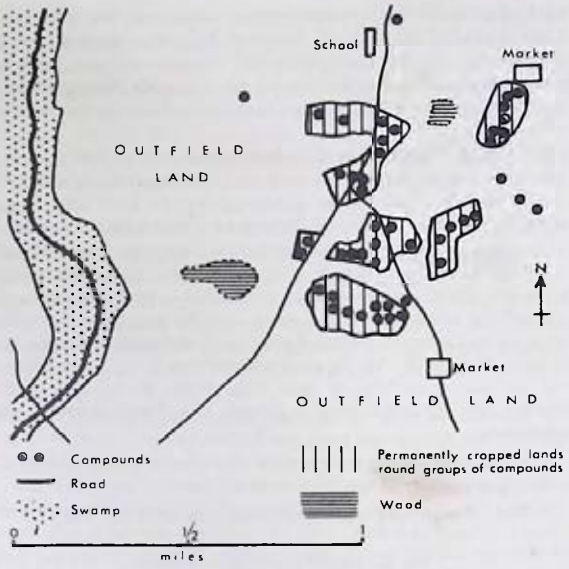


Fig. 81. Ikot Abia village.

The compounds are grouped together in hamlets (*ekpuk*) each occupied by members of an extended family (see Chapter 2 for explanation). In between the hamlets and around the whole village lie the outfield farms, which here grow cassava or sometimes yams, with a four-year rotation or longer (i.e. 1st year cassava; 2nd year fallow; 3rd year fallow; 4th year fallow). No cassava is grown on compound land.

Oil palms are found throughout the village land. Oil palms belong to the men of the village. On compound land the owners have the exclusive use of the trees. On the outfields they can usually harvest them, but from time to time these trees are declared 'reserved' by the village head for periods when the money is needed for some building or for sending a young man of the village overseas for further studies. At this time the fruits are harvested and sold for the project in hand. There is also the village grove (*mbak eyop*), a

kind of oil palm forest, where anyone can harvest the fruit, except when the palms are declared 'reserved'. In passing we note that this practice of opening and closing the palm groves has been one reason which has led to the shutting down of some Pioneer Oil Mills, mentioned in Chapter 8. Pioneer Mills depend upon a steady supply of fruit.

On enquiry in the village we find that scarcely any man is now a full-time farmer. Many men have gone to the townships to seek work. Others spend their time in quarrying laterite for roads, digging sands for building. Almost all farm work is now done by the women. This is one reason why cassava is now the main crop instead of yams, for in Ikot Abia, as in Ogidi, cassava is grown by the woman while yams are a man's crop. Another reason is that more cassava can be grown on a patch of land than yams, and the total cassava crop will bring in more money on the market at Ikot Ekpene township, sold as garri. It is likely that this garri will find its way to the Ibo districts, via the market at Aba. In Ikot Abia people do not become rich through farming as it is done at present. The sources of cash income are three:

1. Palm products sold.
2. Garri sold.
3. Sale of craftwork, mostly weaving, and some carving.

Fig. 82. Baskets being taken to market.

But even when the money from these three sources is added together, the prospects do not seem good enough to attract able young men. Farming can be made to pay well as here and there an enterprising farmer, with perhaps a small rubber estate, shows. The problem of farming, as stated at the conclusion of Chapter 8, seems as serious in Ibibio as in Ibo districts.

Some of the differences between life and farming at Ogidi and Ikot Abia are the result of the different positions of the two places. Ikot Abia is in an area with a shorter dry season for instance. It is also further from a big town market, and so it is not so easy to grow vegetables for sale. Other differences, however, are the result of the different traditions of the peoples, handed down from past generations, such as different attitudes to farming and craftwork. We have now visited the homelands of three of the peoples of the eastern provinces, the Ibos, Ijaws and Ibibios. The territories occupied by the main tribal groups are to be seen in Figure 129.

Cane and raphia work

Ikot Ekpene township, which we pass through on our journey, acts as a market centre for the craft products of the Ibibio country. Within about twenty miles in all directions from Ikot Ekpene there exists the most important area of cane and raphia crafts in Nigeria. There are no schools teaching the crafts, and no factories making the products. Every other person in the Ibibio villages seems to be skilled in some craft or another and will hand on his skills to his children. It seems that the skill the Ibibios are said to lack in farming has gone into their craftwork.

They make cane chairs and baskets, raphia mats and bags, as well as items made specially for the overseas visitor, such as dummy raphia snakes. Every Friday the roads to Ikot Ekpene seem full of craftsmen bringing their wares to market on bicycles. Traders from as far away as Onitsha come to buy.

Ikot Ekpene to Calabar

Nineteen miles past Ikot Ekpene we pass through Uyo, an important inland route centre and market town. Beyond Uyo, palm trees become less numerous and bananas become more important, until approaching Oron the road begins to run on an embankment, and on a more clayey soil farms become fewer. Oron itself is a small town, the ferry point for Calabar, but noted also for its museum, which contains a wonderful collection of *ekpos* (carvings representing ancestors).

Fig. 83. The M.V. *Oron* at Oron. This boat takes passengers, goods and vehicles across to Calabar. Across the water are mangrove trees.

From Oron there is an 18-mile boat journey through the creeks of the Cross River estuary and up the Calabar River before we reach Calabar. Calabar lies in the left bank of the river, that is on our right as we approach it upstream. Like Onitsha it is on the outside of a river bend, where deep water comes close to the river bank. Like Onitsha it stands on a cliff above the river, but here the cliff is much higher and the land behind more hilly. At the base of the cliff there is a narrow terrace of more level ground. Along this runs Esuk Street which forms the land approach to the various wharves and is the commercial centre of the town. Above the cliff lies the residential area, with district names such as Henshaw Town and Duke Town, which recall the past.

Calabar history

In Calabar we need to be very unimaginative not to see that the explanation of Calabar's importance lies partly in its past. Many old houses are to be seen in the township, a reminder of past years. In the eighteenth and nineteenth centuries Old Calabar, as it was then known, consisted of a league of trading republics, Henshaw Town, Duke Town and Creek Town. (Creek Town was several miles from the present town.) These were each divided into family groups, or houses (*ufok*), as we found at Opobo Town. They were ruled over by the President of the Egbo Order, a society which united the Efik

rulers of the different houses. In this form Old Calabar became a leading trading power on the Nigerian coast.

The rulers of Old Calabar gave a welcome to the missionaries of the Church of Scotland. The Hope Waddell Institute founded in 1896 by a missionary of that name, is the oldest secondary school in Nigeria. Its former principal, Sir Francis Ibiam, became the Governor of Eastern Nigeria in 1960. Another famous missionary at Calabar was Mary Slessor, whose struggle to stop the killing of twin children has made her name immortal. Later, when the whole of southern Nigeria came under British rule, Calabar was for a time its administrative centre, taking over from Bonny (see Chapter 12) in 1891.

Calabar's situation for trade.

In the days when most long distance trade in Nigeria was carried by water Calabar was extremely well placed to control trade over

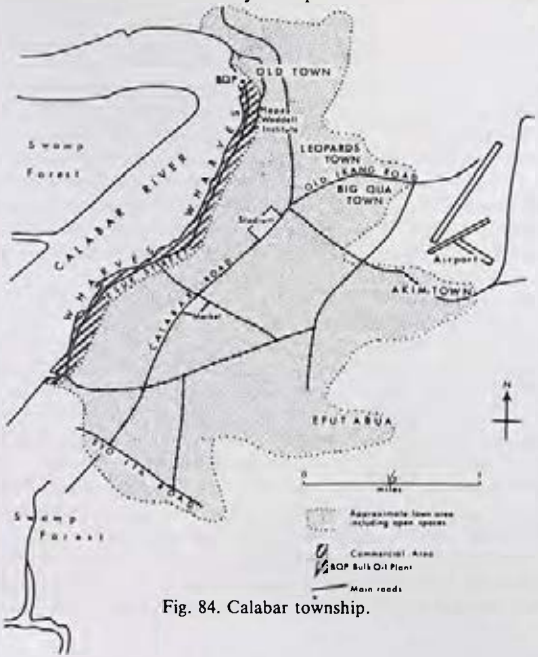


Fig. 84. Calabar township.

a large area. Along the coast trade with the delta trading states to the west and with the towns of the Cameroons to the south-east was easy. Inland, the direction from which most trade came, Old Calabar controlled the trade of the whole Cross River Basin. Even today Efik is a language understood far inland, beyond the districts where the Efiks live. The Cross River trade is still important to Calabar.

When the river is full, in July, August and September, small river steamers can reach as far as Mamfe in West Cameroon, a distance of 350 miles. Ikom can be reached from June to November, and Itu all the year round, provided that the boat does not need more than a 6-foot depth of water. It is by this route that much of Calabar's sea trade reaches the port or is distributed after import.

But at the present day Calabar is not as well placed. Trade routes have altered. The Cross River trade has not grown nearly as much as that of the road and rail routes. Now Calabar's position on the eastern side of the Cross River Estuary shows up as a very great

Fig. 85. The Cross River and its ports.

Fig. 86. Calabar wharf.

disadvantage. The land routes behind the port tap a very small area of farm land, and a group of oil palm and rubber plantations. These are important, and we will see them later on our visit, but they cannot make up for the densely populated productive hinterland that Port Harcourt possesses. Even the main road traffic to Mamfe is interrupted by the ferry over the Great Kwa River at Atimbo, 6 miles from Calabar.

One continuing flow of traffic at Calabar is that between Nigeria and Fernando Po. Here the main item is the passenger trade as workers in Fernando Po plantations go to and fro.

Calabar today

Whereas Port Harcourt has grown very quickly in the last half century, Calabar has not made very great progress. Whether in the future Port Harcourt will take more of Calabar's trade, or whether, as is hoped in Calabar, road improvements, such as the introduction of a vehicle ferry over the Cross River at Ikot Okporo on the Arochuku road, and the improvement of the road to Ikom, will lead to a revival of prosperity at Calabar, only time will tell. There is some hope that Calabar will gain some prosperity as a base of the Nigerian Navy.

The lack of any great energy about the present-day trade has not encouraged the growth of manufacturing industry at Calabar. A sawmill, a small cement factory, a mechanized bakery and a small mineral-water factory are the total of Calabar's industries, apart

from the small family businesses of the kind we found in the main layout at Aba (see Chapter 15). Even these are restricted in number. Factories for the manufacture of chipboard and matches are planned, however.

Away from the commercial and wharf area by the river, Calabar is a town of separate housing districts, a result of its history, with schools and open spaces filling in the land in between. There is a grouping of offices and senior service quarters in the north of the township (see Figure 84).

Calabar market is an important one to which goods come from the farms inland and via the creeks and rivers. Smoked fish caught by local fishermen are brought here and then sold far afield. You probably know the smoked fish on an oval bamboo mat called *nwagbalego*. It is a white fish from salt water, small and flat.

The plantations

The big disadvantage of Calabar port as against Port Harcourt that we noted above was the empty and unproductive area which can be reached from Calabar overland. Yet this very drawback is being turned to advantage. It has proved very much easier to acquire land for plantation development in the east of the Cross River than to the west of it. You will remember that in discussing oil palm plantations in Chapter 9 we noted that the three big plantations in Eastern Nigeria are all near Calabar. The Calabar Oil Palm Estate of Pamol Ltd. (one of the companies of the Unilever Group, of which U.A.C. is the biggest member company) is situated close to Calabar along a road which first passes through their rubber estate. We can visit these plantations from Calabar, taking the Ikot Mbo road about five miles north of the township.

The rubber plantation covers about 3,700 acres of nearly six square miles. All the productive land on the estate is now planted with rubber trees. Rubber trees only grow well in climates which are tropical with no long dry season. The extreme south of Nigeria has a suitable climate. From about five to seven years onwards a white liquid known as latex is obtained by making a cut in the bark of the tree, usually in a spiral or sloping groove half-way round the trunk. The latex oozes out along the groove and is collected in a cup at the end as shown in Figure 87. Each tree must be visited first by the tapper making the cut, and then four hours later again to empty the latex from the cups. Trees are tapped on alternate days to give sufficient rest. Half of the plantation is tapped on one day and the other half on the next day.

Also in the plantation is a rubber factory, where the latex is processed by being mixed with an acid which causes it to set. The rubber is then washed, dried and smoked and rolled to produce sheets of crêpe rubber which are pressed together for export.

Pamol's oil palm plantation is a bigger one, almost twice as big. All the best scientific techniques of oil palm production are here employed, selection of seedlings, manuring, weeding, harvesting by a new method using the Malayan knife. You will see from the photograph that the use of the knife, on a long pole, removes the need to climb the palms. Yet the knife is not much used by farmers in Nigeria mainly because of the difficulty of carrying the pole for long distances. This plantation also has a large oil mill alongside. It achieves an oil extraction rate of 90% against the 50%, approximately, of the traditional methods and maintains a quality of 2%

Fig. 87. In the Pamol Rubber Plantation, Calabar. Notice the straight rows of trees.

Fig. 88. Harvesting by Malayan knife.

f.f.a, which you will see from Chapter 8 is well within the Special Palm Oil Grade. The Pamol plantations employ about 1,400 workers who live in camps or labour lines equipped with many amenities, such as dispensaries, and canteens. The company's policy is to replace all oil palms with rubber trees over a period of several years.

Other and larger plantations of oil palm and rubber lie further away from Calabar, notably the following:

1. The Dunlop Rubber Estate on the Arochuku Road, lying about thirty miles north of Calabar and covering 21,000 acres.
2. The Oban Rubber Estate, 45 miles from Calabar, on the Mamfe Road along which our route lies, owned jointly by the E.N.D.C. and overseas firms is in an early stage of development.
3. The Calaro and Kwa Falls oil palm plantations have also been recently established. They are managed entirely by the E.N.D.C. and together cover 18,000 acres.

This large expansion of the two plantation industries will help the exports of Nigeria and, incidentally, give a boost to the trade of Calabar port.

The timber industry

Finally, we cannot fail to note, before leaving Calabar for the north, that the hinterland of the port is a very important timber-producing area. Whereas west of the Cross River most tall forest trees have been cut down by farmers, east of it in the sparsely populated lands large areas are still covered with what is known as 'high forest'.

In the high forest we find many different varieties of trees, many of them giving timbers which are very valuable. Often a single log of a good quality is worth about £150 after processing at Calabar. The government, recognizing the value to the country of these forests, controls their cutting. Notice the position of timber and timber products in Nigerian exports (see Figure 70). For the northern districts around Ikom and Obubra, the Cross River provides a very convenient highway of transport. Logs of timber are floated downstream to sawmills at Obubra and Calabar. Notice also that the two industries planned for Calabar use timber as their raw material.

Exercises

1. What are the three reasons given for the importance of oil-palm products in Ibibio country?

2. In what way are the farm lands at Ikot Abia similar to those at Ogidi?

3. Which palms can be declared 'reserved' at Ikot Abia? Why are they sometimes declared 'reserved'?

4. Why have some Pioneer Oil Mills been closed down in parts of Nigeria?

5. What are the main sources of income at Ikot Abia?

Note. More than three sources are given in this chapter.

6. What causes differences in life and farming between Ogidi and Ikot Abia?

7. What advantages for a port has the ground where Calabar wharves are built?

8. Why is Efik an important language in the lands of the Cross River?

9. In what way have trade routes altered, to the disadvantage of Calabar?

10. What are the two chief ways in which the trade of Calabar might be increased?

11. Name a notable commodity sold in Calabar market.

12. How has the lack of a large population in the land north of Calabar been turned to some advantage?

13. In what way does the extreme south of Nigeria have a suitable climate for the growth of rubber trees?

14. What is latex? How is it collected?

15. Give a reason why there are more tall forest trees east of the Cross River than west of it.

16. What are the two industries planned for Calabar which will use timber as their raw material?

For more advanced students

17. Rate the three chief palms of southern Nigeria—coconut, oil and raphia—in order of importance for usefulness and trade. Give reasons for your opinion.

18. Compare Onitsha and Calabar in respect of their site, position and trade.

19. What are the important differences between a farm and a plantation?

17 · Ikom, Obudu and Ogoja

Across the Oban Hills

The road from Calabar to Ikom takes us through country as empty of people as are the creeks of the Niger Delta. Beyond the Kwa Falls Oil Palm and Oban Rubber Plantations the earth road becomes poorer as it twists and turns through the high forests of the Oban Hills. Many roads in the eastern half of the region are now being built and improved, at tremendous cost. This is a big task for the government at the present time.

Another disadvantage suffered by the Calabar–Ikom road is that since 1961 there has been an international frontier astride the road. When the course of the road was planned the events which led to the separation of the former Southern Cameroons, including Mamfe Division through which the road passes, were not foreseen. Now within 20 miles we have to halt four times to show our passports to Immigration officers and have our vehicle checked for smuggled goods by the Customs officials. This happens twice at Ekang, as we enter the Federal Republic of Cameroon, and twice again at the suspension bridge over the Cross River, where we re-enter Nigeria.

Away from this one poor road through the Oban Hills it is very difficult to travel at all. These hills, which rise to heights of over 3,000 feet above sea-level, have a very heavy rainfall and are clothed in thick forests. It is a country of deep valleys with steep slopes. In these forests live the Ekoi people, one of the smallest separate tribes in the east. The Ekoi are farmers, growing plantains, an important crop here, and yams, coco-yams, maize and groundnuts. They supplement their farming by hunting, because, as you would imagine, hunting is very rich here. Monkeys, chimpanzees, many small animals and a variety of birds are among the animal life. The Ekoi hunt with guns and dogs and with traps. As you would expect with people who live right in the forest, their sense of direction in the forest is astonishing, reminding us of the Ijaws amongst the twisting creeks of the delta.

At the present day the roadside villages are growing in size at the expense of those inside the forest which are difficult to reach.

Fig. 89. High forest along the road near Ikom. The clearing in the forest made for the road reveals the typical tall branchless trunks of the forest trees.

Amongst the simple houses of mud and thatch pan roofs are becoming more frequently seen. Ibos have come to live with the Ekoi in these villages, to farm and to hunt. Along the road small plantations of oil palms, bananas, and now cocoa, bring a hope of prosperity to the area.

The Cross River lowlands

In the lowland areas by the Cross River, around the town of Ikom, life is easier. The road passes through only a few small villages, but away from the road, alongside the Cross River, villages are common. Compared with the overcrowded lands around Ogidi and Ikot Abia, however, this land still seems empty. The people are fortunate in having no shortage of farming land.

The local people are known as Ogojas, though there are also many Ibos settled here. Farming is the main occupation of the people. It is a varied farming, in which coco-yams, cassava, maize and

Fig. 90. Eastern Provinces of Nigeria: drainage.

plantain are all fairly important crops. Two crops of maize are taken each year. One planting is in April at the beginning of the rains for a harvest in late July or early August in the middle of the rainy season (the August break is less noticeable around Ikom than it is in districts further west such as Ogidi). The second planting is in July or August for a December harvest. The oil palm is not important here, though it will grow. Scattered wild stands are mainly tapped for palm wine.

At the riverside, vegetable gardens, in which *okro* are important, produce crops throughout the dry season. Also fishing is important on the river, from the villages by the bank, or from huts on the dry season sandbanks which remind us of the larger settlements on the Niger sandbanks at Onitsha. Another importance of the river to the people is that there is always a sale for the surplus crops to the traders who travel to markets downstream such as Bansara (on the tributary River Aya), Ediba, Itu and most important of all, to Calabar. Using canoes, paddled or motor powered, this is a seasonal traffic.

Over the last twenty years cocoa has been the biggest agricultural development around Ikom. As long ago as 1918 a private attempt to grow cocoa around Ikom had been made, but it failed, probably because the farmers had not enough money to withstand the losses of the pioneer years. But in 1946 the government began experimental cocoa farms, and by 1953 were ready to start the Ikom Cocoa Estate.

This work has now expanded, and the E.N.D.C. now manage four cocoa estates in the Ikom Division totalling almost 9,000 acres. Good transport is still a difficulty but road building has made excellent progress recently and it seems that cocoa is proving a successful venture.

Along with the production from E.N.D.C. estates the cocoa output of many farms and private estates is rising. Farmers can now sell their cocoa rather more easily, and have had the example and experience of the Ikom cocoa estate to guide them. Ikom people are now more prosperous than ten years ago. This is seen in the appearance of Ikom itself which, it is estimated, has doubled its population in the ten years from 1953 when it was less than 7,000.

We can see from this that we cannot measure the value of the E.N.D.C. work at Ikom by the cocoa production alone, important though it is. Even with their other estates at Umuahia (3,750 acres) and Arochuku (2,000 acres) this is a small production compared with that in the western provinces, and the value of the cocoa is small compared with the oil palm products in the east. Just as important is the encouragement that the cocoa estates give to the farmers of the area, showing them a way to increase their earnings, and helping to interest the youth of the district in farming as a career.

Sonkwala Mountains

Having seen the importance of one government agricultural development we now travel on to see a quite different government development, the Obudu Cattle Ranch, also managed by the Eastern Nigeria Development Corporation.

The Obudu Cattle Ranch is so called because it lies in Obudu Division. It is actually almost fifty miles away from Obudu town, and is situated on the Obudu Plateau, also called the Sonkwala Mountains. From Ikom we take the Basua road, north-eastwards, passing the cocoa estate at Bendeghe Ayuk. From Basua onwards we must travel by magic carpet, or private aeroplane, for the road from Ikom to Obudu is still in the process of being built. We join the E.N.D.C. road at the foot of the mountains as it begins its climb up to the ranch, at a point known as Bottom Camp.

The road climbs for 8 miles, twisting and turning to make the ascent gentle enough for cars and lorries. By the time the top of the climb is reached the road has taken us 3,000 feet up, into a different world. The land at the top is hilly; most of the countryside is open

grassland completely bare of trees. In the hollows of the land are patches of high forest. A little further along the road lie the headquarters of the Cattle Ranch at about 5,500 feet above sea-level. In places the land is even higher, for instance Mt. Bebi reaches 6,100 feet.

The main difference between the lowlands and the tops, however, cannot be seen: it is felt. We notice that the air is very much cooler here, and feels fresher. If we had been able to carry a thermometer as our car climbed up the approach we would have seen that as we went up, so steadily the temperature went down.

Temperature and height

The higher up one goes from sea-level the thinner or lighter is the air. You can see why this should be so if you can think of two columns of air stretching upwards above two separate places. We will for the sake of clear explanation consider the air above Calabar and that above Obudu Ranch. These are shown in the diagram (Figure 91).

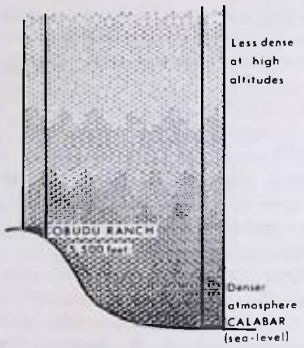


Fig. 91. Diagram to show how air pressure at Calabar is greater than that at Obudu Ranch.

There is much less air above the second column pressing down on the lower regions and so the air itself is less thick or dense. This difference can be measured by instruments and is known as air pressure.

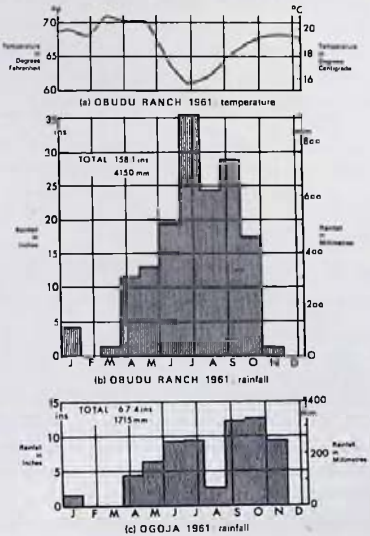
The second stage in the explanation concerns temperature. The air feels warm in the afternoon because it has received some of the sun's heat, not from the sun direct, but through being heated from

the ground. The air behaves differently at a height because, being less dense, it cannot hold as much heat as the air at sea-level. The ground is heated just as easily, by the direct rays of the sun. At the Obudu Ranch the sun feels very hot on our faces—but the air is colder.

Another temperature difference which we soon notice at the Obudu Ranch concerns the night temperature. Here the nights become colder than even the harmattan nights at Ogidi. During the harmattan at the ranch it can become bitterly cold. At all times of the year we can enjoy sitting by a log fire in the evening and in bed we appreciate the comfort of a couple of blankets.

We have no long term averages for the temperatures at the Obudu Ranch, but you will get a good idea of the year from the temperature section of the climate graph made from the 1961 figures. Even

Fig. 92. Climate graphs. These rainfall and temperature graphs are based on the records for a single year. Compare them with the graphs for Port Harcourt and Enugu which are based on averages for forty years. Which graphs are smoother? Why?



at the hottest time of the year, March to May, the averages for the months were only 69 and 70° F. In July and August the averages fell to 60 and 61° F. This is because of the cloudiness which accompanies the rains.

The hills and their rainfall

Rainfall at Obudu is very heavy. The climate graph shows rainfall figures for 1961 set alongside the figures for the same year at a weather station in the near-by lowlands, at Ogoja. Compare the two graphs. In 1961 about $2\frac{1}{2}$ times as much rain fell at Obudu Ranch as at Ogoja. Any other year would have given a similar result.

Hills always attract rainfall. Why should this be so? All rainfall happens as a result of moist air rising and cooling. This can happen in the lowland very easily, as we know well. It usually occurs as a result of the mixing of airs of different temperatures, causing warm and damp air to rise above cooler air. Rain falls from the mixing zone. It may also happen when the air rises because of heating setting up an air circulation which leads to cooling and rainfall. These two types of rainfall causes are shown very simply in the diagrams; they affect Ogoja just as much as Obudu Ranch.

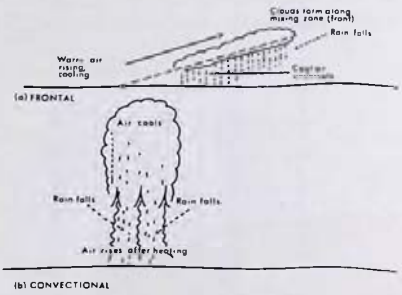


Fig. 93 (*a*) and (*b*).

In addition at the ranch there is the effect of the mountains themselves. If warm moist air comes towards the mountains it is forced to rise and cool when the upward slope or escarpment is reached. This may cause very heavy rains on the slope and over the hills themselves.

The three types of rainfall are known respectively as (*a*) frontal,

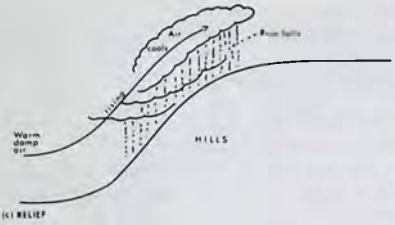


Fig. 93(*c*)

(*b*) convectional and (*c*) relief rains. Remember that any particular fall of rain may be the result of (*a*) and (*b*) together, and, in a hilly district, of (*c*) also.

The cattle ranch

On the high grasslands of the Sonkwala Mountains the E.N.D.C. manages a very large ranch which covers about 25,000 acres, or 40 square miles. In this area over 2,000 cattle are kept, and the numbers increase year by year. The hills form a ridge about twelve miles long by two miles wide. Along the whole length of the ridge we meet separate herds of cattle and workers' camps. There are no fences separating the herds, but the separate hills and forested valleys make

Fig. 94. On the Obudu Plateau. Notice that the land is not level. Grassland covers the tops and slopes; the valley bottom is forested.

good natural ranges for each herd. Ranch managers visit the herds on horseback and herdsmen look after the cattle and help to protect them from wild animals.

Cattle are kept for two purposes:

1. Some are beef cattle, killed for their meat which is sold in Enugu and other townships.
2. Others are dairy cattle, kept for milk and butter. The butter is also sold in Enugu. It is a luxury product, but it finds an easy sale nevertheless.

The purpose of the ranch here is to use this large area of mountain grassland to produce food for the benefit of the people. As the herds increase in size this food production will become more important. Cattle have been obtained from different places, all in West and East Cameroon, where there are many hill areas of the Sonkwala type, and the different herds are known by their places of origin, Bamenda, Gaundere, etc.

The ranch has its problems to face. The very heavy rainfall does not encourage a good grass cover. Large areas are planted with special grasses to improve the pasture, and fertilizer (lime) is spread. The cattle are liable to get infested with parasites, such as ticks, and kirichi, a vegetable parasite. To fight this the animals are dipped regularly in a chemical which kills the parasites. But the ranch has one big advantage. The whole area is free of the tsetse flies, which spread the killing cattle disease called trypanosomiasis, and which are found in the surrounding hotter lowlands. The E.N.D.C. has plans to start another cattle ranch near Nsukka. If some day the problem of the tsetse fly can be overcome, then the experience of the E.N.D.C. at Obudu will be very useful in extending cattle rearing throughout much of southern Nigeria.

The ranch also keeps pigs, which provide another supply of meat, and are cheap to feed with the skimmed milk produced in the making of butter. A small flock of sheep is kept for experimental purposes, and a few horses, for riding.

Another venture of the E.N.D.C. at the ranch is a hotel, which attracts visitors from far afield for a holiday. Comfortable accommodation is provided and the pleasures of staying at Obudu are well advertised. They include:

1. The cool invigorating climate.
2. The beautiful mountain scenery.
3. Good walking, climbing and horse riding.

Fig. 95. The cattle are passed through a trough containing a chemical dip which kills off ticks.

4. Shooting of game in the forests, fishing in the rivers.
5. Freedom from tsetse flies and mosquitoes.
6. Good food and attention at the hotel.

The hotel is being improved, at a great cost, in the hope of making it the leading mountain holiday centre in West Africa.

Savanna

The Ogoja lowlands are open country with trees and tall grass, a harsh countryside of brilliant colours, where at each rise in the road we can look into the distance, usually to a flat horizon, or sometimes to an eye-catching steep isolated hill, known to geographers as an **inselberg.** This is the countryside which we call savanna, a name given to all the different types of woodland-grassland combinations that we find between Ogoja and the borders of the desert, including the whole expanse of northern Nigeria.

Savanna is a Portuguese word meaning 'grassland'. In Africa the word is used to describe a grassland with trees, which may mean scattered trees, separate patches of trees, or even a continuous cover

of trees. But even in this last case there is a big difference between savanna and forest. Nigerian forests always provide shade, so that underneath them it is dimly lit and damp. Savanna trees are deciduous, that is they drop their leaves at one season, which in Nigeria is the first half of the dry season. So, for part of the year at least, the ground is open to the full drying power of the sun. In savannas the drought is so severe that high forest trees do not grow.

The Ogoja savannas have a lot of trees, usually of a kind which are not easily damaged by the fires which are common in the dry season, when hunting is done. Oil palms are few and far between and are replaced in some areas by the borassus palm, often called the fan palm, whose trunks are used for building posts (*ubilí*).

Farming in Ogoja

With the change in the natural vegetation comes a change in the customs of the people. We notice that though the oblong-shaped mud houses with mat roofs are still found another type of building, the round house with a grass thatch roof, becomes common.

Yams seem to be the chief crop, planted in huge mounds. The country of the huge mounds extends from Obudu in the east to Enugu in the west, the western half being Ibo country. Large crops of yams are produced with plenty left over for sale after the farmers have laid in stores in their barns. The huge yam mounds are probably made for good drainage. Compared with Ogidi there seem to be two reasons why this good drainage is needed:

1. The soil is heavy and not well drained, compared with the light sandy soils of Ogidi.
2. The ground is level over long distances and so the rain-water stands around in puddles after a storm. The big mounds rise above this standing water.

Some areas are so low lying and flat that they are subject to an annual flooding. In these cases the yam-planting (*oda*) comes as early as December and the crop is early, a system which reminds us of the similar case of the people living on the flood plains of the Niger. However, customs of farm care are different, for instance very little staking of the yams is done, the young vines being left to trail on the ground.

During the third weeding (*ikpa-ubo*) the yam mounds are thickened. The intercrops include pepper, *anala* (egg plant), fluted pumpkins, groundnuts and some bananas and plantains. Bananas and plantains, however, are not as important as we found them to be

Fig. 96. Changes in farm crops: Ogoja Province. Important crops are named.

in the Ikom and Calabar districts. Cassava is important in a few areas such as Mgbo on the Abakaliki-Enugu road. In the north, around Ogoja, some Guinea corn is found. This is its southern limit, since it is more suitable for countryside where the rainy season is shorter. In northern Nigeria it is an important food crop. Maize is found further south.

Rice

After yams, rice seems to be the next crop in importance. Rice is a cereal (grass with grain) crop which will grow where there is a heavy rainfall, or standing water. The sandy uplands of the Ibo and Ibibio country do not as a rule prove suitable places for growing rice, but these areas are unusual in the southern parts of West

Africa. All areas from Obudu to Ogoja and Abakaliki are important rice-producing areas, and as with yams much is produced for sale.

At Okuku market, near Ogoja, lorries from as far away as Onitsha and Calabar arrive to collect yams and rice. ('Abakaliki yams' are as likely to come from Ogoja and Obudu as from Abakaliki itself.) Other Ogoja products such as groundnuts and *kparakpara* are also in demand at this important market.

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In some countries of West Africa, notably Ivory Coast, Liberia, Sierra Leone and Guinea, rice is the normal food of the people. In Nigeria it is rather a luxury food, but becoming very popular, and it is now realized that there are many areas where rice growing could be developed. More could be grown in Abakaliki and Ogoja Provinces and in the Anambra Plains by the Niger where it is already important. Swamp rice development schemes may lead to big increases in rice growing in the freshwater swamps of the creeks. Important rice growing areas are developing south of Calabar and near Yenagoa in the Niger Delta.

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1. What is the political obstacle to traffic on the Calabar–Ikom route? How long has it been there? Why is it necessary?
2. Why is hunting important for the Ekoi?
3. What is the importance of the Cross River for the riverside farmers?

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15. What crop seems to offer the best hope of increasing food production in the eastern provinces? On what kind of land can it be grown?

For more advanced students

16. Explain how (*a*) ground temperatures and (*b*) air temperatures are affected by increases in height above sea-level.

17. How could the E.N.D.C. ranch on the Obudu Plateau become of very great importance in southern Nigeria?

18. Explain clearly and in as much detail as you can the difference between a forest and a savanna.

18 · Between Abakaliki and Enugu

The mining of lead and zinc

If by mining we mean the taking out of minerals from the earth, then we have already considered the most important mining in Nigeria today, namely the production of oil from the wells of the south of the region. However in the north of our region, from Abakaliki to Enugu, we find three different enterprises from which we can learn more about what mining is like and its importance to the region.

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Fig. 97. The location of Nkalagu cement factory.

ammunition and in many other things. We have already met the principal use of zinc, as a covering for iron in 'galvanized iron', but it has many other industrial uses. The Abakaliki deposits are however not very rich ones and are only worked in those years when the prices of these metals on the world market are high enough.

The Abakaliki mines flood easily, and the pumping up of water adds to the expense of mining. The ores themselves are of fairly low quality, the lead ore, known as galena, consists of about 10% lead, the remaining 90% being waste. However lead and zinc, of a total value unknown but certainly very great, lie about 350 feet down below ground here. As world prices go up, the Nigeria Lead–Zinc Mining Company is able to raise the money to start production again. Then the district resounds to the noise of the workings.

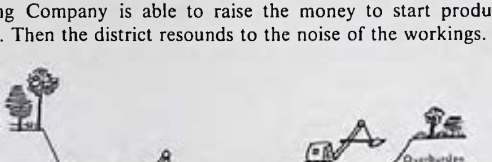

Fig. 98. Excavations removing overburden and limestone rock in a quarry.

Limestone and cement at Nkalagu

If we turn off the main Abakaliki–Enugu road at Nkalagu village, a journey of 8 miles will bring us to the factory of the Nigerian Cement Company. The large modern cement factory, and the large quarries near by of limestone and shale, make a big contrast to the derelict machinery and handful of workers that we found at the Abakaliki lead-zinc mines. Yet both result from the mineral deposits of the area and a comparison between them is instructive.

At the quarries we see mechanical excavators at work winning limestone and shale for the factory. In a quarry work goes on at two levels, as can be seen in Figure 98. First the vegetation, soil and loose rock must be removed. This is together known as the **overburden**. When this has been done, the removal of the limestone (or shale) can take place. In appearance the limestone is a hard grey rock which breaks away in huge blocks when loosened by explosives.

Apart from limestone and shale, which as we have seen are obtained by the factory, the making of cement also needs:

good natural ranges for each herd. Ranch managers visit the herds on horseback and herdsmen look after the cattle and help to protect them from wild animals.

Cattle are kept for two purposes:

1. Some are beef cattle, killed for their meat which is sold in Enugu and other townships.
2. Others are dairy cattle, kept for milk and butter. The butter is also sold in Enugu. It is a luxury product, but it finds an easy sale nevertheless.

The purpose of the ranch here is to use this large area of mountain grassland to produce food for the benefit of the people. As the herds increase in size this food production will become more important. Cattle have been obtained from different places, all in West and East Cameroon, where there are many hill areas of the Sonkwala type, and the different herds are known by their places of origin, Bamenda, Gaundere, etc.

The ranch has its problems to face. The very heavy rainfall does not encourage a good grass cover. Large areas are planted with special grasses to improve the pasture, and fertilizer (lime) is spread. The cattle are liable to get infested with parasites, such as ticks, and kirichi, a vegetable parasite. To fight this the animals are dipped regularly in a chemical which kills the parasites. But the ranch has one big advantage. The whole area is free of the tsetse flies, which spread the killing cattle disease called trypanosomiasis, and which are found in the surrounding hotter lowlands. The E.N.D.C. has plans to start another cattle ranch near Nsukka. If some day the problem of the tsetse fly can be overcome, then the experience of the E.N.D.C. at Obudu will be very useful in extending cattle rearing throughout much of southern Nigeria.

The ranch also keeps pigs, which provide another supply of meat, and are cheap to feed with the skimmed milk produced in the making of butter. A small flock of sheep is kept for experimental purposes, and a few horses, for riding.

Another venture of the E.N.D.C. at the ranch is a hotel, which attracts visitors from far afield for a holiday. Comfortable accommodation is provided and the pleasures of staying at Obudu are well advertised. They include:

1. The cool invigorating climate.
2. The beautiful mountain scenery.
3. Good walking, climbing and horse riding.

Fig. 95. The cattle are passed through a trough containing a chemical dip which kills off ticks.

4. Shooting of game in the forests, fishing in the rivers.
5. Freedom from tsetse flies and mosquitoes.
6. Good food and attention at the hotel.

The hotel is being improved, at a great cost, in the hope of making it the leading mountain holiday centre in West Africa.

Savanna

The Ogoja lowlands are open country with trees and tall grass, a harsh countryside of brilliant colours, where at each rise in the road we can look into the distance, usually to a flat horizon, or sometimes to an eye-catching steep isolated hill, known to geographers as an **inselberg.** This is the countryside which we call savanna, a name given to all the different types of woodland-grassland combinations that we find between Ogoja and the borders of the desert, including the whole expanse of northern Nigeria.

Savanna is a Portuguese word meaning 'grassland'. In Africa the word is used to describe a grassland with trees, which may mean scattered trees, separate patches of trees, or even a continuous cover

of trees. But even in this last case there is a big difference between savanna and forest. Nigerian forests always provide shade, so that underneath them it is dimly lit and damp. Savanna trees are deciduous, that is they drop their leaves at one season, which in Nigeria is the first half of the dry season. So, for part of the year at least, the ground is open to the full drying power of the sun. In savannas the drought is so severe that high forest trees do not grow.

The Ogoja savannas have a lot of trees, usually of a kind which are not easily damaged by the fires which are common in the dry season, when hunting is done. Oil palms are few and far between and are replaced in some areas by the borassus palm, often called the fan palm, whose trunks are used for building posts (*ubili*).

Farming in Ogoja

With the change in the natural vegetation comes a change in the customs of the people. We notice that though the oblong-shaped mud houses with mat roofs are still found another type of building, the round house with a grass thatch roof, becomes common.

Yams seem to be the chief crop, planted in huge mounds. The country of the huge mounds extends from Obudu in the east to Enugu in the west, the western half being Ibo country. Large crops of yams are produced with plenty left over for sale after the farmers have laid in stores in their barns. The huge yam mounds are probably made for good drainage. Compared with Ogidi there seem to be two reasons why this good drainage is needed:

1. The soil is heavy and not well drained, compared with the light sandy soils of Ogidi.
2. The ground is level over long distances and so the rain-water stands around in puddles after a storm. The big mounds rise above this standing water.

Some areas are so low lying and flat that they are subject to an annual flooding. In these cases the yam-planting (*oda*) comes as early as December and the crop is early, a system which reminds us of the similar case of the people living on the flood plains of the Niger. However, customs of farm care are different, for instance very little staking of the yams is done, the young vines being left to trail on the ground.

During the third weeding (*ikpa-ubo*) the yam mounds are thickened. The intercrops include pepper, *anala* (egg plant), fluted pumpkins, groundnuts and some bananas and plantains. Bananas and plantains, however, are not as important as we found them to be

Fig. 96. Changes in farm crops: Ogoja Province. Important crops are named.

in the Ikom and Calabar districts. Cassava is important in a few areas such as Mgbo on the Abakaliki-Enugu road. In the north, around Ogoja, some Guinea corn is found. This is its southern limit, since it is more suitable for countryside where the rainy season is shorter. In northern Nigeria it is an important food crop. Maize is found further south.

Rice

After yams, rice seems to be the next crop in importance. Rice is a cereal (grass with grain) crop which will grow where there is a heavy rainfall, or standing water. The sandy uplands of the Ibo and Ibibio country do not as a rule prove suitable places for growing rice, but these areas are unusual in the southern parts of West

Africa. All areas from Obudu to Ogoja and Abakaliki are important rice-producing areas, and as with yams much is produced for sale.

At Okuku market, near Ogoja, lorries from as far away as Onitsha and Calabar arrive to collect yams and rice. ('Abakaliki yams' are as likely to come from Ogoja and Obudu as from Abakaliki itself.) Other Ogoja products such as groundnuts and *kparakpara* are also in demand at this important market.

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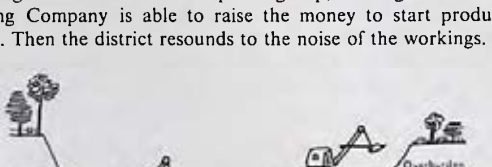

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Apart from limestone and shale, which as we have seen are obtained by the factory, the making of cement also needs:

1. *Gypsum.* This is a salt, calcium sulphate. It is not available at Nkalagu, and is imported.

2. *Fuel.* This is provided by the Enugu coal mines—about one train a day runs via the special railway line to the factory (see Figure 97)—and by the Oji River Electricity Power Station.

3. *Water.* This is available in the quantities needed from the Ora River near by.

At the factory the cement is made as follows:

1. Shale and limestone are crushed and then mixed together with water to form a liquid mud, known as **slurry**. This is stored in large storage buildings or **silos**.

2. Slurry is fed into a large round tank where it is stirred continuously and taken off through a long oven, or kiln, over 100 yards long. In the kiln the slurry is baked and turned into a hard substance called cement **clinker.**

3. The clinker is cooled and stored, then taken to the cement mill, where it is ground, and gypsum added in the proportion of 4%. The mixture, which is the finished cement, is stored in silos.

4. As it is needed the cement is put into paper bags, also made at Nkalagu, and loaded on to waiting lorries or railway wagons for delivery to the purchaser.

Since the factory was opened in 1957 the production of cement at the factory has risen from an initial 110,000 tons per year to about 500,000 tons per year in 1965.

Limestone is not a very common rock in Nigeria. It was the existence of good deposits of limestone near both a railway and a main road that led to the building of the cement works at this place. Yet compared with the lead and zinc ores the limestone has little value. One difference between the two mining enterprises (for quarrying is a similar thing to mining) lies in the rising demand in Nigeria for cement, compared with the lack of local demand for lead and zinc.

Until the opening of the Nigerian factory all cement in Nigeria was imported. Since then several factories have come into production. The graph opposite shows the changes in the imports of cement into Nigeria over a recent ten-year period with the dates of opening of the two biggest factories. Cement is a very heavy item to transport and so, to keep the costs of moving it low, customers will buy from the nearest source of supply. Enugu customers will buy

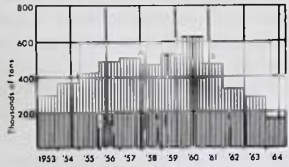


Fig. 99. Twelve years of cement imports into Nigeria. A. Opening of Nkalagu factory. B. Opening of Ewekoro factory (Western Provinces) and expansion of Nkalagu factory.

Nigerian cement from Nkalagu, Ibadan customers will buy from Ewekoro. Port Harcourt customers will buy if possible from the small NEMCO factory there. As Nigerian factories increase their production the need to import cement disappears.

Emene industrial estate

About seven miles short of Enugu the road crosses the Ekulu River, which flows into the Aboine, itself a tributary of the Cross. At about the same point the railway from Port Harcourt, Aba and Enugu crosses the river on the way into northern Nigeria. Here at Emene, the Government has set aside land for manufacturing, known as an industrial estate. One such estate, the Trans-Amadi Industrial Estate, lies outside Port Harcourt (see Chapter 14). Emene is a good place for manufacturing for the following reasons:

1. Good transport facilities—road and railway.
2. Good supply of electricity—the power lines to Nkalagu pass close by.
3. Good supply of water throughout the year, from the river.
4. Building sand available from the bed of the river.
5. Workers can come from Enugu, not far away.
6. Land available for building.

In 1964 there were two factories. The first is a steel rolling mill, a small factory employing some 200 workers only, but very important to Nigeria. The factory uses scrap metal—parts of old machinery, steel from old cars, lorries, workshops and from the railway. This scrap is melted down and shaped into steel bars, and pieces of steel of many different shapes, including thick wire for nails, and steel strips and angles useful in building. Electricity is used as the source of power.

This is the first steel works to be set up in West Africa. It helps to train many workers and managers who will operate other metal industries, including the big iron and steel works which the Federation hopes to set up soon.

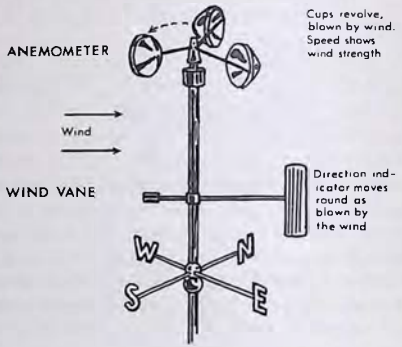
The second and larger factory began producing asbestos cement in 1963. Asbestos cement is a building material which is often used for roofs. It is a good reflector of light and heat, and so keeps buildings cool. It is fireproof and proof against lightning. Yet it is not very easy to handle, because it is rigid, and it would be expensive for the private house owner to use. It is chiefly used for industrial and public buildings where safety is very important. A good example of its use is on the roof of Onitsha Main Market (see Chapter 6). The factory also produces asbestos cement pipes for water mains, sewers and drains. The factory uses asbestos imported from Southern Africa and Canada, and cement from Nkalagu.

Enugu airport

Between Emene and Enugu township the road passes by the Enugu Airport. This is one of the three main airports in the eastern provinces, the others being at Port Harcourt and Calabar. The Port Harcourt Airport serves Aba. At present passengers for Onitsha fly via Enugu or Benin, but an Onitsha airport is planned.

The first thing we notice is that the airfield takes up a lot of space. At present aeroplanes need plenty of room for taking off and landing. This means that airports cannot be built very close to the towns

Fig. 100. Anemometer and wind vane.



they serve. Land nearer the town may be needed for other purposes. Also the safety of the town dwellers cannot be overlooked.

When a plane comes in from the north we have the chance to notice more points of geographical interest. Out of it come passengers from Kano, from Kaduna, and also some who have come via Kano from other parts of the world. After this parcels and bags are unloaded. These are usually small articles; if we were allowed to examine them we would see that either they were valuable, or they were needed quickly by someone. Otherwise these packages would have been sent by sea, road or rail—much cheaper but also much slower.

This air traffic is not very large. One plane arrives at and leaves Enugu Airport every day. Its load is about equal to that of a railway carriage and a truck, or a bus and a lorry. But the traffic is very important for the government of the country and for the management of trade and industry.

Meteorological station

The airport buildings are in two parts. Firstly there are the main airport buildings where passengers are received and parcels checked. Then, separate from these, is the control tower where radio contact is made with planes, and where instructions are given for their safe landing. The control tower has a lot of equipment, amongst which the instruments for measuring and recording weather conditions are of great importance.

As an aircraft approaches an airfield the pilot needs information, particularly about the wind. At ground level this is got by means of a direction indicator or wind vane, and a speed indicator or anemometer. For wind direction and speed in the upper air the staff of the airfield release a gas-filled balloon and study its path as it travels upwards. Normally this information, when sent to the pilot, allows him to bring his plane in safely. Occasionally, in stormy weather, it acts as a warning which may result in the plane going back to another airfield.

At the same time the airport meteorological station records temperature, pressure and rainfall. Airports throughout Nigeria play a valuable part in helping us to understand more about our climate.

Rainfall averages

As we saw in Chapter 4 rainfall records are of special importance. The figures for Enugu have been collected for about fifty years. The average of forty-four years' records is shown in Figure 101.

Study the graph carefully, answering the following questions:

1. Which are the three months of the dry season?
2. Which month appears to be partly dry, or dry in some years and wet in others?
3. In which month do the rains end?
4. In which months do they seem to begin?
5. Which are the four wettest months?

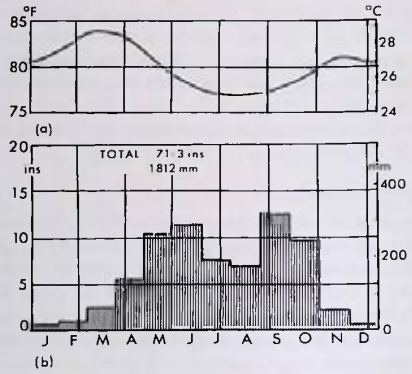


Fig. 101. Enugu: (*a*) temperature and (*b*) rainfall graphs.

It is interesting to look back to the graphs of rainfall which have appeared earlier in the book, to Figure 12 on page 28 for Onitsha, and to Figure 45 on page 78 for Port Harcourt. You will see that Port Harcourt rainfall is different from that of Enugu. Look first of all at the dry season. How many months at Port Harcourt are as dry as the three dry months at Enugu? Which are they? Then look at the rainy season. How many months at Port Harcourt are as wet as or wetter than the four wettest Enugu months? Which are they? Look next at the totals for the year. Port Harcourt, you will see, is a much wetter place than Enugu, with a shorter dry season.

Now look at the Onitsha graph. Do you think it is more like the Enugu graph, or the Port Harcourt graph? When you think also of the very heavy rainfalls we met along the delta coast, at Bonny and Brass (see page 77), you will realize that there are important differences between north and south. These may be summed up as:

1. A longer dry season in the north.
2. A wetter rainy season in the south.
3. Less rain altogether in the north (smaller annual totals).

If we look at the rainfall averages for Makurdi, in northern Nigeria 100 miles north-east of Enugu as seen on the graph below, we can see that north of Enugu the dry season gets even longer, and that the total rainfall for the year gets less. The changes in the length of dry season and in total rainfall over the eastern provinces are shown in Figures 102, 103 and 104.

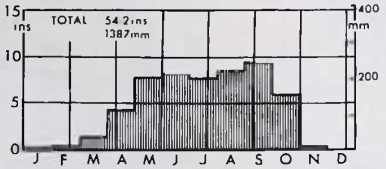


Fig. 102. Makurdi: rainfall graph.

Effects of the long northern dry season

We have seen one big effect of the longer dry season in the north as we travelled north from Calabar to Ogoja: the effect on vegetation. Whereas around Calabar and the Oban Hills the vegetation was high forest, north of Ikom and around Ogoja it changed to savanna, the open grassland with deciduous trees.

Another effect is on the soil. If we examine the soil in the north we are likely to find that it contains a reddish, very hard substance. This we call 'laterite'. It forms easily in areas which are badly drained, and hot and wet most of the year, but which have a distinct very dry season, and is common in the northern part of the region.

You are much more likely to find laterite in flat areas than in hilly areas because of the poorer drainage there. Lateritic soils (soils containing laterite) are rather poor for farming. However laterite has been very useful in road building. It is the best possible material for roads, especially where tar cannot yet be used. You will see it being dug, in many small quarries wherever road building is going on.

Exercises

1. What do we mean by mining? Do you think petroleum production should be called mining?

2. When are the lead and zinc ores near Abakaliki likely to be mined and when are they likely to be left untouched?

3. Give the meaning of the following words: overburden, excavator, slurry, silo, kiln, gypsum.

4. List the advantages that the Nkalagu site had for the making of cement?

5. Explain why a customer will usually buy cement from the nearest source of supply.

6. Why is the Emene steel rolling mill important to Nigeria?

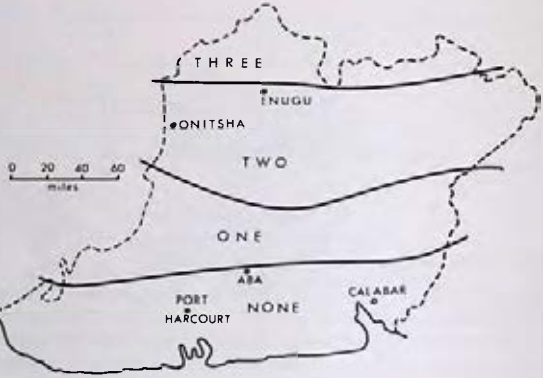


Fig. 103. Eastern Provinces: length of dry season (number of months with less than one inch of rain).

7. Make a list of materials used for roofing buildings in Nigeria and give some advantages of each type.

8. What kind of goods does an aircraft normally carry?

9. What sort of information about wind can an airport provide. Explain the importance of this information to a pilot approaching the airport. What other information connected with weather do you think a pilot needs as he brings his aircraft down to land?

10. What effects of the longer northern dry season are mentioned in this chapter?

For more advanced students

11. Lead and zinc are more valuable by weight than limestone.

How do you account for the greater success of the Nkalagu workings over the Abakaliki workings?

12. From information contained in this book, describe the distribution of factories making materials for use in building. Why do you think so many of Nigeria's industries are connected with the building trade?

13. Discuss the importance of air transport in Nigeria.

14. What do we mean by an 'inch' of rain? Can an inch of rain fall in one day? What is meant by the 1·0 inch given for February in the Enugu monthly averages?

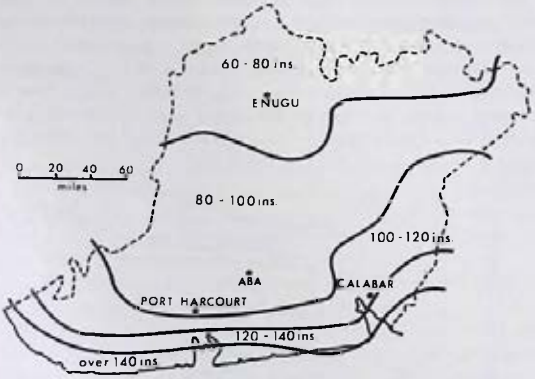


Fig. 104. Eastern Provinces of Nigeria: annual rainfall.

19 · City of Government

History of the township

The oldest part of Enugu lies close to the foot of the hillside 'wall', or escarpment to give it its correct name. A little to the south on the top of this wall stands Enugu Ngwo, a populous Ibo town of the Ogidi type, which existed long before modern Enugu grew up, and from which the modern town takes its name. Enugu grew up as a mining centre, and one of the oldest parts of the town is still referred to as Coal Camp.

Fig. 105. The Enugu district.

Coal was found by a party of British geologists in 1909, and their find led almost straight away to plans for mining and for the building of a railway to a port (see Chapter 13). The first coal was mined in 1915 at what became known as the Udi mine (Udi is about ten miles away, but the mine was then in Udi Administrative Division).

In 1916 the first coal train left for Port Harcourt. Coal mining played an important part in the growth of the township. Coal from Enugu was supplied to all Nigeria and even to other parts of West Africa. We will return to the subject of coal mining in the next chapter.

Enugu was founded at a time when the British administration of Nigeria was being reorganized. Enugu had plenty of land available for building; it also had a climate which was pleasant for Europeans, being drier than Calabar and other towns further south. With the new railway line just built its communications were fairly good. Because of these three advantages it was chosen as the administrative centre for Southern Provinces. In 1939 these were divided into Western and Eastern Provinces, with Enugu remaining as the eastern administrative centre. The Eastern Provinces later became known as the Eastern Region, and then as Eastern Nigeria.

Government and administration

At the present day it is the presence of the Government of Eastern Provinces of Nigeria which is the main reason for Enugu's prosperity. A new House of Assembly was opened in 1965 on the Independence Layout (see the end of this chapter) where representatives of all parts of the eastern provinces debate the affairs of the region. Many others are employed here as clerks to help this business along. This branch of the government is known as the Legislature.

Another branch of the government is known as the Executive. In the employment it gives, this is the biggest part of the government. Each department or Ministry has a permanent official—a senior civil servant, and a large staff of experts, administrators, clerks, typists, messengers and cleaners. There are at least twenty separate government departments, each with their own offices and staff. The group of tall buildings which houses the offices of the different ministries, known as the Secretariat, can be seen on a hill near the town centre alongside the Onitsha Road.

There are also many other offices which are connected with the Eastern Nigerian Government, or are connected with the Nigerian Federal Government. Included amongst these are the offices of the Eastern Nigerian Development Corporation, whose work we have seen in many parts of the region, of the Electricity Corporation of Nigeria, information services, broadcasting services, the Coal Corporation and many others. There are also the offices of the representatives of other countries—Commissioners' offices and Consulates.

Fig. 106. The Eastern Provinces.

Apart from this many of the banks and commercial firms have important offices in Enugu. Some of them have their eastern headquarters here, others may be based on Port Harcourt with Enugu as a second office. All this administration is additional to the normal administration of an important town, the town council and provincial headquarters. The eastern provinces of Nigeria, with their administrative centres, are shown in Figure 106.

So you can see that just to be the capital of the Eastern Provinces means a lot to the township. Many thousands of people find well paid jobs here. Others earn a living through the money people spend, in shops, in the market and on transport. Enugu is a town which attracts people from all over the east, and from other parts of Nigeria, to find work. You will remember that two members of the Okonkwo family at Ogidi were working as clerks here.

But, like the other railway towns of Aba, Port Harcourt and Umuahia, it is still thought of as a new town half a century after its foundation. 'Everybody' comes, but nobody claims it. All Enugu people have a home town elsewhere in the country to which they return from time to time. Yet, perhaps in the future Enugu people

will have as much pride in their town as do those from Calabar and Onitsha.

Enugu's place as an administrative centre depends upon the willingness of the government to allow this to continue. States have been known to move their seats of government. One example in Africa has been the move of the Uganda Government from Entebbe on Lake Victoria to Kampala, 20 miles away. As it happens, Enugu is in a good position to be capital. There is still plenty of land for the town to grow to a size much bigger than the officials of fifty years ago would have expected. With good road and air communications the other regions of Nigeria are soon reached. Moreover the Eastern Provinces seem to be divided into a south-western part, densely populated and with a good deal of wealth, and a north-eastern part, with fewer people and less opportunity for economic progress. Enugu is situated between the two parts, which should help co-operation and understanding, and prevent the problems of one part being neglected.

Other employment in Enugu

We must not think however that administration is all that is important in Enugu. A tour of the township shows us that it is an important market centre, having an important concentration of schools and colleges and a large hospital. Coal mining employs some Enugu people and there are several industries of importance. The

Fig. 107. The Public Lending Library at Enugu.

Fig. 108. The small gorge of the Asata River is one of several that divide Enugu township naturally into separate parts. The escarpment can be seen in the background.

Emene industries have been considered (see last chapter). The railway workshops for the repair of locomotives are important. On the north side of the township we notice a furniture works and a pottery whose products, 'Ekulu Ware', are becoming well known. In the layouts there are many small industrial and trading businesses of the kind we saw at Aba earlier in our tour.

The shape of Enugu

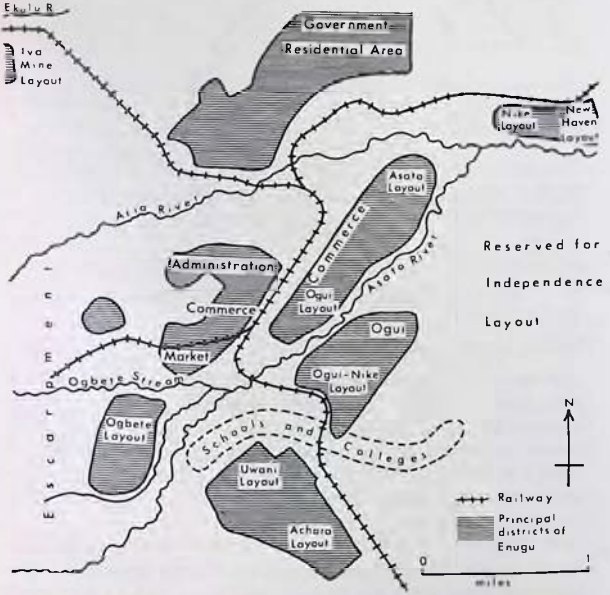
Getting around Enugu to see its various parts can be a tiring or expensive business, because of the large distances between each of its suburbs. Even though the town may have a population of less than 100,000 (1953 Census 62,764), there is a clear 5 miles of continuous town from north to south, plus a lesser extent from west to east. This takes no account of the outlying parts, such as Iva Valley (coal mining) and Emene (new industries).

As at Aba the railway cuts through the township separating the district on either side. Also Enugu has three small but deep valleys which cut through the central parts of the town, those of the Aria, Ogbete and Asata streams. These valleys are not suitable for building and so the various districts are separated even more.

By the main government buildings there is the chief commercial centre of the township, around Okpara Avenue. To the north, across the Aria River, is the main government residential area; to the east, across the railway line is the largest residential district, with the Ogui and Asata layouts; to the south, across the Ogbete stream is the residential district of Ogbete. New districts are growing in the south (Uwani and Achara layouts) and in the north-east (New Haven layout). Figure 109 shows all these features.

You will notice that though the oldest parts of the township are close to the escarpment, all new building seems to be further out from the hill. Scarcely any buildings go up on the hill top. There is plenty of land here, and it is a cool refreshing place to live, but there is, as we shall see later, a water supply difficulty here.

Fig. 109. Enugu layouts.



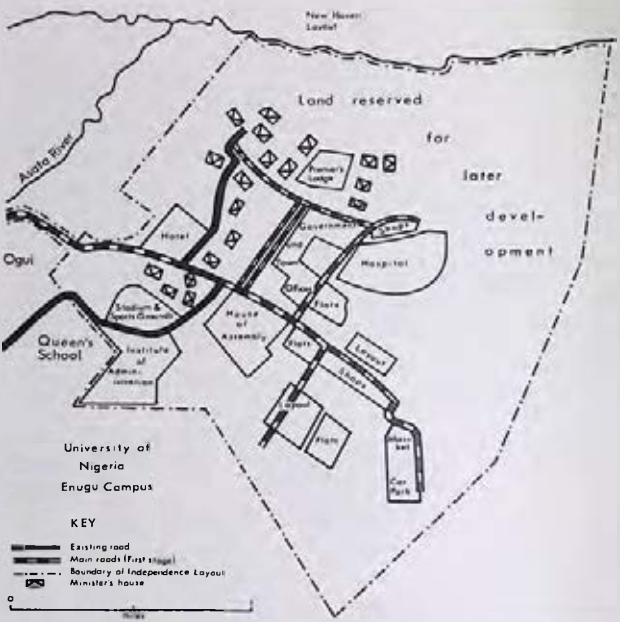


Fig. 110. Independence Layout: an outline of the plan.

Planning for the future

Fortunately the Eastern Ministry of Town Planning and the Enugu Urban Council (Enugu Town Planning Authority) are not allowing the township to grow quickly without any control. They have planned the streets, water supplies, electricity supplies and sewage disposal of the new layouts so that these are pleasant places to live in. In these offices the future geography of Enugu is being planned.

The biggest new development at Enugu is the Independence Layout. It was thought that as Eastern Nigeria became a more prosperous place there would be a need for a bigger government organization than previously existed. So the decision was taken to

keep a large area of land on the eastern edge of the township for development as a new centre of government.

As new buildings are erected they have to agree with a 'master plan' which will make this district into a 'town within a town' with offices, homes, churches, hospitals, schools, playing fields, shops and hotels. The House of Assembly, the new 100-bedroom Hotel Presidential and some houses for senior members of the government had already been built at the time of the change of government in January 1966. The master-plan is a well thought out and complicated scheme. The map opposite is a simplified version of the one in use in Enugu.

But we should remember that even the detailed master-plan will be continually revised to meet the changing needs of the town and the country. Only the Town Planning Authority will have the correct up-to-date plan. The map given here (Figure 110) is just to give an idea of one stage of the Plan.

Exercises

1. Make a list of important dates in the history of Enugu, noting what happened in those years.
2. What kind of work is most vital to the prosperity of Enugu?
3. Why are people working in Onitsha and Calabar more likely to count these places as their 'home towns' than those working in Aba, Enugu and Port Harcourt?
4. Find out how many different Departments or Ministries there are in the government at Enugu at the present time.
5. What advantages for government does Enugu's position hold?
6. What other employment is there in Enugu, apart from clerical and administrative work?
7. From the maps accompanying this chapter, calculate the area, in square miles, of Enugu, including all its districts and the land in between. Include the area planned for Independence Layout. (Area may be calculated approximately here by dividing the whole area into squares measuring a mile across, one square mile, or for greater accuracy squares of half a mile across (a quarter of a square mile). The whole squares can then be counted and the fractions of squares estimated and totalled.)
8. What is the aim of Independence Layout? Why was it needed?
9. List the five main towns of the Eastern Provinces. Find out their populations at the latest census and write these alongside. For

each town list any features which might give it pride of place among the towns of the east, e.g. historical importance, importance for trade, for industry, largest population, etc.

For more advanced students

10. Draw a map to show Enugu as a route centre. Let the map occupy a full sheet of paper or notebook page. Include on the map the roads as far as Oji River in the west (see Chapter 21) and Nkalagu in the east. Mark the hills to the west of Enugu (see Figure 117). Show all important roads, the railway and the airport. Give road distances from Enugu to other important towns.

11. Why does Enugu spread out over so big an area? Compare its shape with that of Onitsha, Aba and Port Harcourt.

12. With the aid of a sketch-map, write a note on the growth, position and importance of Enugu.

Fig. 111. This dramatic photograph shows the exit of the Okpara mine with a close-up of the conveyor belt. In the background you can see a miners' footpath. Several footpaths lead over the hills to the Okpara mine, since a large proportion of the miners come not from Enugu township but from neighbouring villages such as Nsude and Enugu Ngwo.

20 · Coal Mining and Geology around Enugu

Visit to a coal mine

For the next stage on our tour we take the southern road out of Enugu. About a mile beyond the last houses we turn right on to a road leading into the hills. Soon the road is leading up the deep valley of a small river, a tributary of the Nyaba, and shortly we reach the Okpara coal mine.

Mining at the Okpara mine is by means of a tunnel, or adit, cut into the hillside. This type of mining, which is commonly known as adit mining, is possible here because the coal is found in layers, or seams, which lie almost horizontally in these hills, and so can be reached from the sides of a valley. It is a method which is cheaper than the deep mining, from a vertical tunnel, used in the lead–zinc mines (see Chapter 18).

Inside the mine adit, the daylight is soon left behind and we travel by truck the length of the tunnel, lit by electric light, until we reach the coal face, where miners work to cut the coal, the sweat glistening on their bodies. The tunnel here is supported by wooden props skilfully placed. As mining moves forward these are removed and the tunnel, except for the 'main road' out to the fresh air, is allowed to collapse. Only a visit to the inside of a coal mine can really show the wonder and ever-present sense of danger in coal mining. The tens of thousands of people of Enugu just a few miles away may pass their whole lives without any idea of this different world under the ground. Fortunately mine accidents are very rare, thanks to the skill of the mining engineers.

Coal from the coal face is taken to the surface by conveyor belt, sorted in the large building in the centre of the photograph, and then taken by buckets carried by cable over the hill to the waiting rail wagons and lorries at the old Obwetti (Ogbete) mine, now closed. Or it may be taken by another cable way over the hills in the opposite direction, to the Oji River Power Station about sixteen miles away (see Chapter 21). To keep the mine air fresh a fan blows air through

the tunnels and out of a separate adit. In addition water pumps work day and night to remove the water that works down through the rocks into the mine.

The Enugu coalfield

The first coal mine at Enugu was the Udi mine, opened in 1915. After two years this entrance was closed and the same mine has since been worked from Iva, a mine entrance situated up a valley, like the Okpara mine. Another mine to the south, the Obwetti mine (see above), was opened in 1940 and was worked until 1962. The Okpara mine entrance, opened in 1951, now reaches the same coal as the Obwetti mine reached. North of Iva two new mines, the Ekulu mine and the Ribadu mine, were opened in 1958 and 1961 respectively.

The Enugu mines grew in their production from the small beginnings of 1915 to a peak production of over 900,000 tons of coal in 1958–9. Of this about half was used on the railway. From that year onwards the Railway Corporation bought less and less coal as they introduced locomotives which burned diesel oil. This has been a blow to the Enugu mines, but diesel oil is a cheaper fuel for railways. It may save up to half the cost of the fuel. Since then production has gone down, as you can see from Figure 112.

The main customers for Enugu coal are now the Electricity Corporation, for the Oji River Power Station, and the Nigerian Cement Company at Nkalagu. Any hopes for increasing production to 1,000,000 tons per year or more will depend on an increase in its use by any new industries that might be started near by, using coal or electricity made from coal.

Some facts about coal

Coal will be familiar to many people as a dusty black rock, sold in lumps for heating purposes. It is light, easily crushed, and will burn leaving only a small amount of ash. As a fuel it is usually considered better than wood, which burns up more quickly, though the fumes from burning coal are poisonous in a closed room.

Its main importance in the world has been that, in past years, it has made possible the growth of much more industry than wood (charcoal) would have done, and has also allowed the development of mechanical transport, the steamship and the railway engine. Today, though it is still important in most countries, it is giving way to petroleum products, in all types of transport and in some industries.

Coal contains many useful substances. In other parts of the world

it is important in the chemical industry. Road tar and gas can be made from it. In Nigeria these substances can be got more easily through the refining of oil (see Chapter 12). However, some chemicals produced from coal are important in the chemical industries, in making synthetic textiles such as nylon, in the explosives and refrigeration industries and in the manufacture of fertilizers. Experiments on Enugu coal have been going on, which may result in some use of it as a raw material in a chemical industry.

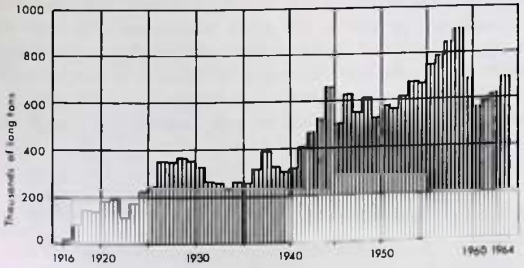


Fig. 112. Coal output from Enugu, year by year. Notice the fall in 1959 and 1960 as the railways used less coal. After 1920 output is measured from April 1 to March 31.

The geology of coal

In Nigeria, in places well away from the railway, coal is not often seen. Even those for whom it is commonplace have probably never seen it in the ground. Since coal is a soft rock, it rarely shows itself at the surface, and is usually covered by several feet of soil. It is also a rather rare rock; the Enugu coalfield is the only worked coalfield in West Africa. A similar and even softer rock, called lignite, or brown coal, is found near Nnewi and other places in the west of the Region.

There are five different coal seams at Enugu. The middle one, the 'No. 3 seam', is 5 to 6 feet thick. This is the only one mined. The other four are too thin for profitable mining. Immediately north and south of Enugu all seams become thin, but further away to the north seams as thick as 12 feet were found (1947–9) at Ezimo (Nsukka Division) and Orukpa (Igala Division). It is interesting to think how different the geography of this part of Nigeria would have been if in 1909 the geologists had found these thicker outcrops instead of the Enugu ones.

The rocks between the seams are not coal. In the Enugu district they are sandstones and shales. The whole series of rocks in which the coal seams are found is known to geologists as the Lower Coal Measures ('Lower' to distinguish them from another series, the Upper Coal Measures found further west). The coal seams were formed about 100,000,000 years ago from the remains of swamp forest vegetation.

More about the geology of the Enugu District

Workers at the Okpara mine come from Enugu Ngwo and Nsude, two farming towns situated just a few miles away at the top of the hills, reached by paths which climb out of the valley at the mine. We will take the Nsude path, reaching the main road after a walk of 4 miles. The journey by road through Enugu is over 20 miles.

Soon we see that the country we walk through is all too familiar.

Fig. 113. This countryside, in the hills not far from Okpara mine, has suffered badly from soil erosion. Notice the lack of soil cover and plants in places. A group of geography students cross a badly eroded area of ground. In the background, gullies can be seen.

It is sandy country, and the very poor soils, and deep gullies and ravines, show us that this countryside, as with that at Agulu, has suffered very badly from soil erosion. If we examine handfuls of soil picked up on the hills we find that it is made of very coarse particles.

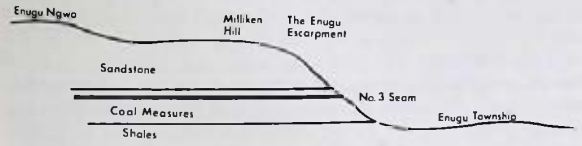


Fig. 114. Enugu Escarpment: geology (simplified and not drawn to scale).

This is a contrast to the soil of the lowlands beyond Enugu. This, apart from the pieces of laterite, is fine soil, dusty when dry, but very sticky when wet. It often dries hard and is not easy for the farmer to hoe. The sandy soil does not stay wet very long: the rain-water soaks away easily underground; it is never sticky.

The two types of soil, which we may call sandy soils and clayey soils, are formed from two types of rock, the sandstones and the shales. Shale is a form of compressed clay in layers. Both sandstone and shale are rocks formed by deposits, often in the same sort of water as the Niger Delta is being formed today. Sandstone is formed from the sandy deposits of fast-flowing rivers, or from deserts. Shales and clays come from the finer muddy deposits dropped by sluggish rivers, or which settle on the bed of a shallow sea or lake. Both are known to geologists as **sedimentary** rocks and both are found as layers or strata in the ground. The Coal Measures are sedimentary rocks of alternate sandstones, shales and coals. In Figure 114 you can see the arrangement of rocks in strata with the position of No. 3 Seam at Enugu picked out.

Shales are the underlying rock in most of the countryside from Ogoja to Enugu. They form the lowlands. On them drainage is often bad. The sandstone areas, on the other hand, are generally dry. Streams are seldom seen flowing, even at the height of the rainy season because the rain sinks below ground so easily. The sandstone areas of the eastern provinces around Nsukka, west of Enugu, Awgu and Okigwi and also around Awka and Agulu stand up as hills. There are two reasons for this:

1. The sandstone is harder than the surrounding shales, and so is worn away less easily than they are.

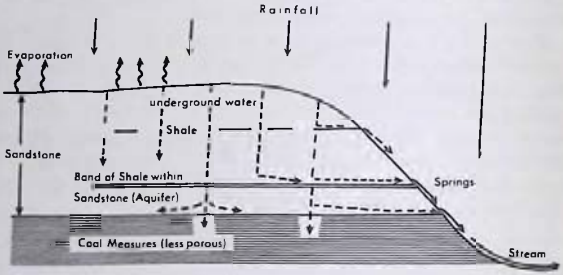
2. Because the rain sinks underground so easily and streams rarely flow, there is much less soil carried away by the rivers, thus leaving these areas as higher land.

When a rock allows rain-water to pass through it so easily we describe that rock as **porous.** If, on the other hand, water does not pass through very easily, or does not pass through at all, then we call the rock **impervious.** The shales are impervious. They take in water but are so close packed that the water does not move down underground much. We ought also to note in passing that some rocks may be very porous, as the Enugu sandstones; others may be slightly porous. Some rocks may be non-porous but nevertheless let water through, by cracks or joints in the rock. Such rocks are known as **pervious.** Most limestones are pervious.

Water supply

The rain-water which sinks down through the porous sandstones reaches the Coal Measures. Underground these rocks may be very wet. You will remember that a lot of pumping is necessary to keep the mines dry. In fact this great area of sandstone hills acts as a natural store of water. Any rain-water which does not evaporate with the heat of the sun sinks straight down into the ground. Sooner or later it reaches less porous rock. Above these bands of less porous rock water collects and moves outwards. Much of this water comes out into the hillsides of the Enugu escarpment to form streams. The movement of water is shown below, in diagram form (Figure 115).

Fig. 115. Enugu Escarpment: diagram showing movement of water. An aquifer is a band of rock through which water does not easily pass. Here it causes springs on the hillside.



At the headstreams of the Ekulu River water is collected and piped to the Enugu township. So Enugu people have a supply of pure water at such a height above the town that it does not have to be pumped upwards at all, except to the houses built on the hill top. As the town has grown in size plans have been made for new waterworks on the Nyaba River, near Nsude. These are planned to make a supply of 10,000,000 gallons per day possible, enough for decades to come. Other towns are not so well placed. They have to obtain water by pumping it up from deep wells, or from a river. River water needs purification before it is considered good to drink.

The value of the Enugu rock formations

At this stage it is convenient to summarize the value of the Enugu rocks to the people of Enugu:

1. The No. 3 Seam provides a good thickness of workable coal, for industry and for use as electricity.
2. The sandstones are a natural water reservoir giving a first-class water supply for a growing township.
3. The shales contain a clay which has been found suitable for commercial pottery.

Further possible uses are:

4. The use of coal as a raw material for the chemical industry.
5. The use of sandstone as a raw material for a glass industry. There are plans for this.
6. The use of some ironstone found within the sandstone at a certain level for an iron and steel industry. This is not planned for Enugu at present, but might come in the future.

Scarp slopes and dip slopes

Before we take to the road again to complete our tour of the eastern provinces we go to a convenient viewpoint to get a general view of the relief of this district. To the south the land is open grassland suffering badly from erosion. At Mile 12 from Enugu, or 55 from Onitsha, we walk about 200 yards to the east away from the busy main road.

From this point we can see the steep slopes falling away eastwards into the valley of the Nyaba River and to the lowlands beyond. This is the slope we have called the Enugu Escarpment. But we can also see a broad, dry valley sloping gently westwards, across the main road between Nsude and its southern neighbour Obioma. From here we can see that Nsude and Obioma are really on the crest of a ridge

with a steep slope to the east and a gentle one to the west. The sandstones, coal seams and shales are not quite horizontal here but they themselves drop gently westwards. The Enugu Escarpment is in fact part of a type of landform known as a **cuesta.** A cuesta has two slopes, a steep slope known as the scarp slope, and a slope which is usually much gentler, following the dip of the rocks, and so is called a dip slope.

This cuesta is one of the principal relief features of Eastern Nigeria, and its extent can be seen on the relief map below (Figure 116). We will be travelling on it for much of the final stage of our journey, which is to be undertaken in the next chapter.

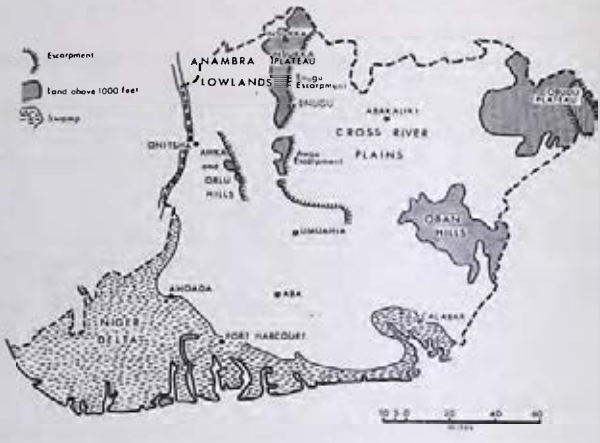


Fig. 116. Eastern Provinces of Nigeria: relief.

Exercises

1. Explain what is meant by adit mining. Show, with the help of a diagram, why adit mining is cheaper than deep mining.
2. How is coal transported from the coal face and away from the mine?
3. Explain, as carefully as you can, why coal mining at Enugu has an uncertain future.
4. What has been the main importance of coal in world history?

5. In what ways might Enugu coal be used, other than as a fuel?
6. Where in the eastern provinces, apart from the Enugu District, is coal found?
7. What is the difference between sandy soil and clayey soil?
8. How are sandstones and shales formed?
9. Select several different places near your school, to the north, south, east and west, on a hill, on a slope, by a stream, etc. Take handfuls of soil from these places and see what differences there are of the kind noted on page 179.
10. Why are few streams ever seen on the hills west of Enugu?
11. Distinguish between 'porous', 'pervious' and 'impervious'.

For more advanced students

12. Why has Enugu got such a good water supply?
13. With the help of diagrams make clear the meanings of **plateau, ridge, cuesta, escarpment.**
14. What are the chief rocks and minerals found in the Enugu area? How have they affected the town's economic development?

21 · Completing the Circle

Derived savanna

The main road northwards follows the crest of the cuesta, linking the many farming towns along this line. We pass through patches of compound land with many high forest trees, and patches of open grassland, sandy and dry with small deciduous trees of the savanna fire-resisting types. A short distance to the east of the road, usually out of sight, the escarpment edge marks the beginning of the drop to

Fig. 117. Eastern Provinces of Nigeria: vegetation regions.

1. Chiefly mangrove or freshwater swamp forest.
2. High forest (mainly in the east) and oil palm bush (mainly in the west).
3. Derived savanna: patches of forest becoming bigger and more continuous near the southern limit. Some parts of this area may be true savanna (Guinea type).

the shale lowlands. To the west are extensive views across the lands of the dip slope, which widen as we go north into an extensive plateau.

The countryside has not always been as open, with extensive views, as it is now. Many years ago the high forest covered the whole landscape, as at Ogidi (see Chapter 2). The first people to farm these lands would clear part of the forest to plant their crops, felling trees and burning off the ground vegetation. Here, unlike further south, there is a severe dry season (see Figure 103) and during this season the ground, which in any case is sandy, gets so dry that the young forest trees do not grow again. Years of clearing and burning have so destroyed the forest that the only remains of it are on the compound land, which may never have been cleared by burning.

A few trees grow on the grassland, of the fire-resisting type, yet this country is not really like the true savanna lands which we find further north in northern Nigeria, which, as far as we know, have never been true high forest. This type of savanna is known as **derived savanna,** 'derived' from forest. It is found to the north of the forest throughout West Africa, noticeably in areas where there are many people living.

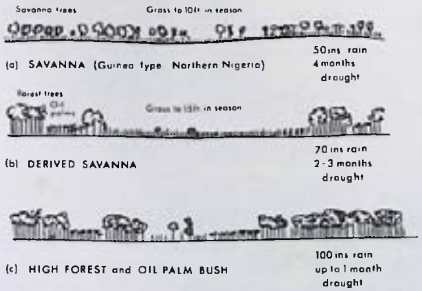


Fig. 118. Forest and savanna.

Population problems

As we go north, we expect that every patch of forest will contain a town or village, and this proves to be the case. In the 25 miles from Nsude to Opi we pass through ten such settlements, part of a line stretching from Udi into northern Nigeria. Enugu Ngwo, on the hill top above Enugu, was another. Other farming towns can be seen at a distance from the main road. The density of population here

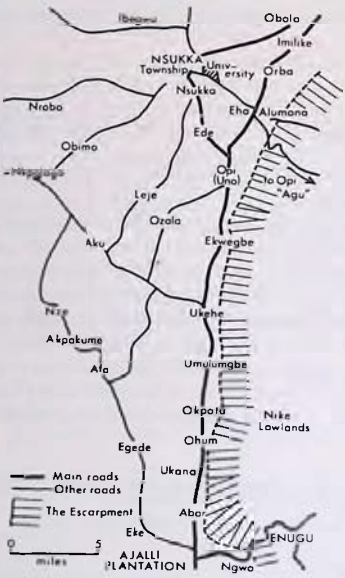


Fig. 119. Enugu to Nsukka.

seems similar to that of the lands near Onitsha where we started our journey, but in between the settlements much of the outfield land seems too poor to use. On the steep slopes of the escarpment, from Udi northwards to Opi, much of the land has been completely lost for farming, by gully erosion, as at Agulu.

Yet only a few miles away to the east at the foot of the escarpment there is good farmland available where there has been no soil erosion. From some places on the hill top, people have been going down to farm these empty lands.

At Opi, for instance, it is the established custom for young men to leave the home town, Opi-Uno, to work farms away down in the plains, Opi-Agu. At first a few men went for a part of each year. Now all young men go for several years. The old town remains the chief

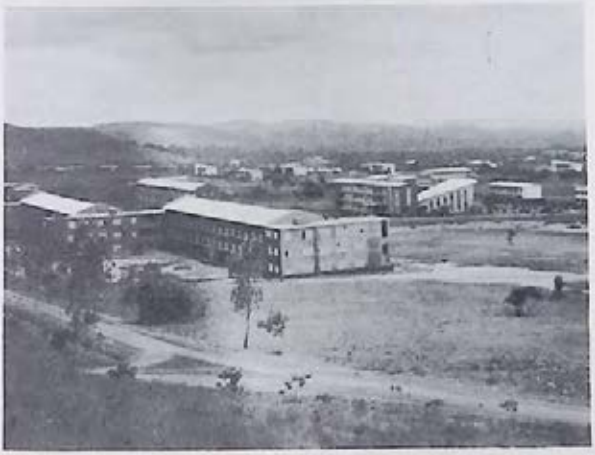
settlement, and the heads of families live here, but the people there get a lot of their food from the distant 'outfields'.

Such towns as Opi are fortunate because there is good land near by, within their own territory, that can be used. Others, in the centre of densely populated areas, cannot solve their problems so easily. Many young men go to the plains, in the territory of Nike, north-east of Enugu, where they farm land for a period, as tenant farmers (*ije okpata*).

Nsukka

Nsukka is one of these towns of the grassland country. It is not on the edge of the escarpment, but it has prospered. In the first place the colonial administration set up a divisional headquarters on the edge of the farming town. Then came churches, schools and traders, so that a small modern township grew up. Then it was selected for the site of Nigeria's second university. The town is not a large one, or a centre of industry. As such it has some defects as a place for a university. In its favour, however, is that the air is less humid here than in other parts of the east, and as the highest township in the eastern provinces, 1,400 feet above sea-level, it has slightly cooler

Fig. 120. Some of the new buildings of the University of Nigeria at Nsukka.



weather at times. These two points of climate should make study a little easier than elsewhere.

The University of Nigeria, Nsukka, opened in 1960. It is growing rapidly in size to take 4,000 students at any one time. There will be a staff of several hundred professors and lecturers, and in addition large numbers of technicians, office staff and manual labourers. With research laboratories also, and a printing industry attracting more skilled workers, it is clear that there will be a vastly increased local trade, and that the township of Nsukka will become vastly changed from the small township of the 1950's.

The flat-topped hills

For our journey south we take one of the minor roads southwards from Nsukka. This country is among the best in southern Nigeria for studying the shape of its land. Extensive views from the road, such as are not found south of Ikom, Okigwi and Onitsha, where the forest is continuous, are common. In this district also the rock formation gives rise to distinctive hills.

Our route lies south-westwards from Nsukka to Obimo and then southwards to Afa and Eke. Along the whole of our route the road passes through hilly country. At first, on either side of the road, set back about half a mile to one mile, there are hills, or plateaux, rising about 300 feet above the level of the road, and remarkably flat topped. As we travel further south-east the hills become more scattered, but still, unless they are very small, keep their level tops.

The explanation for this is to be found in the geology of the area. The land is made up of two different rock series. Firstly, there are the sandstones, which we met on the hill top near Enugu (see Chapter 20), and which we know to be very porous. Secondly, on top of these, and therefore younger, is the rock series known as the Upper Coal Measures. As the name suggests these rocks, like the Lower Coal Measures, contain coal, but the seams are all thin, and nobody has found it worthwhile to mine them. They also contain

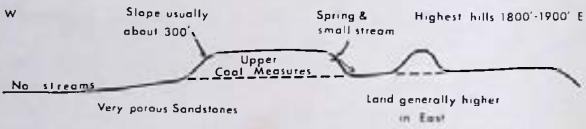
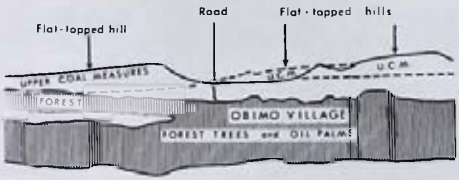


Fig. 121. Diagram showing geology and relief of the area of the flat-topped hills south of Nsukka.

sandstones and shales, and are not as porous as the rocks beneath them. Further west these rocks cover the sandstones completely but in this district part of the cover has been removed, leaving these flat-topped hills.

How the rocks in between have been removed we do not know with certainty. There are no rivers or streams in this area now because the rain-water sinks straight into the porous sandstone, but there could have been streams on the Upper Coal Measures before the cover of them was removed. Even now there are some springs

Fig. 122. Near Obimo, Nsukka (derived savanna).



OPEN GRASSLAND ON
SANDSTONE PLATEAU

FOREGROUND – SANDY SOIL SHOWING UP
THROUGH THIN GRASS COVER

on the sides of these hills, giving a water supply to the people who live near by. Weathering, plus the work of rain-water or storms, and the streams when they existed would have done the work of removing parts of this cover of Upper Coal Measures, leaving the hills as they are today.

The photograph in Figure 122*a*, with a sketch to interpret it, sums up some of the features of this type of country. Distribution of vegetation types, of population, and also the types of landforms are all represented here. The village is the village of Obimo, south-west of Nsukka.

Cashew trees

Almost as soon as we rejoin the main road we take another turning off it to the right to visit a plantation managed by the E.N.D.C., the Ajalli Cashew Plantation. With only 1,200 acres under cultivation this plantation is a small one. 1,200 acres is equal to about two square miles. However, this is an important plantation because cashew trees have been found suitable for planting on this very sandy ground.

The cashew tree (botanical name *Anacardium occidentale*) comes from South America, growing wild in sandy country of North-east

Fig. 123. The plantation entrance at Ajalli. The cashew trees are planted in regular rows, reminding us of rubber and oil palm plantations further south.

Brazil where the climate is similar to that of this part of Eastern Nigeria. There the people eat the fruits of the tree which we call cashew apples or 'false fruit', and make a wine from the juice.

The fruits have a distinctive appearance, as you can see in the diagram. From the false fruit the real fruit projects. This has a double shell and a kernel. The most useful oil comes from between the two layers of the shell. If handled uncooked it can be a very irritating oil, but on plantations such as Ajalli this oil can be extracted by machine. It is used in the engineering industry and in making materials, including paper, waterproof.

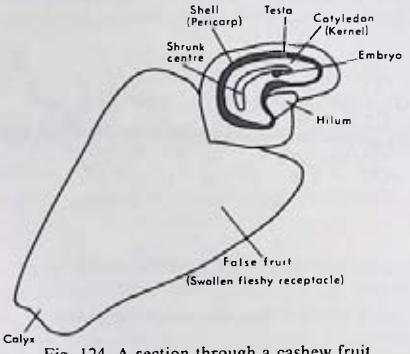


Fig. 124. A section through a cashew fruit.

The wood of the tree is a useful timber and a gum can be obtained from the branches. Research is going on in a chemical laboratory in Enugu into uses of cashew products. The main value of the tree, however, is that the kernel, when roasted, makes a very pleasant nut for eating. These are very popular in the United States which gets its main supplies from India, where the nuts are also eaten. You can buy packets of roasted cashew nuts from Ajalli in the shops and markets of Nigeria.

The plantation has given E.N.D.C. experience of growing a useful tree in a country where oil palms, rubber and cocoa would not be very successful. The cashew acreage is now expected to be extended. Pigs and poultry are also kept as an experimental side-line at Ajalli. As things stand the Eastern Provinces are very dependent on their sales of oil palm produce and of petroleum for prosperity. The government must always investigate the possibilities of growing other crops profitably.

The cuesta dip slope

At Udi the main road turns south-westwards in the direction of Onitsha. It leaves the cuesta ridge and leads off downwards towards the lowlands. On fine days the uplands of Agulu and Awka can be seen looking blue in the distance. The road is straight, and it runs clear of all towns through the open country of derived savanna.

One point of interest is in the gradient of the road. This is a remarkably steady descent. Notice how quickly our car, or bus, covers the 8 miles between the last road out of Udi town to the Oji River settlements. A map would tell us that in this 8 miles we have descended 800 feet, from 1,200 feet to 400 feet above sea-level.

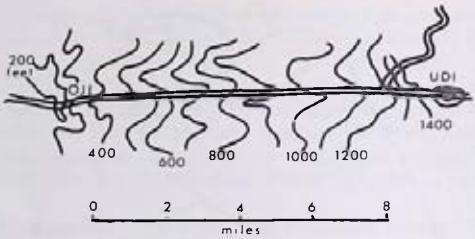


Fig. 125. Udi to Oji, road and contours.

This means that the average gradient of the road is 800 feet in 8 miles, or 'one in fifty'. This we calculate as follows:

800 feet in 8 miles
= 100 feet in 1 mile
= 100 feet in 5,280 feet
= 1 foot in 52·8 feet.

Since our first height and distance measurements were only approximate we can express this approximately, as 1 foot in 50 feet. This would be the same slope as 1 inch in 50 inches (or 1 centimetre in 50 centimetres) so we call it simply '1 in 50'. This is an easy gradient for cars to climb though it would be tough for a railway. Compare this gradient with others you can calculate in your home district.

Oji River

At Oji River the road crosses the deep valley of the river of that name. After the steady descent of the previous 8 miles we particularly

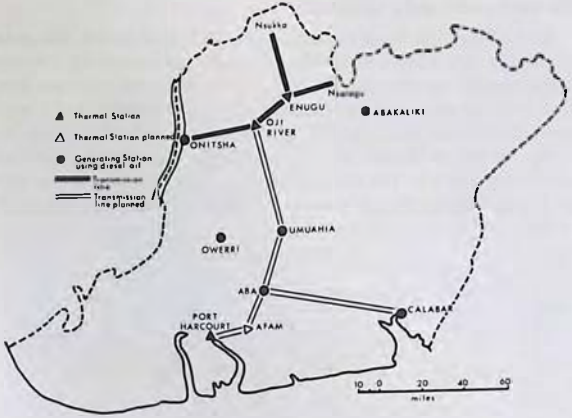


Fig. 126. Eastern Provinces: principal electricity undertakings and transmission lines (1962).

notice the change of slope. The Oji like many other rivers of Eastern Nigeria, such as the Aboine at Nkalagu and the Aba river at Aba, has here cut a deep valley below the general level of the land.

Hidden away in this deep valley is the Oji River Power Station which stands at the other end of the cableway from Okpara mine. This works, which produces electricity from coal, is known as a thermal electric generating station. Thermal electric generating stations need a plentiful supply of water for cooling purposes. The Oji river, which rises near Awgu, is a suitable river for the purpose.

Hydro-electric generating stations on the other hand use the force of running water in order to make electricity. For such stations a large or swift river is necessary. The Oji is not a suitable river for this method of generating electricity. The Niger will be used in northern Nigeria for the huge electricity generating station at Kainji, upstream from Jebba.

Electricity transmission lines take the power from Oji River to Onitsha in one direction and to Enugu, Nkalagu and Nsukka, in the other. A similar network of transmission lines is being built from the Afam thermal electric station in the south, which uses natural gas (see Chapter 12). Some towns away from these transmission lines have their own diesel power stations (see Figure 126).

Oji River to the Awka uplands

As we leave Oji River the main road for Umuahia and Aba goes off on the left, a road which goes through very interesting country with beautiful scenery. But we cannot take that road this time. Our road leads westwards crossing a small cuesta at Ugwuoba and a large river, the Mamu, by a causeway and big bridge before reaching the sandy uplands at Awka. We are now back in the country where we began our journey. You can see the main rises and falls of the road on the section (Figure 127). Here they are related to the sedimentary rocks of this part of Nigeria.

Fig. 127. Agbani to Onitsha: sketch geological section.

You will notice that the sandstones of the Udi Cuesta disappear under the Upper Coal Measures near Oji River. As they do so they take with them a lot of the water which has sunk into those rocks, and which we saw being used at Enugu. To the west of Oji River, in areas such as Awka and Ogidi this water may be found at a great depth. If deep wells could be sunk they would reach this supply, if it exists in quantity, and provide an all-the-year-round water supply perfectly reliable in the dry season. This type of well is known as an 'artesian well'. Artesian basins are common in many parts of the world. In Australia many cattle stations get their water supplies this way, and in England a large part of the water supply for London comes from an underground source of this kind.

Nkwelle Provincial Farm

A further 18 miles from Awka we reach Ogidi, at the same road junction, Ogbujuogwugwu, that we noted at the beginning of our tour in Chapter 1. But we will not stop here. The side road leads through to the Nkwelle Provincial Farm, the headquarters of the Department of Agriculture in Onitsha Province. Each province in the east has such a farm. We passed close by one, for instance, at Abakaliki, which has been very important in helping the agriculture of those districts to be prosperous.

Fig. 128. A pineapple plantation at Nkwelle Provincial Farm.

The purposes of the Provincial Farms throughout the east are:

1. To find out by experiment which crops best suit the farming conditions of the district, and how to improve the yields of those crops already grown.
2. To spread the knowledge of any possible improvements in farming to the farmers of the province.

Nkwelle Provincial Farm is one of the oldest of its type, dating back to 1929. It covers an area of about 300 acres in an area of sandy but fairly rich soils. There is a water supply from the upper course of the Nkisi Stream to supplement rainfall where necessary. The list of crops grown is an impressive one as you would expect. Amongst the permanent crops are oil palms, rubber, citrus fruits, cashew, mango,

guava, coffee and avocado pear. Annuals include the chief food crops yams, cassava and maize and a variety of vegetables. The farm also keeps livestock. Pigs are the chief animal: more than 100 are kept. There are also sheep and cattle, rabbits and fowls.

Agricultural Field Overseers connected to Nkwelle are posted in the different parts of the province. Their job is the important one of distributing seedlings and young animals to the farmers of the district, advising them on any farming problems. For instance it is likely that it will be through Nkwelle that Okpala at Ogidi will hear of any new varieties of yam or new methods of managing his outfields. This seems to be the most important job in agriculture today.

Farm settlements

Some twenty miles away to the north-east lies Igbariam, where the first Eastern Farm Settlement was established in 1962. There are twelve settlements planned, one for each of the Region's twelve provinces. These are being set up, whenever money is available, by the government. Their aim in each province will be to show other people in the province how farming can be made to provide a good income, to show the way for the ambitious young man choosing to remain in farming.

At Igbariam the settlement has 400 settlers each with his own farm land and a share in the produce of communal land. Farmers are given two years' special training so that they can farm according to the Farm Settlement's policy. Each settler will have 9 acres of properly selected and carefully planted oil palms, planted out from the settlement's own seedling nursery. He will have 5 acres of citrus trees to provide fruit for a canning industry, and $2\frac{1}{9}$ acres of arable lands to be ploughed with tractors, and planted with crops as directed. Another $\frac{1}{2}$ acre will be set apart for vegetables and for poultry. Rice will be grown by a communal effort, and fish may be bred.

In other provinces the settlements will have different main crops, such as cocoa or rubber trees, but in almost every case oil palms will be very important. In some settlements other animals, such as cattle, will be introduced. Each Farm Settlement will cover an area of between 8,000 and 12,000 acres, making them as large as plantations. The areas will be divided into villages (three at Igbariam, up to six at others) and the land of each village will be subdivided among the families. All the land farmed by one family will be together in one piece. The situation we found in Ogidi, where the farmers' compound land and outfields are scattered, will be avoided from the

start. Each settlement will have a centre with schools, churches, shops, markets and an oil mill. Good roads will be built and water and electricity provided.

Farm Settlements try to bring to farming all the advantages of plantations for better organization and more scientific methods. At the same time they try to keep the interest and keenness of the worker by giving him farm land of his own to look after. After five years in a settlement it is hoped that a farmer will be able to earn at least as much as his friends in the trade, or in an office in the township.

This method of farming is new, adventurous and progressive. Let us hope that these schemes, overcoming early difficulties, will help to show the way to a solution of the problems of farming mentioned at various places through this book. The Palm Grove Rehabilitation Scheme, mentioned in Chapter 9, also carries promise for the future. Thus our tour of the eastern provinces of Nigeria ends on a hopeful note.

Exercises

1. Why have the forest trees been cleared from most of the land between Enugu and Nsukka?
2. Why is it that patches of forest remain?
3. Why is the grassland with forest patches known as **derived savanna**? Where in West Africa is it found?
4. What makes us think that the farming towns of the escarpment crest, e.g. Opi, have been short of land?
5. Why has Nsukka grown more than its neighbours?
6. Of what rocks are the flat-topped hills south of Nsukka made up?
7. What are the products of the cashew tree?
8. Work out the average gradients for the scarp slope of the cuesta (Enugu Escarpment) at Milliken Hill,
   (*a*) straight down the slope, which drops 350 feet in 250 yards,
   (*b*) along the main road, on which the chief section of hill drops 250 feet in 1,400 yards.
9. How do thermal and hydro-electric generating stations use water?
10. What is an artesian well?
11. What are the two purposes of the Provincial Farms? How do they set about their tasks?
12. What are the duties of a farmer at Igbariam Farm Settlement?
13. What is the aim of the Farm Settlement Scheme?

For more advanced students

14. What is the origin of derived savanna? What is it like? Where in Nigeria is it found? How would you expect it to alter towards the south, and towards the north?

15. Using all written, diagram, map and photograph information in this chapter, and your own observations or memories if possible, write a full and orderly description of the land of the flat-topped hills (between Enugu and Nsukka).

16. What are the conditions of temperature, rainfall and soil under which cashew trees grow in Nigeria? Why is it likely that oil palms would not be as successful in the Ajalli Plantation?

17. Describe and compare the work of the Provincial Farms and the Farm Settlements.

22 · Summing Up

The farmers and the fishermen

In our tour of the eastern provinces of Nigeria we have seen that the patterns of farming have differed from place to place. We noticed slight differences between the farming practices at Ogidi and Ikot Abia, and the north-west Ibo and Ibibio areas that they represent. The greater importance of cassava in the latter area is one such difference. It would need a close study to work out the differences fully. These areas, and those of all the densely-peopled parts of the country, have problems of poor soil and even soil erosion which contrast sharply with those areas where there is much more land per farmer. In the riverine districts of the Niger and in the Cross River Plains the land can rest fallow for ten years at a time, and the traditional rotations and farm routine can go on without very obvious need to change.

Fig. 129. Eastern Provinces: peoples (after Forde and Jones). Boundaries are only approximate.

1. Some differences in farm practice are due to the different histories of the areas, such as, possibly, the greater importance of the plantain and coco-yam in the far eastern districts.

2. Some are the result of differences in relief and geology, such as the important differences between farming on the sandstone hill areas and the more badly drained lowlands.

3. Some are due to differences of climate, particularly in the amounts of rainfall and the length of the dry season. This is most clearly seen by contrasting the crops of the Ibibio and Efik districts with those of Ogoja, especially the northern parts. In the former area rubber, which needs rain all the year round, is important. In the latter area, guinea corn, a crop of the true savannas where the rainy season is short, makes its appearance.

A major contrast in traditional ways of life is that between all the people of these areas and the fishing communities of the two big rivers, the Niger and the Cross, and of the creeks of the Niger Delta and Calabar. This contrast arises from the difference in physical geography between those lands which remain dry all the year, and those which are badly flooded, by the season, or all the year round.

The movement of trade

We have also seen something of the patterns of trade, throughout the region. We studied briefly the local trade of Ogidi, as seen in Nwugo's trading activities and the Ogidi Market Ring. This we saw to be linked at Onitsha to nationwide routes. Here one could buy foodstuffs and handicrafts produced by people from all parts of Nigeria and also the manufactured goods which had come into the country via Port Harcourt or the Delta Ports and on to Onitsha by lorry or river boat, or, increasingly as the years go by, they will have come from Nigeria's own factories.

Another aspect of agriculture and trade is the production and movement of the cash and export crops of the region, an aspect which grows in importance as the roads are improved year by year. Food crops such as yams, cassava and rice move over long distances to the townships, from the lands by the Niger, and from Abakaliki and Ogoja Provinces particularly. Large quantities of dried fish are moved out from the delta and other areas to the people via the Onitsha and Calabar markets, in addition to stockfish imported from Norway via Port Harcourt.

Palm oil and kernels move from the farms of the region, particularly from the south, to the bulk oil plants at Port Harcourt, and other places on the coast. New plantations are producing export

crops of palm oil and kernels and rubber north of Calabar, and more are being established in other parts of the region. Cocoa in the Ikom and Umuahia districts, cashews at Ajalli and coconuts at Bonny are important small developments. Another hopeful development is the attention paid to livestock at the Obudu Ranch, Nkwelle and elsewhere.

Finally at Port Harcourt, Nigeria's second port, together with its **outport** of Bonny we can see the pattern of the country's overseas trade, with the inflow of factory-made goods and the outflow of raw materials such as petroleum and the export crops considered above.

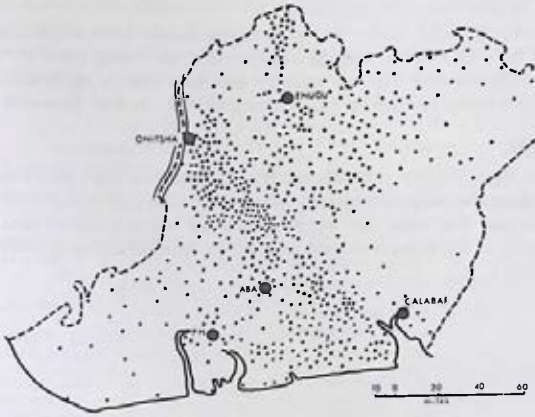


Fig. 130. Eastern Provinces: population distribution, 1953. (One small dot represents 10,000 people. Five largest towns shown by larger circles, not to accurate scale).

The geography of the towns

We have also seen something of the towns of the region, visiting the five largest and some of the smaller ones. We have noted their importance in trade: Onitsha, where trade is the lifeblood of the place; Aba, where it is also very important; and Port Harcourt. We have noted their growing importance as manufacturing centres, Port Harcourt and Aba particularly, and to a certain extent Enugu based on the local coal supplies. We have also studied the differences in

appearance and plan between these towns. Each one, as a result of its history and its position in the country, is quite different from the others.

Conclusion

All these patterns are part of the geography of the Eastern Provinces. We must admit that there are many parts of this geography we do not understand very well, though the universities will play a big part in solving these problems. This is a geography which is changing year by year; you would do well to record any changes you learn about, by observation, through newspapers, or through magazines, in your geography notebook.

Among his other duties the good citizen should know something about his own country and the changes that are taking place in it. And understanding his own country will help him to understand what is happening elsewhere in Africa and in the rest of the world.

Exercise

This short chapter is a concentrated summary of the topics considered on the imaginary journey which forms the plan of this book. We suggest you read this several times and make a careful note-summary of the chapter in your own words, with the different points numbered.

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