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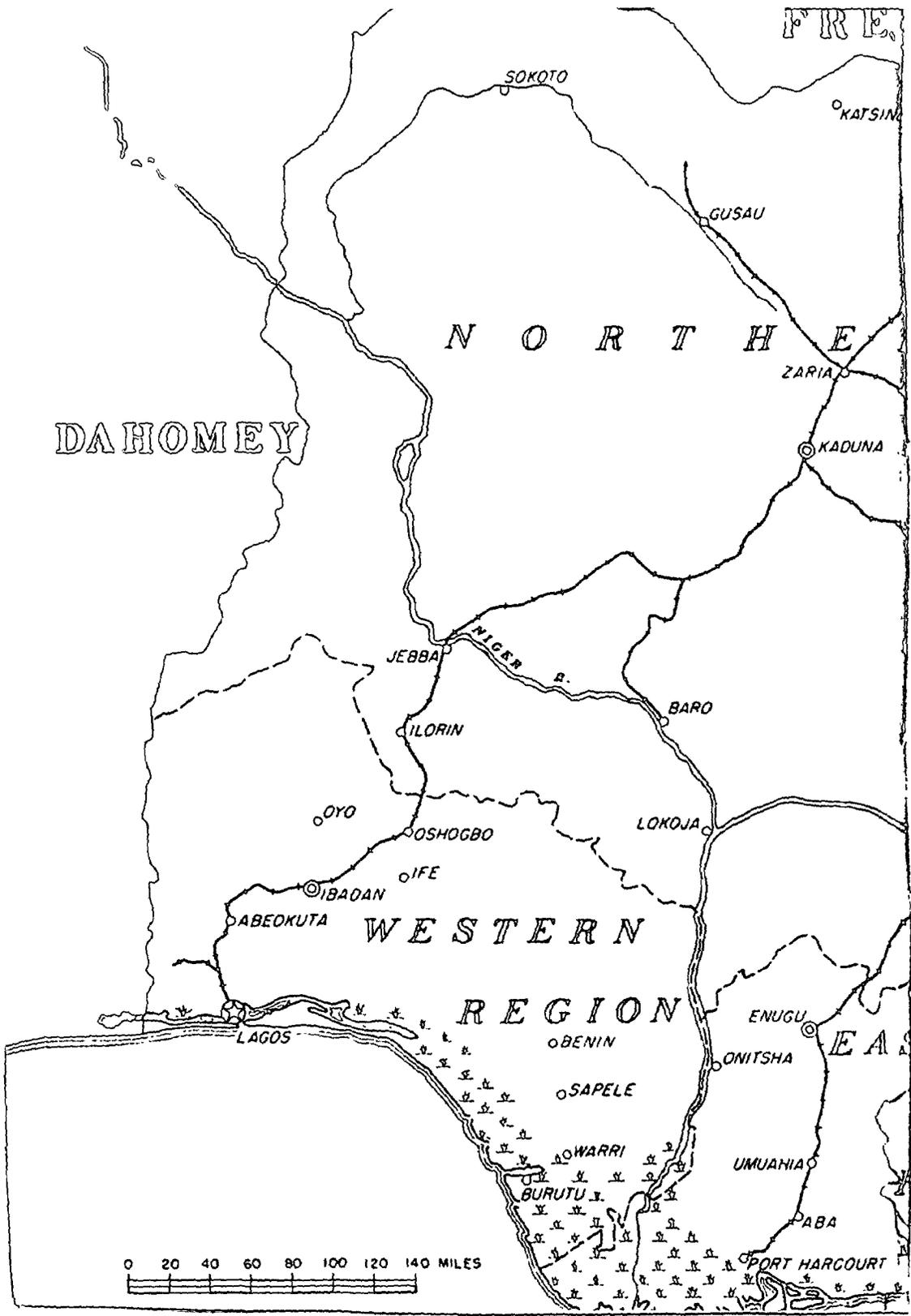
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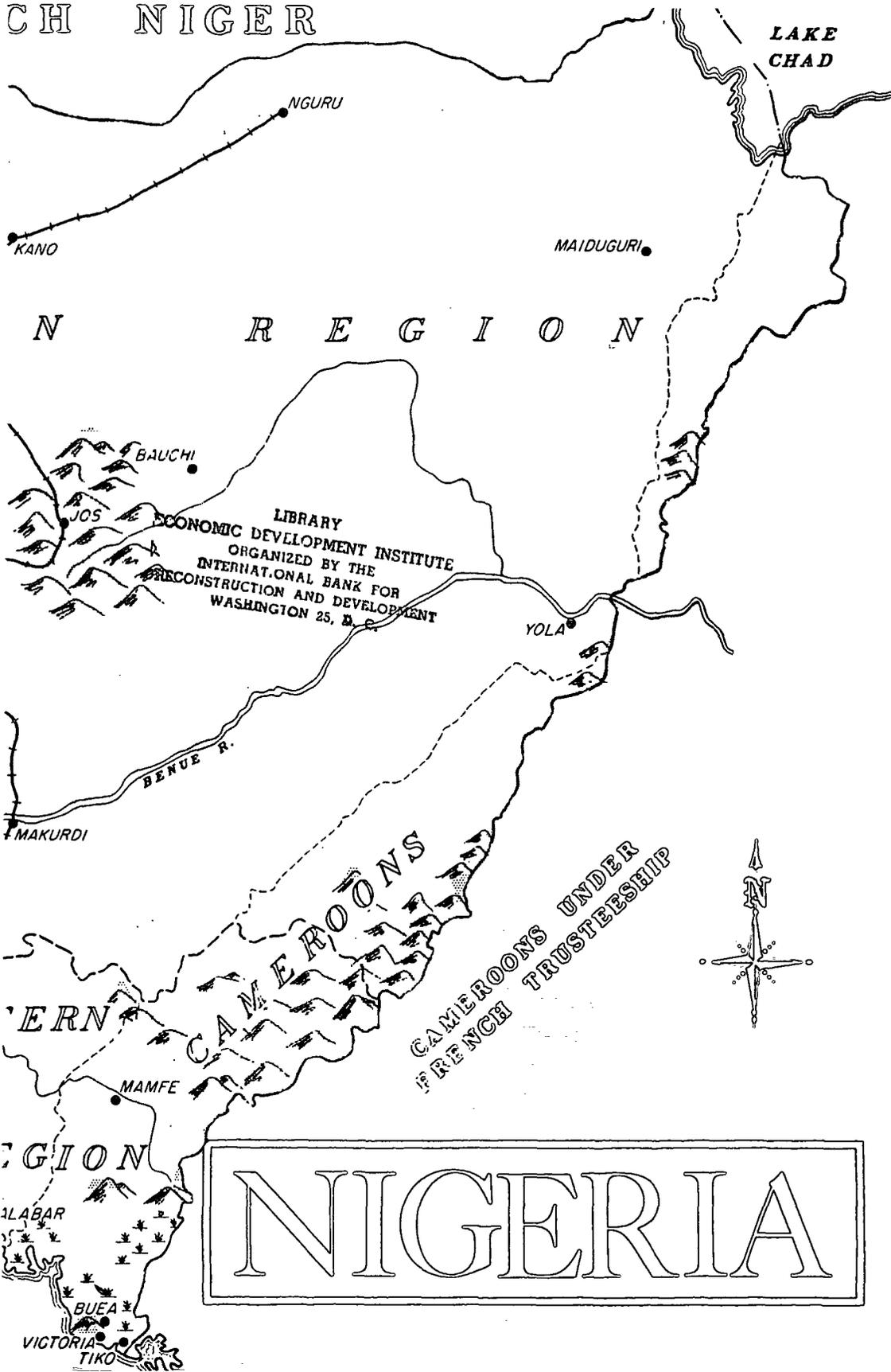
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THE ECONOMIC DEVELOPMENT OF *Nigeria*

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*Report of a Mission Organized  
by the International Bank  
for Reconstruction and Development  
at the Request of the Governments of  
Nigeria and the United Kingdom*

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*THE ECONOMIC DEVELOPMENT OF*

# Nigeria

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## *PREFACE*

---

This is the report of a mission to Nigeria, organized by the International Bank for Reconstruction and Development at the request of the Governments of Nigeria and the United Kingdom. The task of the mission, as agreed upon by the two governments and the Bank, was to assess the resources available for future development, to study the possibilities for development in the major sectors of the economy and to make recommendations for practical steps to be taken, including the timing and co-ordination of developmental activities.

The mission consisted of ten full-time members and five part-time consultants. Three of the experts on agriculture were nominated by the Food and Agriculture Organization of the United Nations; one (the adviser on money and banking) is a member of the regular staff of the International Monetary Fund; six members (the experts on transportation, mineral resources, education, roads, water resources and power) were recruited by the Bank from outside its staff. The other five members are members of the Bank's regular staff. Due to illness, a consultant provided by the World Health Organization was unable to participate in the preparation of the report. The mission chief is from the Netherlands, and other mission members are from Australia, France, Italy, Turkey, the United Kingdom and the United States.

The mission arrived in Nigeria late in September 1953 and remained until mid-December. Members of the mission travelled extensively in the three regions of Nigeria and in the Cameroons, reassembling at the headquarters of the Bank for the purpose of writing their report.

The mission's report consists of three parts. Part I, the General Report, contains the mission's principal recommendations for the organization and financing of a five-year program of development. Part II consists of a series of Technical Reports on economic and financial resources; agriculture; water resources; industry, mining

and power; transportation and communications; and education. Part III contains five appendices, consisting mainly of statistical data.

The President of the Bank transmitted the report to the Governor of Nigeria in September 1954. In his letter of transmittal, he pointed out that since the Executive Directors and Management customarily do not review missions' recommendations in detail, the report as transmitted represented the views of the mission rather than positive recommendations of the Bank. He added, however, that the Bank believed that the findings of the report deserved most careful consideration and discussion.

Similarly, while the other international agencies which participated in the organization of the mission were given an opportunity to comment on the portions of the report of particular interest to them, responsibility for the recommendations of the report is to be regarded solely as that of the mission.

## *ACKNOWLEDGEMENT*

---

The mission wishes to express its appreciation for the interest shown in its work and for the wholehearted co-operation and warm hospitality extended to it by the members of the Council of Ministers and the Executive Councils, Nigerian political and community leaders, government officials, and members of the business community, Nigerian as well as foreign. Among the officials, the mission wishes to mention in particular Mr. R. F. A. Grey, O.B.E., Development Secretary, and Mr. H. B. Cox, Director of Commerce and Industries, who were always ready to give the mission their valuable assistance. The mission also wishes to thank Mr. D. S. Gray, M.B.E., of the Department of Commerce and Industries, for his untiring efforts as liaison officer.



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### *EXCHANGE RATES*

1 West African £ = 1 £ Sterling  
                          = \$ 2.80 U.S.  
1 million £ = \$ 2.8 million U.S.  
\$ 1.00 U.S. = approximately 7 shillings and twopence  
                          = £ 0.357 Sterling

*Note* All references to annual periods, other than calendar years, are to the Nigerian fiscal year, beginning April 1.  
All references to tons are to long tons, of 2,240 lbs, unless otherwise noted.

**PART I** *THE GENERAL REPORT*



## INTRODUCTION

---

In the past 15 years Nigeria has experienced a remarkable transformation, economic, social and political. The leisurely pace of the prewar economy has accelerated, living standards generally have improved, educational facilities have expanded, and the people are participating in government in increasing measure. Yet this is only a start. Production methods are still primitive, the great majority of the population is illiterate and standards of nutrition, housing and medical care are low. The people of Nigeria are anxious to live better and hence to produce more goods, in greater variety; they want to become better educated; they show a growing willingness to modify those social institutions which hold back economic progress and to accept methods of social, economic and political organization which elsewhere have proved conducive to such progress. In all this they have the encouragement and active support of the British authorities.

The mission's task was to appraise the economic development prospects of Nigeria and to recommend practical measures for their realization. We found that the prospects for economic expansion in the long run are good. But it seems equally clear that for the immediate future the rate of growth is not likely to be much faster than it has been for the last few years.

Nigeria has two of the essentials for a development program: manpower and funds. In this respect, it is more fortunate than other countries in Africa. There is lacking, however, the supply of technical and managerial skills and the knowledge of the country's resources necessary to carry out an accelerated program of economic development. Research, survey and extension services in agriculture, forestry, hydrology and industry, the construction of roads and schools and other public works—in short, the kinds of services customarily provided by the government—have failed to keep up with the expansion of the economy. And so although the country's wealth

has grown, it could not be put to its fullest use for the benefit of the people.

The most immediate need, therefore, is to overcome the shortage of skills necessary to permit an expansion of public services. To some extent this can be accomplished by recruiting personnel from overseas. At the same time, Nigerians must be trained. It is our belief that this is the overriding priority need for the next few years. If Nigeria's productive capacity is built up in this period, the foundation will have been laid for faster growth in the years thereafter.

Because the expansion in public services will be gradual and because the government possesses substantial reserves, the development effort will not strain Nigeria's financial resources, present and potential. But unless the groundwork is laid now for a substantial increase in government revenues, they will be insufficient to finance the level of government activities which ought to be reached after the build-up period of the next five years.

It is the purpose of this report to help the Nigerian people to decide for themselves how to achieve the desired economic advancement. It recommends the ways in which Nigeria may organize and finance the development effort, sets the goals which we think can be attained in the next five years, and suggests lines of action which, if pursued by the Government of Nigeria, the regional and local governments and the various public bodies, would, we believe, quicken the rate of development.

## CHAPTER I *NIGERIA TODAY*

---

### I THE COUNTRY AND ITS ORGANIZATION

The largest of British dependent territories, the Colony and Protectorate of Nigeria lies on the west coast of Africa, bordered on three sides by French-governed countries and on the south, about 5 degrees north of the equator, by the Gulf of Guinea. Since World War I, a portion of the former German Cameroons has been administered by Great Britain as an integral part of Nigeria, first as a mandated area and now as a U. N. trust territory.

In size, Nigeria is about equal to Pakistan, or nearly four times the area of the United Kingdom. Within its 373,250 square miles lived, at the end of 1953, about 32 million people of whom all but 16,000 were Africans. Nigeria is thus the most populous country of the African continent and by far the largest unit of African racial origin in the world. In variety of climate, vegetation and topography, its 700 miles from south to north and its 650 from east to west are typical of West Africa: humid heat and mangrove swamps along the low coastal plain; tall tropical forests in the South; upland savannahs, hilly ranges and mountains in the Cameroons; a zone of low forest in the area known as the Middle Belt; and dry heat in the extreme North, fringed by the Sahara sands.

Nigeria's name comes from the Niger River, which enters the country from French West Africa. Its formal title echoes its history. The "Colony" refers to Lagos Island and an area of some 1,300 square miles on the mainland; the Island was occupied by the Royal Navy in 1861 in an effort to stop the slave trade and is now Nigeria's capital and principal port. The Northern and Southern "Protectorates" into which Nigeria was formerly divided were not united until 1914; the contemporary and unified Nigeria is young as countries go.

Many African tribes, religions and languages are represented in Nigeria. Among the main tribes are the Yorubas in the southwest; the Ibos and Ibibios in the southeast; and the Hausas and Fulanis in the North. The North is predominantly Moslem in religion and many of its customs; in the Middle Belt and on the Jos Plateau are found the Pagan communities which took refuge there from slaving raids; in the South, Christianity predominates. Hausa is the lingua franca of the North; in the South, the most widely spoken languages are Yoruba and Ibo.

Nigeria raises foodcrops and cattle for domestic use. The great majority of Nigerians engage in small-scale farming, producing yams, cassava and palm fruit in the South, and guinea corn, millet and other grains in the North. Prevalence of the tsetse fly in the Middle Belt and the South has been largely responsible for confining cattle-raising to the North, where cattle and horses were introduced by the invading Moslem.

Nigeria also has a thriving export trade. The South produces cocoa, palm oil and palm kernels; the North contributes groundnuts and cotton. From the Cameroons come bananas, rubber and palm products.

The largest industrial establishment in Nigeria is the sawmill and plywood plant at Sapele, which employs nearly 3,000 persons. Large-scale mechanized production is also found in a number of other factories owned by non-Africans, producing cigarettes, beer, soap, margarine and metal drums, processing groundnuts, and extracting palm oil. Nigerian industrial enterprises include small textile mills, bottling plants, a ceramics factory, a tire retreading plant, small sawmills and soap factories. In recent years public agencies have established industrial plants, such as the Pioneer oil mills, operated either by the agencies or outside management, and they are in the process of establishing others.

Mineral resources include tin and columbite, of which Nigeria is a major producer, coal, and promising deposits of lead and zinc. There are also strong possibilities of successful petroleum production and there may be potentialities for hydroelectric power generation.

Nigeria has good sea and air connections with other countries. Shipping services from the principal United Kingdom, Western European and North American ports call regularly at Nigerian ports.

Nigerian airports are transit points for international services between Europe and Central and South Africa. The main internal lines of communication are by land and water. From north to south they are the railway and the Niger and Benue rivers; from east to west, the road system and a network of creeks and lagoons. The roads also serve as extensions of the railway lines in the north.

As in any predominantly agricultural economy, most of the population lives in villages and small towns, although there are 18 towns of 50,000 or more inhabitants,<sup>1</sup> 11 of these being in the highly urbanized West. The words "North," "West" and "East" in Nigeria connote more than direction; they refer to the political divisions of the country, known as regions. For administrative purposes, the regions are divided into provinces. The Northern Region's 17 million people represent more than half the total population of Nigeria and its area of 282,000 square miles is three-quarters of the country's total area. The Western and Eastern Regions, together often referred to as the "South," are about equal in size. The West contains 45,000 square miles and has a population of 6.5 million. The East is 46,000 square miles in area, with a population of 7.9 million, including the 16,581 square miles and 760,000 inhabitants of the southern portion of the Cameroons Trust Territory, known as the Southern Cameroons. The northern part of the Cameroons is administered as part of the Northern Region.

### *The Machinery of Government*

As has been true of many colonial and territorial areas throughout the world, Nigeria has made rapid progress toward self-government in the years since the war. A legislative council for the whole of Nigeria was established in 1946 and constitutional changes came in rapid succession thereafter. In 1951 provision was made for separate executive and legislative bodies for the central and regional governments; this was the first time regional bodies were given legislative authority, limited to matters specified in the constitution or declared by the central legislature to be within the competence of a regional legislature. At conferences held in London in the summer

<sup>1</sup> Including Ibadan, Nigeria's largest city, 460,000; Lagos, 272,000; Kano, center of the groundnut trade, 131,000.

of 1953 and in Lagos early in 1954 far-reaching amendments to the 1951 constitution were agreed upon, to become effective in the latter half of 1954. A federal form of government will be instituted, in which the federal government will have exclusive jurisdiction only over matters appearing on the "federal list." In matters included on the "concurrent list"<sup>2</sup> both the federal and regional governments will have jurisdiction, and the regions will in addition have authority over all matters on which the federal government is not specifically empowered to act.

Nigeria will be known as the Federation of Nigeria; its chief executive will be the Governor-General and the regional chief executives will be called Governors. The Governor-General will preside over a federal Council of Ministers, consisting of the Chief Secretary, the Attorney-General, the Financial Secretary and 10 Nigerian ministers, three from each region and one from the Southern Cameroons. All members of the Council will be members of the legislature. Subject to the collective responsibility of the Council, ministers with portfolio will, for the first time, head government departments or services and be individually responsible for their general direction and control. The same will be true of ministers of the regions. Regional Executive Councils, except in the North, will include no *ex officio* (i.e., colonial civil service) members other than the Governor. The federal legislative body, the House of Representatives, will be elected at popular elections rather than by the regional legislative bodies as at present, and will include only three *ex officio* members.

Although no change will be made in the status of the northern part of the Cameroons, the Southern Cameroons will cease to be part of the Eastern Region and will become quasi-federal territory with its own legislature, over which the Commissioner of the Cameroons will preside.

In a substantial alteration of the financial relations between the federal and regional governments, most of the principal sources of revenue will be shared and the present system of statutory grants to the regions will be terminated. Part of the reserves of the present central government will be distributed to the regions.

A conference will be held in Nigeria no later than the end of

<sup>2</sup> These lists are reproduced in Appendix A.

August 1956 at which the constitution will again be reviewed and the question of self-government examined.<sup>3</sup>

These extensive and rapid changes in Nigeria's governmental machinery and their implications in terms of self-government have absorbed the concentrated energies of many persons in Nigeria, most particularly government officials and political leaders. This has inevitably diverted their attention from tasks more directly related to economic development. Realizing, however, that the fullest benefits of increasing degrees of self-government cannot be enjoyed unless accompanied by progress toward economic self-reliance, Nigeria shows a readiness to turn its efforts in that direction.

#### *Native Administrations and Local Governments*

Besides the central and regional governments, there are numerous local authorities of varying composition, powers and importance. Large parts of the Northern and Western Regions are divided into "native administrations" built around the authority of traditional emirs and chiefs, who in recent years have acted in concert with representative councils. Their functions include police, education and health services, collection of taxes and administration of justice. They build and maintain secondary roads and urban and rural water supplies. In other parts of the country, particularly in the Eastern Region and the Pagan areas of the North, where no traditional native authorities extend beyond villages and clans, native administrations covering relatively smaller areas have been developed around the traditional authorities. Gradually, native administrations in the Eastern Region are being replaced by local, district and county councils on the British pattern of local government. In the Western Region also, local governments are coming to take the place of native administrations. Lagos is governed by a representative town council, consisting of elected members and traditional chiefs.

Local governments and native administrations are subject to regional law. Supervision is exercised by residents (in charge of provinces) and district officers (in charge of divisions), who are

<sup>3</sup> See *Report by the Conference on the Nigerian Constitution*, London, 1953 (Cmd. 8934), paras. 27 and 28.

responsible to the regional chief executive. In the case of the local government bodies set up under Eastern regional legislation, the functions of these administrative officers are purely advisory.

### *Public Agencies*

Since the war, a number of autonomous public agencies has been established for a variety of purposes: Marketing Boards set the producers' prices for export crops; Regional Production Development Boards finance and operate development projects; and Regional Development Boards (loans boards) make medium- and long-term agricultural and industrial loans. The Cameroons Development Corporation operates a number of large banana, palm produce and rubber plantations. Other statutory corporations work the coal mines of Enugu and operate and develop public power facilities. The ports and the government-owned railway are shortly to be placed under autonomous corporations. Air transport is now provided by the West African Airways Corporation, an interterritorial corporation serving Nigeria, the Gold Coast, Sierra Leone and the Gambia.

## II THE PEOPLE OF NIGERIA

### *Size and Growth of the Population*

With a population of 32 million, Nigeria's average population density is 85 persons per square mile.<sup>4</sup> Given a gradual expansion of agricultural production and an improvement in methods of managing and developing resources, the growing population should be able to enjoy a rising standard of living. In a few areas, however, especially in the South, the population density of 400 to 500 per square mile has reached the limit of what the land can support under present agricultural methods and here population pressures have resulted in soil depletion and migration of the inhabitants. On the other hand,

<sup>4</sup> Compared with 525 for the United Kingdom, 800 for the Netherlands, 390 for Italy, 250 for Denmark, 50 for the United States, 295 for India, 205 for Pakistan, 300 for Ceylon, 93 for Thailand, 53 for Egypt, 67 for Sierra Leone and 50 for the Gold Coast.

there are wide areas, as in the Northern Region and the Cameroons, which are thinly populated or virtually uninhabited. On the whole, however, Nigeria does not face the problems of other parts of Africa where population is so sparse that development activities are hampered.

In the last 20 years the population has increased at an estimated rate of about 1.5% annually. It is probable that in the last few years control of epidemic diseases and improvements in maternity and child welfare and hospital facilities have lowered infant mortality and the death rate in general, and that this trend will continue. Accordingly, a development program for Nigeria must take account of the fact that the rate of population growth may accelerate. Between 1954 and 1960 the total population may increase by three million or more and by 1966 over 40 million persons may be living in Nigeria.

Approximately four-fifths of the population earn a livelihood as farmers, fishermen, hunters, herdsman or lumbermen. About seven out of 100 men are skilled craftsmen or industrial workers, while six are engaged in commerce, either as traders or employees of commercial firms. In some areas retail trade is largely carried on by women. But nonagricultural employment is a significant source of income only in the port cities, inland commercial centers, in the mining districts of Plateau Province in the North and in the Eastern Region.

### *Literacy*

In Nigeria less than one person in ten of school age and over can read and write. This figure is low as compared with a number of countries in Latin America and Asia,<sup>5</sup> but it probably compares favorably with other areas of Africa and the Middle East.

There are, however, wide differences in education and educational facilities among various parts of the country. In Lagos about half the population seven years of age and over is literate. In other urban centers of the Western and Eastern Regions the literacy rate varies between 30% and 40%. In the "bush" areas of these regions, how-

<sup>5</sup> Comparative figures of literacy percentages: Turkey, 30%; Nicaragua, 37%; Mexico, 46%; Colombia, 56%; Ceylon, 58%. Source: United Nations, *Special Study on Educational Conditions in Non-Self-Governing Territories*, New York, 1954.

ever, and in wide stretches of the North, hardly anyone can read and write.

In recent years substantial progress has been made toward the gradual elimination of illiteracy. In the South, while the literacy rate of the adult population is only about 12%, nearly one-half of all school-age children are now enrolled in schools. In the North, on the other hand, only 5% of the children go to school.

### *Income*

The average Nigerian's standard of living is low. National income estimates for 1952-53 show a per capita income of approximately £ 21. This is of the same order of magnitude as India's and Pakistan's, and considerably higher than that of other African countries (Ethiopia, Liberia) and of several countries in the Far East and the Near East. It is very much lower than the per capita income of Western European countries, which exceeds £ 200.<sup>6</sup>

The value of all goods and services produced in the country, the gross domestic product, amounted to £ 680 million in 1952-53 (Table 1). Agriculture, including forestry, animal husbandry and fishing, accounted for almost two-thirds of the income; transport and distribution, including the operations of the Marketing Boards, made up another 15%. Another principal activity was construction, both public and private. All other sources combined, including government operations other than construction, accounted for the remaining one-tenth of total output. Manufacturing, including handicrafts, accounts for less than 2% of the gross domestic product; even when mechanized processing of agricultural products is included, industry's contribution to total output does not exceed 3%.

Close to 98% of the gross domestic product, or £ 665 million, represents the income of Nigerians, the balance of £ 15 million being accounted for by net payments of dividends and interest to foreign countries and payments to non-Africans in Nigeria.

<sup>6</sup> See for 1949 figures: *National and Per Capita Incomes of Seventy Countries—1949* (Statistical Office of the United Nations, New York: 1950).

TABLE I Gross Domestic Product of Nigeria, 1952-53

	Million £	% of Total
<i>Agriculture</i> .....	450.2	66.1
Farm Crops .....	305.0	44.8
Tree Crops .....	77.2	11.3
Forest Products .....	27.3	4.0
Livestock Products .....	34.4	5.1
Fishing .....	6.3	.9
<i>Industry</i> .....	71.2	10.5
Minerals .....	9.5	1.4
Manufactures and Power .....	3.9	.6
Building and Civil Engineering .....	48.3	7.1
Handicraft .....	9.5	1.4
<i>Services</i> .....	128.5	18.9
Transport and Distribution <sup>1</sup> .....	104.5	15.4
Bank, Insurance and Other Professions .....	1.1	.2
Missions .....	3.0	.4
Domestic Services .....	3.5	.5
Miscellaneous Services .....	6.4	.9
Ownership of Buildings .....	6.0	.9
Intrahousehold Services .....	4.0	.6
<i>Government</i> .....	30.4	4.5
Total .....	680.3	100.0

<sup>1</sup> Including operation of Marketing Boards.

NOTE: More detailed data and information on sources and methods of computation will be found in Appendix B, Tables 1 to 6.

### III POSTWAR CHANGES IN THE ECONOMY

The current state of economic development and the social and political stresses in Nigeria cannot be understood without some knowledge of the changes which have taken place in virtually every aspect of Nigerian life since the end of the war. In less than 10 years the economy has grown and strengthened to such an extent that it bears little resemblance to the prewar economy. The initial impetus for this growth came from the wartime and expanded postwar demand for Nigerian exports. World-wide shortages of vegetable fats and oils and a strong demand for cocoa, tin and columbite resulted in high

export prices. This permitted not only a substantial rise in living standards and in the per capita consumption of a growing population, but also a large increase in government revenues and substantial savings by both the government and the Marketing Boards. The government revenues and the profits of the Marketing Boards, supplemented by Colonial Development and Welfare grants from the United Kingdom government, in turn permitted a substantial expansion of public health and education services and of such public facilities as roads, ports and water supplies. They made possible the setting aside of considerable sums for financing development schemes and educational and research activities.

The private sector of the economy has likewise participated in and benefited from this expansion. The production of foodstuffs for domestic consumption has kept pace with the growth of income originating in the export sector. Foreign firms have expanded their commercial operations in Nigeria and have started manufacturing enterprises. Africans in growing numbers have entered the field of foreign trade and many have found employment in managerial and clerical positions in government and business. The number of Nigerians trained or in training for responsible positions is growing rapidly. There are more Nigerian children in primary and secondary schools than ever before and the first institutions of higher education have been established.

Under the Colonial Development and Welfare Scheme,<sup>7</sup> there was drawn up a series of programs for the development of the Nigerian economy. In 1945 it was agreed that the British government would contribute £ 23 million to a 10-year program for Nigeria and that the Nigerian government would raise from revenues and through loans an additional £ 26.5 million.<sup>8</sup> The amounts available from these sources were allocated for a variety of projects ranging from small community improvements to construction of major health, educational and research facilities. By the end of 1952-53 a total of £ 28.5 million had been spent under the program, £ 13.5 million from contributions of the United Kingdom and £ 15 million from Nigerian funds. During

<sup>7</sup> Sponsored and in part financed by the Government of the United Kingdom to promote the economic and social advancement of colonies and other dependent territories.

<sup>8</sup> Excluding loan charges.

1953 the Government of the United Kingdom announced that it was considering continuing the Colonial Development and Welfare Scheme for another five-year period, beginning in 1955.<sup>9</sup>

The projects undertaken and all other public expenditures for capital investment and improvement of public services in the postwar period have marked a significant advance in the direction of active economic development by the government and government agencies, and of an expansion of private business activity, particularly by Africans.

Thus the development of the last few years can no longer be regarded as merely the transitory result of several boom years. The productive capacity of the economy has risen to a higher level. However, there is as yet no assurance that the pace of development can be maintained, much less accelerated, unless during the next five years the institutional and financial basis for a continuing growth of the Nigerian economy is laid. It is also possible that adverse conditions outside and beyond Nigeria's control may temporarily slow down or interrupt the growth of income and wealth. But we think the rate of growth can be maintained and eventually increased if the human and financial resources now at Nigeria's disposal are used to best advantage and are supplemented by the mobilization of new resources.

### *The Growth of the Economy*

Table 2, at the end of this chapter, shows in summary form some of the economic gains of the last 20 years. The impression conveyed by these figures is one of rapid growth and expansion, particularly in the last decade. The differences between some of the pre- and postwar figures are exaggerated by the rise in the price level and by the fact that in 1934 the export sector of the Nigerian economy was particularly depressed because of the low level of export prices. The low value of exports in the prewar years is also reflected in the figures on tax collections and imports. But even with due consideration to these factors and to the population growth of six to seven million during the last 20 years, there is no question but that Nigeria as a whole,

<sup>9</sup> There would be a one-year overlap with the first 10-year program.

and the Nigerians as individuals, are better off now than ever before. Revenues of the central government are 10 times higher than they were 20 years ago; taking changes in the price level into account, they still amount to three or four times as much as they did prewar.<sup>10</sup> Currency circulation has increased eightfold since 1939, partly because of higher prices but largely because of the growing use of money as a medium of exchange and larger cash holdings in the hands of Nigerians. The growth of Post Office Savings Bank deposits is only partly accounted for by increased use of this institution by local governments and native authorities; it represents a significant change in the habits of the population as a whole which promises to become an effective instrument for the future mobilization of liquid savings.

The best indication of the rise in income and consumption is shown by those figures of Part II of Table 2 which relate to the physical volume of certain primary imports. Imports of such consumer goods as cotton and rayon textiles and of such durable goods as bicycles, sewing machines, corrugated sheets and cement are higher, on a per capita basis, than they were in the export boom years of 1927-29.

Part III of Table 2 indicates some of the structural changes in the Nigerian economy which have taken place in the last two decades. Railway freight traffic has almost trebled; passenger traffic has doubled; the advent of motor transportation represents a major technological change which, though still in progress, has already profoundly affected the transport and distribution system of the country.

The data of Table 2 also reveal certain weaknesses and thus spotlight the areas in which action is required if the growth of the economy is to be sustained. On the fiscal side, for instance, the level of the local authorities' revenues has failed to keep pace with that of the central government. The increase in tarred road mileage has been insufficient to accommodate the tremendous increase in motor and bicycle traffic.

The improvements in living standards and in Nigeria's financial

<sup>10</sup> The comparison is between the present revenues of the central government (excluding those of regional governments) and the revenue of the Nigerian government of 20 years ago when there were no separate regional budgets.

position are partly due to the fact that export proceeds now buy more in terms of imports and domestic goods and services than they did before the war. The well-being of the economy has remained sensitive to changes in world market conditions, although the large reserves of the Marketing Boards (see Chapter 4) provide an important safeguard against domestic repercussions of violent price fluctuations.

The strengthening of Nigeria's economy in the war and postwar period has proceeded at a rate far in excess of the rate at which the new financial resources could be absorbed and put to use for the lasting benefit of the country. This is the fundamental economic problem; it cannot be identified with any specific sector of the economy or with a particular part of the country. While many projects undertaken under the Colonial Development and Welfare Scheme are already contributing to the material welfare and the social and cultural advancement of Nigeria, many important government services and such institutions as the Regional Production Development Boards have not yet had time to expand their operations to the level, and in the direction, of greatest use as an integral part of a growing economy. Until recently, delays were due largely to shortages of equipment. These have now been for the most part overcome. Scarcity of skilled personnel has come to be the principal obstacle. In some sectors, lack of basic information has prevented or delayed the execution of promising plans; in others, false starts have been made because of insufficient preparation and planning.

#### *Fiscal and Payments Surpluses*

Throughout the war and the postwar period Nigeria has earned more than it has spent on consumption and domestic investment. The difference between total output and total expenditure of necessity took the form of foreign assets; these have been held as sterling balances in London. At the beginning of 1953, these balances exceeded £ 150 million, not counting £ 55 million representing the estimated Nigerian share in the holdings of the West African Currency Board. Most of the balances are funds of the central and regional governments and of native administrations, the Marketing Boards and the Regional Production Development Boards.

It is now necessary to maintain larger foreign balances than before the war, partly because of the higher level of prices, and partly because of the growth of the government and government agencies. Also, some accounts, particularly those of the Marketing Boards, were established to serve as a reserve to mitigate adverse price conditions for Nigerian exports in foreign markets. But the present level of Nigerian sterling balances makes it possible to expand the volume of government expenditures to foster economic development. To accomplish this, it is necessary first to overcome those impediments to development which have so far retarded the economic progress of Nigeria and which, as a financial corollary, have prevented the full use of its fiscal and financial reserves. These are discussed in the next chapter.

TABLE 2 Selected Indicators of Economic Growth

	Unit and period <sup>1</sup>	1934	1939	1944	1949	1951	1953
<i>I. Financial Data</i>							
Central Government...	Million £						
Total Revenue.....		4.9	5.8	10.9	23.8	32.8	50.9
Customs & Excise							
Taxes.....		2.2	2.5	4.9	12.6	18.2	33.9
Direct Taxes.....		.8	.9	2.4	3.8	5.3	6.8
Revenue of Native							
Authorities, total..		n.a.	1.5 <sup>2</sup>	2.8	4.9	5.9	8.2
Currency in Circulation		n.a.	5.9	13.5	31.8	39.2	51.4
Bank Deposits with							
principal Nigerian							
Banks.....	Million £						
	as of Dec. 31	n.a.	n.a.	9.9	13.5	22.4	31.2
Post Office Savings....	Thousand £						
Bank Deposits.....		71	185	879	2,254	3,239	4,059
Number of accounts.	1000	21	45	86	169	169	198
<i>II. Foreign Trade</i>							
Exports, total.....	Million £						
	calendar year	8.9	10.5	17.2	81.1	120.1	125.3 <sup>3</sup>
Cocoa.....	Thousand tons						
	calendar year	78.0	113.8	70.1	103.6	121.5	104.7
Palm Kernels.....	"	289	300	314	376	347	403
Palm Oil.....	"	113	126	125	170	150	201

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	Unit and period <sup>1</sup>	1934	1939	1944	1949	1951	1953
Groundnuts.....	"	245	147	156	378	141	327
Cotton.....	"	5.9	4.4	4.3	10.0	15.4	17.7
Bananas.....	Million lbs. calendar year	51.0	138.5	—	145.5	160.9	202.4
Rubber.....	"	3.6	6.2	21.1	15.4	46.7	47.6
Imports, total.....	Million £ calendar year	5.4	6.8	15.7	58.2	84.6	108.2 <sup>3</sup>
Imports of:							
Corrugated iron sheets.....	Thousand tons	6.9	5.8	1.4	14.4	19.0	34.3
Sewing machines....	Thousand	2.5	3.2	.3	19.5	32.4	37.9
Bicycles.....	"	5.2	6.6	14.1	129.6	153.4	217.0
Cotton piece goods..	Million sq. yds.	63.2	60.7	106.6	185.2	121.3	172.0
Rayon piece goods..	"	5.1	3.1	5.2	15.0	40.7	64.8
Cement.....	Thousand tons	35.1	51.1	45.8	161.9	261.1	297.4
Consumption of kerosene.....	Million imperial gallons	1.7	2.0	2.3	4.7	9.0	12.0
 III. <i>Transport and Communications</i>							
Nigeria Railway							
Passenger traffic....	Thousand miles	148 <sup>4</sup>	198	266	326	352	351
Freight traffic.....	Thousand ton- miles	293 <sup>4</sup>	315	513	658	672	827
Roads, total.....	Thousand miles	n.a.	21.0	24.6	26.3	27.8	28.8
Tarred roads.....	Miles	n.a.	n.a.	533 <sup>5</sup>	937	1,114	1,631
Commercial vehicles, new registration....	Calendar year	538	559	663	2,356	2,901	4,159
Cars and Taxis, new registration....	Calendar year	439	572	61	2,112	3,457	3,873
Motor spirit, consumption.....	Million imperial gallons	3.0	4.9	9.9	17.6	23.7	33.3
Telephone and Telegraph.....	Thousand wire miles, end of calendar year	21.5	26.7	30.6	31.8	37.6 <sup>6</sup>	42.1 <sup>6</sup>

<sup>1</sup> Year ending March 31 unless otherwise indicated.

<sup>2</sup> 1940.

<sup>3</sup> Preliminary figure.

<sup>4</sup> 1935.

<sup>5</sup> 1945.

<sup>6</sup> March 31.

SOURCE: Digest of Statistics, Lagos.

## CHAPTER 2 THE CONDITIONS OF NIGERIAN PROGRESS

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It is a truism that economic development efforts normally have as their objective a rise in living standards: better health and longer life, more nutritious and more abundant food, better-built houses, more and better schools and the opportunity to participate in the cultural and spiritual life of the community. It would be unusual indeed if the Nigerians did not want these things; their leaders have made it abundantly clear that they do want them. But so far they have given too little thought to how they can acquire them or how soon. Many factors affect the speed at which the Nigerian economy can be expected to develop. In this chapter we call attention to those which we consider most significant. In succeeding chapters we suggest the fields of development activity into which we think the Nigerian people and their government may most wisely direct their energies.

### *Social Factors*

Although everyone agrees that it is desirable to improve living standards, it is not so universally realized that the growing output of goods and services, the immediate aim of an economic development program, can be accomplished only by the efforts of the people. The enthusiasm and vision of government may act as a spur, the advice of experts may serve as a guide, but by themselves leadership and advice are not productive. No progress can be made unless the people themselves are willing to assume the main burden of the development effort. The mission found this not fully appreciated in Nigeria. Nigerians in all walks of life tend to look too much to the government, more specifically to the British colonial officials, for the fulfillment of their aspirations. The heavy reliance on government is frequently coupled with a strong distrust of its actions and motives. To some extent this is explicable as the response of a people still

under tutelage and exposed to the complexities of Western civilization. But whatever the basis, both attitudes, that of dependence and that of distrust, serve to retard Nigeria's development.

The need for self-help is not understood by the African businessman who looks to the government, and the government alone, for financial assistance in the expansion of his business instead of joining with others in a partnership or other form of common enterprise. It is not understood by rural communities and their leaders who demand school and hospital facilities but are not ready to pay for them by increased tax assessments. It is not understood by those who deplore graft and corruption in the hospitals, in the produce inspection service, in the railway and in private business, yet are unwilling to take effective action against these abuses.

Though there is much in Nigerian attitudes which may curb economic growth, there is much in the social organization which can serve its cause. Nigerians have strong local loyalties. They are closely tied to their immediate family or clan, they support local "unions" (clubs) and they take pride in local achievements. The banding together of families, clans and village communities in producers' co-operatives, in the savings clubs of the Yorubas and in the thrift societies of the Ibo "strangers" in the North are practical and promising illustrations of self-help. We think full support should be given to the co-operative movement as a vehicle for economic development, for it is a form of economic organization fully compatible with Nigerian tradition and social sentiment.

We believe that through the co-operative movement, the types of land ownership associated with the village, clan and tribal system can be adapted to plantation-type agriculture. In this way Nigeria can combine the benefits of private African initiative and individual effort with the technological advantages of large-scale plantation farming, up to now virtually absent from Nigeria.

Other Nigerian social traditions have positive value in a period of rapid change and advancement. Respect for elders and acceptance of their counsel, if not carried to the point of becoming impediments to learning new ways, make for social restraint and stability. Respect for learning in any form and the authority enjoyed by *mallams*, "learned men," in the North, and by teachers, professors and even

students in the South, suggest the key role which the teaching profession can play in developing new attitudes and in the adoption of new institutions and techniques.

A final favorable factor is the relatively cordial relationship between African and non-African, notably lacking in some other African countries. It is attributable to the fact that the few Europeans and Asians in Nigeria are administrators and traders and to the policy of prohibiting alienation of agricultural land to foreign settlers and restricting immigration in general.

The social pattern does, however, have its drawbacks. The high standard of loyalty and morality adhered to within the family and clan does not apply to relationships with "outsiders." This double standard is reflected in many instances of apparent disregard for personal rights and private property, flouting of oral or written contractual obligations and exploitation of one Nigerian by another. It has led to a generally low level of civic responsibility, especially in cities and large settlements where local allegiance makes no demands and the moral restraints of family and clan have weakened. Distrust and fear of the outsider are also behind the opposition to innovations, in both method and concept, frequently encountered in the more backward areas.

Another symptom of this condition is the antagonism between the peoples of the different regions, which has led to progressive political decentralization and to the emergence of three principal political parties, each drawing its largest following from one of the three regions. While agreeing that political decentralization is necessary in a country as heterogeneous as Nigeria, we caution that regionalization carried too far, as for example by exaggerated emphasis on the particular good of any one region, may retard development of Nigeria as a whole.

These, then, are what we regard as the most significant of the barriers of attitudes and social patterns which must be taken into account in assessing development prospects. It is of critical importance that they be broken down without destroying the social institutions which hold the various groups together and which may be of use in Nigeria's economic future. This is a challenge which cannot be easily or readily met and to which outside advice can provide

no answer. Only the Nigerian leaders can make their people understand that economic progress and material welfare depend on national unity and individual initiative.

### *Technical Skills*

One of the most encouraging signs that these difficulties can in time be overcome is the popular enthusiasm for education. Nigeria has decided that it can better afford the cost of education than the waste of illiteracy. Although schooling is still available to only a small fraction of Nigerian youth and instruction does not yet meet the requirements of economic advancement, the expansion of educational facilities has been remarkable.

The spread of general elementary education can affect the speed of economic development in many ways: by teaching the Nigerian people about their country and its resources; by eventually eliminating the notion now held by the literate few that physical labor is beneath the dignity of the man who has been to school and, most significantly, by providing productive skills. Some effort has been made in recent years to introduce technical training and instruction in crafts into the educational system. There is still lacking an appreciation of technical competence and of professional reliability and integrity; this will take time to acquire.

Nigeria is seriously short of trained senior administrators and technicians for government posts and technical personnel for industry. Their skills can be acquired only through higher education and long experience; Nigeria cannot supply them in sufficient quantity for many years to come.

In every branch of government, essential activity related to Nigeria's economic progress is held up for lack of qualified personnel. At the end of 1953 there were more than 5,000 "senior service" positions; approximately 3,300 were held by overseas personnel ("expatriates") and 800 by Nigerians, while over 900 were vacant.<sup>1</sup> In addition there

<sup>1</sup> Until recently, a distinction was made between the "senior" and "junior" services; the two services have now been combined but the terms are still widely used. The "junior" service included all clerical and ancillary positions and was completely staffed by Africans.

was a considerable number of vacancies in the various semi-official agencies.

In 1948, the Nigerian government adopted a policy of accelerated "Nigerianization" of the civil service: overseas personnel would not be employed in any position for which a qualified Nigerian was available.<sup>2</sup> Nigerianization of the public service is an essential part of the progression toward self-government; since self-government is the announced aim of all Nigerian political parties as well as of the Government of the United Kingdom, employment of qualified Nigerians in responsible governmental positions must be fostered and promising young men should be recruited and trained.

But just now Nigeria's problem is not to determine what positions in government should be filled by Nigerians and for what positions the services of overseas personnel should be obtained, but to find qualified persons irrespective of national or racial origin. The hard facts are that the number of Nigerians qualified for many types of government employment is limited and that the government has not been able to recruit overseas personnel in sufficient number. In Chapter 4 we make specific recommendations for recruiting overseas staff. This recruitment effort will not deprive qualified Nigerians of opportunities for employment in positions of responsibility in the public services. There will be more opportunities than Nigerian candidates for many years to come.

### *Business Management*

Nigeria is equally short of men who can manage organized industrial activity. This is not due to a lack of capacity. Nigerians in general have good business sense; many are skillful traders. With few exceptions, retail buying of export produce and retail distribution of imports is in Nigerian hands and efficiently organized.<sup>3</sup> In-

<sup>2</sup> Two studies of the problem of government employment have recently been made, which emphasize the objective of bringing qualified Nigerians into government service but also recognize the need to continue employment of overseas personnel. *Report of the Commission appointed by His Excellency the Governor to make recommendations about the recruitment and training of Nigerians for Senior Posts in the Government Service of Nigeria* (Lagos: 1948); *The Nigerianization of the Civil Service: A Review of Policy and Machinery* (Lagos: 1953).

<sup>3</sup> See P. T. Bauer, *West African Trade* (Cambridge University Press: Cambridge, 1954).

ternal trade, both retail and wholesale, is likewise engaged in almost exclusively by Africans. African businessmen have grown wealthy and many are now firmly established in the domestic business community as well as in international trade. The business community's great weakness is its lack of managerial experience and the absence of a tradition of sound business practices. Most businesses are "one-man" enterprises. Extension of credit is impeded because the proprietor often keeps no systematic accounts.

The central Department of Commerce and Industries has actively supported African business initiative, facilitating direct contacts between African businessmen and exporters, importers and overseas manufacturers. It has encouraged associations of European and African firms such as the Lagos Chamber of Commerce, with the object of improving standards of business conduct and fostering a policy of self-regulation within the business community.

Nigerian businessmen and political leaders have urged government financial and technical assistance for new African enterprises, but in practice the number of Nigerian businessmen willing to launch manufacturing ventures at their own risk has been very small. This reluctance is due in part to the absence of an industrial tradition and in part to the fact that manufacturing enterprises generally require a larger initial capital than the individual businessman is willing or able to invest. In the circumstances, industrial growth will be slow and government assistance will not be fully effective until Nigerians are prepared to spend their energy and risk what capital they have.

The creation of aptitudes and skills for managing commercial and industrial enterprises cannot take place overnight. As we point out in connection with industrial development, it can best be accomplished through the growth and multiplication of many small firms, which will slowly build up business and industrial traditions.

#### *Knowledge of Natural Resources*

Nigeria's development has also been hampered by a lack of knowledge of the country's natural resources, making it difficult and sometimes impossible to assess their potential for useful development.

There are well-established methods of building up depleted soil fertility but in the absence of adequate research it is not known to

what extent they can be applied economically in Nigeria. Nigerian varieties of crops and types of livestock, though well adapted to their environment, give low yields. Research could develop higher-yielding strains. Many indigenous plants hold promise of economic use but the possibilities of such use are still to be investigated. A broad strip across the country, the Middle Belt, is sparsely populated and cannot support livestock, for it is infested with the tsetse fly, the carrier of trypanosomiasis (sleeping sickness). While research on the control of tsetse is well advanced, its results have not yet been applied on the scale necessary to pave the way for what could be an increase in production that would completely transform the area.

Nigeria's water resources can undoubtedly be used much more intensively for agriculture, transportation and power. Yet the basic measurements of the rivers have not been made, nor has the basic exploration of ground water been undertaken. Until a hydrological service has gathered systematic data, schemes for irrigation, water transport and hydroelectric development must be postponed or can be undertaken only with a serious risk of failure.

Many industries may develop around the processing of local raw materials. But here again considerable research needs to be done before the profitability of particular industries can be established.

Some of these research and survey projects are well in hand; the mission recommends that others be undertaken promptly. Nigeria's development will not hit its stride, however, until the research has progressed far enough for its results to be translated into practical application.

#### *Private Investment*

Since the purpose of this report is to suggest action by government and public agencies, it is focused primarily on their development activities, but economic and social advancement should by no means be the exclusive concern and responsibility of government. On the contrary, there are definite limitations to the extent to which government can, by direct intervention, bring about economic development and social progress. In Nigeria, as in any other country with institutions relying on private enterprise and initiative, the government's

role in economic development is essentially one of providing the basic services for, and giving encouragement and support to, private endeavor. Government can assist economic growth by providing such communal facilities as roads, education and training, technical guidance and research, which are prerequisites for private business operations; in circumstances common to most underdeveloped countries, it may have to supplement the financial resources of the private sector of the economy with facilities for long-term credit and equity financing; it may provide such services as railways, electric power and telecommunications; and, perhaps most important of all, it can adopt policies permitting the free development of private initiative and private capital formation.

Although these government activities extend widely over the economy and can go a long way to foster a process of economic advancement, the ultimate success of any development endeavor depends on individual initiative and enterprise—on the farmer who adopts more efficient methods of production, on the craftsman who shifts from hand to machine operations, on the lorry operator who provides better transportation for people and goods and on the businessman who starts a manufacturing enterprise.

During 1950-52,<sup>4</sup> when public investment expanded appreciably, private investment still accounted for more than 60% of total investment in Nigeria. A large proportion of this investment was of an unspectacular nature. It consisted of a multitude of purchases of sewing machines and bicycles,<sup>5</sup> lorries and cars and improvements to private buildings. Investment by large enterprises was confined to a small number of projects in manufacturing, mining and commerce.

The mission makes specific recommendations as to the size and direction of public investment in the next five years and as to the government organization needed to carry it out. It cannot, of course, do the same for private investment. It seems reasonable to expect, however, that the program we recommend would lead, both directly and indirectly, to an expansion of private investment. This expansion,

<sup>4</sup> The only years for which data are available; see Technical Report No. 1, Table 1.

<sup>5</sup> The Nigerian Department of Statistics considers that all sewing machines and 90% of all bicycle purchases should be classified as "business investments," rather than as purchases of consumer goods. The former are used in the tailoring business and the latter are widely employed for transportation of agricultural produce.

though relatively smaller than that of public investment (and public development expenditures in general), would further increase the rate of capital formation and enhance the growth of the economy. For example, improvements in the road network are likely to lead to an increase in private investment in transport equipment; expansion of the power supply would permit increased use of power-driven mechanical equipment; the changes proposed in the operation of the loans boards (see Chapter 4) should facilitate the flow of private investment into agricultural and industrial enterprises. A liberal administration of the provisions of the legislation authorizing favorable tax treatment of new industries<sup>6</sup> should bring an expansion of industrial investment. Nevertheless, it would be too optimistic to predict more than a moderate growth of private investment in industry.

### *Foreign Capital*

An important factor determining the level of private investment in the next few years will be the volume of foreign (i.e., non-Nigerian)—financed investments. In the last years for which data are available, foreign capital financed between 12% and 25% of total private fixed investments in Nigeria. A large proportion of foreign investment is reinvestment of earnings by companies already established in Nigeria; the amount of money brought into the country by new firms is believed to be small. Perhaps even more important than the volume of foreign capital is the fact that a considerable proportion of foreign-financed investment is in manufacturing, which introduces new techniques and skills.

There is no need to labor the advantages to Nigeria of an inflow of private direct investment from abroad. Foreign investment can be an important addition to the domestic capital formation of any country in the process of economic development. It is of particular importance in a country like Nigeria, where there is not only a scarcity of private financial capital but also a virtual absence of the managerial experience and technical skills required in manufacturing processes. Without foreign investment, neither public nor private endeavor can achieve the rate of economic growth that the Nigerian people desire. Nigeria should be conscious, however, that foreign

<sup>6</sup> Aid to Pioneer Industries Ordinance; see Technical Report No. 13.

capital is not a gift but involves a cost to the economy in the form of remittances of profits and interest abroad. Like other imported goods and services, it must be paid for.

The mission on many occasions discussed with Nigerians their attitude regarding foreign capital and found a good deal of confusion on the subject. There was general agreement that efforts should be made to attract foreign capital to Nigeria. At the same time it was argued that Nigeria must be protected against "exploitation" from abroad and that "strategic" industries should not be permitted to fall into the hands of foreigners. It was also asserted that in no industrial enterprise should more than 49% of the capital be foreign-controlled. The Nigerian press reported demands for the expropriation of foreign enterprises when Nigeria obtains self-government—although nothing of the sort was said to the mission.

The demand for development capital all over the world is much larger than the supply. Foreign capital is not clamoring for admission to Nigeria; it has to be attracted. The government should acquaint potential foreign investors, by direct approach and through general publicity, with the available investment opportunities. The encouragement of industrial activity can help to create a favorable climate for foreign investment; in Technical Report No. 13 we make specific recommendations to this end.

The problem of foreign investment in British West Africa has been dealt with at some length by Professor W. A. Lewis in a report on industrialization of the Gold Coast. After weighing its advantages and disadvantages to the economy, he concluded:

"Whatever the foreigner's faults may be, the fact remains that the Gold Coast needs him more than he needs the Gold Coast. . . . The Gold Coast cannot gain by creating an atmosphere towards foreign capital which makes foreigners reluctant to invest in the Gold Coast."<sup>7</sup>

The same conclusion applies to Nigeria. If foreign capital can be sure of its welcome, there should be a reasonably good prospect of attracting it, primarily from the United Kingdom but also from other countries. Nigeria offers a potentially large domestic market and has resources which can be developed for export.

<sup>7</sup> W. A. Lewis, *Report on Industrialisation and the Gold Coast* (Accra: 1953), p. 26.

The mission therefore recommends the formulation of a national policy on foreign capital and the issuance of a statement of policy, endorsed by the federal and regional legislatures and the political leaders, which will set forth clearly the terms upon which foreign capital will be admitted. We think that the basic policy should be to accord foreign investors the same treatment as local citizens, neither discriminating against them nor granting them special privileges. Some qualifications may be necessary or desirable. For example, foreign investors would require assurance of free transferability of profits and repatriation of capital. On the other hand, we think they should accept as reasonable an obligation to train Nigerians in their enterprises and that they would welcome reasonable provision for participation of local capital. The desirability of partnership arrangements between foreign and local capital has come to be generally recognized in capital-importing as well as capital-exporting countries. A somewhat more detailed discussion of this matter will be found in Technical Report No. 13.

### *Pace of Development*

Thus, the attitude of the people and their leaders toward development, the nature of social institutions, the speed at which education can be expected to spread, the availability of technological, administrative and managerial skills, the acquisition of precise knowledge of Nigeria's resources and the response of private endeavor, domestic and foreign, all affect the rate at which Nigeria can increase its output of goods and services and better satisfy the popular wants.

Various statistical series and national income estimates<sup>8</sup> suggest that Nigerian per capita income has increased in real terms at an annual rate of somewhat below 2% in the postwar years, while capital formation has run at a level of approximately 10% of the gross national product. Part of the capital formation has taken the form of an expansion of the "plant" of the Nigerian economy—improved highways, new locomotives and rolling stock, school buildings and hospitals in the public sector; manufacturing plants, permanent houses, garages, lorries, automobiles, sewing machines, oil presses and

<sup>8</sup> The national income estimates are shown in Appendix B; the statistical series are shown in summary form in Chapter 1, pp. 18-19.

bicycles in the private sector—while other capital has been accumulated in the form of assets held abroad.

The growth of income has been to a considerable extent the result of improvements in Nigeria's terms of trade. The country has grown richer because its exports now buy more imports. The high rate of capital formation was likewise due in part to the export boom; a portion of the increased export proceeds was "saved" by the Marketing Boards and the government.

It was suggested to the mission that its development proposals should aim at a "target" increase in total production of 10% per year, which would double total output of the economy in seven years. We are firmly convinced that a rate of growth of this magnitude is impossible now and in the foreseeable future. With few exceptions, attributable to unusually favorable circumstances, no country has in recent years achieved a rate of growth of 10% per year. There have been in fact very few underdeveloped countries able to maintain a rate of income growth in excess of 5% per year, while in high-income countries the rate of income expansion has been between 2% and 5% in recent years. Nigeria is not at this juncture in a position to effect an increase in domestic investment large enough to bring about a growth in income of more than modest proportions.

In the light of all the factors which have been discussed in this chapter, and because of the probability that the terms of trade may not be as favorable as they have been in recent years, the mission believes that in the next five years Nigeria can achieve an aggregate income expansion of 15% to 20%, or an average of 3% per annum.<sup>9</sup> This rate of expansion, though not spectacular, will be well above the rate of population growth. During that period, the institutional groundwork can and should be laid for an acceleration of economic growth in subsequent years.

To achieve this expansion will call for a considerable increase in the volume of government activity in virtually all fields. And so we consider the years 1955-60 to be the time for a building up and strengthening of the machinery of government to enable it better to support and sustain the growth of the economy. The expansion of public services will require a substantial increase in capital expendi-

<sup>9</sup> In constant prices, except for export prices. See Appendix C, Notes to Tables on Government Revenue.

ture and also a steady rise in recurrent expenditure. Therefore the magnitude of the proposed development effort must be measured not only in terms of capital expenditure but also in terms of additional recurrent expenditure.

We recommend an increase in capital expenditure from £ 21 million in 1955-56 to £ 35 million in 1959-60 (compared with a level of £ 17 million in 1952-53); to this should be added the recommended increase in recurrent expenditures, which would rise from £ 34 million in 1952-53 to £ 62 million by 1959-60. Thus the public development effort which the mission proposes, and which in its opinion can be successfully carried out, would in fact involve an expansion of government expenditure from a level of £ 51 million in 1952-53 to an amount of the order of £ 97 million in 1959-60. The foregoing figures do not include capital expenditure of statutory corporations from their own resources; in 1952-53 this expenditure amounted to £ 5 million and in 1959-60 it may be in the neighborhood of £ 6 million. Finally, there must be added an estimate of private investment, financed in part by loans of public funds and in part by foreign companies, but consisting mostly of many small investments by African entrepreneurs in agriculture, transportation and small industries. It is, of course, difficult to forecast the rate of private investment. In view of the new investment opportunities created and induced by public development expenditures, however, it should rise considerably.

It seems reasonable to expect gross domestic investment, public and private, to rise from about 8% of the gross domestic product in 1952 to 11-12%, or £ 90 million to £ 100 million, by 1960. Such a level would be sufficient to raise the rate of income growth substantially above the 3% rate which we project for the next five years and would thus assure a more rapid expansion of the economy in the 1960's.

#### *Financial Considerations*

The mission is satisfied that the public expenditure it recommends is well within the limits of Nigeria's financial resources, although the new system of revenue allocation is likely to result in deficiencies in particular regions and areas. Government will have at its disposal not only current revenues but also substantial amounts of reserves,

proceeds of loans from the Marketing Boards and from abroad, and, in all probability, grant assistance from the United Kingdom under the new Colonial Development and Welfare Scheme. If need be, Nigeria could incur domestic and foreign debt substantially in excess of that contemplated for the next five years without endangering its fiscal stability.

However, if financial considerations are not also to become a limiting factor on the rate of development by 1960, government revenues will have to be increased within the next five years. In the last few years, the share of government revenue in the national income amounted to only 7.5%, a share too small to permit government to meet its responsibilities in a period of accelerated development.<sup>10</sup> Strengthening of the revenue structure is also a prerequisite for increased ability to assume additional foreign debt after 1960.

Balance of payments problems have been largely absent in the last few years; we do not expect that they will appear in any serious form during the next few years. Although we do not anticipate more than a moderate decline in the terms of trade in the immediate future, the possibility of a more serious, though temporary, worsening cannot be ignored. At present, foreign reserves are more than ample to meet this contingency. It would be unwise, however, to permit them to decline past the point of a substantial margin of safety.

<sup>10</sup> The revenue system and the mission's recommendations for the financing of the development program are discussed in Chapter 5.

### CHAPTER 3 *AN INTEGRATED DEVELOPMENT PROGRAM*

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In the preceding chapters we have described the conditions governing the pace of development and have concluded that much of the effort of the next five years must be directed toward strengthening the government services which will support an expansion in production.

This chapter is essentially a summary of our discussion and analysis of the various sectors of the economy and of our principal recommendations for their development, details of which are to be found in the Technical Reports in Part II. The Technical Reports form an integral part of the report, and they should be referred to for a complete statement of the mission's recommendations and of the reasons supporting them.

Expansion in every sector is dependent upon an adequate supply of skilled manpower. Since in the long run this means Nigerian manpower, the educational expansion already begun must be stepped up. The type of instruction offered should be designed to meet the needs of the growing economy and reoriented to this end. This means in particular a changed emphasis in the technical schools. It also means an expansion of higher education, with which should be allied research programs in agriculture, veterinary science and forestry.

Research, surveys, extension and demonstration are the priority needs in agriculture. Facilities for research into soils, plant nutrition, plant varieties and disease must be promptly expanded so that efforts to stimulate production will rest on a firmer base than they do now. Research on cattle breeds and animal disease must be joined with efforts to control the tsetse fly, if increased cattle-raising anywhere but in the northern fringe of the country is to be possible. While large-scale expansion in the output of most products must await the results of survey and fundamental research, increased production of some crops can be achieved soon if extension and demonstration services are more adequately organized to spread techniques already

known. In the North, for example, they are needed to popularize the use of superphosphate in growing groundnuts. In the East, co-operatives should be encouraged to apply plantation techniques to the growing of oil palms; rice-growing in the mangrove swamps, which has proved successful on an experimental basis, should be fostered. In the West, the co-operatives and the Department of Agriculture should together systematically apply the remedies which have been developed against the spread of black pod, capsids and swollen shoot in cocoa, in order to prevent a decline in production.

Industrial expansion cannot in the near future have an impact on living standards equal to that of agricultural advances but its growth should nevertheless be actively encouraged. Government should give technical and management assistance to small business, provide strengthened credit facilities and offer more and better technical education. It should also create a more favorable climate for foreign investment. Further development of mineral resources must await intensified survey and exploration; lead and zinc deposits in the East are particularly worthy of further exploration. Supplies of electric power must meet a mounting demand from small users in urban areas.

Nigeria's transport system does not require fundamental changes. Measures already in hand should make it possible for the railway to carry to the ports the expanding output of groundnuts. To meet an anticipated expansion of agricultural production in the northeast, there will be required either an extension of the railway or a heavy-traffic highway, and facilities at Port Harcourt will have to be expanded. The road system, though by and large adequate in extent, needs to be improved, and so does the quality of earth road maintenance.

The program is an integrated one: the component parts complement and support each other. Development in one sector affects, and is in turn affected by, development in others. These interrelationships can be demonstrated by a few examples. The build-up of government services in agriculture, forestry, animal husbandry, industrial assistance, survey, geological survey and hydrology, and the improvements suggested in roads, telecommunications, power supply and public health can be accomplished only if our proposals in the field of education and for the recruitment of overseas personnel are followed.

Even the education effort itself must initially depend on teachers from overseas to train Nigerian teachers and technicians. Little would be gained by expanding agricultural production unless the recommended improvements in the roads, the railway and the ports were carried out at the same time. On the other hand, there is no purpose in expanding these facilities beyond the point at which they are likely to be utilized. Improved inland navigation and the eventual development of hydroelectric power will depend upon intensified water surveys, and these will also markedly affect the speed of agricultural development.

We have aimed at setting a realistic pace for the program in terms of personnel as well as finances, to avoid creating competing claims which cannot be met and which would lead to imbalance and a slowing down of the entire program. In some instances the pace we have set is not as fast as that which Nigeria has set for itself. Nevertheless, the program in its entirety will require all the organizational effort that Nigeria can command.

Whether and to what extent to accept our recommendations is for Nigeria to decide. In view of their interrelation, however, we hope that in reaching its decision Nigeria will recognize that any substantial modification of a part of the program will require appropriate modifications of other related parts.

## I AGRICULTURE<sup>1</sup>

Nigerian agriculture, which now produces virtually all the food consumed in the country as well as 90% of the exports, is readily capable of expansion. Climatic conditions are favorable in much of the country, many varieties of crops and some livestock are well adapted to their environment, and land is abundant. But expansion in the immediate future and over the long term will depend upon the degree to which Nigeria can succeed in overcoming or minimizing the effect of such limiting factors as soil deficiencies, inadequacy of water supply in certain areas, low-yielding plant varieties, prevalence of plant and livestock disease, and primitive cultivation methods. The

<sup>1</sup> See Technical Reports Nos. 6-11.

priority needs in the agricultural sector are surveys and research to ascertain the precise nature of these factors, tests of possible remedies to determine their local applicability, and finally practical application and demonstration of tested findings, all with the object of expanding production of export crops and increasing the output and improving the quality of food for domestic consumption.

### *Objectives of Agricultural Program*

We believe that in the next five years a substantial expansion of production of several major export crops can be achieved and that this expansion will partially compensate for the price declines which we anticipate. Specifically, we think that groundnut production can be increased by at least one-fourth and the production of palm oil by 15–20%, with the proportion of the latter processed as edible oil reaching two-thirds of total output. Cotton production can be increased half again, and rubber and coconut palm products can assume a more significant role among exports if rubber and coconut palm plantations are established. On the other hand, we think it will be difficult to expand cocoa production in the next five years; we recommend the planting of new trees to replace old stock and to increase the total of bearing trees so that there can be greater cocoa exports in the 'sixties.

We are less optimistic in the case of agricultural products for domestic use. Here knowledge and scientific experience are presently inadequate to permit the formulation of production targets. A good deal of effort must be put forth to achieve a growth in production of such staples as yams, cassava and guinea corn sufficient to keep pace with population growth and to allow for a modest increase in per capita consumption. We believe, however, that in the short run a substantial expansion of rice production—from 300,000 to at least 450,000 tons—is possible and we make specific recommendations for government support in this field. We propose greater government research and extension activity for other food crops and livestock, to assure a long-run increase in supply. We also recommend specific production schemes for food crops, livestock and fisheries.

Whether the expansion of production which we envisage can be achieved in the next five years, and thereafter can proceed at an

accelerated rate, will depend to a large extent on the efforts of the 13 million Nigerian farmers and their families. We recommend that they receive every possible encouragement and technical assistance from government and that private individual efforts should be supplemented by partnership arrangements between the regional development corporations<sup>2</sup> and producers' co-operatives or rural communities, and by other schemes sponsored and financed with public funds.

We suggest that the national economic council which we recommend in Chapter 4 consider establishing an agricultural subcommittee, in which federal and regional representatives might discuss agricultural problems of common concern. The subcommittee might also assist the council in the formulation of national agricultural policies.

We propose expanded agricultural and veterinary services for which we have projected recurrent expenditure rising from £ 2 million in 1953-54 to £ 3.7 million in 1959-60 and capital expenditure of about £5 million. Proposed government expenditures for these services are summarized in Table 1. That Table breaks down the outlays which we recommend according to the agency making the expenditure and by broad classification of projects; detailed projections for specific projects are shown in the Tables of Technical Reports Nos. 10 and 11.

We also recommend increases of similar proportions in expenditure for forestry, fisheries and for the support of the co-operative movement (not shown in Table 1), bringing total recurrent expenditures for the agricultural sector of the economy to £ 5.7 million by 1959-60 and capital expenditure for the five-year period 1955-60 to over £ 6 million. In addition we have projected expenditures of the regional development corporations on agricultural projects at approximately £ 10 million, the precise amount to depend upon the outcome of the technical investigations which we hope will be undertaken promptly.

<sup>2</sup> Used throughout this chapter to refer to the Regional Production Development Boards, reconstituted as recommended in Chapter 4.

TABLE 1 Projection of Expenditure on Agricultural and Veterinary Services

(Thousand £)

	Approved Estimates		Projections of Mission					
	1953-54		1955-56		1959-60		Total 1955-60	
	R	C	R	C	R	C	C	
<i>Federal: Total</i> <sup>1</sup> .....	223	302	300	235	445	80	755	
Agricultural Research .....	100	13	180	150	300	20	420	
Veterinary Services .....	93	31	85	20	110	—	30	
<i>Northern Region: Total</i> <sup>2</sup> .....	900	351	1,319	536	1,868	666	2,679	
Department of Agriculture .....	492	263	724	428	949	411	1,863	
of which: Special Projects ....	111	139	179	248	229	331	1,343	
Veterinary Department <sup>3</sup> .....	136	3	195	20	270	—	35	
Northern Local Authorities .....	272	85	400	88	649	255	781	
of which:								
Superphosphate Scheme .....	—	—	60	—	180	—	—	
Veterinary Services .....	84	11	100	10	150	10	50	
<i>Western Region: Total</i> <sup>2</sup> .....	595	86	589	432	765	85	865	
Department of Agriculture .....	510	77	496	417	639	85	835	
of which: Special Projects ....	267	31	296	332	399	20	460	
Veterinary Department .....	45	9	50	15	75	—	30	
<i>Eastern Region: Total</i> <sup>2</sup> .....	249	100	282	83	467	80	438	
Department of Agriculture .....	209	100	244	73	405	80	418	
of which: Special Projects ....	20	30	44	28	119	30	143	
Veterinary Department .....	33	—	30	10	50	—	20	
<i>Southern Cameroons: Total</i> <sup>2</sup> ....	3	—	86	76	168	14	217	
Department of Agriculture .....	—	—	65	63	128	13	185	
of which: Special Projects ....	—	—	25	3	33	3	15	
Veterinary Department .....	—	—	15	12	30	—	27	
Grand Total: .....	1,970	839	2,576	1,362	3,713	925	4,954	

<sup>1</sup> Includes expenditure in addition to that on agricultural research and veterinary services.

<sup>2</sup> Includes expenditure by local authorities.

<sup>3</sup> Including tsetse control.

SOURCE: Tables in Technical Report No. 10.

NOTE: R = Recurrent; C = Capital.

*Federal Responsibilities*

We recommend that responsibility for all basic agricultural research,<sup>3</sup> including research on livestock, fisheries and forests, be assumed by the federal government, and that the regions devote their efforts to the experimental application of research findings and to demonstration work. Since the resources which Nigeria can devote to research are limited, we believe that best results can be obtained in the shortest time by such a division of responsibility.

To discharge the federal responsibility most effectively, we recommend the establishment of three new institutions and the strengthening of certain existing services.

*Agricultural Research Institute* We propose that research on soils, the agronomy of field crops and pastures, horticulture, genetics and plant health, including the control of diseases and insects affecting economic plants be carried out by an agricultural research institute. A total capital outlay of £ 420,000 has been projected for the research institute; of this, £ 300,000 would be expended between 1955 and 1957. Recurrent expenditure in 1955-56 would be £ 180,000, which should cover appointment of key personnel; thereafter recurrent expenditures are projected to rise sharply, as operations and staff expand, reaching £ 300,000 in 1959-60.

In Technical Reports Nos. 6 to 8 may be found suggestions for specific projects in which the proposed institute might engage, sometimes alone and sometimes guiding the regional departments of agriculture. As an illustration of the kind of activity we envisage for the institute, some of the projects to be undertaken on behalf of the regions may be mentioned here: for groundnuts, research on plant nutrition, varietal improvement and disease control, together with experimentation on mechanized planting, harvesting and decortication; for benniseed, research on varietal improvement, fertilizer treatment and harvesting methods; for bananas, investigation into the nutritional requirements of the soils of the Southern Cameroons, tests of

<sup>3</sup> Apart from the specialized research being performed by interterritorial organizations such as the West African Cocoa Research Institute, the West African Institute for Oil Palm Research, the West African Institute for Trypanosomiasis Research and the West African Stored Products Research Unit, and also by the Empire Cotton Growing Corporation.

disease control by spraying and varietal improvement, including breeding of disease-resistant types; for livestock, investigation into pasture and forage improvement as a basis for more effective animal nutrition.

*Department of Hydrology* Exploration of the country's water resources should be undertaken by a federal department of hydrology. Our recommendations for this proposed department are set forth in Technical Report No. 12.

*Fisheries Research and Demonstration Unit* A federal fisheries research and demonstration unit should be established at Lagos. For this we have projected federal capital expenditure of £ 10,000, to be made, we suggest, in 1955-56; recurrent expenditure would rise from £ 20,000 in that year to £ 25,000 in 1959-60.

*Expansion of Services* The federal veterinary service should expand its investigations into problems of animal health and husbandry and, for best results, should co-ordinate this research with experiments in pasture improvement and forage crops and with soil and water surveys being undertaken by other agencies. Facilities for training Africans to assume responsibility for technical guidance of agricultural development should be expanded by strengthening the faculty of agriculture at University College, Ibadan, adding instruction in agricultural engineering to its curriculum, and by establishing faculties of forestry and veterinary medicine there.

The proposed expansion of veterinary services would call for additional facilities. We have projected capital outlay for that purpose totaling £ 30,000 for 1955-57 and recurrent expenditure for expansion of services rising from £ 85,000 in 1955-56 to £ 110,000 in 1959-60, exclusive of expenditures involved in establishing and operating the proposed faculty of veterinary medicine at the University College. We believe that the present veterinary school should become part of the new faculty and we have incorporated its budget in our projections for education (see Technical Report No. 21). Expenditure for a strengthened faculty of agriculture and for the proposed new faculty of forestry are likewise included in our projections for the educational program. For the intensification of forestry research we recommend an increase in federal recurrent expenditure from £ 25,000

to £ 65,000 between 1955 and 1960; we also propose continued federal support of the school for forestry assistants and a moderate expansion of its physical facilities (see Technical Report No. 11).

A corollary to expansion of training facilities is the need for stepping-up recruitment of agricultural personnel. Agricultural services are understaffed even for the work they are now expected to perform. At the time of the mission's visit no more than two-thirds of the agricultural service posts provided for in the Estimates were filled. Yet it was generally conceded that the country requires three times the personnel now allowed for, or between four and five times the number actually on the rolls. The long-run objective should be a strong, qualified African staff. For the short-term future, however, the employment of overseas personnel is essential. The mission recommends that a recruitment drive be started immediately and that the assistance of such international agencies as the Food and Agriculture Organization be sought in this connection.

#### *Regional Services and Programs*

Research findings must be tested under operational conditions before they can be translated into increased output. It should be the task of the regional departments to apply these findings first in experimental and then in pilot projects and in demonstration, extension and advisory work. In the past, extension work has not been given sufficient attention. It is of crucial importance in a development plan such as that which we propose, which is based largely on raising output from many small units.

Another activity which we believe should be expanded is the program of the regional development corporations for establishment of plantations, either directly or in partnership with co-operative societies or local communities. In partnership schemes, the corporations provide capital equipment, management, technical guidance and, where necessary, working capital, while the co-operatives or the communities provide land and manpower. These schemes should be fostered by the regional governments and the development corporations. They bring to Nigerian agriculture the advantages of large-scale operation and modern production methods without modifying the traditional pattern of land ownership and without creating a class of landless

agricultural workers. Since local systems of land tenure are of relevance in the planning and execution of these projects, the advice of the Land Department should be sought.'

For all regions, the activity which we propose would require an expansion of the departments of agriculture. Table 1 summarizes our estimates of the capital and recurrent expenditures which would be necessary for each of the three regional departments if the projects we recommend for each region were carried out. It also includes our projections for establishment of a department of agriculture in the Southern Cameroons.

*Northern Region* In the North we recommend a doubling of the activities of the agricultural and veterinary services and therefore have projected an increase in recurrent expenditure from an estimated £ 900,000 in 1953-54 to £ 1.9 million in 1959-60. We also recommend capital expenditure of £ 2.7 million, partly to provide office, laboratory and housing space for these services, and partly to finance a number of special projects and experiments.

Officers of the "production division" (extension service) of the development corporation should be transferred to the agricultural department; their number should be increased to permit stationing one in each administrative district.

The research, experimentation and extension activities should be directed toward three objectives: expansion of groundnut and cotton production for export; improvements in livestock production; and increase in the production of staple foods, particularly rice and guinea corn. To encourage the expansion of groundnut production we recommend that native treasuries participate in the financing of purchases of superphosphate fertilizer; we have projected expenditures of £ 500,000 of native treasury funds for this purpose. If necessary, additional funds should be provided by the development corporation as loans to native administrations. Since guinea corn is intercropped with groundnuts, the groundnut fertilizer program, by improving the soil, should also result in an increased output of guinea corn. We recommend further that the activities of the groundnut research center, financed in 1954-55 by the Groundnut Marketing Board, be broadened to cover not only groundnut production, but also food crops for domestic use.

For the expansion of cotton production we recommend a moderate increase (from £ 80,000 to £ 100,000) in the expenditures for seed selection and distribution, and modest capital expenditure (£ 20,000 per year) mainly for the setting up of cotton markets; we suggest that the responsibility for financing this program be transferred from the Cotton Marketing Board to the regional Department of Agriculture.

We propose capital expenditure totaling £ 500,000 for irrigation works to be undertaken by the Department of Agriculture. Most of these funds should be used for small-scale irrigation works of the type already constructed in Sokoto and Niger Provinces for the purpose of expanding the cultivation of rice and other food crops. The scope of these schemes can be gradually broadened as experience in irrigated farming is acquired and more information about river behavior becomes available through the proposed federal department of hydrology. The planned reclamation scheme on the shores of Lake Chad, if successful, would pave the way for a significant expansion of rice production in that area. Because we consider that rice has great potentialities in many parts of the Northern Region, we also recommend an increase in expenditures on rice research (from £ 3,000 to £ 15,000 per year). We believe, however, that the prospects of mechanization of rice production on a substantial scale are not good for the immediate future. We therefore do not recommend an immediate expansion of the development corporation's mechanized plowing scheme for rice land.

The development of livestock production will require close cooperation among the regional agricultural and veterinary services, local authorities and the development corporation. We attach great importance to the long-run expansion of livestock and dairy production because of the deficiency of animal protein in the Nigerian diet, which is most acute toward the South. We recommend that the problem be attacked in five ways:

1. Pasture improvement should be undertaken under the direction of the regional agricultural department, together with experiments on mechanized land clearing and fodder conservation. For this we propose regional capital expenditure of £ 340,000 over the next five years and expenditure by local authorities rising from £ 40,000 to £ 60,000.

2. For the preparation and technical supervision of tsetse control schemes, the Northern regional government should increase recurrent outlay from £ 35,000 in 1955-56 to £ 50,000 in 1959-60. The regional development corporation should intensify its program of settlement schemes for mixed farming and to reduce the area of tsetse infestation. For this we recommend that it set aside £ 1 million to £ 1.5 million.

3. The cattle multiplication scheme should be expanded by the regional Department of Agriculture. For this, recurrent expenditures are projected to rise from £ 15,000 to £ 25,000 while capital expenditure would be £ 140,000.

4. Local authorities should set up grazing reserves, at an estimated capital cost of £ 300,000, and at least one grazing area for the permanent settlement of Fulani herdsmen should be financed by the regional development corporation. This scheme would involve estimated expenditures of £ 1 million in the next five years and a correspondingly larger amount if more than one ranch should be established.

5. The regional development corporation should set up livestock fattening centers near railheads and dairy farms in Kano and Jos, either alone or in co-operation with private African capital or native treasuries. We have projected £ 800,000 for the fattening centers and £ 150,000 for dairy farms.<sup>4</sup>

*Western Region* The Western Regional Department of Agriculture will require new headquarters, separate from Moor Plantation. We recommend capital expenditure of £ 300,000 for the establishment of a sub-unit of the West African Cocoa Research Institute in Ibadan; we think that the region would greatly benefit if cocoa research were carried on in the center of Nigerian cocoa production.

We propose an increase of recurrent expenditure for the agricultural services between 1955 and 1960 from £ 500,000 to £ 640,000, a large part of which—£ 210,000 by 1959-60—we suggest be allocated to extension and related activities on cocoa. The control of black pod, capsids and swollen shoot disease and the provision of technical guidance in the replacement of old trees and new plantings require the

<sup>4</sup> Projections for expenditure on other, minor, activities of the agricultural and veterinary services appear in Technical Report No. 10.

concentrated attention of the agricultural department.

Soil surveys, for which we recommend expenditures rising from £ 70,000 to £ 90,000 in the next five years, should assist in locating more land suitable for cocoa planting. We have made no provision for capital expenditure on cocoa by the regional government because we believe it can be financed by individual cocoa farmers, with the assistance of the Co-operative Bank if necessary. We recommend, however, that the Western development corporation invest £ 500,000 to £ 1 million in cocoa plantations in partnership with producers' co-operatives and local authorities. We also propose that more plantations, including oil palm, coconut, citrus fruit and rubber plantations, be established through partnership arrangements and that £ 2 million be allocated for this purpose.

We believe that experiments with trypanosome-resistant cattle have been sufficiently successful to warrant an expansion of the livestock development program; we have therefore projected £ 50,000 as capital expenditure for regional livestock farms. We have also allocated £ 25,000 of capital expenditure and £ 12,000 of annual recurrent expenditure for the encouragement of poultry farming. We believe that livestock production deserves the attention of the regional development corporation as well, and that it should establish livestock breeding centers; we have projected expenditure of £ 100,000 for this purpose. We also propose that the development corporation establish a town dairy in Ibadan and expand the one at Agege, serving Lagos; for this we estimate capital requirements to be £ 100,000.

*Eastern Region* Because some areas of the East are confronted with the twofold threat of soil depletion and insufficient local food supply, we recommend a substantial expansion of the regional agricultural department. We have therefore projected an increase in recurrent expenditures between 1955 and 1960 from £ 180,000 to £ 250,000.

We recommend that the increased staff be primarily used to strengthen the extension service, which should give special attention to the replacement of over-age oil palm stands by more widely spaced stands, and to soil improvement, especially of the available soil nitrogen level for the staple crops of cassava and yams intercropped in the palm stands. An oil palm-fertilizer program should have the financial support of the regional development corporation, which

should set up partnership schemes with producers' co-operatives and rural communities for the establishment of oil palm plantations. We recommend that the corporation set aside £ 1 million for this purpose. We also propose that the corporation assist in the financing of fertilizer imports but suggest that it be reimbursed by the agricultural department for fertilizer used or distributed for demonstration purposes.

Another program which in our opinion requires the attention of both the agricultural department and the development corporation is the expansion of rice production in the mangrove swamp areas. We project an increase from £ 10,000 to £ 18,000 in recurrent expenditure by the department for technical and supervisory personnel and recommend that the development corporation set aside £ 1 million for bringing up to 100,000 acres of swamp land under cultivation.

We also recommend that the development corporation expand its present program for the establishment of coconut, cashew nut and rubber plantations and we allocate £ 2 million for this purpose.

The agricultural department should continue to run the agricultural school recently established in Umuahia and should make extensive use of the school facilities for experimental work. We project an increase in the recurrent expenditures from £ 15,000 to £ 36,000 in the next five years and recommend capital expenditure for additional facilities of £ 25,000, over and above the appropriations made to the school in 1953-54 and 1954-55.

We also recommend that the agricultural department continue experimentation with mechanical equipment; we propose expenditure of £ 55,000 for the importation of agricultural machinery. We also recommend allocation of £ 70,000 as capital expenditure for an expansion of the department's soil conservation program and a sharp rise in recurrent expenditures from £ 5,000 to £ 50,000 per year for seeds, hand labor and other outlays in connection with the preparation of pasture land. We believe that expenditure of this magnitude is necessary to permit establishing a number of pilot demonstration projects to familiarize Nigerian farmers with modern techniques of soil conservation and land preparation and to induce them to adopt these techniques.

*Southern Cameroons* For the Southern Cameroons, we recommend the establishment of a department of agriculture, a veterinary department, and an agricultural school. For agricultural purposes we have allocated capital expenditure totaling £ 170,000 and recurrent expenditure rising from £ 50,000 to £ 95,000 in the next five years. For veterinary services we propose capital expenditure of £ 27,000 and recurrent expenditure rising from £ 15,000 to £ 30,000. A substantial proportion of the work of both the agricultural and veterinary services should be devoted to extension activities. The need for improved production methods is particularly great in some of the more remote parts of the region.

In Chapter 4 we recommend the establishment of a separate development agency for the Southern Cameroons. We suggest that this institution finance and manage partnership schemes for the development of rubber, banana and oil palm plantations; establish a cattle and dairy ranch in Bamenda; and take over the coffee plantation in Bamenda Province established by the Eastern Regional Production Development Board. We also recommend in Chapter 4 that the agency obtain capital funds of £ 1 million and a share of the capital of the Eastern board. We believe that the sum of these funds (£ 1.3 million) would be sufficient to finance these projects in the next five years.

#### *Support of the Co-operative Movement*

The mission believes that the co-operative movement, which has grown fast in recent years, can become an effective instrument for agricultural development. We therefore recommend that government assistance in the organization of co-operative societies and the training of officials be expanded as fast as personnel can be recruited. We propose that expenditures of the regional governments for these purposes be greatly increased in the next five years, and therefore have projected recurrent expenditures rising between 1955 and 1960 from £ 135,000 to £ 255,000. These figures include provision for strengthening the co-operative school in the Western Region, which should serve as a training center for officials from other regions as well.

However, we do not recommend that a large amount of financial assistance be given to co-operative societies because we think that

the growth of the co-operative movement depends primarily on membership co-operation and not on financial support from the outside. We propose only that the Eastern regional government make interest-free loans totalling £ 150,000 to the regional co-operative union for establishment of a co-operative bank, and that in the Northern Region and the Southern Cameroons the appropriations of the co-operative department include £ 5,000 per annum as assistance funds to co-operative societies and unions.

## II WATER RESOURCES<sup>5</sup>

Nigeria as a whole has ample water resources, though they are subject to great regional and seasonal variation. At present, however, the planning of major irrigation, flood control, navigation and hydroelectric schemes is hampered by the paucity of data on run-off, evaporation, river levels and river flow. What information exists is scattered among several agencies. To expand and centralize the collection of this information, vital to major water control projects, the mission recommends the establishment of a federal department of hydrology.

The department should collect detailed information about the behavior of Nigerian rivers and should hold this information ready for studies of flood control, irrigation and reclamation projects, as well as for navigation and hydroelectric schemes. It should establish a small laboratory for salt and silt analysis of water and for the study of simple models of water control projects. Establishment of the service would, we estimate, involve a capital cost of £ 120,000, with annual recurrent costs rising to £ 130,000 in 1960. The work of the department, proceeding simultaneously with the operation of small irrigation projects by the Northern agricultural department, should after a few years provide a body of data and experience which can be used in undertaking larger projects of benefit to agriculture.

Because of the importance of the Niger and Benue rivers, not only for agricultural schemes but also for navigation, the collection of data about them is of special urgency. Since the proposed department of hydrology cannot be organized soon enough to undertake survey of

<sup>5</sup> See Technical Report No. 12.

these rivers in the near future, we endorse the plan to have the work performed by outside engineering consultants. Work on the Niger and Benue should be conducted in close consultation with authorities in the French territories through which the rivers pass. We therefore recommend establishment of a Niger basin permanent advisory committee, composed of representatives of interested governments, which would collect and co-ordinate information relating to the basin, arrange for exchange of river data, co-ordinate surveys and evaluate proposed projects.

### III INDUSTRY<sup>6</sup>

Interest in industrialization is intense and articulate. Many Nigerian leaders are hopeful that industrial expansion can be brought about quickly and that through it there can be an early and marked improvement in living standards. The mission believes that these hopes over-emphasize the contribution which industry can make in the foreseeable future and that it would be unwise to count on more than a modest expansion in the next few years. Nevertheless, a balanced development program requires that every encouragement be given to the establishment of industry. Nigeria has the manpower, raw materials, capital and markets for a greater volume of industrial activity than exists today.

Our principal recommendations in the industrial sphere are for measures by which the federal and regional governments and the public development agencies can help to remove the obstacles to industrial development. The low level of industrial production is the result of a combination of factors, some of which have been discussed in Chapter 2. Although the labor supply is ample, the number of skilled workmen is still small. There is a lack of technological and managerial experience and little is known about the industrial possibilities of many Nigerian products. Moreover, successful Nigerian businessmen are reluctant to invest in industry as contrasted to trade, which promises quicker rewards, while the smaller businessman generally does not possess sufficient capital to start an enterprise by

<sup>6</sup> See Technical Report No. 13.

himself. In addition, the development agencies have not always given sufficient support to private entrepreneurial initiative and they have sometimes discouraged the entry of foreign capital by their cautious attitude, reflecting the uncertainty of Nigerian political leaders about the extent to which they wish foreign capital to participate in industrial expansion.

The main objective of industrial development policy should be to encourage the establishment of a variety of small and medium-sized enterprises. This variety of venture is necessary to build the supply of skills and of management and business experience which can form the basis of a later, more impressive industrial expansion. However, it may soon be practicable for a few larger projects, such as a cement plant and textile mills, to be undertaken.

To foster industrial growth in general, we make the following recommendations:

1. *Technical and Management Assistance.* We recommend that government assistance be given to private industrial enterprises on problems of industrial technology and management. In the past the central Department of Commerce and Industries has given much useful help in this direction. We propose that in the future this assistance be provided by "industrial development officers" placed with each of the regional development corporations. We estimate that the annual cost of the services of these officers will rise to £ 300,000 by 1960, to be shared equally by the development corporations and the regional governments.<sup>7</sup>

2. *Training of Skilled Manpower.* It is the mission's opinion that most of the skilled workmen required by industry will have to be trained on the job. Experience of large enterprises has shown that Nigerians, when properly trained and supervised, make good industrial workers. More formal preliminary training is required for supervisory personnel. As discussed elsewhere in this chapter, we recommend for this purpose the strengthening and expansion of technical schools.

3. *Technical Research.* We propose the creation of an institute of applied technical research which would build up staff, labora-

<sup>7</sup> For our recommendations as to financial assistance to be offered by the development corporation, see Chapter 4, p. 94.

tories and experimental plant to conduct research into the industrial uses of a variety of products. In exploring the possibilities of new industries, operating pilot plants, improving local crafts and encouraging wider use of local materials, Nigerian authorities have been drawn increasingly into applied technical research and experimental development. We recommend that these activities be brought together in a specialized institution.

The institute, for which we recommend an expendable endowment of £ 480,000 from the federal government, for use over the next five years, should undertake studies requested by government agencies or private firms on a reimbursable basis. Among the research projects which the institute might undertake are studies of the commercial properties of Nigerian woods; extraction of local tannins, gums, resins, dyes and drugs; commercial processing of shea butter and various lesser oil-seeds; groundnut and palm by-products; local extenders for wheat flour; mechanized gari production; improved processing of local fibers; possible uses for coastal bituminous sands; analysis and commercial use of various Nigerian brines; and beneficiation of Enugu coal.

4. *Aid to Pioneer Industries.* We think that the Aid to Pioneer Industries Ordinance can be a useful device for attracting both domestic and foreign capital to Nigerian industry, if liberally interpreted. Under this legislation, enacted in 1952, enterprises in fields of industry not established in Nigeria, or not sufficiently represented there, may qualify for tax relief. Eligibility for this relief is dependent on a finding that encouragement of the industry and of the particular enterprise is "expedient in the public interest." By the end of 1953 no tax relief had yet been granted. At the present stage of Nigerian development, the objective should be to promote the establishment of all types of industry; there is no need to be concerned about overproduction in any field. We therefore recommend that expediency in the public interest be interpreted to permit the benefits of the ordinance to be extended to virtually any new industrial venture. The cost to the government, at most the loss of five years' income tax, is in our view not too high a price to pay if industrial expansion is desired.

5. *Industrial Estates.* To encourage and assist prospective entre-

preneurs, especially Nigerians, we recommend the establishment by the regional development corporations of "industrial estates," factory buildings to be rented out to small industries and workshops. We suggest that the Northern, Western and Eastern corporations each set aside £ 250,000 for this purpose.

6. *Industrial Sites.* Good industrial sites are hard to obtain in Nigeria. Under existing land laws foreign, and in some circumstances Nigerian, enterprise requires government permission to occupy a site. We recommend that this permission be freely granted. We also recommend that communities take the initiative by offering suitable sites to industry.

While we believe that government policy should emphasize the support and encouragement of private endeavor, we recognize that under present Nigerian conditions government and the public agencies may in some instances have to take the initiative in establishing industrial projects. Such a course can accelerate industrial development, provided two general principles are observed. First, the venture should be operated by experienced management, which in the case of large enterprises would have to be a foreign manufacturer, preferably one willing to contribute to the capital. Second, government should stand ready at all times to sell all or part of its interest to private investors.

We believe that there are good possibilities for development in a number of industrial fields such as cement, textiles, and oilseed and food processing; a number of projects are being actively considered by potential foreign investors. In Technical Report No. 13 will be found comments on specific projects and industries. It may be necessary that the government contribute toward the financing of some of the enterprises. £ 1.2 million has already been appropriated by the central government for a proposed cement plant, for example. Since no specific projects have been developed beyond the preliminary stage and since it is not possible to forecast what proportion of the capital may be provided by participating private interests, we are unable to estimate the amount of investment in industrial projects to be made by the development corporations in the next five years. We recommend in Chapter 4, however, that a total of £ 12 million be made available to them by the various governments. These funds, together

with existing resources, should enable them to engage in a substantial volume of industrial financing, in addition to the financing of agricultural projects recommended in the preceding section.

We have projected recurrent government expenditures on industrial promotion to rise from just under £ 200,000 in 1952-53 to £ 360,000 in 1959-60. Capital expenditure over the five years 1955-60 is estimated at £ 6.75 million, primarily for grants to the development corporations and for the endowment of the technical research institute.

#### IV MINING<sup>s</sup>

The Plateau area of Nigeria produces large quantities of tin and nearly all the world's output of columbite, a metal used increasingly in the manufacture of alloys capable of resisting high temperature. The high price of columbite, most of which is won in conjunction with tin, has sustained the prosperity of the mining companies even in times of falling tin prices. Nigeria is now the world's sixth largest producer of tin, producing about 8,000 tons of metallic tin annually; annual production of columbite is about 1,400 tons.

The mission has no major recommendations to make with respect to the tin mining industry. It believes, however, that liaison between government and the mining industry would be considerably strengthened by more frequent meetings between government and both European and African mining associations. Among the current problems which could be usefully discussed at these meetings is the possibility of replacing the system of crop compensation for African occupants of mining lands.

Coal deposits at Enugu in the Eastern Region are worked by the Nigerian Coal Corporation, a statutory corporation. The coal is a non-coking variety. Present output is about 600,000 tons a year, roughly two-thirds of which is consumed by the railway. The mission's recommendation that the railway be gradually dieselized will not affect its coal consumption during the next decade for reasons explained in Technical Report No. 16.

The condition of the Enugu coal mining industry is not good: production costs are high, productivity is declining in two of the three

<sup>s</sup> See Technical Report No. 14.

mines worked, the coal being marketed is inferior in quality and labor relations have been difficult. All these factors have contributed to the loss of once-important export markets. Reduced costs are essential to the future of the industry. We believe that more efficient output could be obtained by revising the wage structure to offer an incentive for higher productivity. As an initial step toward more efficient operation, we strongly advise that the new management arrange for a careful and detailed time-cost study by outside consultants. We have incorporated in our financial projections the Coal Corporation's estimate of £ 385,000 for capital expenditure from 1955 to 1960. We think, however, that final decisions on new capital projects in the collieries should be postponed until the study reveals what organizational and operating changes are necessary.

There are substantial deposits of lignite in the Western Region, near Asaba on the Niger. The feasibility of their commercial development has not yet been determined, and should be explored as a logical sequence to the investigations recently completed by the Geological Survey.

Promising deposits of lead and zinc are found in the Eastern Region. British and American mining groups explored these fields after the war, without conclusive results. We think that these deposits are worthy of further exploration and we suggest that if private groups willing to finance the whole cost of further exploration cannot be found, the government might assume a share of the cost and perhaps eventually even a share of the cost of exploitation. £ 350,000 has already been appropriated for this purpose; this sum will probably be more than ample.

There are a few other minerals which show some promise of being commercially useful. Two low-grade iron deposits (near Lokoja in the Northern Region and near Enugu in the Eastern Region) have been investigated by the Geological Survey. The next step, we think, is experimentation to determine the feasibility of smelting the ores with Enugu coal. When exploration has proceeded further, the possibility of interesting the steel industries of the United Kingdom and of other countries should be investigated.

Hopes of Nigeria's becoming a petroleum producer were encouraged in 1953 when oil was found in the Eastern Region by the Shell-D'Arcy Petroleum Development Company of Nigeria, Ltd., which has been

drilling for oil in the southern part of the country. The oil was not of a commercial grade but exploration is continuing.

The mission believes that there are a number of ways in which the government might encourage private mining activities in Nigeria. In particular, we recommend an expansion of survey and geological survey services and of activities of the Department of Mines. There is a dearth of accurate topographical maps, one effect of which is to slow down routine mapping by the Geological Survey. We agree with the proposals of the Inspector-General of Surveys to accelerate survey work. One great problem is likely to be the continuing difficulty of recruiting experienced surveyors. In Chapter 4 we make recommendations for intensifying recruitment of technical personnel.

We propose that the Geological Survey be enlarged by expanding the engineering, groundwater and drilling sections and by including a geophysical section. Again, the main difficulty in the way of this expansion will be staff recruitment. The Department of Mines should be enlarged by the addition of a mining section to engage in the exploration of promising mineral occurrences, with the object of interesting private investors in their exploitation.

We recommend that these expanded government services, geological survey and mining administration and exploration, be given recurrent appropriations rising to about £ 250,000 a year by 1960. Capital expenditure by government in the next five years would be about £ 500,000, including loans to the Coal Corporation.

#### v ELECTRIC POWER<sup>9</sup>

Although the 165.2 million kWh of electric power generated in 1952-53 was double the output in 1944 and four times that in 1941, it amounted to only 5 kWh per capita. By 1960 the level of consumption will still not be high, even for a country in an early stage of development, and consumers will be scattered throughout the country.

Except for the output of a private power company supplying the tin mines (which consume 37% of all power generated in Nigeria), and for small amounts generated by industrial enterprises for their

<sup>9</sup> See Technical Report No. 15.

own use, all Nigeria's electricity is supplied by the Electricity Corporation of Nigeria (ECN), a statutory corporation, established in 1951 to operate publicly-owned power undertakings. Private power generation is permitted only under license, issued only when ECN is unable to provide electricity.

In the expectation that the demand for power in towns now supplied by ECN will increase by an average of 15% per annum, we estimate the cost of expansion during 1955-60 at about £ 7 million, plus £ 1.4 million residual expenditure on projects now in hand. On the assumption that ECN will continue to raise its capital by borrowing from the federal government, we have included these amounts in our projections of government expenditure. In the first two years, new expenditure can be relatively small, for the stations now under construction at Lagos and at Oji River (between Enugu and Onitsha) will provide more power than will be required at those points for several years to come. Beginning in 1957, expenditure should be increased to ensure that a further extension of the station at Lagos will be in service in 1961. Much of the balance will need to be expended at Ibadan and Kano, where demand from small industries is likely to grow.

ECN's installations are small in size and widely separated. Only one of ECN's generating plants has an installed capacity of more than 5,000 kW. Power stations are not interconnected to any significant extent. Fifty-five per cent of ECN's sales of power are at Lagos, 12% at Enugu and the balance is scattered among 18 towns. Most of ECN's output is from small steam or diesel plants, some old and inefficient.

Our program provides for expansion of power supply by ECN in the next few years only for the purpose of meeting the demands of the smaller industrial, commercial and domestic consumers in areas already supplied with power. ECN's present policy is to decline to extend power supply to new areas; with this policy the mission agrees. Until present installations can be made to operate economically, it would be unwise to diffuse effort among new and untried ventures. Applications from industrial enterprises, both large and small, for licenses to generate power for their own use should be liberally granted. At the present low level of consumption, it will generally be more economical for the larger factories to be provided with their

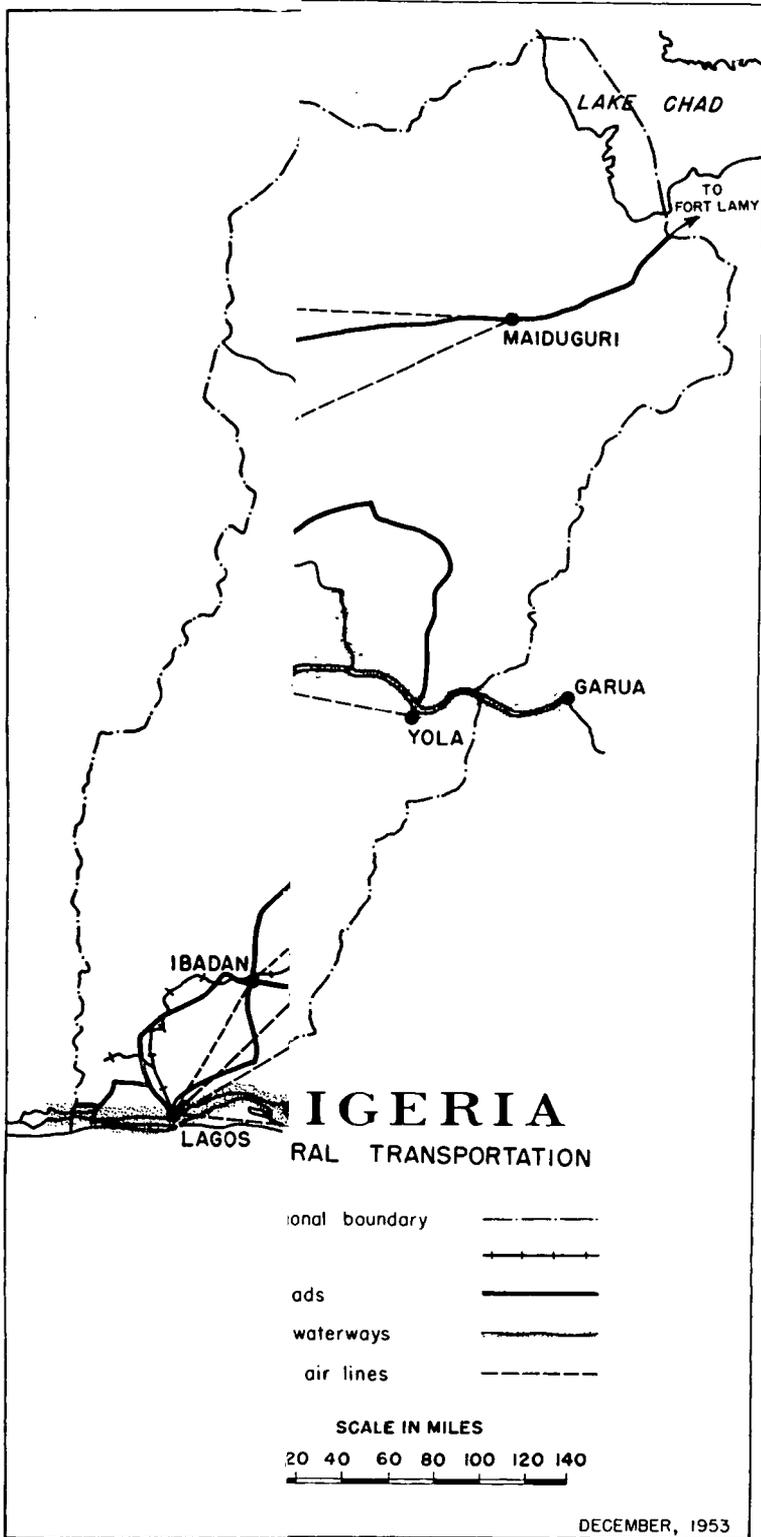
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own power plants than for ECN abruptly to expand an installation to meet the needs of a single consumer.

The management of ECN has been considering several large development projects which appear to the mission to be overambitious at this stage. One is the construction of a large steam station located near the Asaba lignite deposits on the Niger, which could supply power to Lagos and the towns of the West over a 300-mile, 220 kV line. We believe that the cost of transmitting the small amounts of power likely to be required would be prohibitive for many years. A proposal to interconnect Lagos and Ibadan is subject to the same objection. ECN has also spent much time searching for suitable sites for hydroelectric development. The management has spoken of the possibility of developing the hydroelectric potential of the Southern Cameroons to feed an industrial expansion in the French Cameroons and has also been investigating the possibility of harnessing the Niger near Jebba. It is the mission's belief that many more years of flow measurement and survey will be required before major hydroelectric schemes can be undertaken without undue risk. This work should be taken over by the proposed department of hydrology (see p. 41).

In addition to problems relating to future demand, ECN has unsolved operating problems, which have been reflected in large deficits for each year since it was established. It would be desirable for the independent study of ECN's affairs, about to be undertaken, to devote particular attention to the problem of costs. Some of the elements contributing to its high operating costs are beyond ECN's control, but in other respects we think the Corporation can effect economies. A prerequisite to solving this problem is to remedy accounting deficiencies, and, in particular, to prepare adequate cost analyses. In addition, the organization of the Corporation should be examined, to ascertain how the heavy expenses of the London headquarters and regional offices can be reduced.

Rates are not high compared to those of other underdeveloped countries. It may be necessary to increase them in order to stop the drain on public funds resulting from government financing of the deficit. In the long run, however, ECN must reduce its costs.





VI TRANSPORTATION AND COMMUNICATIONS<sup>10</sup>

Except in the northeast and the Cameroons, Nigeria's transportation system (shown on Map 1) is reasonably adequate in the sense that there are already extensive facilities and lines of communication. It is not adequate in the sense of being able to move, promptly and at reasonable cost, the present volume of traffic, let alone the increase anticipated during 1955-60.

The volume of present traffic cannot be estimated with precision, for there are no statistics for road traffic and the figures for water transportation are incomplete. Our estimate of past and present distribution of traffic among the various forms of transportation is shown in Table 2.

TABLE 2 Estimated Distribution of Traffic

*(Million ton-miles)*

	1938-39		1948-49		1952-53	
		%		%		%
Rail .....	315	66	658	63	827	61
Road .....	100	21	300	29	400	30
Rivers and creeks <sup>1</sup> .....	60	13	85	8	120	9
Air .....	—	—	—	—	0.2	—
Total .....	475	100	1,043	100	1,347	100

<sup>1</sup> It is estimated that 80% of this traffic is carried on the Niger and Benue Rivers.

Improved transport facilities will have an immediately beneficial effect on the Nigerian economy and are essential for its further development. The mission therefore assigns them a high priority.

The objective should be a countrywide system, adequate the year round to handle the traffic at reasonable cost. We have given first attention to the provision of facilities which are now urgently needed to round out the Nigerian transportation system. We have regarded facilities which would parallel existing ones as less urgent, without intending to suggest that such paralleling might not be desirable at some future time.

For the transport portion of the development program, we propose capital expenditure totalling £ 37.9 million and recurrent expenditure

<sup>10</sup> See Technical Reports Nos. 16-20.

rising from £ 4.2 million in 1955-56 to £ 5.38 million in 1959-60, as compared to £ 2.8 million in 1952-53.

#### A RAILWAY <sup>11</sup>

The railway is just beginning to recover from serious postwar difficulties. Material shortages, labor troubles and greatly lowered efficiency, particularly in the locomotive workshops, so affected carrying capacity as to create the threat of a serious obstacle to the country's development. This was most dramatically illustrated by the backlog of 185,000 tons of groundnuts piled up in tarpaulin-covered pyramids at northern stations in November 1953. Delivery of new engines and improved operating efficiency should make it possible, however, to clear this backlog by the end of 1955.

We estimate a rise in traffic from 1,150 million ton-miles in 1955-56 to 1,460 million ton-miles in 1959-60. This projected increase of 5% per annum is in line with our expectation that exports of groundnuts and cotton will rise substantially, that the transport of domestic food-stuffs, including livestock, will increase and that large quantities of motor fuel will move north to satisfy the growing requirements of road transportation.<sup>12</sup>

The principal problems to be solved during 1955-60 are how to meet these anticipated heavy traffic increases and to reduce rapidly mounting operating costs. These problems are aggravated by the fact that while northbound and southbound traffic were well balanced in 1952-53, there will be, we estimate, an annual preponderance of southbound traffic of about 230 million ton-miles between 1955 and 1960.

We think these problems can and should be solved by employing more economical motive power and making maximum use of heavy trains. This will require more powerful engines, heavier track and more rolling stock than Nigeria has now. We do not believe, however, that it will be necessary to double-track any part of the system.

At present, the railway is entirely steam-powered. We recommend that for more efficient and economical operation, steam traction should gradually be replaced by diesel electric traction starting in the North.

<sup>11</sup> See Technical Report No. 16.

<sup>12</sup> See Technical Reports Nos. 7, 8 and 17.

Basing our calculations on the experience of other African countries, we estimate that aggregate savings of nearly 50% can be realized on expenditures for fuel, water and engine operation and maintenance. Ten 750 h.p. diesel engines have already been ordered for 1955 delivery. The mission recommends the purchase of additional diesel equipment to meet 1955-60 motive power needs, at an estimated cost of £ 774,000 (13 750 h.p. engines for the main line, 10 300-400 h.p. engines for branches and shunting and five railcars). A program of gradual dieselization such as we have in mind will not affect the market for Enugu coal for another 10 years, because the stock of coal-burning locomotives will continue in service and will be fully utilized. For the heavily-travelled Enugu-Port Harcourt section, a survey should be made to determine the feasibility of electric traction over the long term, assuming that a general electrification program is instituted for that area.

About 800 30-ton freight cars of various types are needed, for which we have allocated £ 2 million. It has been typical of the past operations that there has been, in stock or on order, equipment adequate to meet minimum needs only. As we foresee a long-term rise in traffic demand, we find no justification for such a policy. Equipment shortages should be avoided even at the risk of temporary surpluses.

As for track, the main lines are for the most part laid with only 60 lb./yd. rail. As renewals become necessary, these lines should be relaid with 80 lb./yd. track, with which only the Lagos-Jebba section is now equipped. Renewal of the Port Harcourt-Enugu section, already planned, should be undertaken promptly so that it will be ready to handle the increased traffic which may be expected after completion of the proposed wharf extension at Port Harcourt.<sup>13</sup> The railway has planned to re-lay the narrow-gauge Bauchi Light Railway between Zaria and Jos. Since this line carries very light traffic, which is unlikely to increase substantially, and since it operates at a deficit, we recommend that it be closed and replaced by a road transport service.

The lack of transport facilities is impeding the development of the northeast, which has a considerable agricultural potential. There is also a need for improved facilities to serve the transit traffic with the French Chad territory. These needs could be met either by extending

<sup>13</sup> See p. 65.

the railway to Maiduguri or by tarring the Jos-Maiduguri road for two lanes. Three possible routes for a railway extension have been proposed. One of them, via Zaria-Rahama, if modified to pass through Bauchi, would seem to us to have merit. In addition we suggest consideration of a route via Jos-Bauchi. We recommend a survey of these routes, over both of which connections could be made with the eastern main line. When the relative advantages of these two routes are known and can be compared with the advantages of the road, either the road or the rail project should be undertaken promptly.

We think the only railway extension immediately justified is one of 40 miles from Nguru to Gashua, to give better service to that part of the Northern Region where no all-weather road exists. The extension could be laid with track taken up elsewhere; no additional motive power or rolling stock would be required. We have allocated £ 400,000 for this extension.

Total capital expenditures recommended by the mission (including, in addition to the items specifically discussed, expenditures on buildings, stations, workshops, machinery, etc.) amount to £ 9 million. We estimate that £ 5.4 million of this amount can be met from the railway's profits; we have projected government loans for the balance.

On the basis of our traffic estimates, and on the assumption that the efficiency of operation and maintenance will continue to improve, we foresee a substantial margin of profit over the period 1955-60. We suggest, therefore, that the railway consider the possibility of lowering rates, to aid the country's production and trade. A review of the rate structure should also take account of increasing road competition.

## B ROADS <sup>14</sup>

The Nigerian road system was estimated in 1953 at 29,000 miles, approximately one mile of road per 14 square miles, a high road density for Africa. But some of this mileage consists of mere tracks and much of it is not passable during the rainy seasons. Only 1,900 miles of road were bituminous, over half of them in the West. The number of vehicles in operation at the end of 1953 was 23,000, about half commercial. We estimate that the number of vehicles will increase

<sup>14</sup> See Technical Report No. 17.

by 15% per year, so that by 1960 approximately 60,000 vehicles will be on the roads. There is a need for heavy trailer-trucks for long-distance traffic but at present they are permitted to operate only between Jos, Maiduguri and Fort Lamy in the dry season.

Administratively, Nigerian roads are classified as Trunk Roads A, financed by the central government; Trunk Roads B, financed by the regions; and local roads, which are the responsibility of various local governments and authorities. An adequate network of about 6,000 miles of Trunk Roads A was planned in 1946. We have allocated £ 2 million for its completion during 1955-60, but we suggest that the projected construction of about 200 miles of the Bamenda-Yola road be deferred in view of the anticipated completion of the connection via Takum.

The emphasis of the 1955-60 program should be on adapting the Trunk Roads A system to denser and heavier traffic. This means widening, straightening and tarring roads, and reinforcing and replacing prewar bridges, designed for an eight-ton load only. We propose a number of arteries for heavy-weight traffic aggregating 1,700 miles, limited to the hinterland of the ports, an east-west connection and the area beyond the railway line in the North. They should be two-lane bituminous roads and should have bridges capable of carrying 12 units B.S.,<sup>15</sup> permitting heavy trailer-truck traffic. The many short single-lane bridges constitute a serious traffic hazard; they should be widened to two lanes.

Since we think that for the time being the railway should remain the principal heavy-traffic connection between Lagos and the North, we do not recommend that the Lagos-Kano road be brought up to the above specifications. Pending a decision on the alternatives of rail versus road transport for Bornu Province, the Jos-Maiduguri road should be tarred for one lane only.

We have allocated £ 10.5 million for the heavy-weight traffic arteries program and £ 1.5 million for improvement of the Lagos road network, consisting of a four-lane road connecting Carter Bridge with the port and the industrial area of Apapa, and a connection running to the west of the city between Apapa and Ikeja airport.

We recommend an extension of the Trunk Roads B mileage and

<sup>15</sup> British Standard.

tarring of all Southern Trunk Roads B. In the North, roads should be tarred at a lower traffic density than is now the rule. The 1960 goal for the North should be 5,000 miles of Trunk Roads B, of which 1,000 would be tarred. We estimate that capital expenditures by the regional governments would total £ 7.5 million for the five-year period.

The present poor quality of road surfaces is due in part to primitive work methods. We recommend that tarring be mechanized. Maintenance of earth roads, especially in the North, presents special problems. There is no doubt that mechanized maintenance could greatly improve the quality of the roads. However, before it is adopted for roads throughout the country, we recommend the experimental introduction of mechanized maintenance on one heavily travelled sector, to enable the authorities to become more familiar with the problems of organization and maintenance. At the same time manual maintenance should be improved, chiefly by better supervision.

The greatly increased road activities recommended for 1955-60 require, in our opinion, some organizational changes. At present, Trunk Roads A and B are the responsibility of the Public Works Department, which also performs a number of other tasks. We recommend separate road departments for the federal government and for the Northern Region. In the other regions, the regional public works departments will be able to give sufficient attention to road problems. We further recommend that the federal road department be placed under the jurisdiction of the Minister of Transport, to assure coordination of transport policy.

Capital expenditures for roads recommended by the mission total £ 25 million. Recurrent expenditure is projected to rise from £ 2.5 million in 1955-56 to £ 3.4 million in 1959-60 as against an estimated £ 2.2 million in 1953-54. A program of this magnitude will require not only intensified training of Nigerian staff and recruitment of expatriate staff, but also a much greater reliance on private contractors than has been customary heretofore. We recommend that the contracts to be let call for sufficient work and run for a sufficient period to be attractive to private contractors; international competitive bids should be invited.

new Lagos-Benin road and the Apapa Wharf extension have been in operation for a while.

We have allocated £ 5.8 million for ports and other marine improvements.

### *Inland Waterways*

Nigeria has an extensive inland waterways system. More than 1,000 miles of the Niger and its tributary the Benue are navigable for at least part of the year and a network of navigable creeks stretches from the western border of Nigeria to Opobo in the Eastern Region. Including other waterways, a total of 4,000 miles is in regular use.

Silting of the entrances of the huge Niger delta and the short period of navigability of much of the Niger and the Benue pose serious problems which until recently have not received the necessary attention. In 1953, however, an independent engineering survey of the delta was undertaken with the object of finding an entrance with a satisfactory and maintainable draught, to be followed in 1955 by a complete survey of the two rivers (see p. 49). Year-round navigation of the Niger is possible as far as Onitsha only; the railway terminus of Baro, a transshipment port for groundnuts, can be reached for eight months. The Benue is navigable up to Yola for only four months, while Garua in the French Cameroons can be reached for no more than 10 weeks. For this reason, the river transport companies find it uneconomical to expand their fleets to a size which could take care of all traffic, but new "push-tow" tugs, recently introduced, have increased the fleet's carrying capacity.

If the projected river basin study discloses the technical feasibility of major improvements, their economic justification should be judged in the light of the traffic outlook and of the possibility of co-ordinating the river improvements with irrigation schemes and the development of agricultural production in the Middle Belt.

For surveys of and improvements to inland waterways, £ 800,000 has been allocated in the mission's recommended program.

### *Organization*

The Nigeria Marine, a government department, is the Nigerian harbor authority. It is also responsible for inland waterways and has

C PORTS AND INLAND WATERWAYS<sup>16</sup>*Ports*

The nine Nigerian ports open to ocean-going vessels handled a total of 3.7 million tons of cargo in 1953, three-quarters of that total at Lagos and Port Harcourt. Over the past five years, cargo in foreign trade has increased by 50% in Lagos and by 80% in Port Harcourt, seriously straining these ports' resources and leading to costly delays.

A major program of extension and improvement of Apapa Wharf at Lagos is well under way. The planned annual capacity of 1.4 million tons should be adequate for the near future. Customs Wharf on Lagos Island is badly in need of repair, but as the volume of its traffic is likely to decrease in favor of Apapa, it may be advisable to close Customs Wharf and concentrate traffic at Apapa, which should then be further extended. We suggest that an estimate of the cost of rehabilitation be made but recommend that no extensive work be undertaken until a decision is reached as to the wharf's future.

Facilities at Port Harcourt, which are already inadequate to handle present traffic, face increased demands. The port and the eastern railway line are growing in importance as northeastern traffic grows. Major improvements to the port, including additional pier and lighterage berths and better road access, estimated to cost roughly £ 2 million, are being considered. These improvements are badly needed and we urge that the necessary preliminary surveys be made promptly so that the work can be begun in 1955.

The other ports, which serve a limited hinterland or are transshipment ports for river traffic, present no problem, with the exception of Sapele where traffic must use a ferry. To avoid this, it has been proposed to construct a port at Koko, some 30 miles away, to which would be diverted all traffic except timber now using Sapele. We are not convinced that the proposal is economically justified and we urge that a careful comparative survey be made of the cost of building a port at Koko, together with housing, roads and power, and of constructing a wharf and warehouse on the river opposite Sapele. No final decision on either alternative should be taken until it can be seen what changes in volume and direction of traffic occur after the

<sup>16</sup> See Technical Report No. 18.

a number of other functions. A Ports Authority is to be set up to take over the Marine's harbor functions and to operate the publicly-owned wharves, now operated by the railway, by the Customs Department and by other agencies. Lagos and Port Harcourt will undoubtedly benefit from the unified and integrated port operations made possible by the new form of organization. The Marine's non-port functions will be exercised by a "Marine Department" within the Authority. In order to insure that this reorganization will not result in too little attention being paid to the inland waterways problems, we recommend the organization of a separate inland waterways section of the Marine Department as soon as possible.

#### D CIVIL AVIATION <sup>17</sup>

Nigerian air transport is operated by the West African Airways Corporation (WAAC), an interterritorial statutory corporation serving Nigeria, the Gold Coast, Sierra Leone and the Gambia. There are 28 airports and landing grounds in Nigeria, including the international airports of Lagos and Kano, the latter being an important transit port. We see no need for additional airports. We do recommend improvements necessary to adapt all runways to use by the B-170 planes of the WAAC fleet, and the extension of runway lighting, now installed only at Kano and Lagos, to other airports. A new terminal is planned for Kano. At other terminals only minor improvements are needed. Radio equipment will be required to extend and improve the communications system.

We estimate the cost of the foregoing improvements at £ 1.4 million.

In April 1954, WAAC substantially reorganized its Nigerian operations in an effort to reduce its deficit, which has grown annually despite steady increases in passenger and freight traffic. Cost of operation has been high, due in part to low aircraft utilization (because of short flight stages and lack of runway lighting), but in greater measure to the uneconomical use of small planes for most of the first-class services. The success of its second-class services, operated with larger planes, led WAAC in April 1954 to institute a single-class service on its main lines, operated at reduced frequencies by 45-seater B-170's. The fare of 6d. per passenger mile is slightly above the

<sup>17</sup> See Technical Report No. 19.

former second-class rate. We think that this plan should reduce operating and maintenance costs and should soon result in self-supporting main lines which will offer more frequent service as traffic expands. But we also think that consideration might be given to the feasibility of increasing revenue by offering some more comfortable first-class seats on these planes at higher rates. The northern secondary lines will not be self-supporting for some time to come.

WAAC deficits are made up by contributions of the four territorial governments, Nigeria customarily contributing from 70% to 75%. We have allocated £ 750,000 for Nigeria's contribution to WAAC's deficit over 1955-60. To permit a more realistic allocation of the deficit, we recommend that separate operating accounts be kept for intercolonial, Nigerian main, and Nigerian secondary lines.

For fleet expansion we have allocated a token £ 200,000.

## E COMMUNICATIONS<sup>18</sup>

Nigeria's communications services are at the moment inefficient and slow. The postal service is handicapped by a shortage of staff and plans for extending the service by building new post offices have been held up because the Public Works Department is occupied with more urgent work. Urban telephone service has been improving but long-distance telephone service is erratic and does not connect all large centers. The Posts and Telegraphs Department has undertaken a program of expansion of the VHF (very high frequency) radio-telephone system, which should result in marked improvements. Telegraph service is very poor; we think this is largely because of a system of overtime wage payments that acts as a deterrent to efficiency.

The postal service is now being surveyed by experts from the British Post Office and it is to be hoped that the survey will lead to a substantial improvement in service. The staff position can be bettered only by energetic training and recruitment campaigns. The building program could be speeded up by turning large portions of it over to private contractors. Recruitment of additional skilled maintenance linesmen and a revision of the wage system would result in improved telegraph service. These steps should be taken as soon as pos-

<sup>18</sup> See Technical Report No. 20.

sible, for Nigeria's economic expansion will demand much more efficient telecommunications than now exist.

The Nigerian Broadcasting Service has an ambitious expansion program for the next three years. Although the mission did not examine the program in detail, it feels that the plan should be stretched out over the five years to 1960 at least, to avoid competing with other claims for skilled manpower.

Expansion of telecommunications and the postal service will require capital expenditure of £ 3.7 million in the five years 1955-60. The capital cost of the broadcasting program is £ 1.1 million. Recurrent expenditure for the operation of all these services will rise from £ 1.5 million in 1952-53 to £ 3.4 million in 1959-60. The mission did not draw up a separate detailed communications program; our cost estimates are based on proposals of the government departments concerned.

## VII EDUCATION<sup>19</sup>

Education in Nigeria has been undergoing remarkable expansion. Within the last two years both the Eastern and Western Regions have formulated plans for the early introduction of universal primary education and a rapid advance at the primary level is also being proposed in the North. Secondary and higher education are likewise expanding. The country's first technical schools are in the process of development.

The intense and widespread desire in Nigeria for education is encouraging. Broadly-based education is an essential in providing the manpower for economic development. In the past, economic growth has been largely left to the efforts of expatriate entrepreneurs, administrators and technicians; the time has come to increase as speedily as possible the number of adequately trained Nigerians able effectively to contribute to that growth.

However, the pace of educational advance and the formulation of a financial program for the period ahead are affected by a variety of factors, including popular interest in education, financial resources, the extent of organizational and managerial ability and, most impor-

<sup>19</sup> See Technical Report No. 21.

tant, the number of trained teachers available. In view of the limiting effect of some of these factors, the mission doubts whether all of the currently planned educational programs can be accomplished as quickly as is desired. On the other hand, there are areas in which the mission feels that greater progress could be made.

### *Primary Education*

It is estimated that at the beginning of 1953 only 20–25% of Nigeria's five million children between the ages of 7 and 14 were in school: about two out of five in the East, one out of three in the West, one out of four in the Southern Cameroons and one out of 20 in the North.

The two most important limitations on progress toward universal primary education will be the rate at which trained teachers can be supplied and the magnitude of recurrent costs in relation to the present revenue levels. Our financial projections are based on our estimate that enrollment can increase at a rate of 15% per year in the West, 10% in the North, 8% in the Southern Cameroons and 6% in the East. These rates mean a faster growth than heretofore. The West has set 1959 as the date by which all children of school age will be in primary school. Taking into account our estimate of a 15% annual growth, it seems improbable to the mission that the target can be reached before 1962.

These rates of expansion are as high as the availability of trained teachers will allow. There are now in Nigeria some 42,000 teachers of whom less than 14,000 have had specialized teacher training; the remainder have not received an education beyond the first eight or even six years. In 1953, training centers produced only about 1,800 new teachers, to fill new posts and to serve as replacements.

Programs now under way in all regions will almost double the output of trained teachers by 1958; we would favor additional expansion in the North and the East. In the East and in the Southern Cameroons there should also be an effort to increase the present very low ratio of trained teachers to students. Every effort should be made to make teaching as a career more attractive and to reduce the "wastage" of trained teachers who leave the profession. To secure qualified staff for the teacher-training centers, the training departments at the

Nigerian College of Arts and at the institute of education of the University College, proposed below, should be developed promptly.

### *Secondary Education*

Only 20,300 are enrolled in general secondary schools compared to over one million now in primary schools, although secondary education is the basic preparation for most responsible jobs and is mandatory for any type of professional training.

A doubling of the secondary school enrollment by 1960 would be a desirable target but we doubt its feasibility because of the difficulty of obtaining qualified teachers. We have therefore based our projections on a 10% annual increase, except in the North where the dearth of secondary schools necessitates an extra effort and where we have projected an annual increase of 15%.

Secondary school instruction is not now geared to the needs of the Nigerian student body and should be reoriented accordingly. Much has already been accomplished in this direction in the North but there is in the East and West a great deal of emphasis on the pattern of the English grammar school and on preparation for the Cambridge School Certificate examination. More emphasis should be placed on chemistry, biology and physics (preparatory to training in medicine, health and nutrition), agriculture and handicrafts, and on such commercial and clerical subjects as bookkeeping, commercial law, shorthand and typing.

Facilities for the training of secondary school teachers are extremely limited. If the present dependence on expatriate staff is to be lessened, programs will have to be instituted or enlarged at the Nigerian College of Arts, Science and Technology and at the University College.

### *Technical Education*

Nigeria's 10-year plan for development and welfare has given a central place to training in technical skills. As a result, a program of technical education is now being developed in technical institutes, trade centers and handicraft centers in every region.

The most advanced technical institute is at Yaba, near Lagos, which offers "senior" courses in electrical, mechanical and civil engineering, "junior" courses in subprofessional engineering, drafting, commerce, printing and woodworking, and teacher training in handicrafts, as well as shortened and part-time courses. These programs are highly effective. It is to be hoped that the similar institutes now being developed at Enugu and Kaduna will be in full operation soon. Business and industry have been co-operating with the schools in providing supplementary training; there should be more of these arrangements.

The mission recommends that the seven trade centers now being established should be reorganized and expanded. Instead of producing a small number of skilled workmen, the centers should aim at providing the kind of training which will enable the students eventually to hold supervisory positions. We suggest that the five-year course begin with two years of general education and that the following three years of specialized training include a year of on-the-job experience in industry. The handicraft centers and the home craft centers have been most beneficial and we suggest that additional centers be set up all over the country.

But technical training programs in schools, by their nature, cannot be expected to provide the type of skilled and semi-skilled workers in the mechanical and industrial trades who will be needed in increasing number as Nigeria's development proceeds. The mission believes that the most effective way of producing the required manipulative skills will be through training on the job—training within industry—as distinguished from instruction at organized trade schools. Every opportunity should be taken to encourage the efforts of government agencies, private industry and organized labor to this end.

### *Higher Education*

The establishment of the University College, Ibadan, was an important step forward but Nigeria needs many times more college graduates than even the most optimistic plans could provide. Therefore we recommend that every effort be made to increase enrollment at the University, presently around 400, as quickly as possible. Added enrollment would also reduce the present high operating cost per student.

At the same time the University College should offer a greater variety of courses. We recommend that an institute of education be established at the University to offer postgraduate study in education, that the faculty of agriculture be strengthened and a course in agricultural engineering be given, that faculties of forestry and veterinary medicine be established and that courses in applied economics be added to the curriculum.

The Nigerian College of Arts, Science and Technology is a federal government institution with three branches, one in each region. It is designed to meet the need for a kind of higher education not normally offered by a university. The mission believes that it would be advantageous to divide the College into three parts and to vest operating responsibility in the regional governments, with the federal government contributing to the running expenses and assuring the maintenance of minimum standards. We also have three specific suggestions: the agricultural schools now being operated by the agriculture departments of the Northern and Western Regions should be consolidated with the branches of the Nigerian College at Zaria and Ibadan; pharmacy courses should be added at all three branches; and the courses in bookkeeping and accounting should be expanded both in the regular program and by offering evening extension classes.

As the educational program grows, there will be a growing demand for scholarships; the cost of advanced education is high for Nigeria. The mission's projections allow for moderate expansion, 5% per year, in the funds to be made available for this purpose by the federal and regional governments. However, present policies for granting scholarships should be reviewed and in the future preference should be given as far as possible to students who will study in Nigeria rather than abroad.

#### *Cost and Financing of Educational Expansion*

The educational expansion which we have projected would involve a very large increase in annual recurrent expenditure by all levels of government: from £ 6.3 million in 1953-54 to over £ 14 million in 1959-60. In the last year 56% of the recurrent expenditure would be on primary schools. Total capital expenditure would be likely to approach £ 14 million over the five years 1955-60. Of this amount,

34% would be for primary schools, 23% for secondary schools, 15% for teacher training, 17% for technical education and 10% for higher education.

Broadly speaking, higher education should be financed by federal funds, secondary education by regional funds and primary education by local funds. The regions should, however, contribute substantially to primary schools, and to the regionalized branches of the Nigerian College. The mission urges particularly that the cost of primary education be financed to the greatest possible extent at the local level. In general, the greater the local responsibility for the cost of education the more genuine will be the community's interest in its schools. The mission wholeheartedly supports the policy statement of the government of the Eastern Region that the rate of progress in this field should depend on the willingness of local authorities to finance the cost of expansion. We also think that the system of "rates" adopted by those Eastern local authorities which have chosen to move rapidly ahead is the most practical device for raising the necessary revenue. However, the precise financing arrangements and in particular the importance of regional grants must of necessity vary according to the circumstances of each region.

#### *General Recommendations*

Finally, there are certain observations which apply broadly to Nigerian education and which have provided a basis for the mission's more specific recommendations set forth in Technical Report No. 21.

1. As the educational program develops, continuing thought and effort must be devoted to making instruction as beneficial to Nigerian students as possible. The closeness with which standards and practices developed in the United Kingdom have been followed in Nigeria can be a source both of pride and of concern—pride because standards have been high and concern lest courses and methods of instruction might be adapted too slowly to Nigerian needs.

2. The recent constitutional revision has placed squarely on regional and local governments the responsibility for organizing, financing and supervising primary and secondary education. The

mission agrees with this in principle, as long as it does not impair the maintenance of uniform standards which will assure basically sound education in all regions; these are best administered centrally. The mission would like to see the federal government carry out functions of inspection, including interregional co-ordination, research and the administration of a modest program of special financial assistance to the regions. The exercise of some of these functions may require the delegation of authority by the regions to the federal government.

3. The Christian Missions which pioneered in education in Nigeria are gradually being displaced as primary education becomes more and more a matter of public responsibility. We suggest that the Missions can still serve a useful purpose by providing instruction of a quality and with emphases and values which public institutions cannot always offer.

4. The education of women in Nigeria suffers by comparison with the opportunities for men. Educational opportunities should be expanded and diversified to provide proper training for teaching posts and for employment in industry and government.

#### VIII MEDICAL AND HEALTH SERVICES

The mission has formulated no detailed recommendations for medical and health services in Nigeria. It nevertheless attaches importance to their development, particularly of those services which can help to prevent disease. In this category are the plans now under consideration for a public sewerage system and for slum clearance projects in Lagos. We recommend slum clearance programs for Port Harcourt and Ibadan as well. In the case of federal expenditures on medical and health facilities, official proposals for expenditure have been incorporated in our projections. In the case of regional and local governments, we have made rough projections providing for a substantial rise in recurrent expenditure and for a moderate rise in capital expenditure. Our projections call for a rise in total recurrent expenditure on medical and health services from £ 3.6 million in 1952-53 to £ 7 million in 1959-60. Capital expenditure is projected to amount to £ 21 million during 1955-60. Of this, £ 5 million is for

Lagos sewerage, £ 4 million for Lagos slum clearance, £ 3 million for slum clearance in the Western Region, £ 1 million for slum clearance in the Eastern Region and the balance for hospitals (including expanded general hospital facilities for Lagos), dispensaries and small public health projects.

The mission attaches considerable importance to the attainment of higher nutritional standards through the production of higher-quality home-grown foods. Earlier reference is made to the need for research on soil, plant and animal production problems; such research will have an important bearing on the future elimination of disease, the availability of milk for children and an increased production of animal protein generally.

Public health improvement also calls for an expansion in the water supplies available in Nigerian towns and villages, and it is unfortunate that the provision of water supplies, both urban and rural, has recently had to be somewhat curtailed for lack of sufficient appropriations. We recommend that government expenditure on water resources<sup>20</sup> include £ 4.7 million capital expenditure between 1955 and 1960 on new urban water undertakings, much of which should be provided to local authorities as loans. In addition, the renewal and expansion of existing undertakings operated by the Public Works Department may require capital expenditure of £ 900,000. The recurrent cost of urban water undertakings would rise from about £ 140,000 in 1953-54 to about £ 350,000 in 1959-60.

There is also a need to continue providing new rural water supplies, especially in the North, where they are required not only for public health but also to make possible increased cattle production. The Northern Regional Public Works Department has been engaged in an extensive program of digging wells and, where the water is very far from the surface, drilling bore holes. We have projected continuing capital expenditure on this program, amounting to £ 3 million in five years. In the Eastern and Western Regions, we have allocated £ 880,000 for proposed capital expenditure on rural water supplies. Recurrent expenditure by the three regional governments would rise to £ 550,000 in 1959-60, from £ 260,000 in 1953-54.

Local authorities can also make a substantial contribution to im-

<sup>20</sup> See Technical Report No. 12.

provement of water supplies. We propose that their capital expenditure, exclusive of expenditure from loans from the regional governments, amount to not less than £ 650,000 between 1955 and 1960. In 1953-54 they spent about £ 90,000 for this purpose.

## IX THE PATTERN OF EXPENDITURE

The development program which we have outlined is summarized in Table 3. It proposes a rise in the expenditures of the various levels of government from £ 51 million in 1952-53 to just under £ 100 million in 1959-60.<sup>21</sup> Thus in six years public outlays would be almost doubled, while Nigeria's national income is not likely to rise by more than 20% in that period. From a relatively low 7.5% of the national income in 1952-53, government expenditure would mount to some 12% in 1959-60 on the basis of our projections. This figure is more in line with the level in other underdeveloped countries,<sup>22</sup> though much lower than that in developed ones. The mission believes this expansion to be fully warranted, for, as we have pointed out, the public services have been inadequate to serve the economic and social needs of the country.

As explained in Appendix C, the projections of Table 3 represent the mission's recommended expenditure program in the case of the sectors for which the mission has formulated detailed recommendations; for other sectors we have projected expenditures at a fixed rate of increase, in most cases 3% per annum. Annual projections of recurrent expenditures reflect the pace at which, in our opinion, positions can be filled and services expanded. Capital expenditures are shown in the years in which they are most likely to be incurred, although for this type of expenditure the five-year total is more significant than the annual figures.

Table 4 gives the percentage composition of actual and recommended public expenditure by main sectors for 1952-53, 1955-56 and

<sup>21</sup> Exclusive of the capital expenditures from nongovernment funds made by statutory corporations, which totalled £ 5 million in 1952-53; our projections provide for their spending some £ 6 million in 1959-60.

<sup>22</sup> In British Guiana the proportion has in recent years been 17%, in Burma 12%, in Ceylon 15%, in Chile 15% and in Colombia 11%.

TABLE 3 The Pattern of Public Expenditure

(Million £)

	Actual <sup>1</sup> 1952-53		Projections of Mission										Total 1955-60	
			1955-56		1956-57		1957-58		1958-59		1959-60			
	Recur- rent	Cap- ital	Recur- rent	Cap- ital	Recur- rent	Cap- ital	Recur- rent	Cap- ital	Recur- rent	Cap- ital	Recur- rent	Cap- ital	Recur- rent	Cap- ital
<b>Agriculture<sup>2</sup></b>														
Government .....	2.5	.4	4.0	2.0	4.4	1.4	4.9	2.6	5.3	3.3	5.7	3.1	24.2	12.4
Statutory corporations <sup>3</sup> .....	—	1.2	—	1.5	—	2.0	—	1.0	—	.8	—	1.5	—	6.8
<b>Industry, mining and power</b>														
Government .....	.5	2.1	.6	2.6	.6	.9	.7	3.0	.7	4.4	.7	4.9	3.2	15.8
Statutory corporations <sup>3</sup> .....	—	2.0	—	1.0	—	1.5	—	.5	—	.3	—	1.0	—	4.3
<b>Transportation<sup>4</sup></b>														
Government .....	2.8	4.9	4.2	5.5	4.5	6.1	4.8	8.5	5.1	8.7	5.4	9.2	23.9	37.9
Statutory corporations <sup>3</sup> .....	—	1.4	—	3.4	—	3.4	—	3.5	—	3.4	—	3.4	—	17.1
Telecommunications .....	1.5	.6	2.2	1.0	2.5	1.0	2.7	.9	3.0	1.0	3.4	1.0	13.8	4.8
Water supplies .....	.4	1.2	.7	1.4	.8	1.8	.9	2.1	.9	2.6	1.0	2.7	4.3	10.6
Miscellaneous public works .....	3.6	2.9	3.4	3.1	3.6	3.3	3.8	3.5	4.0	3.5	4.2	3.6	19.0	16.9
Education .....	5.3	3.1	9.4	3.0	10.5	3.1	11.7	2.6	12.9	2.4	14.2	2.4	58.8	13.6
Medical and public health services .....	3.6	.6	5.2	1.7	5.5	2.5	5.9	3.9	6.3	6.2	6.8	7.1	29.7	21.3
<b>Administration, security, survey and miscellaneous</b>														
Government .....	14.2	.8	18.6	1.2	19.2	1.2	19.7	1.1	20.3	1.1	20.8	1.1	98.5	5.8
Statutory corporations <sup>3</sup> .....	—	.5	—	—	—	—	—	—	—	—	—	—	—	—
Total <sup>5</sup> .....	34.3	21.6	48.4	27.4	51.7	28.0	55.1	33.2	58.4	37.6	62.1	41.0	275.4	167.2
of which:														
Government <sup>5</sup> .....	34.3	16.5	48.4	21.5	51.7	21.1	55.1	28.2	58.4	33.1	62.1	35.1	275.4	139.0
Statutory corporations <sup>3</sup> .....	—	5.1	—	5.9	—	6.9	—	5.0	—	4.5	—	5.9	—	28.2

<sup>1</sup> Figures for local authorities are revised Estimates.<sup>2</sup> Including forestry, veterinary, marketing and exports, co-operatives, and fisheries.<sup>3</sup> Expenditure of funds other than those received from government.<sup>4</sup> Roads, harbors and waterways, railways, aviation.<sup>5</sup> Totals may not equal sum of columns because of rounding. SOURCE: Tables 1-11 in Appendix C.

TABLE 4 Percentage Composition of Proposed Public Expenditure

	1952-53			1955-56			1959-60		
	Recurrent	Capital	Total	Recurrent	Capital	Total	Recurrent	Capital	Total
Agriculture .....	7.3	7.4	7.3	8.3	12.8	9.9	9.2	11.2	10.0
Industry, mining and power .....	1.5	18.9	8.2	1.2	13.1	5.6	1.1	14.4	6.4
Transportation .....	8.1	29.0	16.2	8.7	32.4	17.3	8.7	30.7	17.4
Telecommunications .....	4.4	2.8	3.7	4.6	3.6	4.2	5.5	2.4	4.3
Water supplies .....	1.2	5.5	2.9	1.4	5.1	2.8	1.6	6.6	3.6
Miscellaneous public works .....	10.5	13.3	11.6	7.0	11.3	8.6	6.8	8.8	7.6
Education .....	15.4	14.3	15.0	19.5	10.9	16.4	22.8	5.9	16.1
Medical and public health services .....	10.5	2.8	7.5	10.8	6.2	9.1	10.9	17.3	13.5
Administration, etc. ....	41.3	6.0	27.6	38.5	4.4	26.2	33.4	2.7	21.2
Total <sup>1</sup> .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

<sup>1</sup> Totals may not equal sum of columns because of rounding.

SOURCE: Table 3.

1959-1960. By 1959-60, projected expenditure on agricultural services and projects amounts to 10% of total expenditure, as against 7.3% in 1952-53. Agriculture's share in recurrent expenditure is projected to rise during 1955-60, whereas capital expenditure would become relatively less important after the initial heavy investment in research facilities and staff quarters.

The industrial sector would account for 6.4% of total expenditure in 1959-60. The comparison with 1952-53, when it accounted for 8.2%, is misleading: in that year large loans were made to the Electricity and Coal Corporations, while recurrent expenditures included running expenses of certain power plants, since transferred to ECN. In fact, if electric power is excluded, the proportionate share of industry would double from 1952-53 to 1959-60.

Transportation, which already accounted for one-sixth of total expenditure in 1952-53, would increase further in relative importance during the years 1955-60.

The greatest proportional increase is recommended for the medical and health sector. It is to be noted, however, that this increase is due largely to proposed capital expenditure on slum clearance projects in Lagos, Port Harcourt and Ibadan and on a sewerage system in Lagos. Recurrent expenditure would remain a constant percentage of the total. The share of education in total expenditure, on the other hand, would show only a slight rise, from 15% to 16%. However, recurrent expenditure for education would rise steeply and in 1959-60 would take almost 23% of total recurrent expenditure compared to 15% in 1952-53, while capital expenditure would decline because most of the facilities for University College, Ibadan, and the Nigerian College of Arts, Science and Technology will have been completed by 1959-60.

Cost of general administration, security and miscellaneous activities would decline in relation to expenditures for other sectors. A greater decline would have been projected were it not for expenditures on the additional administrative apparatus necessitated by the constitutional changes.

## CHAPTER 4 *ORGANIZING THE DEVELOPMENT EFFORT*

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The preceding chapter is concerned with our recommendations for expanded development activities by the federal, regional and local governments and by the several statutory bodies. This chapter addresses itself to the organization of the development effort and to the role of a number of public agencies in that effort. It also sets forth the mission's proposal for a state bank.

In making our recommendations, which involve the creation of new institutions and changes in existing ones, we have been mindful of the desirability of keeping to a minimum any further burdening of the administrative apparatus. In each case, we have carefully weighed the advantages of a proposed change against the added administrative burden which it would initially entail.

We have paid particular attention to the implications of the progression towards self-government, and of the federal system introduced by the revised constitution which has already made necessary a great number of organizational and administrative changes. We think that most of our recommendations can be carried out as part of this general reorganization.

### I FORMULATION AND CO-ORDINATION OF ECONOMIC POLICY

The limited availability of skilled manpower and the fact that funds, though now ample, are by no means inexhaustible, make it imperative that duplication of effort be avoided, that each part of the development program be related to the needs of the economy as a whole, and that priorities be assigned among public investment projects. Ultimate decision on these matters is a responsibility of government which cannot be delegated. But cabinet action should be based on staff work, and this should be done by an economic secretariat independent of the departmental government machinery.

This report is to a certain extent illustrative of the kind of analysis such a staff would make. But we have made no more than a beginning. Our recommendations are necessarily based on the situation as it exists and as we expect it to develop; they must be studied, kept under constant review and modified in the light of changing circumstances. In many instances we have not been able to recommend action, in the absence of necessary information; in those cases we have recommended surveys, studies and research. When their results become available, they will form the basis for further decision and action.

In our view, Nigeria's present economic problems call for the creation of a special body to advise on economic policy and to propose, analyze and co-ordinate public investment programs. The machinery which we suggest for this purpose consists of an economic secretariat within the federal government, to provide staff services for an economic committee of the federal Council of Ministers. We also propose that there be regional counterparts of the economic committee and that there be created a national economic council in which the federal and regional governments would be represented.

#### *Economic Secretariat*

The economic secretariat, which would be responsible to the economic committee of the Council of Ministers, which we propose below, would have three principal functions:

1. To gather, analyze and evaluate information regarding the development potential of the country as a whole; to estimate the financial requirements of development projects and programs; and, generally, to prepare such studies and documentation as may be required by the economic committee of the Council of Ministers, including an appraisal of the economic situation for use in the preparation of the annual Estimates.
2. To review departmental estimates of federal development expenditure in the light of the priority needs of the country laid down in the development program, as agreed upon from time to time, and to report thereon to the economic committee of the Council of Ministers before action by the committee.

3. To furnish secretariat services to the national economic council.

The secretariat should report to the economic committee of the Council of Ministers through the secretary of the committee, a position which we recommend be held by the secretary of the Council of Ministers. The professional staff of the secretariat, which need not be large, should be headed by a director who should be a competent economist with government experience.

To ensure smooth relationships with the staffs of the ministries and departments, the statutory corporations and other agencies, to avoid duplication and to facilitate the work of the secretariat, we recommend that (a) the various ministries and agencies be required to make available to the secretariat staff such information as it may require in the exercise of its functions, particularly those of review; (b) the secretariat should not be asked to undertake, or be permitted to assume, administrative or operational duties beyond those set forth above, nor should it concern itself with technical aspects of development proposals, which are properly the responsibility of the heads of departments or statutory corporations, as the case may be; (c) in its research activities the secretariat should co-operate with the West African Institute of Social and Economic Research (WAISER) at Ibadan.

#### *Economic Committees*

In our opinion, co-ordination of development activity at the political level would be furthered by placing primary responsibility for it in a body somewhat smaller than the federal Council of Ministers or the regional Executive Councils, and composed of those cabinet members most directly concerned with, and responsible for, economic development.

The mission therefore recommends that an economic committee of the Council of Ministers be set up, to be charged particularly with the financial and economic aspects of federal development activity and the formulation of policy in that field. The conclusions and recommendations of the committee would require approval by the full Council. We suggest that the governor of the proposed state

bank be invited to attend meetings of the economic committee as an observer.

In the Northern Region there is already an Economic Committee of the Executive Council; we recommend that similar committees be set up in the other regions. They would have the same relation to the full executive council as the federal committee would have to the Council of Ministers. We do not anticipate that the magnitude of the problems at the regional level will be such as immediately to call for separate regional economic secretariats. We suggest that all studies of the federal secretariat which do not deal with matters wholly of federal interest be circulated to the economic committees of the regions; these committees will also be able to call upon their regular departmental staffs for advice.

#### *National Economic Council*

The federal and regional economic committees, the former served by the economic secretariat, can, we think, greatly strengthen policy-making in their respective governmental spheres. We think that there is need for a national body as well.

It would be extremely useful for Nigeria to have a forum in which the federation and the regions might meet to discuss the many economic problems common to each, notwithstanding their separate constitutional functions, and such of their development policies as may have consequences reaching beyond their respective constitutional spheres. We think it most important that these consultations be given a permanent organizational basis. We recommend, therefore, the establishment of a national economic council, under the chairmanship of the Governor-General, in which the federation and each region will have an equal number of representatives. The governor of the proposed state bank would also be a member. We would suggest that members of the economic committees serve respectively as federal and regional representatives on the council.

We are fully aware that the constitution delimits the respective fields of federal and regional action, as well as an area of concurrent powers. In suggesting the setting up of the council, we do not intend that there should be any encroachment by either the federation or the regions upon the authority entrusted to the other. The council

would be primarily consultative and should be given no administrative authority or responsibility. It is designed to give maximum encouragement to the development of a national policy and to close co-operation toward that end between the federal government and the regions.

The council need not meet frequently; one or two regular meetings a year should suffice. Subcommittees appointed to deal with particular problems might be convened more frequently. The council and any subcommittees should draw their secretaries from the staff of the economic secretariat.

We strongly recommend that the national economic council sit as the Loans Advisory Board which, under the new constitution, is to advise the federal government on external borrowing; this should be done with a reduced number of members.

## II MARKETING BOARDS

The purchase in Nigeria and the sale abroad of the principal export crops, oil palm produce, cocoa, groundnuts and cotton,<sup>1</sup> are in the hands of four statutory marketing boards, autonomous bodies established between 1947 and 1949 to take the place of control schemes instituted during the war. At the beginning of each crop year the boards announce minimum prices at which the firms licensed as the boards' buying agents will purchase crops from producers during the year.

The principal tasks of the Marketing Boards are the stabilization of producer prices, the promotion of the economic development of the producing industries and areas of production, and the encouragement and financing of research.

During their comparatively short existence the Marketing Boards have become one of the most important factors in the economic life and the financial structure of Nigeria. Because world prices have risen more rapidly than prices paid to producers, their operations have shown very large surpluses which, after the allocation of £ 25 million for economic development and research, stood at about £ 75 million at the end of 1953.

<sup>1</sup> And the minor crops of benniseed, soybeans and sunflower seeds, which are under the jurisdiction of the Groundnut Marketing Board.

At the 1954 Lagos Conference it was decided to replace the existing boards, each of which has countrywide jurisdiction over a particular product or group of products, by four regional boards,<sup>2</sup> each with jurisdiction over all controlled commodities produced within its territory. There will also be a Central Marketing Board which will set standards of quality and arrange for transportation and marketing overseas. Price and stabilization policy will be determined by the regional boards with the advice of the central board.

On the whole, the operations of the Marketing Boards have benefited the producers of the controlled crops and the Nigerian economy in general. We found that both the producers and the commercial community were satisfied with the working of the system.

Producer prices are set and maintained for an entire crop season. Thus the producer as well as the middleman and produce buyer is protected against day-to-day fluctuations, the possibility of speculation is eliminated and crops are promptly collected and moved.

The boards have successfully used their price-setting powers to bring about great improvements in the quality of export produce. The introduction of wide price margins between "special grade" (edible) and "grade I" (technical) oil by the Oil Palm Produce Marketing Board has resulted in a radically changed composition of the palm oil supply: in 1950, less than 1% of the board's purchases was classified as edible, with a free fatty acid content below 4.5%; by 1953 more than one-half of the oil purchased was edible. The demand outlook for edible oil being considerably better than that for the lower-grade technical oil, the long-run prospects for Nigerian palm oil have been greatly improved. Similarly, the price differential between grade I and grade II cocoa resulted in 95% of 1952-53 exports being grade I, compared with only 47% in 1947-48.

The Marketing Boards must also be credited with bringing more Nigerians into the trade in export produce. Before the war, virtually all of this trade was carried on by European firms. By the end of the 1952-53 buying season, the Cocoa Marketing Board had 17 Nigerian licensed buying agents compared with only 6 in 1949-50, while the number of expatriate buying agents decreased from 19 to 18. Similarly, as of November 1953, of 26 licensed buying agents

<sup>2</sup> One for each region and one for the Southern Cameroons.

for palm oil, 10 were Nigerians, and for palm kernels 18 out of 40. There are, on the other hand, no Nigerian cotton buyers and only two Nigerian groundnut buyers. The share of Nigerian buyers in the volume of produce purchases is still small, however.

To be able to set prices for an entire crop season and to lessen the impact of year-to-year world price changes on the Nigerian producer, the boards had to accumulate large reserves. These were built up over a short period, thanks to the sterling devaluation, the raw materials boom caused by the Korean war and the continuing higher-than-normal world price level thereafter. Partly as a matter of conscious policy and partly in expectation of a price fall which did not materialize, the boards fixed producer prices at levels which regularly netted substantial additions to reserves.

This course of action has been criticized as resulting in a withholding from the producers of their equitable share of higher world prices. Although we agree that in some instances the boards' price policies have been unduly cautious, we do not think that the generality of the criticism is justified. In the first place, under any stabilization scheme a period of rising prices is the time for the formation of reserves. Secondly, the setting of relatively low producer prices greatly mitigated the severity of inflationary pressures, to the advantage of the country in general, the producers included, at a time when no other machinery for anti-inflationary action existed. Finally, the accumulated stabilization reserves are large enough not only to assure producers the direct benefit of reasonable and relatively stable prices for many years to come but also to enable the boards to lend large sums on a long-term basis to government for development purposes.

In our opinion the marketing board system is well suited to Nigerian conditions. The combination of guaranteed prices for an entire crop year to the smallholder producers, adequate compensation for the buying agents, and price policies designed to encourage quality improvements provides the inducements necessary for increased and improved production and for a regular and efficient flow of produce, and the joint selling arrangements<sup>3</sup> strengthen Nigeria's position in the world market.

<sup>3</sup> Through the Nigeria Produce Marketing Company, Ltd. in London, owned by the several Marketing Boards.

We recommend, however, that henceforth the boards' functions be limited to setting quality standards, fixing producer prices and purchasing and marketing crops. The financing of economic development and agricultural research is a responsibility of government and the boards should not attempt to undertake it. Nor should the level of expenditure for these purposes be left to the discretion of the boards or be dependent on the results of their operations. While the present reserves of the boards can be an important source of development capital, we recommend that the boards' contribution be made through long-term loans to government out of that portion of their funds which need not be kept liquid, as discussed below.

We also recommend that in fixing producer prices, the boards should have no object other than mitigating price fluctuations and giving an incentive to improvement of quality. The deliberate use of the price-fixing function for other purposes, such as the promotion of development or to counteract inflationary or deflationary trends, cuts across the responsibility of government.

Present stabilization reserves are ample and the boards should not aim to increase them. They can afford to adopt a long-term stabilization and reserve policy which we believe will result in producer prices higher in relation to world market prices than has thus far been the case. While in fixing producer prices the boards should continue to take account of the expected trend of world market prices, the prices they set should as a rule vary no more than 10% from those set for the previous year. This principle should be applied after an initial readjustment of those purchase prices which are lower than is warranted by world market conditions. We have in mind particularly the price of cocoa. Details of our recommendations and the calculations on which they are based are set forth in Technical Report No. 4. Our calculations indicate that to carry out this stabilization policy the boards would not need to keep more than an estimated £ 25 million as liquid reserves and that, after allowing for working capital, some £ 40 million, constituting the second-line reserves, could be loaned on a long-term basis to government for development purposes (see Chapter 5 for specific recommendations regarding Marketing Board lending). The existing boards have already agreed to

lend £ 14 million to the Government of Nigeria, of which £ 2.7 million has been drawn to date.

We believe that the foregoing recommendations would achieve a more appropriate demarcation of the functions of the Marketing Boards and of government. We also believe that the recommended price and reserve policies would enable the boards to pay the producers fair prices while giving them adequate protection against foreseeable risks, and would at the same time permit funds already accumulated to be used to finance development.

### III DEVELOPMENT INSTITUTIONS

The agencies most directly concerned with the promotion of Nigeria's economic development, in addition to the central Department of Commerce and Industries, are the Regional Production Development Boards (RPDBs), the Regional Development Boards and the Colony Development Board, called loans boards. The former make direct investments; the latter provide capital primarily by way of loans, sometimes by grants. Together, they represent Nigeria's principal machinery for the financing and execution of agricultural and industrial development projects. We believe that they could perform that function more effectively than they do at present. In this section we make recommendations designed to improve the operations of both types of institution, including a proposal that in each region they be merged into a single "development corporation."<sup>5</sup>

The RPDBs were created in 1949 to administer funds made available for development purposes by the several Marketing Boards. These funds may be used only for the development of the specific branches of agriculture from which they were derived, or for the economic benefit of the producers or the areas of production. By March 31, 1954 the RPDBs had received grants totaling nearly £ 22 million and had spent (net after investment income) some £ 6 million. Investment and operating expenditure for all boards has now reached a level of £ 3 million per annum.

<sup>4</sup> Of which £ 2 million is to be reloaned to the Western and Eastern Regions.

<sup>5</sup> For additional comments and recommendations with respect to these institutions, see Technical Report No. 5.

The RPDBs have engaged in a variety of operations, including a number of directly productive agricultural projects (e.g., rubber, coconut, citrus, oil palm and other kinds of plantations), some in partnership with local authorities or co-operatives and one with expatriate investors, and various processing projects (e.g., oil mills, factories and a cannery).

They have financed projects dealing with settlement, mixed farming, tsetse control and fertilizer and fodder distribution, and experiments with corn storage and meat canning. They have also financed certain activities of the regional departments of agriculture, road building, and (in the North) have employed agricultural production officers.

The loans boards, also created in 1949, derive their funds principally from a government grant. Loans or grants have been made for agricultural projects, promotion of rural crafts and industries, transport equipment, industrial development of Nigerian products, public works, town planning and similar projects. Loans granted to March 31, 1953 totaled £ 1.2 million, in amounts ranging from £ 30 to £ 100,000. Forty percent of the total was lent to public bodies and nearly 20% for the purchase of transport equipment. The remainder was lent to private entrepreneurs for both agricultural and industrial projects.

The RPDBs and, to a much lesser extent, the loans boards, can point to a number of successful projects, but both have had failures, the causes of which are, in part, the same. Both have been under great pressure to show results and neither has had adequate staff to do the job, having had to rely on such staff assistance as they could get from government departments. In the case of the RPDBs this has undoubtedly contributed to the overlapping of their operations with those of the government, evidenced by their financing of various governmental projects. In the case of the loans boards, it has meant that loan applications have had to be investigated and evaluated by persons neither directly associated with the boards nor qualified to judge the commercial viability of projects.

#### *Regional Production Development Boards*

A number of projects, particularly in the field of agricultural production, has been successful or holds promise of becoming successful

in the next few years. Others have failed because of a lack of planning and insufficient preliminary investigation and research, due in part at least to the shortage of qualified technical personnel which has also resulted in delays (see Technical Report No. 13). The projects in which the RPDBs have engaged on behalf of the government may well be of high priority in the economic development of the regions, but we think they might more appropriately be undertaken or financed by the government proper. To some extent, the use of RPDB funds for these purposes can be attributed to the fact that there has never been a clear line of demarcation between properly governmental functions and the functions of the boards. Such distinction as exists has been further blurred by administrative arrangements under which the respective regional Development Secretaries have presided over the boards and regional Directors of Agriculture have served as members. As a consequence, the boards have been operated as a side-line of government and sometimes as a source of extra-budgetary funds.

We feel that a redefinition of the functions of the boards is desirable and we make the following recommendations.

We think the primary function of the RPDBs should be the promotion of directly productive enterprise, with maximum participation of private African and foreign capital, and the support of African entrepreneurial initiative. As a corollary, we think they should not extend either direct or indirect financial assistance to the government nor should they engage in activities customarily undertaken by government, such as agricultural extension work. They should provide capital for commercially promising investment opportunities for which private capital and entrepreneurial skills are not available, or which are unattractive to private investors because of the risks involved. They should encourage participation in their projects by giving preference to those projects in which local interests—communities, co-operatives, or private entrepreneurs—are willing to join, and through the sale of projects to private interests. In the latter connection, the facilities of the reconstituted loans boards should be called upon (see below).

The RPDBs can usefully continue to conduct pilot projects in the form of demonstration units, although research and experimentation

work should as a rule be undertaken not by the boards but by the agricultural services and the proposed technical research institute (see Technical Report No. 13). The technical staffs which the RPDBs will require for their investment and loan operations should also be available for assistance to African entrepreneurs (see Technical Report No. 13, page 363).

### *Loans Boards*

The loans boards have been criticized on several grounds: that their procedures are slow and complicated, that they have engaged in political favoritism and that their judgment is poor.

The boards' difficulties can be ascribed at least in part to their overly broad field of action, which, as already stated, extends to loans and grants to public bodies as well as to loans to private enterprise. These two types of activity call for the application of differing criteria and techniques. They should preferably be undertaken by separate institutions. We recommend, therefore, that the loans boards concentrate their efforts on the provision of credit for private business. Public bodies should finance their public works projects from tax revenues and from local development funds.<sup>6</sup>

The boards' procedures leave much to be desired: they meet infrequently, and because of staff shortages they have limited personal contact with the applicant. We think that frequent discussions and explanations are essential to give Nigerians an understanding of the requirements of a sound lending proposition.

On occasion, types of enterprises have been declared ineligible, as a matter of policy, by one board or another. Since entrepreneurial initiative is so limited, lending policies should be kept flexible and designed to give the maximum encouragement to prospective industrialists. When a project appears sound and potentially productive and the borrower is responsible, an application ought generally to be given favorable consideration.

On loans to industrial and agricultural enterprise, the default ratio has been high and is rising. The boards are intended to accept risks higher than normal and defaults are bound to occur. But some losses might have been avoided by better selection of projects and better

<sup>6</sup> See Chapter 5, p. 122.

loan supervision. Use of the loan proceeds is often unsupervised; sometimes the proceeds are used for purposes entirely unrelated to the project for which the loan was granted. The mission was informed that the Western Board has begun to supervise loan funds and pays over loan proceeds only upon proof of payment for the goods financed by the loan. This kind of supervision is essential, but it is not enough. Even after completion of the project, the boards should keep themselves informed of the manner in which the borrower conducts his business and should advise him where necessary.

We think much of the criticism of the boards' operations is justified, but we believe that, if properly run, the boards can play an important role in the promotion of African enterprise. They have made a number of sound loans and many of their mistakes stem from a laudable desire to get a flow of loans to Africans under way.

To improve the operations of the loans boards, a number of changes should be made. To begin with, the loans boards should be incorporated into the RPDBs where they should function as separate loans departments. This will permit use of the RPDBs technical staffs and will effect administrative savings. The loans departments should have no grant authority, and should lend only to private enterprise, encouraging especially co-operatives and other forms of business association. They should finance, on a medium- and long-term basis, both small and large projects. In the case of the latter, the closest attention should be paid to technical and commercial management, in which the large industrial projects already financed show their greatest weakness. They should not, however, make loans which commercial banks or other lenders are willing to handle on reasonable terms; their function should be to supplement, not to compete with, other sources of credit.

#### *Future Activities*

The reorganization of the functions of the RPDBs and of the loans boards, and the merger of the two types of institutions, will require legislation. In order more appropriately to indicate the functions of the new institutions, they might be named the Northern, Western and Eastern Development Corporations, respectively. In view of the anticipated separation of the Southern Cameroons from the Eastern

Region, the Southern Cameroons should have its own development agency.<sup>7</sup>

As stated in the preceding section, the Marketing Boards should no longer be responsible for the financing of the development corporations. The regional governments should henceforth assume direct financial responsibility for all development corporation activities. The mission has estimated in its financial projections that the development corporations will require government assistance amounting to £ 12 million over 1955-60 (including £ 1 million to the Cameroons development agency). This, together with the resources now on hand, would provide them with well over £ 20 million to finance their activities over the next five years.

All funds of the corporations should be available for any of the following purposes:

1. Direct investment in productive agricultural and industrial projects;
2. Loans to agricultural, industrial and commercial enterprises;
3. Encouragement of agricultural and industrial development by pilot operations and, in the industrial field, by technical and managerial advice to entrepreneurs.

At present, the funds of the RPDBs are restricted in their use to expenditures which can be deemed to benefit the producers or the areas of production of the commodities from which they were derived. We recommend that this restriction be eliminated in the proposed legislation merging the RPDBs and the loans boards. We consider it highly unrealistic; the economic well-being of producers of export produce is so closely tied to the prosperity of the regions and the country as a whole that a distinction between expenditures for the benefit of the producers and for the benefit of the country cannot justifiably be made.

<sup>7</sup> To be distinguished in name from the existing Cameroons Development Corporation (see Technical Report No. 5). The activities of the latter differ from those of the development corporations as we define them, and should not be extended to include them.

## IV STATUTORY CORPORATIONS

At various times the Nigerian government has engaged in activities which lie outside the normal administrative functions of government: the railway, most of the important port installations, the coal mines and a large number of power plants were set up and operated by the government.

In recent years, plans have been made and in part already carried out to transfer these operations out of the general governmental machinery to autonomous bodies, known as statutory corporations. In 1951 the coal mines were transferred to the Nigerian Coal Corporation and the electricity undertakings to the Electricity Corporation of Nigeria. Legislation is now being drafted for the establishment of a railway corporation and a ports authority. When, after World War II, the government assumed responsibility for the development of former enemy-owned plantations in the Cameroons, it delegated that responsibility to the Cameroons Development Corporation, created for the purpose.

The statutory corporation is a legal entity, has separate finances, employs its own staff and is subject to income tax. The chairman is generally also the chief executive officer; the other members include government officials as well as members of the public. The membership of the railway corporation and the ports authority will, in addition, include representatives of the users of their facilities.

We think it has been a wise policy to entrust quasi-commercial operations to these statutory corporations. We also endorse the general policy under which they conduct their operations along commercial lines and seek to earn enough, after allowance for interest and depreciation, to permit building up not only adequate reserves but also a surplus out of which to finance expansion.

To make fully effective, both in the interest of the corporation and of the government, the financial autonomy inherent in the system of statutory corporations, they should be so capitalized as to be enabled in due time to finance their capital needs by borrowing in the market on their own credit, rather than being a burden on the government budget. This is not now the case. The statutory corporations are financed exclusively by loan capital. None has been given a permanent capital fund and, as far as we know, it is planned that the

two corporations about to be created will issue debenture stock or other obligations to the government for the full amount of the assets to be transferred to them.

We strongly recommend that this policy be changed and that a substantial portion of the capital of the corporations be converted into a permanent capital fund.<sup>8</sup> This would increase their creditworthiness by reducing fixed charges and by offering prospective lenders the security of the permanent capital fund.

#### v STATE BANK<sup>9</sup>

In 1952, the Government of Nigeria requested Mr. J. L. Fisher, Adviser to the Bank of England, to examine the desirability and practicability of establishing a central bank in Nigeria as an instrument for promoting the economic development of the country. His report and recommendations were completed in December 1952.<sup>10</sup>

After describing the principles of central banking as developed in England and reviewing Nigeria's monetary system, Mr. Fisher concluded that it would be inadvisable to establish a central bank "at the moment." He suggested instead a program in three stages, first, the transfer of the West African Currency Board to Africa; second, the establishment of a Nigerian currency board; and third, the establishment of a bank of issue which would gradually develop into a full-fledged central bank.

In reviewing the monetary system of Nigeria in relation to the proposed development program, the mission has paid close attention to Mr. Fisher's analysis. On many points we are in basic agreement with his report. In particular there can be no dispute that creation of a full-fledged central bank would be premature at this time. On the other hand, the mission feels that, in the light of the increasingly

<sup>8</sup> For additional comments relating to the Cameroons Development Corporation, see Technical Report No. 5.

<sup>9</sup> See Technical Report No. 3 for an account of the monetary and banking system in Nigeria.

<sup>10</sup> *Report on the desirability and practicability of establishment of a Central Bank in Nigeria for promoting the economic development of the country* (Government Printer, Nigeria: 1953).

rapid strides toward self-government,<sup>11</sup> the timing of the advance should not be as cautious as that report suggests. Therefore, the mission proposes the early creation of a "State Bank of Nigeria" with limited functions. Initially these functions should include the right to issue currency, to be the principal depository for the funds of government and semi-governmental organizations, to accept deposits from banks and to regulate their operations, and to buy and sell government securities. At a later stage, these functions may be gradually broadened to enable the new institution to assume other functions of a central bank.

The continued political and economic advancement of Nigeria is bound to lead to the establishment of a central bank. To postpone the day when functions of currency issue and the management of foreign assets are performed in Nigeria will also postpone the day when trained Nigerians will be able to perform these functions responsibly by themselves.

The proposed state bank would have as its primary function the issue of Nigerian currency to replace that of the West African Currency Board. The new issue, like the old, should be backed by sterling. Foreign reserves should not fall below 100% of the currency issue in the foreseeable future. Sterling would be acquired by the retirement of the West African currency in Nigeria and the paying-over by the Currency Board to the state bank of the corresponding share of the undistributed profits of the Currency Reserve Fund. Like the Currency Board, the state bank should stand ready at all times to issue or redeem local currency for sterling. In this manner the advantages of a stable sterling link would be retained, ensuring particularly the continuance, on present conditions, of trade with sterling area countries.

The second function of the state bank would be to serve as the principal depository of the funds of government and semi-governmental organizations. These assets should be centralized, as is the case in nearly every country in the world. By far the greater part of Nigerian government and semi-government reserves is now held abroad. This makes it particularly important that they be centralized in the state bank. The consolidation of these sterling assets would

<sup>11</sup> Mr. Fisher's report was completed before the decision was taken to convene the London constitutional conference.

have the advantage of permitting Nigeria to safeguard the external value of its currency with a smaller level of foreign reserves than is necessary when foreign assets are held individually by separate agencies. It would therefore permit maximum use of the country's accumulated capital for development.<sup>12</sup>

In acting as the depository for official and semi-official funds, the bank should be empowered to accept demand deposits and fixed deposits. The reason for fixed deposit accounts, which would bear interest, is that a large portion of government and semi-government funds is not immediately needed by the depositors. It would be manifestly unjust if the depositors, by transferring their funds to the state bank, would have to lose the income which they are now earning from these funds. The bank should also be empowered to offer trust account arrangements to governmental and semi-governmental depositors. Under these arrangements the bank would administer and invest funds entrusted to it for the account of the depositors.

The state bank should also be empowered to accept demand deposits from commercial banks, as a service to those banks which may wish to use the facilities of the state bank as a clearing house.

The transfer to the bank of official and semi-official sterling holdings could be made soon after its establishment. Local funds would have to be transferred gradually, with due regard to the position of the commercial banks which now hold them. Some transfers should, however, be made promptly in order to enable the bank to begin operations as banker of governmental and semi-governmental organizations. Working balances for services not provided by the state bank should continue to be held with European and African commercial banks.

The bank should be empowered to buy and sell for its own account securities of the Government of Nigeria, but in the next 5 or 10 years its holdings of such securities should not, as a working rule, exceed the level of its accumulated surplus, including Nigeria's share of the profits of the West African Currency Board. Aside from loans already

<sup>12</sup> As we point out in Technical Report No. 3, there has developed a widespread desire to "repatriate" Nigerian public funds and to deposit them with African commercial banks. We believe that the African banking and business community would be ill-served if government deposits were used as a basis for expanding credit, because the drawing-down of these reserves in the course of the next few years would then necessitate a dangerous contraction of bank credit.

contracted for with the Marketing Boards, the federal government is most unlikely during the next five years to borrow substantial amounts in Nigeria. Some small issues of securities of various maturities would, however, be quite important in helping to develop the institutional framework necessary to ensure the success of security sales in later years. The issue of short-term securities, such as Treasury bills, would be particularly useful in providing bankers with a short-term domestic investment.

In order to give publicly issued local securities the necessary marketability and to make them suitable for the trust accounts managed by the bank, the bank must be prepared to purchase them at all times. There should be no guaranteed purchase price, but the bank might consider initially undertaking to relate prices to those prevailing in London. This facility should also be open to the public, in order to encourage it to hold government securities.

The supervision of the commercial banks which at present is the responsibility of the Financial Secretary, under the provisions of the Banking Ordinance, should be transferred to the state bank. For the time being, a modification of the provisions of the Banking Ordinance does not appear necessary, since the domestic banking system is not yet developed sufficiently to justify access by it to the resources of the state bank as a lender of last resort. The ultimate aim must be the assumption by the state bank of the normal responsibility of a central bank to assure the liquidity of the banking system, but this extension of its functions will have to await the further development of that system.

Two other tasks at present undertaken by government departments might be taken over by the state bank. First, the administration of exchange controls would be a proper function of the institution responsible for external solvency. Second, the bank might maintain a small statistical department responsible in particular for preparing monetary statistics and balance of payments estimates.

The state bank should not undertake any private business, either by accepting deposits from the public or by making loans or advances. The recently established government bank in the Gold Coast engages in commercial banking. But unlike the Gold Coast, Nigeria has, in addition to European banks, African commercial banks, and

there is no need for a government institution in the field of commercial banking.

The form of the governing body of the bank is a matter which will have to be determined at the time of its formation. Tentatively, a relatively large board might be suggested so that the state bank may benefit from the wide experience of its members and on the other side ensure a wide dissemination of knowledge of central banking problems. The board would not need to meet frequently. A suitable board might consist of the governor and deputy governor of the state bank, representatives of the federal government and nonofficial members chosen with due regard to the interests of the various regions and of the interests of the Marketing Boards. Another matter to consider at that time is the desirability of establishing separate issue and banking departments.

The success of the bank would depend above all on the quality of the staff selected. Initially the staff would have to be largely European, for Africans with qualifications in the field of banking are few and much in demand. But plans should be laid from the outset for the training of Africans so that they can soon assume responsibility. Particular attention should be devoted to the selection of the first governor.

Such a state bank should make substantial profits. It should earn a large income from the investments backing the currency issue, while expenditures should initially be relatively small. The staff required would not be large and in part might be drawn from existing government departments. At first the bank should operate only in Lagos and in the three regional capitals, continuing elsewhere the agency arrangements of the currency board system. The investments in London would be made through an agent, either the Bank of England or the Crown Agents for Oversea Governments and Administrations.

The relatively small additional administrative expenditure as compared with the present system would, in the opinion of the mission, be money very well spent, since it would assist in the development of sound monetary and banking practices and in the training of Nigerians in the techniques of central banking.

In the mission's view the state bank is a necessary element in the organization of the economy of a developing Nigeria, although, as

Mr. Fisher has pointed out, its establishment would not in itself create resources for development. Its operations cannot take the place of development financing by private and government savings; they can only assist in the channeling and the most economic utilization of the country's financial resources.

Our recommendations are not intended to present a complete blueprint for a state bank. In the creation of such an institution problems will arise which we have not discussed or to which we have referred only in general terms. In carrying out our recommendations, the government should seek the expert assistance of the United Kingdom monetary authorities or of the International Monetary Fund.

## VI STAFFING

The need to draw upon the services of overseas personnel was recognized by the leaders of all Nigerian political parties in a statement issued at the Lagos constitutional conference, designed to reassure expatriate personnel. But the retention of present staff will not meet the problem of filling existing vacancies or the new positions which in our opinion are necessary. Energetic measures must be taken to step up recruitment of personnel.

At present, overseas personnel for government service is recruited through the Colonial Office and the Crown Agents. Some of the statutory corporations hire overseas personnel directly. To fill current vacancies and to staff new positions may, we estimate, require as many as 2,000 additional overseas recruits, yet present recruitment arrangements have proved inadequate to meet even the requirements of the present establishment. The mission therefore recommends the setting-up of a Nigerian recruitment office in London, through which all personnel for the federal and regional governments and the statutory bodies would be recruited and to which all requests for overseas staff would be made directly by the government or agency concerned. The recruitment office should seek to recruit personnel both directly and through the Colonial Office and the Crown Agents; the existing arrangements would not be replaced but would be supplemented.

We are aware of the possibility of duplication and of interference

with the Colonial Office's established procedure of personnel selection. These possible disadvantages, which with skillful administration can be avoided, would be far outweighed by the increased vigor of a purely Nigerian recruiting organization and by a widening of the geographical area of recruitment.

In order to match the attractiveness of other employment opportunities for qualified candidates, particularly in technical fields such as agricultural research and experimentation, road construction and public health, it may be necessary in some instances to depart from prevailing standards of salary, tenure and other emoluments. The possibility that some positions cannot be filled at established rates of pay must be faced. In some instances, considerations other than salary may be important in attracting personnel: for example, opportunities to engage in research or special investigations of particular interest to the employee.

The mission feels that it is not in a position to make more specific recommendations regarding salary scales and other terms of employment for overseas personnel. We are impressed, however, by the arguments presented in a report of a select committee of the Legislative Assembly of the Gold Coast regarding the necessity of maintaining a differential between the salaries of overseas and locally recruited personnel. We believe that the analysis of the problem presented in the report applies with equal force to Nigeria.<sup>13</sup>

We also believe that the reorganization of the Colonial Service into the Oversea Service should help to overcome the concern of overseas personnel regarding their tenure, and thus facilitate recruitment in the future.<sup>14</sup>

One method of securing overseas staff, which in the opinion of the mission should be pursued more vigorously than in the past, is to arrange for secondment of personnel from the United Kingdom and other Commonwealth countries. Under existing arrangements, some personnel for the Nigerian Railway, the Posts and Telegraphs Department and other services have been obtained through secondment from corresponding U.K. agencies, but for administrative reasons the services of staff thus obtained have been limited to relatively short

<sup>13</sup> *Report of the Select Committee on the Lidbury Report* (Accra, Gold Coast: Government Printing Department, 1952). See particularly page 6, paragraph 33.

<sup>14</sup> White Paper, June, 1954 (Colonial No. 306).

periods. The mission believes that a more flexible treatment of secondment should be feasible and that the possibility of secondment should be explored in additional fields, such as agricultural research, public works and education.

While most overseas personnel would come from the United Kingdom and the Commonwealth, recruitment should not be confined to these countries. A wider search for suitable applicants would not only enhance the possibility of filling the personnel requirements more quickly, but would also offer a wider selection if experience in the skill sought is particularly common in a country outside the Commonwealth. For instance, it should be possible to obtain from Western European countries research and managerial personnel with experience in tropical agriculture, or road construction engineers. The assistance of international organizations such as the Food and Agriculture Organization and the World Health Organization should also be sought.

## CHAPTER 5 *FINANCING NIGERIAN DEVELOPMENT*

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In Chapter 3 we outlined our principal recommendations for the development effort in various sectors of the economy, by the federal and regional governments, the local authorities and the statutory corporations, and showed the aggregate cost of the recommended 1955-60 program. In this chapter we consider how the country and the separate government units could meet the cost of that program.

We have projected government revenue and expenditure over the five-year period in order to determine how much additional financing would be likely to be required. Separate revenue and expenditure projections have been made on a year-to-year basis for the governments of the Federation, the regions and the Southern Cameroons and for the local authorities under their jurisdiction.<sup>1</sup>

In making these projections, we have been cognizant of the impossibility of forecasting with any real degree of accuracy government expenditure and revenue over a fairly long period of years. Nevertheless such forecasts must be made by governments whenever they embark on any long-term program.

In setting forth annual figures, rather than forecasting aggregates for the five-year period, we have undertaken a particularly hazardous, but in our opinion necessary, task. On the expenditure side, a five-year aggregate figure would be misleading, because it would fail to reveal that expenditure can increase only gradually. Moreover, it would not enable us to show the rate at which we think it can expand. Annual expenditure under the recommended program, far from being uniformly one-fifth of the total for the period, would not

<sup>1</sup> These projections are set forth in Appendix C, Tables 1-18. Summary tables appear in this chapter.

be much higher in 1955 than at present, but would be considerably higher by 1960. Of necessity our figures are indicative of orders of magnitude only and undoubtedly they will differ by a more or less wide margin from expenditures which will actually be made. Shortages of personnel may postpone recommended expansion of government services, causing annual expenditure to be lower than projected; conversely, expansion may come sooner than we have anticipated, in which case actual expenditure will be higher. If costs should prove higher than those allowed for, or if the many surveys we recommend should disclose the feasibility of undertaking additional projects earlier than now seems possible, the projections may be found to be too low.

On the revenue side, year-by-year projections are necessary to show the likely development of specific items of revenue and to provide a basis for gauging the rate at which additional financing will be required. Here again, the figures should be viewed with caution.

The methods employed in making the projections and the assumptions on which they are based are explained in detail in Appendix C. Three general comments should, however, be made here. We have consolidated in our figures all government revenue and expenditure, whether shown in the main accounts of the government units or in various special funds or extra-budgetary accounts. Second, the revenue estimates have been based in part on the conservative assumption of a considerable decline in export prices below the high levels of recent years. Third, in the case of federal and regional government accounts, we have made an allowance for contingencies equal to 10% of projected revenue. This is in part intended to cover service charges on new debt and loss of interest receipts through the drawing-down of reserves, which have not been included in our detailed projections because of the impossibility of forecasting the timing and conditions of new loans. In view of the conservative nature of our revenue estimates and of the generous provisions for expenditure, the allowance should be adequate as well to meet possible additional expenditure and temporary decline in revenue.

## I COST OF THE PROGRAM

The proposed development program for Nigeria contemplates a gradual build-up of annual government expenditure at all levels to about £ 100 million by 1959-60. The upward movement may be summarized as follows:

*(Million £)*

Expenditure	1952-53	1955-56	1959-60
Recurrent .....	34	48	62
Capital .....	17	22	35
Total .....	51	70	97
Statutory corporations—capital expenditures <sup>1</sup> ...	5	6	6

<sup>1</sup> Funds other than those received from the government.

The proposed year-by-year rise in expenditure is shown in Table 1.

TABLE 1 The Proposed Rise in Public Expenditure

*(Million £)*

	Federal Govern- ment	Regional Govern- ments	Native Treasuries, Local Govt., & Townships	Totals
1951-52 (Actual) .....	23.8	12.2	7.2	43.2
1952-53 (Actual) .....	25.4	17.2	8.2 <sup>1</sup>	50.8
1953-54 (Approved Estimates) <sup>2</sup> ..	30.0	21.2	9.6	60.8
1954-55 (Preliminary Estimates) ..	34.5 <sup>3</sup>	23.3	10.1 <sup>4</sup>	67.9
1955-56 <sup>5</sup> (Mission's projections) ..	31.7	25.9	12.2	69.9
1956-57 " " ..	31.8	27.9	13.2	72.8
1957-58 " " ..	35.5	33.6	14.2	83.3
1958-59 " " ..	39.0	37.1	15.2	91.3
1959-60 " " ..	41.2	39.8	16.3	97.2
Total 1955-60 <sup>6</sup> .....	179.2	164.2	71.1	414.4

<sup>1</sup> Revised Estimates.

<sup>2</sup> "Estimates" is used throughout, in accordance with British usage, to refer to budgetary projections.

<sup>3</sup> Approved Estimates.

<sup>4</sup> Projection of mission.

<sup>5</sup> First year of reallocation of functions under new constitution.

<sup>6</sup> Totals may not equal sum of columns because of rounding.

We have limited our recommendations for expenditures to those which we believe can in fact be made within the period 1955-60. The Estimates called for a 20% increase in public expenditures between 1952-53 and 1953-54 and for an additional 12% between 1953-54 and 1954-55. For these years we have entered the latest detailed Estimates available, as approved or proposed. But we now know that 1953-54 expenditure fell short of what was budgeted, particularly in public works, and it is likely that some shortfall will also occur in 1954-55. Our projections for 1955-56, while apparently not much higher than expenditure in 1954-55, would therefore in fact represent a substantial increase.

Table 2<sup>2</sup> shows the expenditures which are projected at the various levels of government.

TABLE 2 The Cost of the Proposed Program

*(Million £)*

	Recurrent Expenditure					Capital Expenditure 1955-60
	1955-56	1956-57	1957-58	1958-59	1959-60	
Federal Government .....	19.8	20.9	21.9	22.9	24.0	69.6
Lagos Town Council .....	.5	.5	.5	.6	.6	.7
Northern Regional Government...	6.6	7.1	7.7	8.3	8.9	20.1
Northern Native Treasuries and Townships .....	4.7	5.0	5.3	5.6	5.9	6.4
Western Regional Government ...	5.9	6.5	7.1	7.7	8.4	22.4
Western Native Treasuries and Local Governments .....	3.2	3.5	3.9	4.2	4.6	3.6
Eastern Regional Government....	5.1	5.4	5.7	6.0	6.3	11.8
Eastern Native Treasuries, Local Governments and Townships...	1.4	1.5	1.7	1.8	2.0	2.1
Southern Cameroons Government.	.8	.9	1.0	1.1	1.2	2.0
Southern Cameroons Native Treasuries .....	.2	.2	.2	.2	.2	.3
Total .....	48.2	51.5	55.0	58.4	62.1	139.0

In 1951-52, central government expenditure accounted for 55% of all Nigerian public expenditure, whereas under the mission's program it would be only 45% in 1955-56. Thereafter the percentage

<sup>2</sup> Differences in totals in Tables 1 and 2 are due to rounding.

TABLE 3 Government Expenditures and Financial Resources Available, 1955-60

(Million £)

Estimates	Northern		Western		Eastern		So. Cameroons		Total		
	Federal Government	Lagos Town Council	Regional Government	Local Authorities	Regional Government	Local Authorities	Regional Government	Local Authorities		Government	Local Authorities
Recurrent Expenditures .....	109.7	2.7	38.6	26.6	35.7	19.5	28.6	8.3	5.1	0.9	275.7
Capital Expenditures .....	69.6	0.7	20.1	6.4	22.4	3.6	11.8	2.1	2.0	0.3	139.0
Total <sup>1</sup> .....	179.2	3.4	58.7	33.0	58.1	23.1	40.4	10.4	7.1	1.2	414.6
Revenues at present revenue structure .....	149.8	2.1	44.9	25.6	59.1	10.6	29.8	7.4	2.2	0.8	332.3
Borrowings planned by Federal government—Internal .....	11.3	—	—	—	—	—	—	—	—	—	11.3
External .....	11.3	—	—	—	—	—	—	—	—	—	11.3
<i>Projections of mission:</i>											
Increase in Tax Revenues ..	—	0.5	4.5	2.0	6.0	6.2	4.3	1.7	1.2 <sup>2</sup>	0.2	26.6
Use of Reserves .....	20.0	—	5.0	—	3.0	—	2.0	—	—	—	30.0
Additional loans from Marketing Boards .....	—	—	10.0	—	10.0	—	—	—	—	—	20.0
Inter-governmental grants:											
Receipts ..	—	0.8	—	5.4	—	6.3	3.0	1.3	4.1 <sup>3</sup>	0.2	21.1
Payments ..	-7.9	—	-5.4	—	-6.3	—	-1.3	—	-0.2	—	-21.1
Contingency allowance <sup>4</sup> .....	-15.0	—	-4.5	—	-5.8	—	-3.0	—	-0.2	—	-28.5
To be covered by C.D. and W. grants and additional loans	9.7	—	4.2	—	(-7.9) <sup>5</sup>	—	5.6	—	<sup>6</sup>	—	19.5 <sup>7</sup>
Total .....	179.2	3.4	58.7	33.0	58.1 <sup>7</sup>	23.1	40.4	10.4	7.1	1.2	414.6 <sup>7</sup>

<sup>1</sup> Totals may not equal sum of columns because of rounding.<sup>2</sup> £ 1 million represents disbursements of profits by the Cameroons Development Corporation to the Southern Cameroons Government; £ 200,000 represents the Cameroons' share of increased duty collections.<sup>3</sup> £ 1.8 million of this amount represents grants to which the Southern Cameroons is entitled because of its special status.<sup>4</sup> 10% of federal and regional revenue. See p. 105.<sup>5</sup> Surplus. <sup>6</sup> Deficit offset by grant from federal government. <sup>7</sup> Excluding surplus of Western Region.

would continue to decline, as a result of greater expansion of services in the regional fields such as agriculture, education and secondary roads. The share of expenditure of native treasuries, local governments, townships and town councils<sup>3</sup> would remain constant at about one-sixth of total public expenditure.

## II FINANCING THE PROGRAM

In order to finance the proposed development program, government authorities at all levels would need £ 415 million in the next five years.

There are four sources of finance for Nigerian public expenditure: government revenue, reserves of public funds, borrowing at home and abroad, and grants from the Government of the United Kingdom. We recommend drawing upon all of them: taxes should be substantially raised, the federal and regional governments should use a large part of their existing reserves and they should borrow substantial amounts from the Marketing Boards. The federal government should also borrow in the London market. We assume that Nigeria will continue to receive grants under the Colonial Development and Welfare Scheme.

A comparison of financial requirements with available or potentially available resources is shown in Table 3. The Table indicates that, assuming no change in the present revenue structure, anticipated revenues for 1955-60 would fall short, by £ 82 million, of the public expenditures we propose. To this must be added the contingency allowance referred to earlier, in the amount of £ 28.5 million, making a total shortfall of £ 111 million.<sup>4</sup>

We propose that this difference should be met roughly as follows: £ 27 million from additional revenue, over and above the normal rate of growth, £ 30 million from reserves, £ 22 million from loans which the central government has already decided to raise, £ 20 million to be borrowed by the regions from the Marketing Boards, and the

<sup>3</sup> Referred to collectively as "local authorities."

<sup>4</sup> No contingency allowance has been made in the case of local authorities since expansion of expenditures on the local level should be determined by the ability and willingness of local authorities to raise additional revenue. See pp. 120 et seq.

balance from Colonial Development and Welfare grants and additional loans.

We also recommend substantial grants by the federal government to the Eastern Region and the Southern Cameroons. These are shown in the Table as intergovernmental grants in addition to the normal grants from the regional governments to local authorities.

The mission believes that the development program for the next five years could be financed with relative ease. But we must repeat here what has been said earlier: the over-all level of revenue is insufficient for a continuing expansion of public development expenditure. If the development effort is to continue after 1960, the build-up of revenue which we recommend will have to continue at an accelerated rate.

#### A THE REVENUE STRUCTURE

Table 4 reveals the two main features of the Nigerian revenue structure: its heavy reliance on indirect taxes (principally import and export duties) and the fact that an overwhelming proportion of revenue is collected by the central government. The first makes Nigerian revenue particularly sensitive to the vagaries of international trade; the second has made for politically difficult and technically complicated problems of revenue allocation.

The central government, under the Income Tax Ordinance, taxes the income of all companies and non-African individuals, and African income earned in Lagos. African income earned outside Lagos is taxed under the Direct Taxation Ordinance. This tax is assessed and collected by local authorities. They also levy "rates," mostly for special purposes such as education or water supply. In 1952-53 these direct taxes together accounted for about one-fourth of total government revenue.

Most of the balance consists of the proceeds of indirect taxes. Except for sales taxes on controlled produce, first imposed by the regional governments in 1953 and 1954, all these are levied and collected by the central government.

The reallocation of functions under the new constitution led to a review of the system of revenue allocation. A fiscal commissioner was appointed to advise on the distribution of revenue, "having

TABLE 4 Structure of Tax Revenue, All Government Authorities Combined

	Actual Tax Collections 1952-53		Projected Tax Collections					
			1955-56		1959-60			
	Million £	%			Million £	%	excluding recommended additional revenue	
Million £			%	Million £			%	
Customs and Excise Taxes <sup>1</sup> ..	33.9	67.5	39.2	70.1	41.3	68.8	46.3	67.8
Direct Taxes <sup>2</sup> .....	12.5	24.9	13.2	23.6	14.9	24.8	18.2	26.6
Licenses, Fees and Fines <sup>3</sup> ....	2.1	4.2	2.3	4.1	2.6	4.3	2.6	3.8
Mining Royalties .....	1.7	3.4	1.3	2.3	1.3	2.2	1.3	1.9
Total <sup>4</sup> .....	50.2	100.0	55.9	100.0	60.0	100.0	68.3	100.0
Of which collected by central government .....	43.2	86.1	44.9	80.3	47.5	79.2	52.5	76.9

<sup>1</sup> Including regional produce sales taxes.

<sup>2</sup> Including federal income taxes, taxes under the Direct Taxation Ordinance and "rates" of local authorities.

<sup>3</sup> Including "licenses and internal revenues" and "fees of court or office."

<sup>4</sup> Totals may not equal sum of components because of rounding.

regard on the one hand to the need to provide to the Regions and the Centre an adequate measure of fiscal autonomy within their own sphere of government and, on the other hand, to the importance of ensuring that the total revenues available to Nigeria are allocated in such a way that the principle of derivation is followed to the fullest degree compatible with meeting the reasonable needs of the Centre and each of the Regions.”<sup>5</sup>

The system recommended by the Commissioner and approved by the Lagos constitutional conference provides for the allocation to the regions, on a derivation basis, of one-half of all import and export duties and excise taxes (but the whole of the import duty on motor spirit); for distribution of mining royalties to the region of origin; for allocation of federal personal income tax proceeds to the region of the taxpayer's residence; and for the retention by the Federation of proceeds of income tax on companies and on residents of Lagos.

It was also recommended and agreed that grants totalling £ 7 million would be made to the regions as their share of federal reserves.

This distribution of revenue between the Federation and the regions as a group gives each a desirable measure of fiscal autonomy. As among the regions, however, the application of the principle of derivation, under which revenue is distributed on the basis of its origin, tends to perpetuate regional differences in financial strength. The Fiscal Commissioner recognized this in his report by recommending that the federal government should have power to make discretionary grants to regions.

We fully agree with the recommendation of the Fiscal Commissioner<sup>6</sup> that the next review of the revenue allocation system, in connection with the review of the constitution in 1956, be conducted under broader terms of reference. We believe that the interests of Nigeria as a whole would best be served by a more flexible application of the derivation principle, in order to give greater recognition to the needs of the different regions.

<sup>5</sup> *Report of the Fiscal Commissioner on the Financial Effects of the Proposed New Constitutional Arrangements* (Government Printer, Nigeria: 1953), p. 1.

<sup>6</sup> *Ibid.*, p. 17.

**B FEDERAL FINANCES**

Federal finances are sound. The Federation would need only limited resort to its borrowing capacity and accumulated reserves in order to finance the increased expenditure we have recommended and to contribute to the revenues of the Eastern Region and of the Southern Cameroons. By the end of the five-year program, we expect annual federal revenue to have risen to £ 31 million, compared with recurrent expenditure of £ 24 million exclusive of grants. Capital expenditure of £ 17 million has been projected for 1959-60, a substantial part of which can be financed from current revenues. At that time the Federation's reserves should still be considerable and its borrowing capacity ample.

*Customs Duties and Excise Taxes*

In recent years, approximately 60% of all customs and excise collections have come from import duties and excise taxes (the latter mainly on cigarettes and beer), and the remainder from export duties.

Import duties are in general low, ranging between 15% and 20% for most articles. Alcoholic beverages, tobacco and certain luxury imports pay higher rates, while machinery, tools, fertilizers and other agricultural or industrial producers' goods are duty-free. Except for duties on such essentials as salt and kerosene, the incidence of the tariff is on the whole progressive. There is considerable evidence that the lowest income groups purchase only small quantities of imports, while persons in the middle and higher income brackets, particularly in urban areas, buy a relatively large volume of imports, especially textiles.

We recommend that import duties be increased—not for the purpose of increasing the federal revenues but as a means of alleviating the financial problems of the regions. We propose further that the full amount realized from the recommended increase be distributed among the regions.

Specifically, we recommend that duties on all imports except food, tobacco, motor spirit and kerosene be increased so that revenue from this source will rise by 50%. We recommend further that certain of the inequitable or undesirable features of the existing tariff be elimi-

nated at the same time: all imports of food except confectionery and alcoholic beverages should be exempt from duty and so should all building materials except (temporarily) cement. Exemption of construction materials is desirable in the interest of promoting building activity but it may be necessary to retain the present duty on cement to give initial protection to the proposed cement factory.<sup>7</sup> We realize that this increase would make the fiscal structure even more dependent on the flow of the country's international trade. We therefore believe that it should remain in effect only until the yield of taxation on income and property rises sufficiently to take its place.

Since it will take some time to put these tariff changes into effect, we have not counted on any increase in revenue from this source until 1957. On the basis of information supplied to us in Nigeria, we estimate that the recommended revision would yield a net of £ 15 million over the period 1957-60.

Export duties on the most important agricultural products are 10% ad valorem with progressive surcharges if export prices exceed a "normal" level.<sup>8</sup> Minor exports are taxed at relatively low specific rates. At the export prices anticipated during the next five years, cocoa would be the only major export subject to duty in excess of 10%. We do not recommend an increase in these duties. On the other hand, we do not believe that the export duty on cocoa should be reduced as suggested in sections of the Nigerian press, even though at presently prevailing prices it far exceeds that on other dutiable exports.<sup>9</sup> There is ample evidence that producers of cocoa are, as a group, substantially better off than other agricultural producers. Their tax burden may therefore equitably be higher, especially if the price which they receive from the Marketing Boards is increased in accordance with our recommendation as to the price policies of the boards (see Chapter 4 and Technical Report No. 4).

### *Income Taxes*

The Income Tax Ordinance taxes profits of limited liability companies and certain statutory corporations at the rate of 9/- in the

<sup>7</sup> See Technical Report No. 13.

<sup>8</sup> The price per ton at which surcharges apply is: cocoa, £ 150; groundnuts, £ 65; palm kernels, £ 50; technical palm oil, £ 65; edible palm oil, £ 75; cotton, £ 325.

<sup>9</sup> At the June 1954 price of cocoa, the duty was 45%.

£ (45%). Non-Africans and Africans earning income in Lagos pay taxes varying from 6/- to £ 2.16.3 on income below £ 150 per year; incomes above that amount are taxed at rates rising from 4½d. in the £ (17/8%) for the first £ 200 of "chargeable" income to 15/- in the £ (75%) on that portion of "chargeable" income which exceeds £ 10,000.<sup>10</sup>

The mission does not believe that an increase in the companies tax is advisable, for it is already at a high level and any increase would discourage investment by both Nigerian and foreign capital. Nor do we recommend an increase in the personal income tax. We do suggest the advisability of a change in the present provisions of the law under which the effective rate of tax may, by reason of allowances and reliefs, remain at 4½d. in the £ for incomes which may be considerably in excess of £ 200.<sup>11</sup>

### *Reserves*

As indicated in Chapter I, the Nigerian government has accumulated substantial reserves partly because revenues have consistently been underestimated, partly because expenditures fell behind estimates, and partly deliberately to mitigate inflationary pressures caused by large export surpluses and to provide a cushion against a possible decline in revenues. The reserves are held in various funds, the largest being the Revenue Equalisation Fund established with the further object of compensating for the impact of future higher recurrent expenditures presently met out of Colonial Development and Welfare grants.

On the basis of official figures, which we consider conservative, we estimate that the reserves of the federal government will be about £ 40 million in March 1955.<sup>12</sup>

We are satisfied that in the next five years the reserves, part of which has been earmarked explicitly for the purpose of financing development expenditure, can be drawn down considerably without

<sup>10</sup> Typical tax liabilities are: £ 67.10.0 on a "chargeable" income of £ 1,000 (6.75%); £ 277.10.0 on £ 2,000 (14.375%); and £ 1,402.10.0 on £ 5,000 (28.05%).

<sup>11</sup> E.g., for married men, the effective rate remains at 4½d. in the £ up to an income of £ 600; and even for higher incomes if child, insurance or other "reliefs" can be claimed.

<sup>12</sup> See Table 19 of Appendix C.

endangering the country's long-run financial stability or impairing the liquidity of its treasury position. We think that in the next five years the government can safely draw up to £ 20 million from its reserves. In the absence of unforeseen developments, Nigeria should be able to use its reserves also after 1960 to supplement other sources of finance for development.

The mission also suggests that the practice of setting up and allocating current revenues into a large number of special funds be discontinued and that the principle of unity of government accounts be established. This would enable the government to work with a much lower level of reserves than the present one. There are, it is true, good reasons why the Nigerian government needs working balances and contingency reserves larger than those required by governments of other countries with a comparable level of revenue. As already stated, the level of Nigerian government revenue depends, and is likely to depend for some time, on the value of the country's international trade which, by the nature of Nigeria's exports, is subject to abrupt fluctuations; moreover, the difficulties of moving funds within the country make large working balances necessary. But the government cannot afford a cushion against all conceivable contingencies except at the cost of a continuing insufficiency of public services, incompatible with the requirements of a growing economy.

### *Loans*

At present, Nigeria's government debt is small. At the beginning of the 1954-55 fiscal year the total Nigerian foreign debt amounted to £ 21.2 million, against which £ 4.2 million was held (as of October 31, 1953) in the statutory sinking fund. Interest and sinking fund required £ 949,000 in 1953-54. In addition, the central government has borrowed £ 2.7 million from the Cocoa Marketing Board, on which the service cost was £ 126,000 in 1953-54. It plans to borrow an additional £ 22.6 million. Half would be raised internally and half is to be raised in the London market.<sup>13</sup> Allowing for the retirement of a loan of £ 4.2 million due in 1955 these operations will increase

<sup>13</sup> This does not include a loan of £ 2 million from the Marketing Boards which is to be reloaned in 1954-55, half to the Western and half to the Eastern regional governments.

the total Nigerian debt to about £ 40 million, with an annual debt service of less than £ 2 million. The cost of debt service will be initially offset to some extent by interest on the invested proceeds of contemplated loans.

After having contracted these additional debts, the country will still be in a position prudently to borrow substantial amounts. But this borrowing potential should be kept intact for the period after 1960, when capital requirements may be expected to increase.

### C REGIONAL FINANCES

The magnitude of the financial problem which each of the regional governments will face in 1960 if the mission's program is followed is illustrated in Table 5.

TABLE 5 Financial Position of Regional Governments, 1959-60

*(Million £)*

	North	West	East
Revenues at normal rate of growth .....	9.6	11.8	6.4
Recurrent expenditure .....	8.9	8.4	6.3
Capital expenditure .....	5.0	6.5	3.2
Balance to be covered .....	4.3	3.1	3.1

The principal sources of regional finance consist of revenues shared with the federal government, produce sales taxes and the so-called "capitation levy," the regions' share of local direct taxes levied under the Direct Taxation Ordinance. The produce sales taxes are levied by the regions on exports controlled by the Marketing Boards and have been in effect in the North and West since 1953;<sup>14</sup> and our projections of revenue assume that like taxes will be imposed in the East also.

The regions themselves raise little of their income. The only major sources of revenue the level of which they can control are the produce sales taxes. They are essentially export duties and as such they duplicate federal export duties. We realize that for the time being these

<sup>14</sup> The rates are: cocoa £ 4 per ton; groundnuts and palm oil, £ 1 per ton; ben-niseed, 10/- per ton; and cotton, 0.1d. per lb. of seed cotton.

taxes will have to be retained, but we do not think that they should be increased.

While over the long term we expect that an increase in the tax collected by local authorities under the Direct Taxation Ordinance will result in greater revenue to the regions through their share of the additional proceeds, no substantial increase from that source is likely to come about before 1960.

In order to reduce the gap between regional expenditure and revenue, we have proposed above that the regions receive the entire proceeds of the recommended rise in import duties, estimated at £ 15 million over 1957-60. Accordingly, that sum has been included in Table 3 and, on the assumption that arrangements can be made under which the federal government will forego its 50% share of this revenue, we have allocated it to the regions. Following the revenue allocation scheme, we have allocated £ 6 million to the West, although, as Table 3 shows, the West actually does not need additional funds.

In addition, we recommend that all three regional governments be prepared to use during 1955-60 the reserves, aggregating £ 7 million, granted to them by the Lagos conference. The North should also use another £ 2 million of its reserves, bolstered in 1952 by a special "underdevelopment grant" from the central government, while the West can draw upon an additional £ 1 million of its reserves.

In Chapter 4, we recommend that the "second-line reserves" of the Marketing Boards be made available for long-term lending to government for development purposes. On the basis of our appraisal of the reserve position of the boards as reorganized (see Technical Report No. 4), we recommend that the West and the North each borrow up to £ 10 million from their Marketing Boards. The figure of £ 10 million (shown in Table 3) merely indicates the order of magnitude of loans which can safely be made in these two regions without impairing the financial position of either the boards as creditors or the regions as debtors. Also, loans in such amounts would leave sufficient funds with the respective boards for lending at a later date. We think the second-line reserves of the Marketing Board in the Eastern Region are insufficient to permit their use for long-term loans during 1955-60.

Among the regions, only the West can mobilize sufficient funds to meet the cost of the program which we propose. The Eastern Region,

even taking into consideration probable financial assistance under the new Colonial Development and Welfare Scheme, would not be able to meet the cost of the program without financial assistance from the federal government. The North should just be able to meet the demands of the recommended program with Colonial Development and Welfare assistance.

Under the new revenue allocation system, regional revenues will be more sensitive than federal revenues to price and volume fluctuations of individual export crops. This is so because each of the principal export crops is for the most part concentrated in a single region and because export duties are a significant part of regional receipts. During 1955-60, we expect the price of cocoa to remain at a high level in relation to the last few years and prices of groundnuts and palm produce to decline to lower levels. As a result, the revenues of the West are likely to be higher than was anticipated when the allocation system was devised, while those of the North and East are likely to be somewhat lower. In the Northern Region, the expected price decline of groundnuts is likely to be partially offset by an increase in export volume, partly because of large shipments of accumulated stocks and partly because of good prospects for a sizeable expansion of production. There are no important compensating factors in sight for the Eastern Region.

The Trust Territory of the Southern Cameroons has a special financial relationship with the Federation, explained in the Notes on Government Revenue in Appendix C. To increase Cameroons revenue, we recommend that the federal government consider the practicability of increasing the export duty on bananas and of introducing export duties on other products such as coffee.

We further recommend a substantial addition to revenue through larger profit distributions to the government of the Southern Cameroons by the Cameroons Development Corporation. We have projected these at £ 1 million for 1955-60.<sup>15</sup>

The Southern Cameroons has no reserves to draw on and the reserve position of its Marketing Board will not, in our view, permit any lending to the government.

The insufficiency of Eastern Region revenues and of those of the

<sup>15</sup> See Technical Report No. 5 for our views on the future financial policy of the CDC.

Southern Cameroons was anticipated by the recommendation of the Fiscal Commissioner that the East and the Southern Cameroons be given some grant assistance by the federal government. Table 3 indicates that the East may need £ 3 million in grants during 1955-60 and that grants to the Southern Cameroons may exceed £ 4 million.<sup>16</sup> These grants would be a heavy burden on federal revenue, but we think they must be made if these two regions are not to fall behind the others in economic development.

The mission has not taken into consideration funds of the Custodian of Enemy Property totaling £ 1.6 million, derived from the disposal of enemy assets in Nigeria and the Cameroons. At the time of the mission's visit, no decision had been taken regarding the disposition of the balance of these funds remaining after the payment of claims. It is to be assumed, however, that this balance will be made available to Nigeria and the Southern Cameroons. As more than half of the Custodian's holdings was derived from the sale of enemy assets in the Cameroons a substantial sum would thus become available for the Southern Cameroons.

#### D LOCAL FINANCES

Although only one-sixth of public expenditure is accounted for by local authorities, we believe that local authority finances deserve the closest attention. Under the present system of taxation, taxes on the Nigerian population outside Lagos are assessed by local authorities. We are inclined to believe that for many years to come it will be impossible to assess income or property taxes on Africans on any but the local authority level. Since we believe that in Nigeria, as in other countries, taxes on income and property are the most equitable form of taxation, we recommend that taxation at the local level be increased in order to pay for the increased government services which we propose. The proceeds of such taxation should be sufficient not only to pay for local government but eventually to permit the appli-

<sup>16</sup> The special financial arrangements of the Southern Cameroons may entitle it to grants of £ 1.8 million, so that "discretionary" grants by the federal government, including the Southern Cameroons' share of C.D. and W. funds, would amount to £ 2.3 million only. See Appendix C. The figure for grants to the Cameroons does not include £ 1 million for the Southern Cameroons development agency which we have recommended in Chapter 4. This amount is included in federal expenditure.

cation of income tax proceeds to the cost of regional government. As and to the extent that this becomes possible, local expenditure should be met increasingly through property taxes.

While this should be the long-term objective of tax policy, we believe that during 1955-60 the objective will have to be limited to making the local authorities assume an increasing share of the cost of their operations, most particularly in health and education.

At present, local authorities collect taxes under the Direct Taxation Ordinance. A share of the proceeds of these taxes, the "capitation levy," is turned over to the regional governments. But these payments to the regions are more than offset by grants by the regional governments to the local authorities.

In 1952-53 about 62% of local authorities' revenue came from direct taxes and local "rates." Although administration of the Direct Taxation Ordinance varies considerably from one part of Nigeria to another, in principle there are two classes of direct tax. The first amounts to a flat-rate poll tax to be levied on low-income taxpayers only. In many parts of the North this head tax is apportioned by village chiefs according to a rough estimate of ability to pay. Rates generally vary between 10/- to 30/- per adult male. The second class applies to "wealthy" persons, and to salaried persons whose income is easily ascertainable; in theory, it is a progressive tax on income.

In practice, the direct tax is often administered in a manner which makes it regressive. Most authorities assess all but a few taxpayers at the flat rate although incomes vary considerably. Methods of assessing income taxes at the progressive rate are crude. It is understood that generally local assessment committees grossly underassess incomes of farmers, traders, craftsmen, etc., with the result that the latter may pay a lower share of their actual incomes than persons subject to the flat rate. Local authorities are aware of this shortcoming and recently some areas have made great progress toward more accurate assessment of larger incomes. Many taxpayers have been shifted from the flat to the progressive rate. This improved administration should continue and should be extended. Moreover, sooner or later local governments must squarely face the politically difficult problem of taxing the incomes of women. We recognize, however, that it will be a long time before income assessment on western standards will be achieved.

Local authorities are also empowered to levy "rates" on a property or other basis, for special purposes or to increase their general funds. These have been extensively introduced in the East, commonly to finance education. Proceeds of rates in that region rose from an estimated £ 134,000 in 1952-53 to £ 309,000 in 1953-54. New rates for specified purposes seem to be far more acceptable to taxpayers than other kinds of tax increases and we recommend their adoption by all local authorities. We believe, however, that they should to an increasing extent be levied in accordance with income and wealth. In urban areas they should be based on property values, as is already done in Lagos. Property assessments made or in progress in many towns for the purpose of levying water rates can be used as a basis for property or other rates.

Grants are received from the regional (and in the case of the Lagos Town Council, the federal) government for a variety of purposes. In 1952-53, they accounted for 15% of local revenues. All regions reimburse local authorities for a large share of their expenditures on education.<sup>17</sup> Police, roads, medical services and, in the Northern Region, agriculture, forestry and veterinary services are also partly grant-financed. The East has a system of matching grants for local capital works projects. Both the West and the East make "Community Development Grants" out of funds supplied under the Colonial Development and Welfare Scheme.

Aside from education grants, the mission makes two proposals with respect to regional grants to local authorities. Each region should establish a local development fund, to provide grants and loans for meritorious capital works projects. In the East and in the West these funds should continue the type of assistance supplied by Community Development Funds.<sup>18</sup> In the North, where we have projected a relatively smaller sum for the purpose, the local development fund should be used to assist native treasuries unable to finance desirable development projects from their current revenue surpluses. These funds should be administered by the departments responsible for local finance, i.e., the Ministries of Local Government in the East and the West and by the Financial Secretary's office in the North.

<sup>17</sup> For our recommendations on the future of these grants see Technical Report No. 21.

<sup>18</sup> And in the East by "special grants" and up to 1954-55 by "code grants."

Grants for recurrent costs of agriculture, medical and veterinary services, etc., should not be increased, and in the North, where they have made up a larger proportion of local authorities' revenue than elsewhere, they should be reduced. We have made our projections accordingly. Expansion of these services should be paid for out of local revenues.

Reserves of Eastern and Western local authorities are no larger than needed for working balances. In the North, on the other hand, reserves were estimated to amount on March 31, 1954 to almost £ 6 million, a sum substantially in excess of working requirements. We do not suggest any net reduction of these reserves over the next five years, since we anticipate a great expansion of expenditure on schools and other facilities after 1960. But we do suggest a revision of the present system of five-year development plans, under which only funds available at the beginning of a five-year period may be expended for development purposes during that period, while surpluses earned within the period are frozen until the beginning of the next period. The local authorities should be free immediately to accelerate their development plans if their current revenues permit, as long as reserves on hand are not thereby reduced.

Our program for local authorities calls for a rise in total expenditure from £ 8.2 million in 1952-53 to £ 16.3 million in 1959-60. Revenues retained by local authorities and grants from regional governments totalled £ 8.5 million in 1952-53. Assuming a normal rate of growth, local authorities' own revenues might amount to £ 9.8 million in 1959-60. We project, in addition, grants from regional governments (in the case of the Lagos Town Council, from the federal government) amounting to £ 3.2 million in 1959-60. Efforts must therefore be made to increase local revenues, mainly from direct taxes, to fill the gap which would rise to £ 3.3 million in 1960.

Table 6 gives a more detailed breakdown of the required increase in direct taxes in the North, the West, the East and the Southern Cameroons.

In Lagos, where the property tax assessment is now being thoroughly revised, there should be no difficulty in reaching the target of £ 430,000 by 1959-60.

Direct taxes of Southern Cameroons native treasuries will rise to

TABLE 6 Proposed Rise in Direct Taxes Collected  
by Local Authorities

(Million £)

	1952-53	1953-54	1959-60
<i>North</i>			
Normal growth <sup>1</sup>			
for own use .....	3.06	3.78	4.51
for regional government .....	.33	.35	.52
Proposed additional yield .....	—	—	.70
Total .....	3.39	4.13	5.73
<i>West</i>			
Normal growth <sup>1</sup>			
for own use .....	1.02	1.17	1.40
for regional government .....	.03	.53	.66
Proposed additional yield .....	—	—	1.80
Total .....	1.05	1.70	3.86
<i>East</i>			
Normal growth <sup>1</sup>			
for own use .....	.84	1.03	1.23
for regional government .....	.03	.04	.04
Proposed additional yield .....	—	—	.60
Total .....	.87	1.07	1.87
<i>Southern Cameroons</i>			
Normal growth <sup>1</sup>			
for own use .....	.10	.11	.13
for regional government .....	.01	.01	.01
Proposed additional yield .....	—	—	.04
Total .....	.11	.12	.18
<i>Lagos Town Council</i>			
Normal growth <sup>1</sup> .....	.23	.29	.35
Proposed additional yield .....	—	—	.08
Total .....	.23	.29	.43

<sup>1</sup> 3% per annum after 1954-55, based on an anticipated rise in incomes at that rate. See Appendix C, Notes on Government Revenue.

£ 140,000 on the basis of a normal growth. We estimate that they will need an additional £ 40,000 to meet expanding local authority expenditures.

In the North an additional £ 700,000 will be required by 1959-60. This amount and much more could be raised by assessing more accurately the incomes of wealthier individuals.

The Eastern local authorities will have a more difficult task. By 1959-60 the amount of additional tax revenue required will be £ 600,000. To raise this amount will mean increasing the yield of direct taxation by 50% over what it would have been if normal growth were maintained. In the last two years the East has made striking progress in increasing tax yields and we are satisfied that the goal can be achieved by more widespread use of rating and perhaps by some increase in the yield of rates already in effect.

Western local authorities will have the most difficult problem. The relatively wealthy Western Region has decided to introduce free universal primary education beginning in 1955 and to expand social services. We believe that the West can carry out its ambitious program and we have made our projections accordingly. In order to do so, we estimate that local authorities will have to increase the yield of direct taxation from a level of £ 1 million in 1952-53 to £ 2.8 million by 1959-60, even if they receive substantial regional education grants, which we recommend should rise to £ 1.5 million in 1959-60. This would mean an increase in the tax burden from an average of 30/- per taxpayer to some 80/-. We estimate that the average taxpayer has at his disposal about £ 90 to £ 120 of cash income per year. The higher tax is surely not an impossible burden, though the discontent occasioned by the Education and Health Levy of 10/- imposed in 1953 is an indication of the opposition which may be anticipated. The necessity of shouldering this burden will have to be explained clearly to the Western people. The raising of the additional tax revenue would be facilitated by taxing more persons on the "progressive" scale rather than on the flat rate basis, and by increasing the use of property taxes, especially in Ibadan and other large towns. We further recommend that regional grants for education be made contingent upon the achievement by the local authorities of the tax targets suggested.



**PART II** *THE TECHNICAL REPORTS*



## TECHNICAL REPORT 1 CAPITAL FORMATION

As in any other country, the growth of Nigeria's national income in the long run will depend to a large extent on the rate of capital

TABLE 1 Savings and Investment, 1950-52

(Million £)

	1950	1951	1952
<i>Public Investment</i>			
Domestic Fixed .....	12.1	15.1	22.4
Abroad .....	24.2	42.9	25.4
Total .....	36.3	58.0	47.8
<i>Private Investment</i>			
Domestic Fixed .....	24.5	26.9 <sup>1</sup>	33.3
Abroad <sup>2</sup> .....	2.2	1.0	1.0
Total .....	26.7	27.9	34.3
Total Domestic Fixed Investment...	36.6	42.0	55.7
Increase in Foreign Assets .....	26.4	43.9	26.4
Total .....	63.0	85.9	82.1
<i>Financed by:</i>			
Net Donation Receipts from Abroad..	2.6	0.7	4.0
Public Borrowing Abroad .....	1.0	7.3	0.4
Private Capital Inflow .....	3.0	7.6	12.4
Domestic Savings <sup>3</sup> —Public .....	32.2	49.4	42.8
Private .....	24.2	20.9	22.5
Total .....	63.0	85.9	82.1

<sup>1</sup> Mission estimate.

<sup>2</sup> Changes in foreign balances of Nigerian banks.

<sup>3</sup> Excluding dividend and interest payments abroad.

SOURCE: Department of Statistics, Lagos. For more detailed data on fixed investment, see Appendix E.

formation. Data on capital formation for the years 1950-52 (Table 1) show that the level of gross investment came to an average of 12% of the gross domestic product.

Only a small part of total investment was financed by resources coming from outside Nigeria. Donations (mostly Colonial Development and Welfare grants), borrowings by government and inflows of private capital, consisting mostly of reinvested earnings of expatriate firms, accounted for one-sixth of total investment only; the remainder, or 10% of the gross national product, represented domestic savings.

This must be considered a remarkable performance in view of the low consumption standards prevailing in the country, even if allowance is made for the fact that two-thirds of the savings accrued to the government and government agencies from receipts resulting mainly from increases in export prices.<sup>1</sup>

However, less than 60% of the funds available for investment was used to augment the stock of capital of the Nigerian economy; the remainder took the form of foreign investment, i.e., it was added to the country's sterling balances. Two-thirds of public savings—the difference between current receipts and current expenditures of government and public agencies—accumulated abroad. The net outflow of public funds was partly offset by a net inflow of capital on private account. Thus, domestic investment<sup>2</sup> amounted between 1950 and 1952 to 7% of the gross national product only. The reasons for the failure to utilize fully the country's savings within Nigeria are explained in Chapter 2.

As to the future, there is the possibility that savings in the public sector will decline, primarily because the Marketing Boards probably will no longer accumulate "profits," if the prices of export produce decline, as appears likely, and if the mission's recommendations regarding the price policy of the boards are adopted.

The increase in current government expenditure proposed by the mission would leave a smaller margin for capital investment out of current government revenues. Public domestic investment, on the other hand, should substantially increase and should exceed public

<sup>1</sup> A large part of increased export proceeds accrued to the public sector through export duty collections and in the form of "profits" of the Marketing Boards.

<sup>2</sup> Excluding changes in inventories for which estimates are not available, except for 1952 when the value of inventories increased by £ 9.5 million.

savings, the difference being financed, as recommended in Chapter 5, by the drawing-down of reserves, borrowings from abroad, and Colonial Development and Welfare grants.

In the private sector, it is reasonable to expect an increase both in savings and investment, since the increase in public expenditures, capital and recurrent, aiming at an expansion of agricultural production, and improvements in the efficiency of Nigerian labor should open up new private investment opportunities for both African and non-African entrepreneurs. There are already some indications that the demand for certain kinds of consumer goods (textiles, household utensils) is growing more slowly than in the past and that a rising proportion of income is saved and invested in oil presses, lorries, bicycles, boats and permanent housing. Private investment should likewise be furthered by loans and partnership schemes of the reorganized development corporations. There is also the possibility of increased foreign investment in Nigeria through plowing back of earnings of foreign-owned enterprises and inflow of new capital by both established and new firms.

It should be noted that there is no danger that in the next few years the increased level of investment will lead to pressures on the balance of payments. The difference between public savings and public capital expenditures is to be financed by drawing down balances held abroad and by loans and grants from abroad, while the expected increase in private investment would be financed primarily out of current income of individuals and business firms and to some extent through inward capital movements.

To the extent to which increased total capital expenditures result in a rising demand for domestic goods and services, however, they may give rise to pressures on the price level, unless the supply of domestically produced goods, especially foodstuffs, is increased sufficiently to meet that demand. Therefore, the encouragement of local food production for which we make several recommendations in Technical Report No. 8 is an important measure of over-all economic policy and a prerequisite to the success of the proposed development program.

## TECHNICAL REPORT 2

### *INTERNATIONAL TRADE AND PAYMENTS*

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Nigeria's international trade presents in general an unusually favorable picture. The exports are a reasonably diversified group of products, the long-run markets for which seem well assured. The balance of payments has for a number of years shown a very substantial surplus, both over-all and with the dollar area, and Nigeria has acquired very considerable sterling balances. The burden of foreign indebtedness is light—in fact, Nigeria is at the moment a net creditor. Accordingly, as far as external payments are concerned, Nigeria is very well placed to proceed rapidly with development plans.

#### I EXPORTS

Nigerian exports have averaged over £ 100 million annually for the last five years. Although this is not a great volume of exports for a country with a population of over 30 million, it nevertheless establishes Nigeria as a world exporter of some importance. For example, its exports in the last five years were about equal in value to those of Turkey; they considerably exceed those of Uruguay and are 50% higher than the exports of Portugal.

Table 1 shows the value of Nigerian exports. Almost exactly half is represented by vegetable oil products—principally palm oil, palm kernels and groundnuts. Cocoa, the other major product, accounts for nearly one-quarter of total exports. Tin and columbite provide the largest share of the remainder.

The bulk of the agricultural exports is produced by small landholders and purchased by large expatriate companies as buying agents for the Marketing Boards. Palm products, groundnuts, cocoa and

TABLE 1 Average Annual Value of Exports by Commodity, 1949-53

(Thousand £)

		%			%
<i>Total Exports</i> .....	106,175	100.0	<i>Other Exports:</i>		
<i>Oil &amp; Oilseeds:</i>			Cocoa .....	23,717	22.3
Palm Kernels .....	19,690	18.5	Tin .....	7,050	6.6
Palm Oil .....	13,406	12.6	Hides & Skins .....	4,958	4.7
Groundnuts .....	18,019	17.0	Cotton .....	4,325	4.1
Groundnut Oil .....	878	0.8	Rubber .....	3,675	3.5
Benniseed .....	854	0.8	Timber (incl. Plywood)	3,553	3.3
Other Oilseeds and			Bananas .....	2,205	2.1
Vegetable Oils .....	929	0.9	Columbite .....	1,276	1.2
Sub-total .....	53,776	50.6	All Other .....	1,640	1.6
			Sub-total .....	52,399	49.4

SOURCE: Digest of Statistics and Nigeria Trade Summary, Lagos.

cotton all follow this pattern. Mineral exports are principally produced and sold by expatriate-owned mining companies. Bananas are produced and sold chiefly by the Cameroons Development Corporation and a subsidiary of the United Fruit Company. A considerable portion of the timber exports originates in the plywood factory of the United Africa Company, which together with some other companies is also a major exporter of hides, skins and rubber.

Table 2 shows the volume of principal export commodities.

Palm products have long been the chief source of earnings abroad. The oil palm is indigenous and even 40 years ago exports of the oil

TABLE 2 Volume of Exports of Principal Commodities

(1949-53 = 100)

	Total Exports <sup>1</sup>	Palm Kernels	Palm Oil	Groundnuts (incl. oil)	Cocoa	Tin	Cotton	Rubber	Columbite
1913 ....	22	46	49	7	3	36	20	—	—
1924-28 ..	47	67	71	35	39	91	39	4	—
1929-33 ..	58	69	73	57	53	84	31	4	—
1934-38 ..	78	86	78	76	82	92	57	14	28
1939-43 ..	79	83	78	61	83	140	66	29	48
1944-48 ..	77	80	70	74	82	126	29	58	124
1949-53 ..	100	100	100	100	100	100	100	100	100

<sup>1</sup> See Appendix E for description of index.

SOURCE: Digest of Statistics, Lagos; League of Nations: International Trade Statistics.

were nearly half the present volume. Cocoa and groundnuts, on the other hand, were introduced to Nigeria and developed substantially only after World War I. It was a little over 20 years ago that they reached half their present export level. Tin mining was developed relatively early in Nigeria, exports reaching almost their present level in the 'twenties. Among the minor products, rubber has been outstanding in its recent growth.

Within the last five years the trends have varied somewhat from the longer run tendencies. While groundnuts have continued their expansion (with an increasing proportion being exported as groundnut oil), the growth of cocoa exports has stopped for the time being. Timber, rubber, cotton and columbite have made quite rapid strides in recent years. This growth in minor products has made the recent pattern of exports rather more diversified, a desirable tendency because it makes the country less vulnerable to shifts in particular markets.

The over-all growth of exports, as shown in Table 2, has been quite remarkable. A doubling of the 1913 trade was achieved soon after World War I and the increase continued into the 'thirties. The war checked this growth; 1944-48 exports were below the level of 1934-38. The rise has since resumed: the last five-year average is over 25% above prewar levels and 1953 exports were considerably above those of any previous year.

## II IMPORTS

Table 3 shows the commodity groups represented among Nigeria's imports in the last five years.

As would be expected for a country in an early stage of development, finished consumer goods bulk large in imports, as shown by Table 3. Textiles in particular form a very large item, one-third of total imports, a proportion which is exceeded by very few countries. On the other hand food imports are relatively small, consisting for the most part of luxury items and a few specialized items such as dried and canned fish and salt, in which the country is deficient.

Transport equipment, including road vehicles, originates almost

TABLE 3 Imports by Commodity Groups, 1949-53

*(% of value of total imports)*

I. <i>Consumption Goods:</i>		II. <i>Capital Goods and Raw Materials:</i>	
Textiles .....	33.6	Vehicles and Parts .....	12.1
of which		of which	
Cotton Piece Goods ....	21.5	Lorries .....	3.0
Rayon Piece Goods ....	7.0	Cycles .....	1.9
Food, Drink & Tobacco ....	12.1	Automobiles .....	1.7
of which		Building Materials .....	7.6
Fish .....	2.5	of which	
Salt .....	1.4	Corrugated Iron .....	2.7
Sugar .....	1.0	Cement .....	2.3
Beer .....	1.8	Machinery and Equipment ..	7.5
Tobacco & Cigarettes...	2.0	of which	
Miscellaneous Consumption		Electrical Machinery	
Goods .....	8.4	& Apparatus .....	2.3
of which		Industrial Machinery ..	1.4
Hollowware .....	1.8	Miscellaneous Supplies ....	10.1
Medicine & Drugs ....	1.4	of which	
Kerosene .....	0.7	Petroleum Oils .....	4.2
		Bags and Sacks .....	2.3
Sub-total .....	54.1	Sub-total .....	37.3
		III. <i>Other Items</i> .....	8.6
		of which Unspecified Iron	
		and Steel Manufactures.	4.0
		Sub-total .....	8.6

SOURCE: Digest of Statistics and Nigeria Trade Summary, Lagos.

wholly from abroad and now takes a considerable share of the imports. The value of bicycle imports exceeds that of passenger automobiles. Building materials, particularly cement and corrugated iron sheets, are also imported in considerable quantities. Nigeria is dependent on imports for practically all machinery and equipment. The amounts imported are not as yet substantial; the group shown, which includes all forms of implements as well as some household electrical equipment, is less than one-fourth the imports of textiles.

From the rough separation made of consumption goods it appears that they absorbed about 60% of all imports in recent years. This percentage is probably somewhat lower now than in earlier periods. The volume figures indicate that except for beer, imports of consumption goods have increased rather less than most of the capital goods.

Among the latter, the increase in imports of cement, road vehicles and petroleum is quite spectacular. One factor in the slow growth in consumption goods has been the growth of domestic production. Increased sales of the cigarette factory and increased local production of tobacco have reduced the need to import cigarettes and tobacco. In earlier years there was a similar replacement of kola nut imports by local production.

Table 4 shows the volume of selected imported commodities, representative of consumption goods, capital goods and raw materials.

TABLE 4 Volume of Imports of Selected Commodities

*(1949-53 = 100)*

Consumption Goods							
	Fish	Salt	Sugar	Beer	Tobacco	Cigar-Cotton & Rayon ettes	Rayon Piece Goods
1924-28...	132	65	28	22	87	104	48
1929-33...	132	63	32	15	61	106	47
1934-38...	109	65	61	10	48	117	61
1939-43...	18	67	18	11	38	81	37
1944-48...	14	86	20	21	58	104	51
1949-53...	100	100	100	100	100	100	100

Capital Goods and Raw Materials						
	Cement	Corrugated Iron Sheets	Cars and Lorries	Petroleum Oils	Bags and Sacks	Total Imports <sup>1</sup>
1924-28...	24	56	22	10	51	49
1929-33...	19	49	17	12	57	44
1934-38...	22	50	28	16	83	52
1939-43...	16	10	8	26	76	28
1944-48...	41	13	35	42	77	43
1949-53...	100	100	100	100	100	100

<sup>1</sup> See Appendix E for description of index.

SOURCE: Digest of Statistics, Lagos; League of Nations: International Trade Statistics.

The over-all volume of imports showed a surprising stability in the interwar years. The growth in export volume was not accompanied by an equivalent increase in imports, because imports were held down by the abnormally low export prices in the 'thirties. In the war years the import volume fell very substantially, partly due to unavailability

of some types of supplies but also owing to a further worsening of the terms of trade, the extent of which is shown in the next section. The postwar volume of imports grew rapidly and the average for the last five years is roughly double the prewar level. The growth in the machinery and equipment imports has been particularly great; their share in total imports rose from 6.3% in 1949 to 8.6% in 1953. In the same period the much larger item of textiles reduced its share from 39.4% to 30.5%. However, part of these changes arose from differing price movements, as textile prices increased much less than those of other items.

### III PRICE MOVEMENTS AND TERMS OF TRADE

Table 5 shows the prices of exports and imports and the terms of trade since 1924.

TABLE 5 Prices of Exports and Imports and Terms of Trade  
(1949-53 = 100)

	Export Prices	Import Prices	Terms of Trade <sup>1</sup>
1924-28 .....	32	33	98
1929-33 .....	19	25	78
1934-38 .....	15	20	76
1939-43 .....	15	36	42
1944-48 .....	39	66	60
1949-53 .....	100	100	100
1949 .....	76	85	90
1950 .....	84	88	97
1951 .....	115	108	107
1952 .....	120	115	105
1953 .....	105	104	101

<sup>1</sup> Terms of trade = export prices divided by import prices. Apparent discrepancies are due to rounding. A rise in this ratio indicates improved terms of trade.

SOURCE: For five-year averages: mission estimate; for annual figure: Department of Statistics, Lagos.

In the last 30 years the prices of Nigerian exports and imports have shown wide fluctuations, but the variations of export prices were much more pronounced than those of import prices. The terms of

trade resulting from these movements have gone through a full cycle. The prosperous period of the 'twenties, with relatively high prices for Nigerian exports, was followed by the depression of the 'thirties when export prices fell by much more than import prices. The terms of trade as roughly estimated from the available data fell by one-quarter. Ignoring year-to-year fluctuations, the terms of trade stayed low until the war, when they further worsened. Export prices during the war were kept stable, but import prices rose quite substantially and the terms of trade fell to less than half those of the 'twenties. This means that at that time Nigeria had to export twice as much in order to buy the same volume of imports.

After the war the terms of trade rapidly recovered and soon passed the immediate prewar level. The rise in export prices in the period 1949-53 was sufficiently great to return Nigeria to the favorable terms of 1924-28. Taking the figures for the last five years individually, it is apparent that a peak was reached in 1951 under the stimulus of the speculative buying following the outbreak of Korean fighting. By 1953 the terms had receded somewhat and were only slightly more advantageous than the average for the last five years.

These indications of the over-all terms of trade of the country are not of course directly indicative of the position of the individual African producer of export commodities. He purchases a collection of imported goods in which, for example, textiles would weigh more heavily than in the official index. Moreover, the producers are concerned with the price they receive rather than the export price, which includes Marketing Board "profits" (or "losses") and export duties. An index on this basis would indicate a somewhat less favorable position for recent years than the over-all index. The general trend would, however, be similar and the index of the producer terms of trade would show the tremendous recent improvement.<sup>1</sup> The main difference would be that the producer index would probably be still improving and would mark an all-time high in 1953.

<sup>1</sup> A detailed investigation of these producer terms of trade made by E. K. Hawkins of the West African Institute of Social and Economic Research, Ibadan, in an unpublished study, establishes the very considerable gains made.

## IV DIRECTION OF TRADE

In the last five years some three-quarters of Nigerian exports has gone to the United Kingdom. The United States is the next largest customer and accounts for more than all other countries combined, the most important of which are European. This marks a sharp change from prewar when the exports to the United Kingdom were much lower and the exports to the European continent much higher. The change is in part attributable to the bulk purchase arrangements with the U.K. Ministry of Food during the last five years.

Table 6 shows the direction of flow of exports and imports during the prewar years and for the last five years.

TABLE 6 Direction of Trade

*(% of Total)*

	Exports		Imports		
	1934-38	1949-53	1934-38	1949-53	
United Kingdom .....	46.0	78.3	United Kingdom .....	56.8	52.8
United States .....	9.4	12.4	Japan .....	5.0	8.9
Netherlands .....	8.9	2.1	Germany .....	8.2	5.9
Germany .....	17.2	1.7	India and Pakistan ...	5.9	5.8
France .....	8.9	0.5	United States .....	6.5	4.2
			Netherlands West		
			Indies .....	1.1	3.8
			Italy .....	2.0	3.5
			Netherlands .....	1.8	3.0

SOURCE: Digest of Statistics, Lagos.

The import pattern has been much more stable. The United Kingdom has consistently been the source of more than half the total imports. The remainder has been widely distributed among industrial nations. In spite of quite severe restriction, Japan has achieved the greatest increase over prewar and in the last five years provided the second largest group of imports. Germany, whose share has been expanding greatly in the last two years, is next in importance. The United States, third largest prewar supplier, has been reduced to fifth place through dollar import restrictions.

This pattern results in Nigeria's running a large surplus with the

United Kingdom and the United States, combined with a considerable deficit with the rest of the world. While trade with other dollar countries has been in deficit and there are net dollar payments involved in other transactions, such as petroleum purchases, Nigeria has clearly been a net dollar earner. On the other hand Nigeria runs a heavy deficit with Japan.

#### v TRADE AND PAYMENTS RESTRICTIONS

Nigeria is a member of the sterling area and maintains exchange and import controls similar to those of other members. Purchases from the dollar area have been restricted in over-all amount, with licenses granted only for a specified list of essential goods unobtainable elsewhere. The list and the over-all allocation are determined in London on the basis of Nigerian submissions.

Restrictions on imports from other countries have for the most part been relaxed, with the significant exception of Japanese goods. During 1952 restrictions on Japanese goods were sharply tightened by Nigeria as by most members of the sterling area, following an earlier sterling area deficit with Japan. These restrictions led to a reduction of £ 5.5 million, or 50%, in Japanese goods entering Nigeria in 1953, a cut in terms of total value much more severe than the dollar restrictions.

In 1954, after Japan had negotiated an agreement with the United Kingdom calling for a substantial relaxation of restrictions by the United Kingdom and her colonies, the Nigerian allocation of import licenses for Japanese goods was greatly increased. The requirement for specific licenses for Japanese goods has not been abolished, however. From intimations the mission received at the time of its visit, it was evident that there would remain a substantial volume of repressed demand for such goods.

In the allocation of licenses among importers the policy of the administration has been to favor the African importer. The proportion of import business for scarce goods granted to Nigerian importers has increased annually as compared with that allocated to expatriate importers.

Export controls are maintained, primarily to ensure that the proceeds of the sale are repatriated to Nigeria in accordance with exchange control arrangements. There is no attempt to use these controls to divert exports to the dollar area.

For the foreseeable future Nigeria will remain within the sterling area and while the sterling area maintains restrictions, so will Nigeria. It would be wise, however, if the administrative procedure were revised to provide for the presence of Nigerian representatives at annual discussions in London. In this way, Nigerians would be kept informed about sterling area problems and would be confident that Nigerian problems were presented and adequately taken into account.

## VI EXPATRIATE COMPANIES IN TRADE

Although the agricultural export goods are chiefly produced by numerous small landholders, the purchase from them of the export crops is highly concentrated in the hands of a small number of expatriate companies, which, together with other Nigerian and expatriate firms, operate as licensed buying agents of the Marketing Boards. Since the inception of the boards, the number of Nigerian firms so operating has increased, however. One expatriate company in particular occupies an extremely large place, purchasing in 1949 43% of all Nigerian nonmineral exports.<sup>2</sup> In imports, substantially the same picture is presented with the same firms dominating, although the share of the smaller firms is somewhat larger and has tended to grow recently.

This concentration has arisen chiefly from the great advantages derived in West African trade from large-scale operations backed by substantial capital. Originally there were few facilities available for services such as warehousing. Consequently, firms which provided their own obtained a substantial advantage. Many of the goods handled are standardized and there were economies in bulk handling. The absence of a local capitalist class necessitated the development of

<sup>2</sup> This figure is given by P. Bauer in his article "Concentration in Tropical Trade," *Economica*, Aug. 1953, p. 22. The article provides a detailed analysis of the share of the firms in the trade of Nigeria and an examination of the causes of the concentration.

internal distribution of imports. As communications were poor, unusually large stocks of goods had to be carried. The requirements for capital were further increased by the uncertainties of tropical trade; firms with small capital frequently were destroyed when price declines caused losses on stocks and ran them short of liquid capital. Large firms, well known in London, were able to weather such crises by borrowing abroad.

The large expatriate firms have played a very important role in developing Nigeria. Their distribution of imported goods into the interior has been among the most potent forces in bringing about an increase in production for sale by demonstrating to the farmer the benefits he can derive therefrom. In addition, several of the firms have reinvested their profits in industrial and other enterprises in Nigeria.

These firms have provided and are providing efficient service and their large share in trade will continue for many years to come. But with the passing of the special conditions which gave them their initial advantage, the share in trade of smaller firms and in particular of Nigerian firms will grow. In recent years this tendency has been encouraged by the more liberal allocation of import licenses to the smaller traders. In the future, too, government support and encouragement for the smaller traders will be justified. However, this should not take the form of restrictive action against the larger companies based purely on the size or ownership of the firm.

## VII BALANCE OF PAYMENTS ESTIMATES

While trade gives rise to the major part of Nigeria's payments and receipts with the rest of the world there are other transactions of substantial importance. There are payments of profits by expatriate companies, receipts of interest on investments in London, receipts of private capital from abroad and the investment of government surplus funds in London, to mention only a few. Estimates of all these transactions for 1950, 1951 and 1952 are given in Table 7.<sup>3</sup>

<sup>3</sup> See Appendix E for the basis of the estimates.

TABLE 7 Balance of Payments Estimates

*(Million £)*

	1950		1951		1952	
	R. <sup>1</sup>	P.	R.	P.	R.	P.
<b>Merchandise</b>						
Exports .....	88.9	—	119.6	—	128.6	—
Imports (c.i.f.) .....	—	63.1	—	86.1	—	115.2
Balance on goods .....	25.8		33.5		13.4	
<b>Services</b>						
Travel .....	0.1	1.4	0.1	1.8	0.1	2.1
Transportation & Insurance .....	2.4	2.0	3.1	2.5	3.4	2.7
Investment Income—Direct .....	—	5.8	—	6.7	—	7.0
Other .....	3.0	0.6	3.9	0.6	4.8	0.8
Other Government .....	1.7	2.7	2.3	2.0	2.5	2.2
Miscellaneous .....	—	0.7	—	0.8	—	0.8
Balance on services .....		6.0		5.0		4.8
1. Balance on goods and services...	19.8		28.5		8.6	
<b>Donations</b>						
Private .....	0.7	1.2	0.9	1.5	0.9	1.5
Government .....	3.1	—	1.3	—	4.6	—
2. Balance on donations .....	2.6	—	0.7	—	4.0	—
3. Private Capital .....	2.6	—	8.6	—	7.6	—
4. Errors and Omissions .....	0.4	—	—	1.0	4.8	—
Balance 1 through 4 .....	25.4		36.8		25.0	
<b>Official &amp; Banking Capital</b>						
Changes in Nigerian Liabilities ..	1.0	2.7	7.3	—	0.4	0.1
Changes in Nigerian Assets (Net):						
Marketing Boards .....	—	12.1	—	11.2	2.1	—
Currency Board .....	—	5.3	—	13.4	—	4.0
Banks .....	—	2.2	—	1.2	—	1.0
Other Official .....	—	4.1	—	18.3	—	22.4
Balance of Official & Banking Capital		25.4		36.8		25.0

<sup>1</sup> R. = receipts; P. = payments.SOURCE: Mission estimates based on data supplied by Department of Statistics, Lagos.  
See also Appendix E.

The most striking feature of the balance-of-payments situation is the substantial addition made in each of the three years 1950-52 to Nigeria's net official and banking capital abroad. For the three years

the net addition amounted to £ 87 million, an amount equivalent to over 25% of export proceeds. This is an extraordinarily high rate of exchange savings, which has rarely been exceeded in any country. Nigeria's payments position is consequently very strong.

While this surplus was invested abroad a smaller inflow of private capital was being provided by the expatriate firms. The amount recorded in the estimates, £ 19 million for the three years, refers to the physical additions to capital by the expatriate companies after allowance for depreciation. It does not include any allowance for the growth of their liquid assets in Nigeria—debts or cash holdings—and it is probable that the actual transfer of capital was several million pounds greater.

Among the service items the largest is the profits of the expatriate companies. This item, which amounts to about 6% of export receipts, is quite substantial although it does not approach the level reached in many other underdeveloped countries. Nigeria is, however, almost unique among underdeveloped countries in having a very substantial offset in the form of interest receipts on balances held in London. These receipts are sufficient to cover all the charges on Nigeria's own debt and half the profits of expatriate companies. In consequence, net payments of invested income are less than 3% of receipts for exports.

The other major outward payments by Nigeria occur in travel expenditure and in private remittances abroad. These together take a net amount of a little over 2% of total export receipts. In government donations are recorded the substantial receipts on Colonial Development and Welfare grants together with some minor items.

#### VIII STERLING ASSETS

The large additions to Nigeria's assets abroad, shown in the balance of payments, have through the years led to the accumulation of very considerable sums. The full total of the assets was not readily available, as the balances are held by a large number of organizations, but a tabulation made for the mission indicated the position as of March 31, 1953 shown in Table 8.

TABLE 8 Sterling Assets of Nigerian Official, Semi-Official and Banking Institutions, 1953

<i>(Million £)</i>	
Marketing Boards .....	51.6
Currency Board .....	55.5
Central Government .....	47.7
Regional Governments .....	5.4
Native Authorities .....	3.1
Regional Production Development Boards .....	15.1
Other (Semi-Official) .....	11.9
	<hr/>
	190.3
Net Balances of Banks Abroad .....	16.4
	<hr/>
Total Banking and Official .....	206.7

SOURCE: Financial Secretary's Office. See also Appendix E.

The values in Table 8 represent either cash balances or the market value of securities held in London; 11% of the securities was included at their nominal, and the rest at the market, value. At that time the market values of securities held by the Marketing Boards were at a discount of 12%. As the official United Kingdom sterling balance figures are in terms of nominal values, about £ 20 million should be added to the figures in the Table when comparing them with other countries' sterling balances.<sup>4</sup>

This level of external assets of banking and official and semi-official institutions is quite unusual. In March 1953 not one of the 20 Latin American republics had such reserves. In the independent sterling area only Australia and India had greater assets. South Africa's total gold and foreign exchange reserves were less than two-thirds as large. To look at the assets from another side, they were considerably greater than the investments of expatriate companies in Nigeria; actually they exceed the total of these investments and the Nigerian public debt, so that Nigeria is for the moment a net creditor.

The main part of the balances is held by the Marketing Boards, the Currency Board and the central government, each accounting for about £ 50 million. The other large block was held by the Regional

<sup>4</sup> The realizable value of the £ 207 million in March 1953 has probably increased further in the succeeding year. The market value of the securities has improved and there appear to have been some direct additions by most of the institutions.

Production Development Boards, which received them from the Marketing Boards. The remainder was made up by the surpluses and unspent capital allocations of all the many semi-governmental organizations and the regional and local governments. The bank balances shown are the deposits of the branches in Nigeria with the head office in London. These balances, although private in direct ownership, are half government-owned if the ownership is traced to the depositors, for about half of the private bank deposits are made by official bodies.

Nigeria is exceedingly fortunate to have such assets at the outset of an intensified development program. The assets are considerably in excess of the amount required for external solvency and the excess will be available for development needs.

The amount which should be held abroad to ensure external solvency can never be precisely indicated. It is probably true, however, that Nigeria should maintain for some time at least an above-average reserve. The terms of trade, although not greatly out of line with previous periods of prosperity, are likely to worsen. The price stabilization operations of the Marketing Boards and the use of accumulated reserves by government during times of adversity will lead to relatively great demands on reserves in a depression. On the other hand, the debt service payments are small and imports are fairly easy to compress. Allowing liberally for all factors suggesting higher reserves, there seems no doubt that a substantial proportion of the sterling balances could be regarded as available to meet the capital requirements of development.

It is equally clear that at the moment the use of existing balances for this purpose should be limited. In Chapter 5 we have indicated the amounts which can usefully be employed in financing the development program in the next five years. We do not believe that these amounts should be exceeded because the reserves may have to be relied on in the more distant future to supplement the country's current savings when the requirements for capital investment will be larger. This problem and the working determination of the safe level of reserves are matters for which the proposed state bank should have primary responsibility.

I CURRENCY

The currency in circulation in Nigeria is the West African pound, issued by the West African Currency Board as the common currency of the British West African colonies of Nigeria, the Gold Coast, Sierra Leone and the Gambia. The currency system is based on sterling, and the value of the West African pound is tied directly to that of the pound sterling. West African currency is issued by the Board against the payment of sterling and, conversely, the currency is redeemable for sterling at all times. The issue and redemption take place at the rate of one pound West African currency to one pound sterling.

*The Currency Board*

The West African Currency Board was constituted by the Secretary of State for the Colonies, who also issued the West African Currency Board Regulations of 1949 which presently govern the Board's operations. They authorize the Board, subject to the legislation in force from time to time in the West African colonies, to provide, issue and re-issue coin and currency notes in the four colonies. The issue of currency notes in Nigeria is authorized by the Nigerian West African Currency Notes Ordinance, which provides that the currency notes shall be a charge on the assets of the Board and "failing them, on the general revenues of Nigeria."

The Board consists of five members appointed by the Secretary of State for the Colonies. The practice has been for one of the two Crown Agents for Oversea Governments and Administrations to serve as chairman, while the other members are from the Colonial

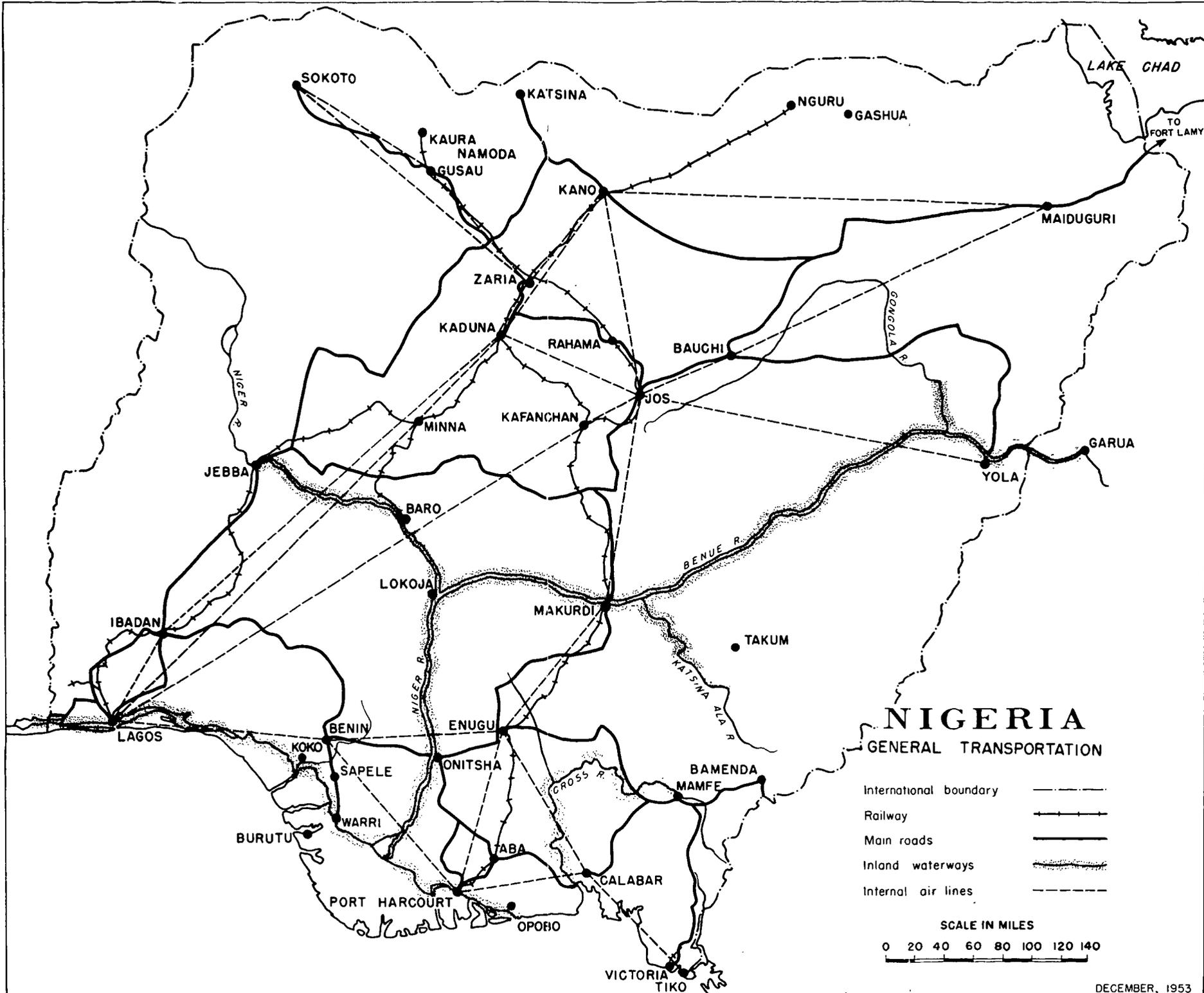
Office and the Bank of England. The secretariat is in the office of the Crown Agents and all meetings are held in London.

The sterling acquired by the Board against the issue of West African currency is credited to a Currency Reserve Fund. Part of this reserve is kept in liquid form to meet likely redemption demands. The Regulations authorize investment of the remainder in "sterling securities of the government of any part of Her Majesty's dominions or in such other manner as the Secretary of State may approve." In practice the Board has virtually limited its investments to U.K. securities which constituted 98% of its holdings in June 1953. At no time has the Board invested in any West African securities, although there is no legal restriction on its doing so. In consequence the currency issue has always been backed by external assets and there has been no fiduciary issue backed by securities of the local colonial governments.

The Board may, with the approval of the Secretary of State, distribute its income in whole or in part to the four governments. In practice, part of the income has been added to the Currency Reserve Fund. It is the broad policy of the Board to aim at a Currency Reserve Fund greater than the amount of currency outstanding, while at the same time making reasonably regular distributions to the four governments. The excess, normally of the order of 10%, is retained against possible depreciation of the securities held. At the end of 1952-53 the Board had reserves valued at 108% of the currency issue and distributed £ 400,000 for that year to the four West African colonies. Nigeria's share, determined by a formula based on trade, amounted to £ 213,000.

The Board will deal with any member of the public in the issue and redemption of currency, provided the amount of each transaction is £ 10,000 or more. It charges a fee of  $\frac{1}{2}\%$  for issue or redemption. As the banks charge the same fee for transfers of funds between London and West Africa, all private transfers take place through the banks.

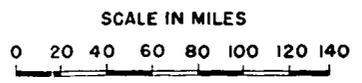
The Board maintains a main currency center in Lagos, and eight subcenters in Nigeria—all of which issue currency and accept currency for redemption. Transfers between all centers and subcenters in West Africa have been free of charge. No regulations have been



# NIGERIA

## GENERAL TRANSPORTATION

- International boundary
- Railway
- Main roads
- Inland waterways
- Internal air lines





VI TRANSPORTATION AND COMMUNICATIONS<sup>10</sup>

Except in the northeast and the Cameroons, Nigeria's transportation system (shown on Map 1) is reasonably adequate in the sense that there are already extensive facilities and lines of communication. It is not adequate in the sense of being able to move, promptly and at reasonable cost, the present volume of traffic, let alone the increase anticipated during 1955-60.

The volume of present traffic cannot be estimated with precision, for there are no statistics for road traffic and the figures for water transportation are incomplete. Our estimate of past and present distribution of traffic among the various forms of transportation is shown in Table 2.

TABLE 2 Estimated Distribution of Traffic

*(Million ton-miles)*

	1938-39		1948-49		1952-53	
		%		%		%
Rail .....	315	66	658	63	827	61
Road .....	100	21	300	29	400	30
Rivers and creeks <sup>1</sup> .....	60	13	85	8	120	9
Air .....	—	—	—	—	0.2	—
Total .....	475	100	1,043	100	1,347	100

<sup>1</sup> It is estimated that 80% of this traffic is carried on the Niger and Benue Rivers.

Improved transport facilities will have an immediately beneficial effect on the Nigerian economy and are essential for its further development. The mission therefore assigns them a high priority.

The objective should be a countrywide system, adequate the year round to handle the traffic at reasonable cost. We have given first attention to the provision of facilities which are now urgently needed to round out the Nigerian transportation system. We have regarded facilities which would parallel existing ones as less urgent, without intending to suggest that such paralleling might not be desirable at some future time.

For the transport portion of the development program, we propose capital expenditure totalling £ 37.9 million and recurrent expenditure

<sup>10</sup> See Technical Reports Nos. 16-20.

rising from £ 4.2 million in 1955-56 to £ 5.38 million in 1959-60, as compared to £ 2.8 million in 1952-53.

#### A RAILWAY <sup>11</sup>

The railway is just beginning to recover from serious postwar difficulties. Material shortages, labor troubles and greatly lowered efficiency, particularly in the locomotive workshops, so affected carrying capacity as to create the threat of a serious obstacle to the country's development. This was most dramatically illustrated by the backlog of 185,000 tons of groundnuts piled up in tarpaulin-covered pyramids at northern stations in November 1953. Delivery of new engines and improved operating efficiency should make it possible, however, to clear this backlog by the end of 1955.

We estimate a rise in traffic from 1,150 million ton-miles in 1955-56 to 1,460 million ton-miles in 1959-60. This projected increase of 5% per annum is in line with our expectation that exports of groundnuts and cotton will rise substantially, that the transport of domestic food-stuffs, including livestock, will increase and that large quantities of motor fuel will move north to satisfy the growing requirements of road transportation.<sup>12</sup>

The principal problems to be solved during 1955-60 are how to meet these anticipated heavy traffic increases and to reduce rapidly mounting operating costs. These problems are aggravated by the fact that while northbound and southbound traffic were well balanced in 1952-53, there will be, we estimate, an annual preponderance of southbound traffic of about 230 million ton-miles between 1955 and 1960.

We think these problems can and should be solved by employing more economical motive power and making maximum use of heavy trains. This will require more powerful engines, heavier track and more rolling stock than Nigeria has now. We do not believe, however, that it will be necessary to double-track any part of the system.

At present, the railway is entirely steam-powered. We recommend that for more efficient and economical operation, steam traction should gradually be replaced by diesel electric traction starting in the North.

<sup>11</sup> See Technical Report No. 16.

<sup>12</sup> See Technical Reports Nos. 7, 8 and 17.

Basing our calculations on the experience of other African countries, we estimate that aggregate savings of nearly 50% can be realized on expenditures for fuel, water and engine operation and maintenance. Ten 750 h.p. diesel engines have already been ordered for 1955 delivery. The mission recommends the purchase of additional diesel equipment to meet 1955-60 motive power needs, at an estimated cost of £ 774,000 (13 750 h.p. engines for the main line, 10 300-400 h.p. engines for branches and shunting and five railcars). A program of gradual dieselization such as we have in mind will not affect the market for Enugu coal for another 10 years, because the stock of coal-burning locomotives will continue in service and will be fully utilized. For the heavily-travelled Enugu-Port Harcourt section, a survey should be made to determine the feasibility of electric traction over the long term, assuming that a general electrification program is instituted for that area.

About 800 30-ton freight cars of various types are needed, for which we have allocated £ 2 million. It has been typical of the past operations that there has been, in stock or on order, equipment adequate to meet minimum needs only. As we foresee a long-term rise in traffic demand, we find no justification for such a policy. Equipment shortages should be avoided even at the risk of temporary surpluses.

As for track, the main lines are for the most part laid with only 60 lb./yd. rail. As renewals become necessary, these lines should be relaid with 80 lb./yd. track, with which only the Lagos-Jebba section is now equipped. Renewal of the Port Harcourt-Enugu section, already planned, should be undertaken promptly so that it will be ready to handle the increased traffic which may be expected after completion of the proposed wharf extension at Port Harcourt.<sup>13</sup> The railway has planned to re-lay the narrow-gauge Bauchi Light Railway between Zaria and Jos. Since this line carries very light traffic, which is unlikely to increase substantially, and since it operates at a deficit, we recommend that it be closed and replaced by a road transport service.

The lack of transport facilities is impeding the development of the northeast, which has a considerable agricultural potential. There is also a need for improved facilities to serve the transit traffic with the French Chad territory. These needs could be met either by extending

<sup>13</sup> See p. 65.

the railway to Maiduguri or by tarring the Jos-Maiduguri road for two lanes. Three possible routes for a railway extension have been proposed. One of them, via Zaria-Rahama, if modified to pass through Bauchi, would seem to us to have merit. In addition we suggest consideration of a route via Jos-Bauchi. We recommend a survey of these routes, over both of which connections could be made with the eastern main line. When the relative advantages of these two routes are known and can be compared with the advantages of the road, either the road or the rail project should be undertaken promptly.

We think the only railway extension immediately justified is one of 40 miles from Nguru to Gashua, to give better service to that part of the Northern Region where no all-weather road exists. The extension could be laid with track taken up elsewhere; no additional motive power or rolling stock would be required. We have allocated £ 400,000 for this extension.

Total capital expenditures recommended by the mission (including, in addition to the items specifically discussed, expenditures on buildings, stations, workshops, machinery, etc.) amount to £ 9 million. We estimate that £ 5.4 million of this amount can be met from the railway's profits; we have projected government loans for the balance.

On the basis of our traffic estimates, and on the assumption that the efficiency of operation and maintenance will continue to improve, we foresee a substantial margin of profit over the period 1955-60. We suggest, therefore, that the railway consider the possibility of lowering rates, to aid the country's production and trade. A review of the rate structure should also take account of increasing road competition.

## B ROADS <sup>14</sup>

The Nigerian road system was estimated in 1953 at 29,000 miles, approximately one mile of road per 14 square miles, a high road density for Africa. But some of this mileage consists of mere tracks and much of it is not passable during the rainy seasons. Only 1,900 miles of road were bituminous, over half of them in the West. The number of vehicles in operation at the end of 1953 was 23,000, about half commercial. We estimate that the number of vehicles will increase

<sup>14</sup> See Technical Report No. 17.

by 15% per year, so that by 1960 approximately 60,000 vehicles will be on the roads. There is a need for heavy trailer-trucks for long-distance traffic but at present they are permitted to operate only between Jos, Maiduguri and Fort Lamy in the dry season.

Administratively, Nigerian roads are classified as Trunk Roads A, financed by the central government; Trunk Roads B, financed by the regions; and local roads, which are the responsibility of various local governments and authorities. An adequate network of about 6,000 miles of Trunk Roads A was planned in 1946. We have allocated £ 2 million for its completion during 1955-60, but we suggest that the projected construction of about 200 miles of the Bamenda-Yola road be deferred in view of the anticipated completion of the connection via Takum.

The emphasis of the 1955-60 program should be on adapting the Trunk Roads A system to denser and heavier traffic. This means widening, straightening and tarring roads, and reinforcing and replacing prewar bridges, designed for an eight-ton load only. We propose a number of arteries for heavy-weight traffic aggregating 1,700 miles, limited to the hinterland of the ports, an east-west connection and the area beyond the railway line in the North. They should be two-lane bituminous roads and should have bridges capable of carrying 12 units B.S.,<sup>15</sup> permitting heavy trailer-truck traffic. The many short single-lane bridges constitute a serious traffic hazard; they should be widened to two lanes.

Since we think that for the time being the railway should remain the principal heavy-traffic connection between Lagos and the North, we do not recommend that the Lagos-Kano road be brought up to the above specifications. Pending a decision on the alternatives of rail versus road transport for Bornu Province, the Jos-Maiduguri road should be tarred for one lane only.

We have allocated £ 10.5 million for the heavy-weight traffic arteries program and £ 1.5 million for improvement of the Lagos road network, consisting of a four-lane road connecting Carter Bridge with the port and the industrial area of Apapa, and a connection running to the west of the city between Apapa and Ikeja airport.

We recommend an extension of the Trunk Roads B mileage and

<sup>15</sup> British Standard.

tarring of all Southern Trunk Roads B. In the North, roads should be tarred at a lower traffic density than is now the rule. The 1960 goal for the North should be 5,000 miles of Trunk Roads B, of which 1,000 would be tarred. We estimate that capital expenditures by the regional governments would total £ 7.5 million for the five-year period.

The present poor quality of road surfaces is due in part to primitive work methods. We recommend that tarring be mechanized. Maintenance of earth roads, especially in the North, presents special problems. There is no doubt that mechanized maintenance could greatly improve the quality of the roads. However, before it is adopted for roads throughout the country, we recommend the experimental introduction of mechanized maintenance on one heavily travelled sector, to enable the authorities to become more familiar with the problems of organization and maintenance. At the same time manual maintenance should be improved, chiefly by better supervision.

The greatly increased road activities recommended for 1955-60 require, in our opinion, some organizational changes. At present, Trunk Roads A and B are the responsibility of the Public Works Department, which also performs a number of other tasks. We recommend separate road departments for the federal government and for the Northern Region. In the other regions, the regional public works departments will be able to give sufficient attention to road problems. We further recommend that the federal road department be placed under the jurisdiction of the Minister of Transport, to assure coordination of transport policy.

Capital expenditures for roads recommended by the mission total £ 25 million. Recurrent expenditure is projected to rise from £ 2.5 million in 1955-56 to £ 3.4 million in 1959-60 as against an estimated £ 2.2 million in 1953-54. A program of this magnitude will require not only intensified training of Nigerian staff and recruitment of expatriate staff, but also a much greater reliance on private contractors than has been customary heretofore. We recommend that the contracts to be let call for sufficient work and run for a sufficient period to be attractive to private contractors; international competitive bids should be invited.

new Lagos-Benin road and the Apapa Wharf extension have been in operation for a while.

We have allocated £ 5.8 million for ports and other marine improvements.

### *Inland Waterways*

Nigeria has an extensive inland waterways system. More than 1,000 miles of the Niger and its tributary the Benue are navigable for at least part of the year and a network of navigable creeks stretches from the western border of Nigeria to Opobo in the Eastern Region. Including other waterways, a total of 4,000 miles is in regular use.

Silting of the entrances of the huge Niger delta and the short period of navigability of much of the Niger and the Benue pose serious problems which until recently have not received the necessary attention. In 1953, however, an independent engineering survey of the delta was undertaken with the object of finding an entrance with a satisfactory and maintainable draught, to be followed in 1955 by a complete survey of the two rivers (see p. 49). Year-round navigation of the Niger is possible as far as Onitsha only; the railway terminus of Baro, a transshipment port for groundnuts, can be reached for eight months. The Benue is navigable up to Yola for only four months, while Garua in the French Cameroons can be reached for no more than 10 weeks. For this reason, the river transport companies find it uneconomical to expand their fleets to a size which could take care of all traffic, but new "push-tow" tugs, recently introduced, have increased the fleet's carrying capacity.

If the projected river basin study discloses the technical feasibility of major improvements, their economic justification should be judged in the light of the traffic outlook and of the possibility of co-ordinating the river improvements with irrigation schemes and the development of agricultural production in the Middle Belt.

For surveys of and improvements to inland waterways, £ 800,000 has been allocated in the mission's recommended program.

### *Organization*

The Nigeria Marine, a government department, is the Nigerian harbor authority. It is also responsible for inland waterways and has

C PORTS AND INLAND WATERWAYS <sup>16</sup>*Ports*

The nine Nigerian ports open to ocean-going vessels handled a total of 3.7 million tons of cargo in 1953, three-quarters of that total at Lagos and Port Harcourt. Over the past five years, cargo in foreign trade has increased by 50% in Lagos and by 80% in Port Harcourt, seriously straining these ports' resources and leading to costly delays.

A major program of extension and improvement of Apapa Wharf at Lagos is well under way. The planned annual capacity of 1.4 million tons should be adequate for the near future. Customs Wharf on Lagos Island is badly in need of repair, but as the volume of its traffic is likely to decrease in favor of Apapa, it may be advisable to close Customs Wharf and concentrate traffic at Apapa, which should then be further extended. We suggest that an estimate of the cost of rehabilitation be made but recommend that no extensive work be undertaken until a decision is reached as to the wharf's future.

Facilities at Port Harcourt, which are already inadequate to handle present traffic, face increased demands. The port and the eastern railway line are growing in importance as northeastern traffic grows. Major improvements to the port, including additional pier and lighterage berths and better road access, estimated to cost roughly £ 2 million, are being considered. These improvements are badly needed and we urge that the necessary preliminary surveys be made promptly so that the work can be begun in 1955.

The other ports, which serve a limited hinterland or are transshipment ports for river traffic, present no problem, with the exception of Sapele where traffic must use a ferry. To avoid this, it has been proposed to construct a port at Koko, some 30 miles away, to which would be diverted all traffic except timber now using Sapele. We are not convinced that the proposal is economically justified and we urge that a careful comparative survey be made of the cost of building a port at Koko, together with housing, roads and power, and of constructing a wharf and warehouse on the river opposite Sapele. No final decision on either alternative should be taken until it can be seen what changes in volume and direction of traffic occur after the

<sup>16</sup> See Technical Report No. 18.

a number of other functions. A Ports Authority is to be set up to take over the Marine's harbor functions and to operate the publicly-owned wharves, now operated by the railway, by the Customs Department and by other agencies. Lagos and Port Harcourt will undoubtedly benefit from the unified and integrated port operations made possible by the new form of organization. The Marine's non-port functions will be exercised by a "Marine Department" within the Authority. In order to insure that this reorganization will not result in too little attention being paid to the inland waterways problems, we recommend the organization of a separate inland waterways section of the Marine Department as soon as possible.

#### D CIVIL AVIATION <sup>17</sup>

Nigerian air transport is operated by the West African Airways Corporation (WAAC), an interterritorial statutory corporation serving Nigeria, the Gold Coast, Sierra Leone and the Gambia. There are 28 airports and landing grounds in Nigeria, including the international airports of Lagos and Kano, the latter being an important transit port. We see no need for additional airports. We do recommend improvements necessary to adapt all runways to use by the B-170 planes of the WAAC fleet, and the extension of runway lighting, now installed only at Kano and Lagos, to other airports. A new terminal is planned for Kano. At other terminals only minor improvements are needed. Radio equipment will be required to extend and improve the communications system.

We estimate the cost of the foregoing improvements at £ 1.4 million.

In April 1954, WAAC substantially reorganized its Nigerian operations in an effort to reduce its deficit, which has grown annually despite steady increases in passenger and freight traffic. Cost of operation has been high, due in part to low aircraft utilization (because of short flight stages and lack of runway lighting), but in greater measure to the uneconomical use of small planes for most of the first-class services. The success of its second-class services, operated with larger planes, led WAAC in April 1954 to institute a single-class service on its main lines, operated at reduced frequencies by 45-seater B-170's. The fare of 6d. per passenger mile is slightly above the

<sup>17</sup> See Technical Report No. 19.

former second-class rate. We think that this plan should reduce operating and maintenance costs and should soon result in self-supporting main lines which will offer more frequent service as traffic expands. But we also think that consideration might be given to the feasibility of increasing revenue by offering some more comfortable first-class seats on these planes at higher rates. The northern secondary lines will not be self-supporting for some time to come.

WAAC deficits are made up by contributions of the four territorial governments, Nigeria customarily contributing from 70% to 75%. We have allocated £ 750,000 for Nigeria's contribution to WAAC's deficit over 1955-60. To permit a more realistic allocation of the deficit, we recommend that separate operating accounts be kept for intercolonial, Nigerian main, and Nigerian secondary lines.

For fleet expansion we have allocated a token £ 200,000.

## E COMMUNICATIONS <sup>18</sup>

Nigeria's communications services are at the moment inefficient and slow. The postal service is handicapped by a shortage of staff and plans for extending the service by building new post offices have been held up because the Public Works Department is occupied with more urgent work. Urban telephone service has been improving but long-distance telephone service is erratic and does not connect all large centers. The Posts and Telegraphs Department has undertaken a program of expansion of the VHF (very high frequency) radio-telephone system, which should result in marked improvements. Telegraph service is very poor; we think this is largely because of a system of overtime wage payments that acts as a deterrent to efficiency.

The postal service is now being surveyed by experts from the British Post Office and it is to be hoped that the survey will lead to a substantial improvement in service. The staff position can be bettered only by energetic training and recruitment campaigns. The building program could be speeded up by turning large portions of it over to private contractors. Recruitment of additional skilled maintenance linesmen and a revision of the wage system would result in improved telegraph service. These steps should be taken as soon as pos-

<sup>18</sup> See Technical Report No. 20.

sible, for Nigeria's economic expansion will demand much more efficient telecommunications than now exist.

The Nigerian Broadcasting Service has an ambitious expansion program for the next three years. Although the mission did not examine the program in detail, it feels that the plan should be stretched out over the five years to 1960 at least, to avoid competing with other claims for skilled manpower.

Expansion of telecommunications and the postal service will require capital expenditure of £ 3.7 million in the five years 1955-60. The capital cost of the broadcasting program is £ 1.1 million. Recurrent expenditure for the operation of all these services will rise from £ 1.5 million in 1952-53 to £ 3.4 million in 1959-60. The mission did not draw up a separate detailed communications program; our cost estimates are based on proposals of the government departments concerned.

## VII EDUCATION<sup>19</sup>

Education in Nigeria has been undergoing remarkable expansion. Within the last two years both the Eastern and Western Regions have formulated plans for the early introduction of universal primary education and a rapid advance at the primary level is also being proposed in the North. Secondary and higher education are likewise expanding. The country's first technical schools are in the process of development.

The intense and widespread desire in Nigeria for education is encouraging. Broadly-based education is an essential in providing the manpower for economic development. In the past, economic growth has been largely left to the efforts of expatriate entrepreneurs, administrators and technicians; the time has come to increase as speedily as possible the number of adequately trained Nigerians able effectively to contribute to that growth.

However, the pace of educational advance and the formulation of a financial program for the period ahead are affected by a variety of factors, including popular interest in education, financial resources, the extent of organizational and managerial ability and, most impor-

<sup>19</sup> See Technical Report No. 21.

tant, the number of trained teachers available. In view of the limiting effect of some of these factors, the mission doubts whether all of the currently planned educational programs can be accomplished as quickly as is desired. On the other hand, there are areas in which the mission feels that greater progress could be made.

### *Primary Education*

It is estimated that at the beginning of 1953 only 20–25% of Nigeria's five million children between the ages of 7 and 14 were in school: about two out of five in the East, one out of three in the West, one out of four in the Southern Cameroons and one out of 20 in the North.

The two most important limitations on progress toward universal primary education will be the rate at which trained teachers can be supplied and the magnitude of recurrent costs in relation to the present revenue levels. Our financial projections are based on our estimate that enrollment can increase at a rate of 15% per year in the West, 10% in the North, 8% in the Southern Cameroons and 6% in the East. These rates mean a faster growth than heretofore. The West has set 1959 as the date by which all children of school age will be in primary school. Taking into account our estimate of a 15% annual growth, it seems improbable to the mission that the target can be reached before 1962.

These rates of expansion are as high as the availability of trained teachers will allow. There are now in Nigeria some 42,000 teachers of whom less than 14,000 have had specialized teacher training; the remainder have not received an education beyond the first eight or even six years. In 1953, training centers produced only about 1,800 new teachers, to fill new posts and to serve as replacements.

Programs now under way in all regions will almost double the output of trained teachers by 1958; we would favor additional expansion in the North and the East. In the East and in the Southern Cameroons there should also be an effort to increase the present very low ratio of trained teachers to students. Every effort should be made to make teaching as a career more attractive and to reduce the "wastage" of trained teachers who leave the profession. To secure qualified staff for the teacher-training centers, the training departments at the

Nigerian College of Arts and at the institute of education of the University College, proposed below, should be developed promptly.

### *Secondary Education*

Only 20,300 are enrolled in general secondary schools compared to over one million now in primary schools, although secondary education is the basic preparation for most responsible jobs and is mandatory for any type of professional training.

A doubling of the secondary school enrollment by 1960 would be a desirable target but we doubt its feasibility because of the difficulty of obtaining qualified teachers. We have therefore based our projections on a 10% annual increase, except in the North where the dearth of secondary schools necessitates an extra effort and where we have projected an annual increase of 15%.

Secondary school instruction is not now geared to the needs of the Nigerian student body and should be reoriented accordingly. Much has already been accomplished in this direction in the North but there is in the East and West a great deal of emphasis on the pattern of the English grammar school and on preparation for the Cambridge School Certificate examination. More emphasis should be placed on chemistry, biology and physics (preparatory to training in medicine, health and nutrition), agriculture and handicrafts, and on such commercial and clerical subjects as bookkeeping, commercial law, shorthand and typing.

Facilities for the training of secondary school teachers are extremely limited. If the present dependence on expatriate staff is to be lessened, programs will have to be instituted or enlarged at the Nigerian College of Arts, Science and Technology and at the University College.

### *Technical Education*

Nigeria's 10-year plan for development and welfare has given a central place to training in technical skills. As a result, a program of technical education is now being developed in technical institutes, trade centers and handicraft centers in every region.

The most advanced technical institute is at Yaba, near Lagos, which offers "senior" courses in electrical, mechanical and civil engineering, "junior" courses in subprofessional engineering, drafting, commerce, printing and woodworking, and teacher training in handicrafts, as well as shortened and part-time courses. These programs are highly effective. It is to be hoped that the similar institutes now being developed at Enugu and Kaduna will be in full operation soon. Business and industry have been co-operating with the schools in providing supplementary training; there should be more of these arrangements.

The mission recommends that the seven trade centers now being established should be reorganized and expanded. Instead of producing a small number of skilled workmen, the centers should aim at providing the kind of training which will enable the students eventually to hold supervisory positions. We suggest that the five-year course begin with two years of general education and that the following three years of specialized training include a year of on-the-job experience in industry. The handicraft centers and the home craft centers have been most beneficial and we suggest that additional centers be set up all over the country.

But technical training programs in schools, by their nature, cannot be expected to provide the type of skilled and semi-skilled workers in the mechanical and industrial trades who will be needed in increasing number as Nigeria's development proceeds. The mission believes that the most effective way of producing the required manipulative skills will be through training on the job—training within industry—as distinguished from instruction at organized trade schools. Every opportunity should be taken to encourage the efforts of government agencies, private industry and organized labor to this end.

### *Higher Education*

The establishment of the University College, Ibadan, was an important step forward but Nigeria needs many times more college graduates than even the most optimistic plans could provide. Therefore we recommend that every effort be made to increase enrollment at the University, presently around 400, as quickly as possible. Added enrollment would also reduce the present high operating cost per student.

At the same time the University College should offer a greater variety of courses. We recommend that an institute of education be established at the University to offer postgraduate study in education, that the faculty of agriculture be strengthened and a course in agricultural engineering be given, that faculties of forestry and veterinary medicine be established and that courses in applied economics be added to the curriculum.

The Nigerian College of Arts, Science and Technology is a federal government institution with three branches, one in each region. It is designed to meet the need for a kind of higher education not normally offered by a university. The mission believes that it would be advantageous to divide the College into three parts and to vest operating responsibility in the regional governments, with the federal government contributing to the running expenses and assuring the maintenance of minimum standards. We also have three specific suggestions: the agricultural schools now being operated by the agriculture departments of the Northern and Western Regions should be consolidated with the branches of the Nigerian College at Zaria and Ibadan; pharmacy courses should be added at all three branches; and the courses in bookkeeping and accounting should be expanded both in the regular program and by offering evening extension classes.

As the educational program grows, there will be a growing demand for scholarships; the cost of advanced education is high for Nigeria. The mission's projections allow for moderate expansion, 5% per year, in the funds to be made available for this purpose by the federal and regional governments. However, present policies for granting scholarships should be reviewed and in the future preference should be given as far as possible to students who will study in Nigeria rather than abroad.

#### *Cost and Financing of Educational Expansion*

The educational expansion which we have projected would involve a very large increase in annual recurrent expenditure by all levels of government: from £ 6.3 million in 1953-54 to over £ 14 million in 1959-60. In the last year 56% of the recurrent expenditure would be on primary schools. Total capital expenditure would be likely to approach £ 14 million over the five years 1955-60. Of this amount,

34% would be for primary schools, 23% for secondary schools, 15% for teacher training, 17% for technical education and 10% for higher education.

Broadly speaking, higher education should be financed by federal funds, secondary education by regional funds and primary education by local funds. The regions should, however, contribute substantially to primary schools, and to the regionalized branches of the Nigerian College. The mission urges particularly that the cost of primary education be financed to the greatest possible extent at the local level. In general, the greater the local responsibility for the cost of education the more genuine will be the community's interest in its schools. The mission wholeheartedly supports the policy statement of the government of the Eastern Region that the rate of progress in this field should depend on the willingness of local authorities to finance the cost of expansion. We also think that the system of "rates" adopted by those Eastern local authorities which have chosen to move rapidly ahead is the most practical device for raising the necessary revenue. However, the precise financing arrangements and in particular the importance of regional grants must of necessity vary according to the circumstances of each region.

#### *General Recommendations*

Finally, there are certain observations which apply broadly to Nigerian education and which have provided a basis for the mission's more specific recommendations set forth in Technical Report No. 21.

1. As the educational program develops, continuing thought and effort must be devoted to making instruction as beneficial to Nigerian students as possible. The closeness with which standards and practices developed in the United Kingdom have been followed in Nigeria can be a source both of pride and of concern—pride because standards have been high and concern lest courses and methods of instruction might be adapted too slowly to Nigerian needs.

2. The recent constitutional revision has placed squarely on regional and local governments the responsibility for organizing, financing and supervising primary and secondary education. The

mission agrees with this in principle, as long as it does not impair the maintenance of uniform standards which will assure basically sound education in all regions; these are best administered centrally. The mission would like to see the federal government carry out functions of inspection, including interregional co-ordination, research and the administration of a modest program of special financial assistance to the regions. The exercise of some of these functions may require the delegation of authority by the regions to the federal government.

3. The Christian Missions which pioneered in education in Nigeria are gradually being displaced as primary education becomes more and more a matter of public responsibility. We suggest that the Missions can still serve a useful purpose by providing instruction of a quality and with emphases and values which public institutions cannot always offer.

4. The education of women in Nigeria suffers by comparison with the opportunities for men. Educational opportunities should be expanded and diversified to provide proper training for teaching posts and for employment in industry and government.

#### VIII MEDICAL AND HEALTH SERVICES

The mission has formulated no detailed recommendations for medical and health services in Nigeria. It nevertheless attaches importance to their development, particularly of those services which can help to prevent disease. In this category are the plans now under consideration for a public sewerage system and for slum clearance projects in Lagos. We recommend slum clearance programs for Port Harcourt and Ibadan as well. In the case of federal expenditures on medical and health facilities, official proposals for expenditure have been incorporated in our projections. In the case of regional and local governments, we have made rough projections providing for a substantial rise in recurrent expenditure and for a moderate rise in capital expenditure. Our projections call for a rise in total recurrent expenditure on medical and health services from £ 3.6 million in 1952-53 to £ 7 million in 1959-60. Capital expenditure is projected to amount to £ 21 million during 1955-60. Of this, £ 5 million is for

Lagos sewerage, £ 4 million for Lagos slum clearance, £ 3 million for slum clearance in the Western Region, £ 1 million for slum clearance in the Eastern Region and the balance for hospitals (including expanded general hospital facilities for Lagos), dispensaries and small public health projects.

The mission attaches considerable importance to the attainment of higher nutritional standards through the production of higher-quality home-grown foods. Earlier reference is made to the need for research on soil, plant and animal production problems; such research will have an important bearing on the future elimination of disease, the availability of milk for children and an increased production of animal protein generally.

Public health improvement also calls for an expansion in the water supplies available in Nigerian towns and villages, and it is unfortunate that the provision of water supplies, both urban and rural, has recently had to be somewhat curtailed for lack of sufficient appropriations. We recommend that government expenditure on water resources<sup>20</sup> include £ 4.7 million capital expenditure between 1955 and 1960 on new urban water undertakings, much of which should be provided to local authorities as loans. In addition, the renewal and expansion of existing undertakings operated by the Public Works Department may require capital expenditure of £ 900,000. The recurrent cost of urban water undertakings would rise from about £ 140,000 in 1953-54 to about £ 350,000 in 1959-60.

There is also a need to continue providing new rural water supplies, especially in the North, where they are required not only for public health but also to make possible increased cattle production. The Northern Regional Public Works Department has been engaged in an extensive program of digging wells and, where the water is very far from the surface, drilling bore holes. We have projected continuing capital expenditure on this program, amounting to £ 3 million in five years. In the Eastern and Western Regions, we have allocated £ 880,000 for proposed capital expenditure on rural water supplies. Recurrent expenditure by the three regional governments would rise to £ 550,000 in 1959-60, from £ 260,000 in 1953-54.

Local authorities can also make a substantial contribution to im-

<sup>20</sup> See Technical Report No. 12.

provement of water supplies. We propose that their capital expenditure, exclusive of expenditure from loans from the regional governments, amount to not less than £ 650,000 between 1955 and 1960. In 1953-54 they spent about £ 90,000 for this purpose.

## IX THE PATTERN OF EXPENDITURE

The development program which we have outlined is summarized in Table 3. It proposes a rise in the expenditures of the various levels of government from £ 51 million in 1952-53 to just under £ 100 million in 1959-60.<sup>21</sup> Thus in six years public outlays would be almost doubled, while Nigeria's national income is not likely to rise by more than 20% in that period. From a relatively low 7.5% of the national income in 1952-53, government expenditure would mount to some 12% in 1959-60 on the basis of our projections. This figure is more in line with the level in other underdeveloped countries,<sup>22</sup> though much lower than that in developed ones. The mission believes this expansion to be fully warranted, for, as we have pointed out, the public services have been inadequate to serve the economic and social needs of the country.

As explained in Appendix C, the projections of Table 3 represent the mission's recommended expenditure program in the case of the sectors for which the mission has formulated detailed recommendations; for other sectors we have projected expenditures at a fixed rate of increase, in most cases 3% per annum. Annual projections of recurrent expenditures reflect the pace at which, in our opinion, positions can be filled and services expanded. Capital expenditures are shown in the years in which they are most likely to be incurred, although for this type of expenditure the five-year total is more significant than the annual figures.

Table 4 gives the percentage composition of actual and recommended public expenditure by main sectors for 1952-53, 1955-56 and

<sup>21</sup> Exclusive of the capital expenditures from nongovernment funds made by statutory corporations, which totalled £ 5 million in 1952-53; our projections provide for their spending some £ 6 million in 1959-60.

<sup>22</sup> In British Guiana the proportion has in recent years been 17%, in Burma 12%, in Ceylon 15%, in Chile 15% and in Colombia 11%.

TABLE 3 The Pattern of Public Expenditure

(Million £)

	Actual <sup>1</sup> 1952-53		Projections of Mission										Total 1955-60	
			1955-56		1956-57		1957-58		1958-59		1959-60			
	Recur- rent	Cap- ital	Recur- rent	Cap- ital	Recur- rent	Cap- ital	Recur- rent	Cap- ital	Recur- rent	Cap- ital	Recur- rent	Cap- ital	Recur- rent	Cap- ital
Agriculture <sup>2</sup>														
Government .....	2.5	.4	4.0	2.0	4.4	1.4	4.9	2.6	5.3	3.3	5.7	3.1	24.2	12.4
Statutory corporations <sup>3</sup> .....	—	1.2	—	1.5	—	2.0	—	1.0	—	.8	—	1.5	—	6.8
Industry, mining and power														
Government .....	.5	2.1	.6	2.6	.6	.9	.7	3.0	.7	4.4	.7	4.9	3.2	15.8
Statutory corporations <sup>3</sup> .....	—	2.0	—	1.0	—	1.5	—	.5	—	.3	—	1.0	—	4.3
Transportation <sup>4</sup>														
Government .....	2.8	4.9	4.2	5.5	4.5	6.1	4.8	8.5	5.1	8.7	5.4	9.2	23.9	37.9
Statutory corporations <sup>3</sup> .....	—	1.4	—	3.4	—	3.4	—	3.5	—	3.4	—	3.4	—	17.1
Telecommunications .....	1.5	.6	2.2	1.0	2.5	1.0	2.7	.9	3.0	1.0	3.4	1.0	13.8	4.8
Water supplies .....	.4	1.2	.7	1.4	.8	1.8	.9	2.1	.9	2.6	1.0	2.7	4.3	10.6
Miscellaneous public works .....	3.6	2.9	3.4	3.1	3.6	3.3	3.8	3.5	4.0	3.5	4.2	3.6	19.0	16.9
Education .....	5.3	3.1	9.4	3.0	10.5	3.1	11.7	2.6	12.9	2.4	14.2	2.4	58.8	13.6
Medical and public health services .....	3.6	.6	5.2	1.7	5.5	2.5	5.9	3.9	6.3	6.2	6.8	7.1	29.7	21.3
Administration, security, survey and miscellaneous														
Government .....	14.2	.8	18.6	1.2	19.2	1.2	19.7	1.1	20.3	1.1	20.8	1.1	98.5	5.8
Statutory corporations <sup>3</sup> .....	—	.5	—	—	—	—	—	—	—	—	—	—	—	—
Total <sup>5</sup> .....	34.3	21.6	48.4	27.4	51.7	28.0	55.1	33.2	58.4	37.6	62.1	41.0	275.4	167.2
of which:														
Government <sup>5</sup> .....	34.3	16.5	48.4	21.5	51.7	21.1	55.1	28.2	58.4	33.1	62.1	35.1	275.4	139.0
Statutory corporations <sup>3</sup> .....	—	5.1	—	5.9	—	6.9	—	5.0	—	4.5	—	5.9	—	28.2

<sup>1</sup> Figures for local authorities are revised Estimates.<sup>2</sup> Including forestry, veterinary, marketing and exports, co-operatives, and fisheries.<sup>3</sup> Expenditure of funds other than those received from government.<sup>4</sup> Roads, harbors and waterways, railways, aviation.<sup>5</sup> Totals may not equal sum of columns because of rounding. SOURCE: Tables 1-11 in Appendix C.

TABLE 4 Percentage Composition of Proposed Public Expenditure

	1952-53			1955-56			1959-60		
	Recurrent	Capital	Total	Recurrent	Capital	Total	Recurrent	Capital	Total
Agriculture .....	7.3	7.4	7.3	8.3	12.8	9.9	9.2	11.2	10.0
Industry, mining and power .....	1.5	18.9	8.2	1.2	13.1	5.6	1.1	14.4	6.4
Transportation .....	8.1	29.0	16.2	8.7	32.4	17.3	8.7	30.7	17.4
Telecommunications .....	4.4	2.8	3.7	4.6	3.6	4.2	5.5	2.4	4.3
Water supplies .....	1.2	5.5	2.9	1.4	5.1	2.8	1.6	6.6	3.6
Miscellaneous public works .....	10.5	13.3	11.6	7.0	11.3	8.6	6.8	8.8	7.6
Education .....	15.4	14.3	15.0	19.5	10.9	16.4	22.8	5.9	16.1
Medical and public health services .....	10.5	2.8	7.5	10.8	6.2	9.1	10.9	17.3	13.5
Administration, etc. ....	41.3	6.0	27.6	38.5	4.4	26.2	33.4	2.7	21.2
Total <sup>1</sup> .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

<sup>1</sup> Totals may not equal sum of columns because of rounding.

SOURCE: Table 3.

1959-1960. By 1959-60, projected expenditure on agricultural services and projects amounts to 10% of total expenditure, as against 7.3% in 1952-53. Agriculture's share in recurrent expenditure is projected to rise during 1955-60, whereas capital expenditure would become relatively less important after the initial heavy investment in research facilities and staff quarters.

The industrial sector would account for 6.4% of total expenditure in 1959-60. The comparison with 1952-53, when it accounted for 8.2%, is misleading: in that year large loans were made to the Electricity and Coal Corporations, while recurrent expenditures included running expenses of certain power plants, since transferred to ECN. In fact, if electric power is excluded, the proportionate share of industry would double from 1952-53 to 1959-60.

Transportation, which already accounted for one-sixth of total expenditure in 1952-53, would increase further in relative importance during the years 1955-60.

The greatest proportional increase is recommended for the medical and health sector. It is to be noted, however, that this increase is due largely to proposed capital expenditure on slum clearance projects in Lagos, Port Harcourt and Ibadan and on a sewerage system in Lagos. Recurrent expenditure would remain a constant percentage of the total. The share of education in total expenditure, on the other hand, would show only a slight rise, from 15% to 16%. However, recurrent expenditure for education would rise steeply and in 1959-60 would take almost 23% of total recurrent expenditure compared to 15% in 1952-53, while capital expenditure would decline because most of the facilities for University College, Ibadan, and the Nigerian College of Arts, Science and Technology will have been completed by 1959-60.

Cost of general administration, security and miscellaneous activities would decline in relation to expenditures for other sectors. A greater decline would have been projected were it not for expenditures on the additional administrative apparatus necessitated by the constitutional changes.

## CHAPTER 4 *ORGANIZING THE DEVELOPMENT EFFORT*

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The preceding chapter is concerned with our recommendations for expanded development activities by the federal, regional and local governments and by the several statutory bodies. This chapter addresses itself to the organization of the development effort and to the role of a number of public agencies in that effort. It also sets forth the mission's proposal for a state bank.

In making our recommendations, which involve the creation of new institutions and changes in existing ones, we have been mindful of the desirability of keeping to a minimum any further burdening of the administrative apparatus. In each case, we have carefully weighed the advantages of a proposed change against the added administrative burden which it would initially entail.

We have paid particular attention to the implications of the progression towards self-government, and of the federal system introduced by the revised constitution which has already made necessary a great number of organizational and administrative changes. We think that most of our recommendations can be carried out as part of this general reorganization.

### I FORMULATION AND CO-ORDINATION OF ECONOMIC POLICY

The limited availability of skilled manpower and the fact that funds, though now ample, are by no means inexhaustible, make it imperative that duplication of effort be avoided, that each part of the development program be related to the needs of the economy as a whole, and that priorities be assigned among public investment projects. Ultimate decision on these matters is a responsibility of government which cannot be delegated. But cabinet action should be based on staff work, and this should be done by an economic secretariat independent of the departmental government machinery.

This report is to a certain extent illustrative of the kind of analysis such a staff would make. But we have made no more than a beginning. Our recommendations are necessarily based on the situation as it exists and as we expect it to develop; they must be studied, kept under constant review and modified in the light of changing circumstances. In many instances we have not been able to recommend action, in the absence of necessary information; in those cases we have recommended surveys, studies and research. When their results become available, they will form the basis for further decision and action.

In our view, Nigeria's present economic problems call for the creation of a special body to advise on economic policy and to propose, analyze and co-ordinate public investment programs. The machinery which we suggest for this purpose consists of an economic secretariat within the federal government, to provide staff services for an economic committee of the federal Council of Ministers. We also propose that there be regional counterparts of the economic committee and that there be created a national economic council in which the federal and regional governments would be represented.

#### *Economic Secretariat*

The economic secretariat, which would be responsible to the economic committee of the Council of Ministers, which we propose below, would have three principal functions:

1. To gather, analyze and evaluate information regarding the development potential of the country as a whole; to estimate the financial requirements of development projects and programs; and, generally, to prepare such studies and documentation as may be required by the economic committee of the Council of Ministers, including an appraisal of the economic situation for use in the preparation of the annual Estimates.
2. To review departmental estimates of federal development expenditure in the light of the priority needs of the country laid down in the development program, as agreed upon from time to time, and to report thereon to the economic committee of the Council of Ministers before action by the committee.

3. To furnish secretariat services to the national economic council.

The secretariat should report to the economic committee of the Council of Ministers through the secretary of the committee, a position which we recommend be held by the secretary of the Council of Ministers. The professional staff of the secretariat, which need not be large, should be headed by a director who should be a competent economist with government experience.

To ensure smooth relationships with the staffs of the ministries and departments, the statutory corporations and other agencies, to avoid duplication and to facilitate the work of the secretariat, we recommend that (a) the various ministries and agencies be required to make available to the secretariat staff such information as it may require in the exercise of its functions, particularly those of review; (b) the secretariat should not be asked to undertake, or be permitted to assume, administrative or operational duties beyond those set forth above, nor should it concern itself with technical aspects of development proposals, which are properly the responsibility of the heads of departments or statutory corporations, as the case may be; (c) in its research activities the secretariat should co-operate with the West African Institute of Social and Economic Research (WAISER) at Ibadan.

#### *Economic Committees*

In our opinion, co-ordination of development activity at the political level would be furthered by placing primary responsibility for it in a body somewhat smaller than the federal Council of Ministers or the regional Executive Councils, and composed of those cabinet members most directly concerned with, and responsible for, economic development.

The mission therefore recommends that an economic committee of the Council of Ministers be set up, to be charged particularly with the financial and economic aspects of federal development activity and the formulation of policy in that field. The conclusions and recommendations of the committee would require approval by the full Council. We suggest that the governor of the proposed state

bank be invited to attend meetings of the economic committee as an observer.

In the Northern Region there is already an Economic Committee of the Executive Council; we recommend that similar committees be set up in the other regions. They would have the same relation to the full executive council as the federal committee would have to the Council of Ministers. We do not anticipate that the magnitude of the problems at the regional level will be such as immediately to call for separate regional economic secretariats. We suggest that all studies of the federal secretariat which do not deal with matters wholly of federal interest be circulated to the economic committees of the regions; these committees will also be able to call upon their regular departmental staffs for advice.

#### *National Economic Council*

The federal and regional economic committees, the former served by the economic secretariat, can, we think, greatly strengthen policy-making in their respective governmental spheres. We think that there is need for a national body as well.

It would be extremely useful for Nigeria to have a forum in which the federation and the regions might meet to discuss the many economic problems common to each, notwithstanding their separate constitutional functions, and such of their development policies as may have consequences reaching beyond their respective constitutional spheres. We think it most important that these consultations be given a permanent organizational basis. We recommend, therefore, the establishment of a national economic council, under the chairmanship of the Governor-General, in which the federation and each region will have an equal number of representatives. The governor of the proposed state bank would also be a member. We would suggest that members of the economic committees serve respectively as federal and regional representatives on the council.

We are fully aware that the constitution delimits the respective fields of federal and regional action, as well as an area of concurrent powers. In suggesting the setting up of the council, we do not intend that there should be any encroachment by either the federation or the regions upon the authority entrusted to the other. The council

would be primarily consultative and should be given no administrative authority or responsibility. It is designed to give maximum encouragement to the development of a national policy and to close co-operation toward that end between the federal government and the regions.

The council need not meet frequently; one or two regular meetings a year should suffice. Subcommittees appointed to deal with particular problems might be convened more frequently. The council and any subcommittees should draw their secretaries from the staff of the economic secretariat.

We strongly recommend that the national economic council sit as the Loans Advisory Board which, under the new constitution, is to advise the federal government on external borrowing; this should be done with a reduced number of members.

## II MARKETING BOARDS

The purchase in Nigeria and the sale abroad of the principal export crops, oil palm produce, cocoa, groundnuts and cotton,<sup>1</sup> are in the hands of four statutory marketing boards, autonomous bodies established between 1947 and 1949 to take the place of control schemes instituted during the war. At the beginning of each crop year the boards announce minimum prices at which the firms licensed as the boards' buying agents will purchase crops from producers during the year.

The principal tasks of the Marketing Boards are the stabilization of producer prices, the promotion of the economic development of the producing industries and areas of production, and the encouragement and financing of research.

During their comparatively short existence the Marketing Boards have become one of the most important factors in the economic life and the financial structure of Nigeria. Because world prices have risen more rapidly than prices paid to producers, their operations have shown very large surpluses which, after the allocation of £ 25 million for economic development and research, stood at about £ 75 million at the end of 1953.

<sup>1</sup> And the minor crops of benniseed, soyabeans and sunflower seeds, which are under the jurisdiction of the Groundnut Marketing Board.

At the 1954 Lagos Conference it was decided to replace the existing boards, each of which has countrywide jurisdiction over a particular product or group of products, by four regional boards,<sup>2</sup> each with jurisdiction over all controlled commodities produced within its territory. There will also be a Central Marketing Board which will set standards of quality and arrange for transportation and marketing overseas. Price and stabilization policy will be determined by the regional boards with the advice of the central board.

On the whole, the operations of the Marketing Boards have benefited the producers of the controlled crops and the Nigerian economy in general. We found that both the producers and the commercial community were satisfied with the working of the system.

Producer prices are set and maintained for an entire crop season. Thus the producer as well as the middleman and produce buyer is protected against day-to-day fluctuations, the possibility of speculation is eliminated and crops are promptly collected and moved.

The boards have successfully used their price-setting powers to bring about great improvements in the quality of export produce. The introduction of wide price margins between "special grade" (edible) and "grade I" (technical) oil by the Oil Palm Produce Marketing Board has resulted in a radically changed composition of the palm oil supply: in 1950, less than 1% of the board's purchases was classified as edible, with a free fatty acid content below 4.5%; by 1953 more than one-half of the oil purchased was edible. The demand outlook for edible oil being considerably better than that for the lower-grade technical oil, the long-run prospects for Nigerian palm oil have been greatly improved. Similarly, the price differential between grade I and grade II cocoa resulted in 95% of 1952-53 exports being grade I, compared with only 47% in 1947-48.

The Marketing Boards must also be credited with bringing more Nigerians into the trade in export produce. Before the war, virtually all of this trade was carried on by European firms. By the end of the 1952-53 buying season, the Cocoa Marketing Board had 17 Nigerian licensed buying agents compared with only 6 in 1949-50, while the number of expatriate buying agents decreased from 19 to 18. Similarly, as of November 1953, of 26 licensed buying agents

<sup>2</sup> One for each region and one for the Southern Cameroons.

for palm oil, 10 were Nigerians, and for palm kernels 18 out of 40. There are, on the other hand, no Nigerian cotton buyers and only two Nigerian groundnut buyers. The share of Nigerian buyers in the volume of produce purchases is still small, however.

To be able to set prices for an entire crop season and to lessen the impact of year-to-year world price changes on the Nigerian producer, the boards had to accumulate large reserves. These were built up over a short period, thanks to the sterling devaluation, the raw materials boom caused by the Korean war and the continuing higher-than-normal world price level thereafter. Partly as a matter of conscious policy and partly in expectation of a price fall which did not materialize, the boards fixed producer prices at levels which regularly netted substantial additions to reserves.

This course of action has been criticized as resulting in a withholding from the producers of their equitable share of higher world prices. Although we agree that in some instances the boards' price policies have been unduly cautious, we do not think that the generality of the criticism is justified. In the first place, under any stabilization scheme a period of rising prices is the time for the formation of reserves. Secondly, the setting of relatively low producer prices greatly mitigated the severity of inflationary pressures, to the advantage of the country in general, the producers included, at a time when no other machinery for anti-inflationary action existed. Finally, the accumulated stabilization reserves are large enough not only to assure producers the direct benefit of reasonable and relatively stable prices for many years to come but also to enable the boards to lend large sums on a long-term basis to government for development purposes.

In our opinion the marketing board system is well suited to Nigerian conditions. The combination of guaranteed prices for an entire crop year to the smallholder producers, adequate compensation for the buying agents, and price policies designed to encourage quality improvements provides the inducements necessary for increased and improved production and for a regular and efficient flow of produce, and the joint selling arrangements<sup>3</sup> strengthen Nigeria's position in the world market.

<sup>3</sup> Through the Nigeria Produce Marketing Company, Ltd. in London, owned by the several Marketing Boards.

We recommend, however, that henceforth the boards' functions be limited to setting quality standards, fixing producer prices and purchasing and marketing crops. The financing of economic development and agricultural research is a responsibility of government and the boards should not attempt to undertake it. Nor should the level of expenditure for these purposes be left to the discretion of the boards or be dependent on the results of their operations. While the present reserves of the boards can be an important source of development capital, we recommend that the boards' contribution be made through long-term loans to government out of that portion of their funds which need not be kept liquid, as discussed below.

We also recommend that in fixing producer prices, the boards should have no object other than mitigating price fluctuations and giving an incentive to improvement of quality. The deliberate use of the price-fixing function for other purposes, such as the promotion of development or to counteract inflationary or deflationary trends, cuts across the responsibility of government.

Present stabilization reserves are ample and the boards should not aim to increase them. They can afford to adopt a long-term stabilization and reserve policy which we believe will result in producer prices higher in relation to world market prices than has thus far been the case. While in fixing producer prices the boards should continue to take account of the expected trend of world market prices, the prices they set should as a rule vary no more than 10% from those set for the previous year. This principle should be applied after an initial readjustment of those purchase prices which are lower than is warranted by world market conditions. We have in mind particularly the price of cocoa. Details of our recommendations and the calculations on which they are based are set forth in Technical Report No. 4. Our calculations indicate that to carry out this stabilization policy the boards would not need to keep more than an estimated £ 25 million as liquid reserves and that, after allowing for working capital, some £ 40 million, constituting the second-line reserves, could be loaned on a long-term basis to government for development purposes (see Chapter 5 for specific recommendations regarding Marketing Board lending). The existing boards have already agreed to

lend £ 14 million to the Government of Nigeria,<sup>4</sup> of which £ 2.7 million has been drawn to date.

We believe that the foregoing recommendations would achieve a more appropriate demarcation of the functions of the Marketing Boards and of government. We also believe that the recommended price and reserve policies would enable the boards to pay the producers fair prices while giving them adequate protection against foreseeable risks, and would at the same time permit funds already accumulated to be used to finance development.

### III DEVELOPMENT INSTITUTIONS

The agencies most directly concerned with the promotion of Nigeria's economic development, in addition to the central Department of Commerce and Industries, are the Regional Production Development Boards (RPDBs), the Regional Development Boards and the Colony Development Board, called loans boards. The former make direct investments; the latter provide capital primarily by way of loans, sometimes by grants. Together, they represent Nigeria's principal machinery for the financing and execution of agricultural and industrial development projects. We believe that they could perform that function more effectively than they do at present. In this section we make recommendations designed to improve the operations of both types of institution, including a proposal that in each region they be merged into a single "development corporation."<sup>5</sup>

The RPDBs were created in 1949 to administer funds made available for development purposes by the several Marketing Boards. These funds may be used only for the development of the specific branches of agriculture from which they were derived, or for the economic benefit of the producers or the areas of production. By March 31, 1954 the RPDBs had received grants totaling nearly £ 22 million and had spent (net after investment income) some £ 6 million. Investment and operating expenditure for all boards has now reached a level of £ 3 million per annum.

<sup>4</sup> Of which £ 2 million is to be reloaned to the Western and Eastern Regions.

<sup>5</sup> For additional comments and recommendations with respect to these institutions, see Technical Report No. 5.

The RPDBs have engaged in a variety of operations, including a number of directly productive agricultural projects (e.g., rubber, coconut, citrus, oil palm and other kinds of plantations), some in partnership with local authorities or co-operatives and one with expatriate investors, and various processing projects (e.g., oil mills, factories and a cannery).

They have financed projects dealing with settlement, mixed farming, tsetse control and fertilizer and fodder distribution, and experiments with corn storage and meat canning. They have also financed certain activities of the regional departments of agriculture, road building, and (in the North) have employed agricultural production officers.

The loans boards, also created in 1949, derive their funds principally from a government grant. Loans or grants have been made for agricultural projects, promotion of rural crafts and industries, transport equipment, industrial development of Nigerian products, public works, town planning and similar projects. Loans granted to March 31, 1953 totaled £ 1.2 million, in amounts ranging from £ 30 to £ 100,000. Forty percent of the total was lent to public bodies and nearly 20% for the purchase of transport equipment. The remainder was lent to private entrepreneurs for both agricultural and industrial projects.

The RPDBs and, to a much lesser extent, the loans boards, can point to a number of successful projects, but both have had failures, the causes of which are, in part, the same. Both have been under great pressure to show results and neither has had adequate staff to do the job, having had to rely on such staff assistance as they could get from government departments. In the case of the RPDBs this has undoubtedly contributed to the overlapping of their operations with those of the government, evidenced by their financing of various governmental projects. In the case of the loans boards, it has meant that loan applications have had to be investigated and evaluated by persons neither directly associated with the boards nor qualified to judge the commercial viability of projects.

#### *Regional Production Development Boards*

A number of projects, particularly in the field of agricultural production, has been successful or holds promise of becoming successful

in the next few years. Others have failed because of a lack of planning and insufficient preliminary investigation and research, due in part at least to the shortage of qualified technical personnel which has also resulted in delays (see Technical Report No. 13). The projects in which the RPDBs have engaged on behalf of the government may well be of high priority in the economic development of the regions, but we think they might more appropriately be undertaken or financed by the government proper. To some extent, the use of RPDB funds for these purposes can be attributed to the fact that there has never been a clear line of demarcation between properly governmental functions and the functions of the boards. Such distinction as exists has been further blurred by administrative arrangements under which the respective regional Development Secretaries have presided over the boards and regional Directors of Agriculture have served as members. As a consequence, the boards have been operated as a side-line of government and sometimes as a source of extra-budgetary funds.

We feel that a redefinition of the functions of the boards is desirable and we make the following recommendations.

We think the primary function of the RPDBs should be the promotion of directly productive enterprise, with maximum participation of private African and foreign capital, and the support of African entrepreneurial initiative. As a corollary, we think they should not extend either direct or indirect financial assistance to the government nor should they engage in activities customarily undertaken by government, such as agricultural extension work. They should provide capital for commercially promising investment opportunities for which private capital and entrepreneurial skills are not available, or which are unattractive to private investors because of the risks involved. They should encourage participation in their projects by giving preference to those projects in which local interests—communities, co-operatives, or private entrepreneurs—are willing to join, and through the sale of projects to private interests. In the latter connection, the facilities of the reconstituted loans boards should be called upon (see below).

The RPDBs can usefully continue to conduct pilot projects in the form of demonstration units, although research and experimentation

work should as a rule be undertaken not by the boards but by the agricultural services and the proposed technical research institute (see Technical Report No. 13). The technical staffs which the RPDBs will require for their investment and loan operations should also be available for assistance to African entrepreneurs (see Technical Report No. 13, page 363).

### *Loans Boards*

The loans boards have been criticized on several grounds: that their procedures are slow and complicated, that they have engaged in political favoritism and that their judgment is poor.

The boards' difficulties can be ascribed at least in part to their overly broad field of action, which, as already stated, extends to loans and grants to public bodies as well as to loans to private enterprise. These two types of activity call for the application of differing criteria and techniques. They should preferably be undertaken by separate institutions. We recommend, therefore, that the loans boards concentrate their efforts on the provision of credit for private business. Public bodies should finance their public works projects from tax revenues and from local development funds.<sup>6</sup>

The boards' procedures leave much to be desired: they meet infrequently, and because of staff shortages they have limited personal contact with the applicant. We think that frequent discussions and explanations are essential to give Nigerians an understanding of the requirements of a sound lending proposition.

On occasion, types of enterprises have been declared ineligible, as a matter of policy, by one board or another. Since entrepreneurial initiative is so limited, lending policies should be kept flexible and designed to give the maximum encouragement to prospective industrialists. When a project appears sound and potentially productive and the borrower is responsible, an application ought generally to be given favorable consideration.

On loans to industrial and agricultural enterprise, the default ratio has been high and is rising. The boards are intended to accept risks higher than normal and defaults are bound to occur. But some losses might have been avoided by better selection of projects and better

<sup>6</sup> See Chapter 5, p. 122.

loan supervision. Use of the loan proceeds is often unsupervised; sometimes the proceeds are used for purposes entirely unrelated to the project for which the loan was granted. The mission was informed that the Western Board has begun to supervise loan funds and pays over loan proceeds only upon proof of payment for the goods financed by the loan. This kind of supervision is essential, but it is not enough. Even after completion of the project, the boards should keep themselves informed of the manner in which the borrower conducts his business and should advise him where necessary.

We think much of the criticism of the boards' operations is justified, but we believe that, if properly run, the boards can play an important role in the promotion of African enterprise. They have made a number of sound loans and many of their mistakes stem from a laudable desire to get a flow of loans to Africans under way.

To improve the operations of the loans boards, a number of changes should be made. To begin with, the loans boards should be incorporated into the RPDBs where they should function as separate loans departments. This will permit use of the RPDBs technical staffs and will effect administrative savings. The loans departments should have no grant authority, and should lend only to private enterprise, encouraging especially co-operatives and other forms of business association. They should finance, on a medium- and long-term basis, both small and large projects. In the case of the latter, the closest attention should be paid to technical and commercial management, in which the large industrial projects already financed show their greatest weakness. They should not, however, make loans which commercial banks or other lenders are willing to handle on reasonable terms; their function should be to supplement, not to compete with, other sources of credit.

#### *Future Activities*

The reorganization of the functions of the RPDBs and of the loans boards, and the merger of the two types of institutions, will require legislation. In order more appropriately to indicate the functions of the new institutions, they might be named the Northern, Western and Eastern Development Corporations, respectively. In view of the anticipated separation of the Southern Cameroons from the Eastern

Region, the Southern Cameroons should have its own development agency.<sup>7</sup>

As stated in the preceding section, the Marketing Boards should no longer be responsible for the financing of the development corporations. The regional governments should henceforth assume direct financial responsibility for all development corporation activities. The mission has estimated in its financial projections that the development corporations will require government assistance amounting to £ 12 million over 1955-60 (including £ 1 million to the Cameroons development agency). This, together with the resources now on hand, would provide them with well over £ 20 million to finance their activities over the next five years.

All funds of the corporations should be available for any of the following purposes:

1. Direct investment in productive agricultural and industrial projects;
2. Loans to agricultural, industrial and commercial enterprises;
3. Encouragement of agricultural and industrial development by pilot operations and, in the industrial field, by technical and managerial advice to entrepreneurs.

At present, the funds of the RPDBs are restricted in their use to expenditures which can be deemed to benefit the producers or the areas of production of the commodities from which they were derived. We recommend that this restriction be eliminated in the proposed legislation merging the RPDBs and the loans boards. We consider it highly unrealistic; the economic well-being of producers of export produce is so closely tied to the prosperity of the regions and the country as a whole that a distinction between expenditures for the benefit of the producers and for the benefit of the country cannot justifiably be made.

<sup>7</sup> To be distinguished in name from the existing Cameroons Development Corporation (see Technical Report No. 5). The activities of the latter differ from those of the development corporations as we define them, and should not be extended to include them.

## IV STATUTORY CORPORATIONS

At various times the Nigerian government has engaged in activities which lie outside the normal administrative functions of government: the railway, most of the important port installations, the coal mines and a large number of power plants were set up and operated by the government.

In recent years, plans have been made and in part already carried out to transfer these operations out of the general governmental machinery to autonomous bodies, known as statutory corporations. In 1951 the coal mines were transferred to the Nigerian Coal Corporation and the electricity undertakings to the Electricity Corporation of Nigeria. Legislation is now being drafted for the establishment of a railway corporation and a ports authority. When, after World War II, the government assumed responsibility for the development of former enemy-owned plantations in the Cameroons, it delegated that responsibility to the Cameroons Development Corporation, created for the purpose.

The statutory corporation is a legal entity, has separate finances, employs its own staff and is subject to income tax. The chairman is generally also the chief executive officer; the other members include government officials as well as members of the public. The membership of the railway corporation and the ports authority will, in addition, include representatives of the users of their facilities.

We think it has been a wise policy to entrust quasi-commercial operations to these statutory corporations. We also endorse the general policy under which they conduct their operations along commercial lines and seek to earn enough, after allowance for interest and depreciation, to permit building up not only adequate reserves but also a surplus out of which to finance expansion.

To make fully effective, both in the interest of the corporation and of the government, the financial autonomy inherent in the system of statutory corporations, they should be so capitalized as to be enabled in due time to finance their capital needs by borrowing in the market on their own credit, rather than being a burden on the government budget. This is not now the case. The statutory corporations are financed exclusively by loan capital. None has been given a permanent capital fund and, as far as we know, it is planned that the

two corporations about to be created will issue debenture stock or other obligations to the government for the full amount of the assets to be transferred to them.

We strongly recommend that this policy be changed and that a substantial portion of the capital of the corporations be converted into a permanent capital fund.<sup>8</sup> This would increase their creditworthiness by reducing fixed charges and by offering prospective lenders the security of the permanent capital fund.

#### v STATE BANK<sup>9</sup>

In 1952, the Government of Nigeria requested Mr. J. L. Fisher, Adviser to the Bank of England, to examine the desirability and practicability of establishing a central bank in Nigeria as an instrument for promoting the economic development of the country. His report and recommendations were completed in December 1952.<sup>10</sup>

After describing the principles of central banking as developed in England and reviewing Nigeria's monetary system, Mr. Fisher concluded that it would be inadvisable to establish a central bank "at the moment." He suggested instead a program in three stages, first, the transfer of the West African Currency Board to Africa; second, the establishment of a Nigerian currency board; and third, the establishment of a bank of issue which would gradually develop into a full-fledged central bank.

In reviewing the monetary system of Nigeria in relation to the proposed development program, the mission has paid close attention to Mr. Fisher's analysis. On many points we are in basic agreement with his report. In particular there can be no dispute that creation of a full-fledged central bank would be premature at this time. On the other hand, the mission feels that, in the light of the increasingly

<sup>8</sup> For additional comments relating to the Cameroons Development Corporation, see Technical Report No. 5.

<sup>9</sup> See Technical Report No. 3 for an account of the monetary and banking system in Nigeria.

<sup>10</sup> *Report on the desirability and practicability of establishment of a Central Bank in Nigeria for promoting the economic development of the country* (Government Printer, Nigeria: 1953).

rapid strides toward self-government,<sup>11</sup> the timing of the advance should not be as cautious as that report suggests. Therefore, the mission proposes the early creation of a "State Bank of Nigeria" with limited functions. Initially these functions should include the right to issue currency, to be the principal depository for the funds of government and semi-governmental organizations, to accept deposits from banks and to regulate their operations, and to buy and sell government securities. At a later stage, these functions may be gradually broadened to enable the new institution to assume other functions of a central bank.

The continued political and economic advancement of Nigeria is bound to lead to the establishment of a central bank. To postpone the day when functions of currency issue and the management of foreign assets are performed in Nigeria will also postpone the day when trained Nigerians will be able to perform these functions responsibly by themselves.

The proposed state bank would have as its primary function the issue of Nigerian currency to replace that of the West African Currency Board. The new issue, like the old, should be backed by sterling. Foreign reserves should not fall below 100% of the currency issue in the foreseeable future. Sterling would be acquired by the retirement of the West African currency in Nigeria and the paying-over by the Currency Board to the state bank of the corresponding share of the undistributed profits of the Currency Reserve Fund. Like the Currency Board, the state bank should stand ready at all times to issue or redeem local currency for sterling. In this manner the advantages of a stable sterling link would be retained, ensuring particularly the continuance, on present conditions, of trade with sterling area countries.

The second function of the state bank would be to serve as the principal depository of the funds of government and semi-governmental organizations. These assets should be centralized, as is the case in nearly every country in the world. By far the greater part of Nigerian government and semi-government reserves is now held abroad. This makes it particularly important that they be centralized in the state bank. The consolidation of these sterling assets would

<sup>11</sup> Mr. Fisher's report was completed before the decision was taken to convene the London constitutional conference.

have the advantage of permitting Nigeria to safeguard the external value of its currency with a smaller level of foreign reserves than is necessary when foreign assets are held individually by separate agencies. It would therefore permit maximum use of the country's accumulated capital for development.<sup>12</sup>

In acting as the depository for official and semi-official funds, the bank should be empowered to accept demand deposits and fixed deposits. The reason for fixed deposit accounts, which would bear interest, is that a large portion of government and semi-government funds is not immediately needed by the depositors. It would be manifestly unjust if the depositors, by transferring their funds to the state bank, would have to lose the income which they are now earning from these funds. The bank should also be empowered to offer trust account arrangements to governmental and semi-governmental depositors. Under these arrangements the bank would administer and invest funds entrusted to it for the account of the depositors.

The state bank should also be empowered to accept demand deposits from commercial banks, as a service to those banks which may wish to use the facilities of the state bank as a clearing house.

The transfer to the bank of official and semi-official sterling holdings could be made soon after its establishment. Local funds would have to be transferred gradually, with due regard to the position of the commercial banks which now hold them. Some transfers should, however, be made promptly in order to enable the bank to begin operations as banker of governmental and semi-governmental organizations. Working balances for services not provided by the state bank should continue to be held with European and African commercial banks.

The bank should be empowered to buy and sell for its own account securities of the Government of Nigeria, but in the next 5 or 10 years its holdings of such securities should not, as a working rule, exceed the level of its accumulated surplus, including Nigeria's share of the profits of the West African Currency Board. Aside from loans already

<sup>12</sup> As we point out in Technical Report No. 3, there has developed a widespread desire to "repatriate" Nigerian public funds and to deposit them with African commercial banks. We believe that the African banking and business community would be ill-served if government deposits were used as a basis for expanding credit, because the drawing-down of these reserves in the course of the next few years would then necessitate a dangerous contraction of bank credit.

contracted for with the Marketing Boards, the federal government is most unlikely during the next five years to borrow substantial amounts in Nigeria. Some small issues of securities of various maturities would, however, be quite important in helping to develop the institutional framework necessary to ensure the success of security sales in later years. The issue of short-term securities, such as Treasury bills, would be particularly useful in providing bankers with a short-term domestic investment.

In order to give publicly issued local securities the necessary marketability and to make them suitable for the trust accounts managed by the bank, the bank must be prepared to purchase them at all times. There should be no guaranteed purchase price, but the bank might consider initially undertaking to relate prices to those prevailing in London. This facility should also be open to the public, in order to encourage it to hold government securities.

The supervision of the commercial banks which at present is the responsibility of the Financial Secretary, under the provisions of the Banking Ordinance, should be transferred to the state bank. For the time being, a modification of the provisions of the Banking Ordinance does not appear necessary, since the domestic banking system is not yet developed sufficiently to justify access by it to the resources of the state bank as a lender of last resort. The ultimate aim must be the assumption by the state bank of the normal responsibility of a central bank to assure the liquidity of the banking system, but this extension of its functions will have to await the further development of that system.

Two other tasks at present undertaken by government departments might be taken over by the state bank. First, the administration of exchange controls would be a proper function of the institution responsible for external solvency. Second, the bank might maintain a small statistical department responsible in particular for preparing monetary statistics and balance of payments estimates.

The state bank should not undertake any private business, either by accepting deposits from the public or by making loans or advances. The recently established government bank in the Gold Coast engages in commercial banking. But unlike the Gold Coast, Nigeria has, in addition to European banks, African commercial banks, and

there is no need for a government institution in the field of commercial banking.

The form of the governing body of the bank is a matter which will have to be determined at the time of its formation. Tentatively, a relatively large board might be suggested so that the state bank may benefit from the wide experience of its members and on the other side ensure a wide dissemination of knowledge of central banking problems. The board would not need to meet frequently. A suitable board might consist of the governor and deputy governor of the state bank, representatives of the federal government and nonofficial members chosen with due regard to the interests of the various regions and of the interests of the Marketing Boards. Another matter to consider at that time is the desirability of establishing separate issue and banking departments.

The success of the bank would depend above all on the quality of the staff selected. Initially the staff would have to be largely European, for Africans with qualifications in the field of banking are few and much in demand. But plans should be laid from the outset for the training of Africans so that they can soon assume responsibility. Particular attention should be devoted to the selection of the first governor.

Such a state bank should make substantial profits. It should earn a large income from the investments backing the currency issue, while expenditures should initially be relatively small. The staff required would not be large and in part might be drawn from existing government departments. At first the bank should operate only in Lagos and in the three regional capitals, continuing elsewhere the agency arrangements of the currency board system. The investments in London would be made through an agent, either the Bank of England or the Crown Agents for Oversea Governments and Administrations.

The relatively small additional administrative expenditure as compared with the present system would, in the opinion of the mission, be money very well spent, since it would assist in the development of sound monetary and banking practices and in the training of Nigerians in the techniques of central banking.

In the mission's view the state bank is a necessary element in the organization of the economy of a developing Nigeria, although, as

Mr. Fisher has pointed out, its establishment would not in itself create resources for development. Its operations cannot take the place of development financing by private and government savings; they can only assist in the channeling and the most economic utilization of the country's financial resources.

Our recommendations are not intended to present a complete blueprint for a state bank. In the creation of such an institution problems will arise which we have not discussed or to which we have referred only in general terms. In carrying out our recommendations, the government should seek the expert assistance of the United Kingdom monetary authorities or of the International Monetary Fund.

## VI STAFFING

The need to draw upon the services of overseas personnel was recognized by the leaders of all Nigerian political parties in a statement issued at the Lagos constitutional conference, designed to reassure expatriate personnel. But the retention of present staff will not meet the problem of filling existing vacancies or the new positions which in our opinion are necessary. Energetic measures must be taken to step up recruitment of personnel.

At present, overseas personnel for government service is recruited through the Colonial Office and the Crown Agents. Some of the statutory corporations hire overseas personnel directly. To fill current vacancies and to staff new positions may, we estimate, require as many as 2,000 additional overseas recruits, yet present recruitment arrangements have proved inadequate to meet even the requirements of the present establishment. The mission therefore recommends the setting-up of a Nigerian recruitment office in London, through which all personnel for the federal and regional governments and the statutory bodies would be recruited and to which all requests for overseas staff would be made directly by the government or agency concerned. The recruitment office should seek to recruit personnel both directly and through the Colonial Office and the Crown Agents; the existing arrangements would not be replaced but would be supplemented.

We are aware of the possibility of duplication and of interference

with the Colonial Office's established procedure of personnel selection. These possible disadvantages, which with skillful administration can be avoided, would be far outweighed by the increased vigor of a purely Nigerian recruiting organization and by a widening of the geographical area of recruitment.

In order to match the attractiveness of other employment opportunities for qualified candidates, particularly in technical fields such as agricultural research and experimentation, road construction and public health, it may be necessary in some instances to depart from prevailing standards of salary, tenure and other emoluments. The possibility that some positions cannot be filled at established rates of pay must be faced. In some instances, considerations other than salary may be important in attracting personnel: for example, opportunities to engage in research or special investigations of particular interest to the employee.

The mission feels that it is not in a position to make more specific recommendations regarding salary scales and other terms of employment for overseas personnel. We are impressed, however, by the arguments presented in a report of a select committee of the Legislative Assembly of the Gold Coast regarding the necessity of maintaining a differential between the salaries of overseas and locally recruited personnel. We believe that the analysis of the problem presented in the report applies with equal force to Nigeria.<sup>13</sup>

We also believe that the reorganization of the Colonial Service into the Oversea Service should help to overcome the concern of overseas personnel regarding their tenure, and thus facilitate recruitment in the future.<sup>14</sup>

One method of securing overseas staff, which in the opinion of the mission should be pursued more vigorously than in the past, is to arrange for secondment of personnel from the United Kingdom and other Commonwealth countries. Under existing arrangements, some personnel for the Nigerian Railway, the Posts and Telegraphs Department and other services have been obtained through secondment from corresponding U.K. agencies, but for administrative reasons the services of staff thus obtained have been limited to relatively short

<sup>13</sup> *Report of the Select Committee on the Lidbury Report* (Accra, Gold Coast: Government Printing Department, 1952). See particularly page 6, paragraph 33.

<sup>14</sup> White Paper, June, 1954 (Colonial No. 306).

periods. The mission believes that a more flexible treatment of secondment should be feasible and that the possibility of secondment should be explored in additional fields, such as agricultural research, public works and education.

While most overseas personnel would come from the United Kingdom and the Commonwealth, recruitment should not be confined to these countries. A wider search for suitable applicants would not only enhance the possibility of filling the personnel requirements more quickly, but would also offer a wider selection if experience in the skill sought is particularly common in a country outside the Commonwealth. For instance, it should be possible to obtain from Western European countries research and managerial personnel with experience in tropical agriculture, or road construction engineers. The assistance of international organizations such as the Food and Agriculture Organization and the World Health Organization should also be sought.

## CHAPTER 5 *FINANCING NIGERIAN DEVELOPMENT*

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In Chapter 3 we outlined our principal recommendations for the development effort in various sectors of the economy, by the federal and regional governments, the local authorities and the statutory corporations, and showed the aggregate cost of the recommended 1955-60 program. In this chapter we consider how the country and the separate government units could meet the cost of that program.

We have projected government revenue and expenditure over the five-year period in order to determine how much additional financing would be likely to be required. Separate revenue and expenditure projections have been made on a year-to-year basis for the governments of the Federation, the regions and the Southern Cameroons and for the local authorities under their jurisdiction.<sup>1</sup>

In making these projections, we have been cognizant of the impossibility of forecasting with any real degree of accuracy government expenditure and revenue over a fairly long period of years. Nevertheless such forecasts must be made by governments whenever they embark on any long-term program.

In setting forth annual figures, rather than forecasting aggregates for the five-year period, we have undertaken a particularly hazardous, but in our opinion necessary, task. On the expenditure side, a five-year aggregate figure would be misleading, because it would fail to reveal that expenditure can increase only gradually. Moreover, it would not enable us to show the rate at which we think it can expand. Annual expenditure under the recommended program, far from being uniformly one-fifth of the total for the period, would not

<sup>1</sup> These projections are set forth in Appendix C, Tables 1-18. Summary tables appear in this chapter.

be much higher in 1955 than at present, but would be considerably higher by 1960. Of necessity our figures are indicative of orders of magnitude only and undoubtedly they will differ by a more or less wide margin from expenditures which will actually be made. Shortages of personnel may postpone recommended expansion of government services, causing annual expenditure to be lower than projected; conversely, expansion may come sooner than we have anticipated, in which case actual expenditure will be higher. If costs should prove higher than those allowed for, or if the many surveys we recommend should disclose the feasibility of undertaking additional projects earlier than now seems possible, the projections may be found to be too low.

On the revenue side, year-by-year projections are necessary to show the likely development of specific items of revenue and to provide a basis for gauging the rate at which additional financing will be required. Here again, the figures should be viewed with caution.

The methods employed in making the projections and the assumptions on which they are based are explained in detail in Appendix C. Three general comments should, however, be made here. We have consolidated in our figures all government revenue and expenditure, whether shown in the main accounts of the government units or in various special funds or extra-budgetary accounts. Second, the revenue estimates have been based in part on the conservative assumption of a considerable decline in export prices below the high levels of recent years. Third, in the case of federal and regional government accounts, we have made an allowance for contingencies equal to 10% of projected revenue. This is in part intended to cover service charges on new debt and loss of interest receipts through the drawing-down of reserves, which have not been included in our detailed projections because of the impossibility of forecasting the timing and conditions of new loans. In view of the conservative nature of our revenue estimates and of the generous provisions for expenditure, the allowance should be adequate as well to meet possible additional expenditure and temporary decline in revenue.

## I COST OF THE PROGRAM

The proposed development program for Nigeria contemplates a gradual build-up of annual government expenditure at all levels to about £ 100 million by 1959-60. The upward movement may be summarized as follows:

*(Million £)*

Expenditure	1952-53	1955-56	1959-60
Recurrent .....	34	48	62
Capital .....	17	22	35
Total .....	51	70	97
Statutory corporations—capital expenditures <sup>1</sup> ...	5	6	6

<sup>1</sup> Funds other than those received from the government.

The proposed year-by-year rise in expenditure is shown in Table I.

TABLE I The Proposed Rise in Public Expenditure

*(Million £)*

	Federal Govern- ment	Regional Govern- ments	Native Treasuries, Local Govt., & Townships	Total <sup>6</sup>
1951-52 (Actual) .....	23.8	12.2	7.2	43.2
1952-53 (Actual) .....	25.4	17.2	8.2 <sup>1</sup>	50.8
1953-54 (Approved Estimates) <sup>2</sup> ..	30.0	21.2	9.6	60.8
1954-55 (Preliminary Estimates) ..	34.5 <sup>3</sup>	23.3	10.1 <sup>4</sup>	67.9
1955-56 <sup>5</sup> (Mission's projections) ..	31.7	25.9	12.2	69.9
1956-57 " " ..	31.8	27.9	13.2	72.8
1957-58 " " ..	35.5	33.6	14.2	83.3
1958-59 " " ..	39.0	37.1	15.2	91.3
1959-60 " " ..	41.2	39.8	16.3	97.2
Total 1955-60 <sup>6</sup> .....	179.2	164.2	71.1	414.4

<sup>1</sup> Revised Estimates.

<sup>2</sup> "Estimates" is used throughout, in accordance with British usage, to refer to budgetary projections.

<sup>3</sup> Approved Estimates.

<sup>4</sup> Projection of mission.

<sup>5</sup> First year of reallocation of functions under new constitution.

<sup>6</sup> Totals may not equal sum of columns because of rounding.

We have limited our recommendations for expenditures to those which we believe can in fact be made within the period 1955-60. The Estimates called for a 20% increase in public expenditures between 1952-53 and 1953-54 and for an additional 12% between 1953-54 and 1954-55. For these years we have entered the latest detailed Estimates available, as approved or proposed. But we now know that 1953-54 expenditure fell short of what was budgeted, particularly in public works, and it is likely that some shortfall will also occur in 1954-55. Our projections for 1955-56, while apparently not much higher than expenditure in 1954-55, would therefore in fact represent a substantial increase.

Table 2<sup>2</sup> shows the expenditures which are projected at the various levels of government.

TABLE 2 The Cost of the Proposed Program

*(Million £)*

	Recurrent Expenditure					Capital Expenditure 1955-60
	1955-56	1956-57	1957-58	1958-59	1959-60	
Federal Government .....	19.8	20.9	21.9	22.9	24.0	69.6
Lagos Town Council .....	.5	.5	.5	.6	.6	.7
Northern Regional Government...	6.6	7.1	7.7	8.3	8.9	20.1
Northern Native Treasuries and Townships .....	4.7	5.0	5.3	5.6	5.9	6.4
Western Regional Government ...	5.9	6.5	7.1	7.7	8.4	22.4
Western Native Treasuries and Local Governments .....	3.2	3.5	3.9	4.2	4.6	3.6
Eastern Regional Government....	5.1	5.4	5.7	6.0	6.3	11.8
Eastern Native Treasuries, Local Governments and Townships...	1.4	1.5	1.7	1.8	2.0	2.1
Southern Cameroons Government.	.8	.9	1.0	1.1	1.2	2.0
Southern Cameroons Native Treasuries .....	.2	.2	.2	.2	.2	.3
Total .....	48.2	51.5	55.0	58.4	62.1	139.0

In 1951-52, central government expenditure accounted for 55% of all Nigerian public expenditure, whereas under the mission's program it would be only 45% in 1955-56. Thereafter the percentage

<sup>2</sup> Differences in totals in Tables 1 and 2 are due to rounding.

TABLE 3 Government Expenditures and Financial Resources Available, 1955-60

(Million £)

Estimates	Northern		Western		Eastern		So. Cameroons		Total		
	Federal Government	Lagos Town Council	Regional Government	Local Authorities	Regional Government	Local Authorities	Regional Government	Local Authorities		Government	Local Authorities
Recurrent Expenditures .....	109.7	2.7	38.6	26.6	35.7	19.5	28.6	8.3	5.1	0.9	275.7
Capital Expenditures .....	69.6	0.7	20.1	6.4	22.4	3.6	11.8	2.1	2.0	0.3	139.0
Total <sup>1</sup> .....	179.2	3.4	58.7	33.0	58.1	23.1	40.4	10.4	7.1	1.2	414.6
Revenues at present revenue structure .....	149.8	2.1	44.9	25.6	59.1	10.6	29.8	7.4	2.2	0.8	332.3
Borrowings planned by Federal government—Internal .....	11.3	—	—	—	—	—	—	—	—	—	11.3
External .....	11.3	—	—	—	—	—	—	—	—	—	11.3
<i>Projections of mission:</i>											
Increase in Tax Revenues ..	—	0.5	4.5	2.0	6.0	6.2	4.3	1.7	1.2 <sup>2</sup>	0.2	26.6
Use of Reserves .....	20.0	—	5.0	—	3.0	—	2.0	—	—	—	30.0
Additional loans from Marketing Boards .....	—	—	10.0	—	10.0	—	—	—	—	—	20.0
Inter-governmental grants:											
Receipts ..	—	0.8	—	5.4	—	6.3	3.0	1.3	4.1 <sup>3</sup>	0.2	21.1
Payments ..	-7.9	—	-5.4	—	-6.3	—	-1.3	—	-0.2	—	-21.1
Contingency allowance <sup>4</sup> .....	-15.0	—	-4.5	—	-5.8	—	-3.0	—	-0.2	—	-28.5
To be covered by C.D. and W. grants and additional loans	9.7	—	4.2	—	(-7.9) <sup>5</sup>	—	5.6	—	<sup>6</sup>	—	19.5 <sup>7</sup>
Total .....	179.2	3.4	58.7	33.0	58.1 <sup>7</sup>	23.1	40.4	10.4	7.1	1.2	414.6 <sup>7</sup>

<sup>1</sup> Totals may not equal sum of columns because of rounding.<sup>2</sup> £ 1 million represents disbursements of profits by the Cameroons Development Corporation to the Southern Cameroons Government; £ 200,000 represents the Cameroons' share of increased duty collections.<sup>3</sup> £ 1.8 million of this amount represents grants to which the Southern Cameroons is entitled because of its special status.<sup>4</sup> 10% of federal and regional revenue. See p. 105.<sup>5</sup> Surplus. <sup>6</sup> Deficit offset by grant from federal government.<sup>7</sup> Excluding surplus of Western Region.

would continue to decline, as a result of greater expansion of services in the regional fields such as agriculture, education and secondary roads. The share of expenditure of native treasuries, local governments, townships and town councils<sup>3</sup> would remain constant at about one-sixth of total public expenditure.

## II FINANCING THE PROGRAM

In order to finance the proposed development program, government authorities at all levels would need £ 415 million in the next five years.

There are four sources of finance for Nigerian public expenditure: government revenue, reserves of public funds, borrowing at home and abroad, and grants from the Government of the United Kingdom. We recommend drawing upon all of them: taxes should be substantially raised, the federal and regional governments should use a large part of their existing reserves and they should borrow substantial amounts from the Marketing Boards. The federal government should also borrow in the London market. We assume that Nigeria will continue to receive grants under the Colonial Development and Welfare Scheme.

A comparison of financial requirements with available or potentially available resources is shown in Table 3. The Table indicates that, assuming no change in the present revenue structure, anticipated revenues for 1955-60 would fall short, by £ 82 million, of the public expenditures we propose. To this must be added the contingency allowance referred to earlier, in the amount of £ 28.5 million, making a total shortfall of £ 111 million.<sup>4</sup>

We propose that this difference should be met roughly as follows: £ 27 million from additional revenue, over and above the normal rate of growth, £ 30 million from reserves, £ 22 million from loans which the central government has already decided to raise, £ 20 million to be borrowed by the regions from the Marketing Boards, and the

<sup>3</sup> Referred to collectively as "local authorities."

<sup>4</sup> No contingency allowance has been made in the case of local authorities since expansion of expenditures on the local level should be determined by the ability and willingness of local authorities to raise additional revenue. See pp. 120 et seq.

balance from Colonial Development and Welfare grants and additional loans.

We also recommend substantial grants by the federal government to the Eastern Region and the Southern Cameroons. These are shown in the Table as intergovernmental grants in addition to the normal grants from the regional governments to local authorities.

The mission believes that the development program for the next five years could be financed with relative ease. But we must repeat here what has been said earlier: the over-all level of revenue is insufficient for a continuing expansion of public development expenditure. If the development effort is to continue after 1960, the build-up of revenue which we recommend will have to continue at an accelerated rate.

#### A THE REVENUE STRUCTURE

Table 4 reveals the two main features of the Nigerian revenue structure: its heavy reliance on indirect taxes (principally import and export duties) and the fact that an overwhelming proportion of revenue is collected by the central government. The first makes Nigerian revenue particularly sensitive to the vagaries of international trade; the second has made for politically difficult and technically complicated problems of revenue allocation.

The central government, under the Income Tax Ordinance, taxes the income of all companies and non-African individuals, and African income earned in Lagos. African income earned outside Lagos is taxed under the Direct Taxation Ordinance. This tax is assessed and collected by local authorities. They also levy "rates," mostly for special purposes such as education or water supply. In 1952-53 these direct taxes together accounted for about one-fourth of total government revenue.

Most of the balance consists of the proceeds of indirect taxes. Except for sales taxes on controlled produce, first imposed by the regional governments in 1953 and 1954, all these are levied and collected by the central government.

The reallocation of functions under the new constitution led to a review of the system of revenue allocation. A fiscal commissioner was appointed to advise on the distribution of revenue, "having

TABLE 4 Structure of Tax Revenue, All Government Authorities Combined

	Actual Tax Collections 1952-53		Projected Tax Collections					
			1955-56		1959-60			
	Million £	%	Million £	%	excluding recommended additional revenue		including recommended additional revenue	
	Million £	%	Million £	%	Million £	%	Million £	%
Customs and Excise Taxes <sup>1</sup> ..	33.9	67.5	39.2	70.1	41.3	68.8	46.3	67.8
Direct Taxes <sup>2</sup> .....	12.5	24.9	13.2	23.6	14.9	24.8	18.2	26.6
Licenses, Fees and Fines <sup>3</sup> ....	2.1	4.2	2.3	4.1	2.6	4.3	2.6	3.8
Mining Royalties .....	1.7	3.4	1.3	2.3	1.3	2.2	1.3	1.9
Total <sup>4</sup> .....	50.2	100.0	55.9	100.0	60.0	100.0	68.3	100.0
Of which collected by central government .....	43.2	86.1	44.9	80.3	47.5	79.2	52.5	76.9

<sup>1</sup> Including regional produce sales taxes.

<sup>2</sup> Including federal income taxes, taxes under the Direct Taxation Ordinance and "rates" of local authorities.

<sup>3</sup> Including "licenses and internal revenues" and "fees of court or office."

<sup>4</sup> Totals may not equal sum of components because of rounding.

regard on the one hand to the need to provide to the Regions and the Centre an adequate measure of fiscal autonomy within their own sphere of government and, on the other hand, to the importance of ensuring that the total revenues available to Nigeria are allocated in such a way that the principle of derivation is followed to the fullest degree compatible with meeting the reasonable needs of the Centre and each of the Regions.”<sup>5</sup>

The system recommended by the Commissioner and approved by the Lagos constitutional conference provides for the allocation to the regions, on a derivation basis, of one-half of all import and export duties and excise taxes (but the whole of the import duty on motor spirit); for distribution of mining royalties to the region of origin; for allocation of federal personal income tax proceeds to the region of the taxpayer's residence; and for the retention by the Federation of proceeds of income tax on companies and on residents of Lagos.

It was also recommended and agreed that grants totalling £ 7 million would be made to the regions as their share of federal reserves.

This distribution of revenue between the Federation and the regions as a group gives each a desirable measure of fiscal autonomy. As among the regions, however, the application of the principle of derivation, under which revenue is distributed on the basis of its origin, tends to perpetuate regional differences in financial strength. The Fiscal Commissioner recognized this in his report by recommending that the federal government should have power to make discretionary grants to regions.

We fully agree with the recommendation of the Fiscal Commissioner<sup>6</sup> that the next review of the revenue allocation system, in connection with the review of the constitution in 1956, be conducted under broader terms of reference. We believe that the interests of Nigeria as a whole would best be served by a more flexible application of the derivation principle, in order to give greater recognition to the needs of the different regions.

<sup>5</sup> *Report of the Fiscal Commissioner on the Financial Effects of the Proposed New Constitutional Arrangements* (Government Printer, Nigeria: 1953), p. 1.

<sup>6</sup> *Ibid.*, p. 17.

**B FEDERAL FINANCES**

Federal finances are sound. The Federation would need only limited resort to its borrowing capacity and accumulated reserves in order to finance the increased expenditure we have recommended and to contribute to the revenues of the Eastern Region and of the Southern Cameroons. By the end of the five-year program, we expect annual federal revenue to have risen to £ 31 million, compared with recurrent expenditure of £ 24 million exclusive of grants. Capital expenditure of £ 17 million has been projected for 1959-60, a substantial part of which can be financed from current revenues. At that time the Federation's reserves should still be considerable and its borrowing capacity ample.

*Customs Duties and Excise Taxes*

In recent years, approximately 60% of all customs and excise collections have come from import duties and excise taxes (the latter mainly on cigarettes and beer), and the remainder from export duties.

Import duties are in general low, ranging between 15% and 20% for most articles. Alcoholic beverages, tobacco and certain luxury imports pay higher rates, while machinery, tools, fertilizers and other agricultural or industrial producers' goods are duty-free. Except for duties on such essentials as salt and kerosene, the incidence of the tariff is on the whole progressive. There is considerable evidence that the lowest income groups purchase only small quantities of imports, while persons in the middle and higher income brackets, particularly in urban areas, buy a relatively large volume of imports, especially textiles.

We recommend that import duties be increased—not for the purpose of increasing the federal revenues but as a means of alleviating the financial problems of the regions. We propose further that the full amount realized from the recommended increase be distributed among the regions.

Specifically, we recommend that duties on all imports except food, tobacco, motor spirit and kerosene be increased so that revenue from this source will rise by 50%. We recommend further that certain of the inequitable or undesirable features of the existing tariff be elimi-

nated at the same time: all imports of food except confectionery and alcoholic beverages should be exempt from duty and so should all building materials except (temporarily) cement. Exemption of construction materials is desirable in the interest of promoting building activity but it may be necessary to retain the present duty on cement to give initial protection to the proposed cement factory.<sup>7</sup> We realize that this increase would make the fiscal structure even more dependent on the flow of the country's international trade. We therefore believe that it should remain in effect only until the yield of taxation on income and property rises sufficiently to take its place.

Since it will take some time to put these tariff changes into effect, we have not counted on any increase in revenue from this source until 1957. On the basis of information supplied to us in Nigeria, we estimate that the recommended revision would yield a net of £ 15 million over the period 1957-60.

Export duties on the most important agricultural products are 10% ad valorem with progressive surcharges if export prices exceed a "normal" level.<sup>8</sup> Minor exports are taxed at relatively low specific rates. At the export prices anticipated during the next five years, cocoa would be the only major export subject to duty in excess of 10%. We do not recommend an increase in these duties. On the other hand, we do not believe that the export duty on cocoa should be reduced as suggested in sections of the Nigerian press, even though at presently prevailing prices it far exceeds that on other dutiable exports.<sup>9</sup> There is ample evidence that producers of cocoa are, as a group, substantially better off than other agricultural producers. Their tax burden may therefore equitably be higher, especially if the price which they receive from the Marketing Boards is increased in accordance with our recommendation as to the price policies of the boards (see Chapter 4 and Technical Report No. 4).

### *Income Taxes*

The Income Tax Ordinance taxes profits of limited liability companies and certain statutory corporations at the rate of 9% in the

<sup>7</sup> See Technical Report No. 13.

<sup>8</sup> The price per ton at which surcharges apply is: cocoa, £ 150; groundnuts, £ 65; palm kernels, £ 50; technical palm oil, £ 65; edible palm oil, £ 75; cotton, £ 325.

<sup>9</sup> At the June 1954 price of cocoa, the duty was 45%.

£ (45%). Non-Africans and Africans earning income in Lagos pay taxes varying from 6/- to £ 2.16.3 on income below £ 150 per year; incomes above that amount are taxed at rates rising from 4½d. in the £ (1⅞%) for the first £ 200 of "chargeable" income to 15/- in the £ (75%) on that portion of "chargeable" income which exceeds £ 10,000.<sup>10</sup>

The mission does not believe that an increase in the companies tax is advisable, for it is already at a high level and any increase would discourage investment by both Nigerian and foreign capital. Nor do we recommend an increase in the personal income tax. We do suggest the advisability of a change in the present provisions of the law under which the effective rate of tax may, by reason of allowances and reliefs, remain at 4½d. in the £ for incomes which may be considerably in excess of £ 200.<sup>11</sup>

### *Reserves*

As indicated in Chapter 1, the Nigerian government has accumulated substantial reserves partly because revenues have consistently been underestimated, partly because expenditures fell behind estimates, and partly deliberately to mitigate inflationary pressures caused by large export surpluses and to provide a cushion against a possible decline in revenues. The reserves are held in various funds, the largest being the Revenue Equalisation Fund established with the further object of compensating for the impact of future higher recurrent expenditures presently met out of Colonial Development and Welfare grants.

On the basis of official figures, which we consider conservative, we estimate that the reserves of the federal government will be about £ 40 million in March 1955.<sup>12</sup>

We are satisfied that in the next five years the reserves, part of which has been earmarked explicitly for the purpose of financing development expenditure, can be drawn down considerably without

<sup>10</sup> Typical tax liabilities are: £ 67.10.0 on a "chargeable" income of £ 1,000 (6.75%); £ 277.10.0 on £ 2,000 (14.375%); and £ 1,402.10.0 on £ 5,000 (28.05%).

<sup>11</sup> E.g., for married men, the effective rate remains at 4½d. in the £ up to an income of £ 600; and even for higher incomes if child, insurance or other "reliefs" can be claimed.

<sup>12</sup> See Table 19 of Appendix C.

endangering the country's long-run financial stability or impairing the liquidity of its treasury position. We think that in the next five years the government can safely draw up to £ 20 million from its reserves. In the absence of unforeseen developments, Nigeria should be able to use its reserves also after 1960 to supplement other sources of finance for development.

The mission also suggests that the practice of setting up and allocating current revenues into a large number of special funds be discontinued and that the principle of unity of government accounts be established. This would enable the government to work with a much lower level of reserves than the present one. There are, it is true, good reasons why the Nigerian government needs working balances and contingency reserves larger than those required by governments of other countries with a comparable level of revenue. As already stated, the level of Nigerian government revenue depends, and is likely to depend for some time, on the value of the country's international trade which, by the nature of Nigeria's exports, is subject to abrupt fluctuations; moreover, the difficulties of moving funds within the country make large working balances necessary. But the government cannot afford a cushion against all conceivable contingencies except at the cost of a continuing insufficiency of public services, incompatible with the requirements of a growing economy.

### *Loans*

At present, Nigeria's government debt is small. At the beginning of the 1954-55 fiscal year the total Nigerian foreign debt amounted to £ 21.2 million, against which £ 4.2 million was held (as of October 31, 1953) in the statutory sinking fund. Interest and sinking fund required £ 949,000 in 1953-54. In addition, the central government has borrowed £ 2.7 million from the Cocoa Marketing Board, on which the service cost was £ 126,000 in 1953-54. It plans to borrow an additional £ 22.6 million. Half would be raised internally and half is to be raised in the London market.<sup>13</sup> Allowing for the retirement of a loan of £ 4.2 million due in 1955 these operations will increase

<sup>13</sup> This does not include a loan of £ 2 million from the Marketing Boards which is to be reloaned in 1954-55, half to the Western and half to the Eastern regional governments.

the total Nigerian debt to about £ 40 million, with an annual debt service of less than £ 2 million. The cost of debt service will be initially offset to some extent by interest on the invested proceeds of contemplated loans.

After having contracted these additional debts, the country will still be in a position prudently to borrow substantial amounts. But this borrowing potential should be kept intact for the period after 1960, when capital requirements may be expected to increase.

### C REGIONAL FINANCES

The magnitude of the financial problem which each of the regional governments will face in 1960 if the mission's program is followed is illustrated in Table 5.

TABLE 5 Financial Position of Regional Governments, 1959-60

*(Million £)*

	North	West	East
Revenues at normal rate of growth .....	9.6	11.8	6.4
Recurrent expenditure .....	8.9	8.4	6.3
Capital expenditure .....	5.0	6.5	3.2
Balance to be covered .....	4.3	3.1	3.1

The principal sources of regional finance consist of revenues shared with the federal government, produce sales taxes and the so-called "capitation levy," the regions' share of local direct taxes levied under the Direct Taxation Ordinance. The produce sales taxes are levied by the regions on exports controlled by the Marketing Boards and have been in effect in the North and West since 1953;<sup>14</sup> and our projections of revenue assume that like taxes will be imposed in the East also.

The regions themselves raise little of their income. The only major sources of revenue the level of which they can control are the produce sales taxes. They are essentially export duties and as such they duplicate federal export duties. We realize that for the time being these

<sup>14</sup> The rates are: cocoa £ 4 per ton; groundnuts and palm oil, £ 1 per ton; ben-niseed, 10/- per ton; and cotton, 0.1d. per lb. of seed cotton.

taxes will have to be retained, but we do not think that they should be increased.

While over the long term we expect that an increase in the tax collected by local authorities under the Direct Taxation Ordinance will result in greater revenue to the regions through their share of the additional proceeds, no substantial increase from that source is likely to come about before 1960.

In order to reduce the gap between regional expenditure and revenue, we have proposed above that the regions receive the entire proceeds of the recommended rise in import duties, estimated at £ 15 million over 1957-60. Accordingly, that sum has been included in Table 3 and, on the assumption that arrangements can be made under which the federal government will forego its 50% share of this revenue, we have allocated it to the regions. Following the revenue allocation scheme, we have allocated £ 6 million to the West, although, as Table 3 shows, the West actually does not need additional funds.

In addition, we recommend that all three regional governments be prepared to use during 1955-60 the reserves, aggregating £ 7 million, granted to them by the Lagos conference. The North should also use another £ 2 million of its reserves, bolstered in 1952 by a special "underdevelopment grant" from the central government, while the West can draw upon an additional £ 1 million of its reserves.

In Chapter 4, we recommend that the "second-line reserves" of the Marketing Boards be made available for long-term lending to government for development purposes. On the basis of our appraisal of the reserve position of the boards as reorganized (see Technical Report No. 4), we recommend that the West and the North each borrow up to £ 10 million from their Marketing Boards. The figure of £ 10 million (shown in Table 3) merely indicates the order of magnitude of loans which can safely be made in these two regions without impairing the financial position of either the boards as creditors or the regions as debtors. Also, loans in such amounts would leave sufficient funds with the respective boards for lending at a later date. We think the second-line reserves of the Marketing Board in the Eastern Region are insufficient to permit their use for long-term loans during 1955-60.

Among the regions, only the West can mobilize sufficient funds to meet the cost of the program which we propose. The Eastern Region,

even taking into consideration probable financial assistance under the new Colonial Development and Welfare Scheme, would not be able to meet the cost of the program without financial assistance from the federal government. The North should just be able to meet the demands of the recommended program with Colonial Development and Welfare assistance.

Under the new revenue allocation system, regional revenues will be more sensitive than federal revenues to price and volume fluctuations of individual export crops. This is so because each of the principal export crops is for the most part concentrated in a single region and because export duties are a significant part of regional receipts. During 1955-60, we expect the price of cocoa to remain at a high level in relation to the last few years and prices of groundnuts and palm produce to decline to lower levels. As a result, the revenues of the West are likely to be higher than was anticipated when the allocation system was devised, while those of the North and East are likely to be somewhat lower. In the Northern Region, the expected price decline of groundnuts is likely to be partially offset by an increase in export volume, partly because of large shipments of accumulated stocks and partly because of good prospects for a sizeable expansion of production. There are no important compensating factors in sight for the Eastern Region.

The Trust Territory of the Southern Cameroons has a special financial relationship with the Federation, explained in the Notes on Government Revenue in Appendix C. To increase Cameroons revenue, we recommend that the federal government consider the practicability of increasing the export duty on bananas and of introducing export duties on other products such as coffee.

We further recommend a substantial addition to revenue through larger profit distributions to the government of the Southern Cameroons by the Cameroons Development Corporation. We have projected these at £ 1 million for 1955-60.<sup>15</sup>

The Southern Cameroons has no reserves to draw on and the reserve position of its Marketing Board will not, in our view, permit any lending to the government.

The insufficiency of Eastern Region revenues and of those of the

<sup>15</sup> See Technical Report No. 5 for our views on the future financial policy of the CDC.

Southern Cameroons was anticipated by the recommendation of the Fiscal Commissioner that the East and the Southern Cameroons be given some grant assistance by the federal government. Table 3 indicates that the East may need £ 3 million in grants during 1955-60 and that grants to the Southern Cameroons may exceed £ 4 million.<sup>16</sup> These grants would be a heavy burden on federal revenue, but we think they must be made if these two regions are not to fall behind the others in economic development.

The mission has not taken into consideration funds of the Custodian of Enemy Property totaling £ 1.6 million, derived from the disposal of enemy assets in Nigeria and the Cameroons. At the time of the mission's visit, no decision had been taken regarding the disposition of the balance of these funds remaining after the payment of claims. It is to be assumed, however, that this balance will be made available to Nigeria and the Southern Cameroons. As more than half of the Custodian's holdings was derived from the sale of enemy assets in the Cameroons a substantial sum would thus become available for the Southern Cameroons.

#### D LOCAL FINANCES

Although only one-sixth of public expenditure is accounted for by local authorities, we believe that local authority finances deserve the closest attention. Under the present system of taxation, taxes on the Nigerian population outside Lagos are assessed by local authorities. We are inclined to believe that for many years to come it will be impossible to assess income or property taxes on Africans on any but the local authority level. Since we believe that in Nigeria, as in other countries, taxes on income and property are the most equitable form of taxation, we recommend that taxation at the local level be increased in order to pay for the increased government services which we propose. The proceeds of such taxation should be sufficient not only to pay for local government but eventually to permit the appli-

<sup>16</sup> The special financial arrangements of the Southern Cameroons may entitle it to grants of £ 1.8 million, so that "discretionary" grants by the federal government, including the Southern Cameroons' share of C.D. and W. funds, would amount to £ 2.3 million only. See Appendix C. The figure for grants to the Cameroons does not include £ 1 million for the Southern Cameroons development agency which we have recommended in Chapter 4. This amount is included in federal expenditure.

cation of income tax proceeds to the cost of regional government. As and to the extent that this becomes possible, local expenditure should be met increasingly through property taxes.

While this should be the long-term objective of tax policy, we believe that during 1955-60 the objective will have to be limited to making the local authorities assume an increasing share of the cost of their operations, most particularly in health and education.

At present, local authorities collect taxes under the Direct Taxation Ordinance. A share of the proceeds of these taxes, the "capitation levy," is turned over to the regional governments. But these payments to the regions are more than offset by grants by the regional governments to the local authorities.

In 1952-53 about 62% of local authorities' revenue came from direct taxes and local "rates." Although administration of the Direct Taxation Ordinance varies considerably from one part of Nigeria to another, in principle there are two classes of direct tax. The first amounts to a flat-rate poll tax to be levied on low-income taxpayers only. In many parts of the North this head tax is apportioned by village chiefs according to a rough estimate of ability to pay. Rates generally vary between 10/- to 30/- per adult male. The second class applies to "wealthy" persons, and to salaried persons whose income is easily ascertainable; in theory, it is a progressive tax on income.

In practice, the direct tax is often administered in a manner which makes it regressive. Most authorities assess all but a few taxpayers at the flat rate although incomes vary considerably. Methods of assessing income taxes at the progressive rate are crude. It is understood that generally local assessment committees grossly underassess incomes of farmers, traders, craftsmen, etc., with the result that the latter may pay a lower share of their actual incomes than persons subject to the flat rate. Local authorities are aware of this shortcoming and recently some areas have made great progress toward more accurate assessment of larger incomes. Many taxpayers have been shifted from the flat to the progressive rate. This improved administration should continue and should be extended. Moreover, sooner or later local governments must squarely face the politically difficult problem of taxing the incomes of women. We recognize, however, that it will be a long time before income assessment on western standards will be achieved.

Local authorities are also empowered to levy "rates" on a property or other basis, for special purposes or to increase their general funds. These have been extensively introduced in the East, commonly to finance education. Proceeds of rates in that region rose from an estimated £ 134,000 in 1952-53 to £ 309,000 in 1953-54. New rates for specified purposes seem to be far more acceptable to taxpayers than other kinds of tax increases and we recommend their adoption by all local authorities. We believe, however, that they should to an increasing extent be levied in accordance with income and wealth. In urban areas they should be based on property values, as is already done in Lagos. Property assessments made or in progress in many towns for the purpose of levying water rates can be used as a basis for property or other rates.

Grants are received from the regional (and in the case of the Lagos Town Council, the federal) government for a variety of purposes. In 1952-53, they accounted for 15% of local revenues. All regions reimburse local authorities for a large share of their expenditures on education.<sup>17</sup> Police, roads, medical services and, in the Northern Region, agriculture, forestry and veterinary services are also partly grant-financed. The East has a system of matching grants for local capital works projects. Both the West and the East make "Community Development Grants" out of funds supplied under the Colonial Development and Welfare Scheme.

Aside from education grants, the mission makes two proposals with respect to regional grants to local authorities. Each region should establish a local development fund, to provide grants and loans for meritorious capital works projects. In the East and in the West these funds should continue the type of assistance supplied by Community Development Funds.<sup>18</sup> In the North, where we have projected a relatively smaller sum for the purpose, the local development fund should be used to assist native treasuries unable to finance desirable development projects from their current revenue surpluses. These funds should be administered by the departments responsible for local finance, i.e., the Ministries of Local Government in the East and the West and by the Financial Secretary's office in the North.

<sup>17</sup> For our recommendations on the future of these grants see Technical Report No. 21.

<sup>18</sup> And in the East by "special grants" and up to 1954-55 by "code grants."

Grants for recurrent costs of agriculture, medical and veterinary services, etc., should not be increased, and in the North, where they have made up a larger proportion of local authorities' revenue than elsewhere, they should be reduced. We have made our projections accordingly. Expansion of these services should be paid for out of local revenues.

Reserves of Eastern and Western local authorities are no larger than needed for working balances. In the North, on the other hand, reserves were estimated to amount on March 31, 1954 to almost £ 6 million, a sum substantially in excess of working requirements. We do not suggest any net reduction of these reserves over the next five years, since we anticipate a great expansion of expenditure on schools and other facilities after 1960. But we do suggest a revision of the present system of five-year development plans, under which only funds available at the beginning of a five-year period may be expended for development purposes during that period, while surpluses earned within the period are frozen until the beginning of the next period. The local authorities should be free immediately to accelerate their development plans if their current revenues permit, as long as reserves on hand are not thereby reduced.

Our program for local authorities calls for a rise in total expenditure from £ 8.2 million in 1952-53 to £ 16.3 million in 1959-60. Revenues retained by local authorities and grants from regional governments totalled £ 8.5 million in 1952-53. Assuming a normal rate of growth, local authorities' own revenues might amount to £ 9.8 million in 1959-60. We project, in addition, grants from regional governments (in the case of the Lagos Town Council, from the federal government) amounting to £ 3.2 million in 1959-60. Efforts must therefore be made to increase local revenues, mainly from direct taxes, to fill the gap which would rise to £ 3.3 million in 1960.

Table 6 gives a more detailed breakdown of the required increase in direct taxes in the North, the West, the East and the Southern Cameroons.

In Lagos, where the property tax assessment is now being thoroughly revised, there should be no difficulty in reaching the target of £ 430,000 by 1959-60.

Direct taxes of Southern Cameroons native treasuries will rise to

TABLE 6 Proposed Rise in Direct Taxes Collected  
by Local Authorities*(Million £)*

	1952-53	1953-54	1959-60
<i>North</i>			
Normal growth <sup>1</sup>			
for own use .....	3.06	3.78	4.51
for regional government .....	.33	.35	.52
Proposed additional yield .....	—	—	.70
Total .....	3.39	4.13	5.73
<i>West</i>			
Normal growth <sup>1</sup>			
for own use .....	1.02	1.17	1.40
for regional government .....	.03	.53	.66
Proposed additional yield .....	—	—	1.80
Total .....	1.05	1.70	3.86
<i>East</i>			
Normal growth <sup>1</sup>			
for own use .....	.84	1.03	1.23
for regional government .....	.03	.04	.04
Proposed additional yield .....	—	—	.60
Total .....	.87	1.07	1.87
<i>Southern Cameroons</i>			
Normal growth <sup>1</sup>			
for own use .....	.10	.11	.13
for regional government .....	.01	.01	.01
Proposed additional yield .....	—	—	.04
Total .....	.11	.12	.18
<i>Lagos Town Council</i>			
Normal growth <sup>1</sup> .....	.23	.29	.35
Proposed additional yield .....	—	—	.08
Total .....	.23	.29	.43

<sup>1</sup> 3% per annum after 1954-55, based on an anticipated rise in incomes at that rate. See Appendix C, Notes on Government Revenue.

£ 140,000 on the basis of a normal growth. We estimate that they will need an additional £ 40,000 to meet expanding local authority expenditures.

In the North an additional £ 700,000 will be required by 1959-60. This amount and much more could be raised by assessing more accurately the incomes of wealthier individuals.

The Eastern local authorities will have a more difficult task. By 1959-60 the amount of additional tax revenue required will be £ 600,000. To raise this amount will mean increasing the yield of direct taxation by 50% over what it would have been if normal growth were maintained. In the last two years the East has made striking progress in increasing tax yields and we are satisfied that the goal can be achieved by more widespread use of rating and perhaps by some increase in the yield of rates already in effect.

Western local authorities will have the most difficult problem. The relatively wealthy Western Region has decided to introduce free universal primary education beginning in 1955 and to expand social services. We believe that the West can carry out its ambitious program and we have made our projections accordingly. In order to do so, we estimate that local authorities will have to increase the yield of direct taxation from a level of £ 1 million in 1952-53 to £ 2.8 million by 1959-60, even if they receive substantial regional education grants, which we recommend should rise to £ 1.5 million in 1959-60. This would mean an increase in the tax burden from an average of 30/- per taxpayer to some 80/-. We estimate that the average taxpayer has at his disposal about £ 90 to £ 120 of cash income per year. The higher tax is surely not an impossible burden, though the discontent occasioned by the Education and Health Levy of 10/- imposed in 1953 is an indication of the opposition which may be anticipated. The necessity of shouldering this burden will have to be explained clearly to the Western people. The raising of the additional tax revenue would be facilitated by taxing more persons on the "progressive" scale rather than on the flat rate basis, and by increasing the use of property taxes, especially in Ibadan and other large towns. We further recommend that regional grants for education be made contingent upon the achievement by the local authorities of the tax targets suggested.



**PART II** *THE TECHNICAL REPORTS*



## TECHNICAL REPORT 1 CAPITAL FORMATION

As in any other country, the growth of Nigeria's national income in the long run will depend to a large extent on the rate of capital

TABLE 1 Savings and Investment, 1950-52

(Million £)

	1950	1951	1952
<i>Public Investment</i>			
Domestic Fixed .....	12.1	15.1	22.4
Abroad .....	24.2	42.9	25.4
Total .....	36.3	58.0	47.8
<i>Private Investment</i>			
Domestic Fixed .....	24.5	26.9 <sup>1</sup>	33.3
Abroad <sup>2</sup> .....	2.2	1.0	1.0
Total .....	26.7	27.9	34.3
Total Domestic Fixed Investment...	36.6	42.0	55.7
Increase in Foreign Assets .....	26.4	43.9	26.4
Total .....	63.0	85.9	82.1
<i>Financed by:</i>			
Net Donation Receipts from Abroad..	2.6	0.7	4.0
Public Borrowing Abroad .....	1.0	7.3	0.4
Private Capital Inflow .....	3.0	7.6	12.4
Domestic Savings <sup>3</sup> —Public .....	32.2	49.4	42.8
Private .....	24.2	20.9	22.5
Total .....	63.0	85.9	82.1

<sup>1</sup> Mission estimate.

<sup>2</sup> Changes in foreign balances of Nigerian banks.

<sup>3</sup> Excluding dividend and interest payments abroad.

SOURCE: Department of Statistics, Lagos. For more detailed data on fixed investment, see Appendix E.

formation. Data on capital formation for the years 1950-52 (Table 1) show that the level of gross investment came to an average of 12% of the gross domestic product.

Only a small part of total investment was financed by resources coming from outside Nigeria. Donations (mostly Colonial Development and Welfare grants), borrowings by government and inflows of private capital, consisting mostly of reinvested earnings of expatriate firms, accounted for one-sixth of total investment only; the remainder, or 10% of the gross national product, represented domestic savings.

This must be considered a remarkable performance in view of the low consumption standards prevailing in the country, even if allowance is made for the fact that two-thirds of the savings accrued to the government and government agencies from receipts resulting mainly from increases in export prices.<sup>1</sup>

However, less than 60% of the funds available for investment was used to augment the stock of capital of the Nigerian economy; the remainder took the form of foreign investment, i.e., it was added to the country's sterling balances. Two-thirds of public savings—the difference between current receipts and current expenditures of government and public agencies—accumulated abroad. The net outflow of public funds was partly offset by a net inflow of capital on private account. Thus, domestic investment<sup>2</sup> amounted between 1950 and 1952 to 7% of the gross national product only. The reasons for the failure to utilize fully the country's savings within Nigeria are explained in Chapter 2.

As to the future, there is the possibility that savings in the public sector will decline, primarily because the Marketing Boards probably will no longer accumulate "profits," if the prices of export produce decline, as appears likely, and if the mission's recommendations regarding the price policy of the boards are adopted.

The increase in current government expenditure proposed by the mission would leave a smaller margin for capital investment out of current government revenues. Public domestic investment, on the other hand, should substantially increase and should exceed public

<sup>1</sup> A large part of increased export proceeds accrued to the public sector through export duty collections and in the form of "profits" of the Marketing Boards.

<sup>2</sup> Excluding changes in inventories for which estimates are not available, except for 1952 when the value of inventories increased by £ 9.5 million.

savings, the difference being financed, as recommended in Chapter 5, by the drawing-down of reserves, borrowings from abroad, and Colonial Development and Welfare grants.

In the private sector, it is reasonable to expect an increase both in savings and investment, since the increase in public expenditures, capital and recurrent, aiming at an expansion of agricultural production, and improvements in the efficiency of Nigerian labor should open up new private investment opportunities for both African and non-African entrepreneurs. There are already some indications that the demand for certain kinds of consumer goods (textiles, household utensils) is growing more slowly than in the past and that a rising proportion of income is saved and invested in oil presses, lorries, bicycles, boats and permanent housing. Private investment should likewise be furthered by loans and partnership schemes of the reorganized development corporations. There is also the possibility of increased foreign investment in Nigeria through plowing back of earnings of foreign-owned enterprises and inflow of new capital by both established and new firms.

It should be noted that there is no danger that in the next few years the increased level of investment will lead to pressures on the balance of payments. The difference between public savings and public capital expenditures is to be financed by drawing down balances held abroad and by loans and grants from abroad, while the expected increase in private investment would be financed primarily out of current income of individuals and business firms and to some extent through inward capital movements.

To the extent to which increased total capital expenditures result in a rising demand for domestic goods and services, however, they may give rise to pressures on the price level, unless the supply of domestically produced goods, especially foodstuffs, is increased sufficiently to meet that demand. Therefore, the encouragement of local food production for which we make several recommendations in Technical Report No. 8 is an important measure of over-all economic policy and a prerequisite to the success of the proposed development program.

## TECHNICAL REPORT 2

### *INTERNATIONAL TRADE AND PAYMENTS*

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Nigeria's international trade presents in general an unusually favorable picture. The exports are a reasonably diversified group of products, the long-run markets for which seem well assured. The balance of payments has for a number of years shown a very substantial surplus, both over-all and with the dollar area, and Nigeria has acquired very considerable sterling balances. The burden of foreign indebtedness is light—in fact, Nigeria is at the moment a net creditor. Accordingly, as far as external payments are concerned, Nigeria is very well placed to proceed rapidly with development plans.

#### I EXPORTS

Nigerian exports have averaged over £ 100 million annually for the last five years. Although this is not a great volume of exports for a country with a population of over 30 million, it nevertheless establishes Nigeria as a world exporter of some importance. For example, its exports in the last five years were about equal in value to those of Turkey; they considerably exceed those of Uruguay and are 50% higher than the exports of Portugal.

Table 1 shows the value of Nigerian exports. Almost exactly half is represented by vegetable oil products—principally palm oil, palm kernels and groundnuts. Cocoa, the other major product, accounts for nearly one-quarter of total exports. Tin and columbite provide the largest share of the remainder.

The bulk of the agricultural exports is produced by small landholders and purchased by large expatriate companies as buying agents for the Marketing Boards. Palm products, groundnuts, cocoa and

TABLE 1 Average Annual Value of Exports by Commodity, 1949-53

(Thousand £)

		%			%
<i>Total Exports</i> .....	106,175	100.0	<i>Other Exports:</i>		
<i>Oil &amp; Oilseeds:</i>			Cocoa .....	23,717	22.3
Palm Kernels .....	19,690	18.5	Tin .....	7,050	6.6
Palm Oil .....	13,406	12.6	Hides & Skins .....	4,958	4.7
Groundnuts .....	18,019	17.0	Cotton .....	4,325	4.1
Groundnut Oil .....	878	0.8	Rubber .....	3,675	3.5
Benniseed .....	854	0.8	Timber (incl. Plywood)	3,553	3.3
Other Oilseeds and			Bananas .....	2,205	2.1
Vegetable Oils .....	929	0.9	Columbite .....	1,276	1.2
Sub-total .....	53,776	50.6	All Other .....	1,640	1.6
			Sub-total .....	52,399	49.4

SOURCE: Digest of Statistics and Nigeria Trade Summary, Lagos.

cotton all follow this pattern. Mineral exports are principally produced and sold by expatriate-owned mining companies. Bananas are produced and sold chiefly by the Cameroons Development Corporation and a subsidiary of the United Fruit Company. A considerable portion of the timber exports originates in the plywood factory of the United Africa Company, which together with some other companies is also a major exporter of hides, skins and rubber.

Table 2 shows the volume of principal export commodities.

Palm products have long been the chief source of earnings abroad. The oil palm is indigenous and even 40 years ago exports of the oil

TABLE 2 Volume of Exports of Principal Commodities

(1949-53 = 100)

	Total Exports <sup>1</sup>	Palm Kernels	Palm Oil	Ground-nuts (incl. oil)	Cocoa	Tin	Cotton	Rubber	Columbite
1913 ....	22	46	49	7	3	36	20	—	—
1924-28 ..	47	67	71	35	39	91	39	4	—
1929-33 ..	58	69	73	57	53	84	31	4	—
1934-38 ..	78	86	78	76	82	92	57	14	28
1939-43 ..	79	83	78	61	83	140	66	29	48
1944-48 ..	77	80	70	74	82	126	29	58	124
1949-53 ..	100	100	100	100	100	100	100	100	100

<sup>1</sup> See Appendix E for description of index.

SOURCE: Digest of Statistics, Lagos; League of Nations: International Trade Statistics.

were nearly half the present volume. Cocoa and groundnuts, on the other hand, were introduced to Nigeria and developed substantially only after World War I. It was a little over 20 years ago that they reached half their present export level. Tin mining was developed relatively early in Nigeria, exports reaching almost their present level in the 'twenties. Among the minor products, rubber has been outstanding in its recent growth.

Within the last five years the trends have varied somewhat from the longer run tendencies. While groundnuts have continued their expansion (with an increasing proportion being exported as groundnut oil), the growth of cocoa exports has stopped for the time being. Timber, rubber, cotton and columbite have made quite rapid strides in recent years. This growth in minor products has made the recent pattern of exports rather more diversified, a desirable tendency because it makes the country less vulnerable to shifts in particular markets.

The over-all growth of exports, as shown in Table 2, has been quite remarkable. A doubling of the 1913 trade was achieved soon after World War I and the increase continued into the 'thirties. The war checked this growth; 1944-48 exports were below the level of 1934-38. The rise has since resumed: the last five-year average is over 25% above prewar levels and 1953 exports were considerably above those of any previous year.

## II IMPORTS

Table 3 shows the commodity groups represented among Nigeria's imports in the last five years.

As would be expected for a country in an early stage of development, finished consumer goods bulk large in imports, as shown by Table 3. Textiles in particular form a very large item, one-third of total imports, a proportion which is exceeded by very few countries. On the other hand food imports are relatively small, consisting for the most part of luxury items and a few specialized items such as dried and canned fish and salt, in which the country is deficient.

Transport equipment, including road vehicles, originates almost

TABLE 3 Imports by Commodity Groups, 1949-53

*(% of value of total imports)*

I. <i>Consumption Goods:</i>		II. <i>Capital Goods and Raw Materials:</i>	
Textiles .....	33.6	Vehicles and Parts .....	12.1
of which		of which	
Cotton Piece Goods ....	21.5	Lorries .....	3.0
Rayon Piece Goods ....	7.0	Cycles .....	1.9
Food, Drink & Tobacco ....	12.1	Automobiles .....	1.7
of which		Building Materials .....	7.6
Fish .....	2.5	of which	
Salt .....	1.4	Corrugated Iron .....	2.7
Sugar .....	1.0	Cement .....	2.3
Beer .....	1.8	Machinery and Equipment ..	7.5
Tobacco & Cigarettes...	2.0	of which	
Miscellaneous Consumption		Electrical Machinery	
Goods .....	8.4	& Apparatus .....	2.3
of which		Industrial Machinery ..	1.4
Hollowware .....	1.8	Miscellaneous Supplies ....	10.1
Medicine & Drugs .....	1.4	of which	
Kerosene .....	0.7	Petroleum Oils .....	4.2
		Bags and Sacks .....	2.3
Sub-total .....	54.1		
		Sub-total .....	37.3
		III. <i>Other Items</i> .....	8.6
		of which Unspecified Iron	
		and Steel Manufactures.	4.0
		Sub-total .....	8.6

SOURCE: Digest of Statistics and Nigeria Trade Summary, Lagos.

wholly from abroad and now takes a considerable share of the imports. The value of bicycle imports exceeds that of passenger automobiles. Building materials, particularly cement and corrugated iron sheets, are also imported in considerable quantities. Nigeria is dependent on imports for practically all machinery and equipment. The amounts imported are not as yet substantial; the group shown, which includes all forms of implements as well as some household electrical equipment, is less than one-fourth the imports of textiles.

From the rough separation made of consumption goods it appears that they absorbed about 60% of all imports in recent years. This percentage is probably somewhat lower now than in earlier periods. The volume figures indicate that except for beer, imports of consumption goods have increased rather less than most of the capital goods.

Among the latter, the increase in imports of cement, road vehicles and petroleum is quite spectacular. One factor in the slow growth in consumption goods has been the growth of domestic production. Increased sales of the cigarette factory and increased local production of tobacco have reduced the need to import cigarettes and tobacco. In earlier years there was a similar replacement of kola nut imports by local production.

Table 4 shows the volume of selected imported commodities, representative of consumption goods, capital goods and raw materials.

TABLE 4 Volume of Imports of Selected Commodities

(1949-53 = 100)

Consumption Goods							
	Fish	Salt	Sugar	Beer	Tobacco	Cigar-Cotton & Rayon ettes Piece Goods	
1924-28...	132	65	28	22	87	104	48
1929-33...	132	63	32	15	61	106	47
1934-38...	109	65	61	10	48	117	61
1939-43...	18	67	18	11	38	81	37
1944-48...	14	86	20	21	58	104	51
1949-53...	100	100	100	100	100	100	100

Capital Goods and Raw Materials						
	Cement	Corrugated Iron Sheets	Cars and Lorries	Petroleum Oils	Bags and Sacks	Total Imports <sup>1</sup>
1924-28...	24	56	22	10	51	49
1929-33...	19	49	17	12	57	44
1934-38...	22	50	28	16	83	52
1939-43...	16	10	8	26	76	28
1944-48...	41	13	35	42	77	43
1949-53...	100	100	100	100	100	100

<sup>1</sup> See Appendix E for description of index.

SOURCE: Digest of Statistics, Lagos; League of Nations: International Trade Statistics.

The over-all volume of imports showed a surprising stability in the interwar years. The growth in export volume was not accompanied by an equivalent increase in imports, because imports were held down by the abnormally low export prices in the 'thirties. In the war years the import volume fell very substantially, partly due to unavailability

of some types of supplies but also owing to a further worsening of the terms of trade, the extent of which is shown in the next section. The postwar volume of imports grew rapidly and the average for the last five years is roughly double the prewar level. The growth in the machinery and equipment imports has been particularly great; their share in total imports rose from 6.3% in 1949 to 8.6% in 1953. In the same period the much larger item of textiles reduced its share from 39.4% to 30.5%. However, part of these changes arose from differing price movements, as textile prices increased much less than those of other items.

### III PRICE MOVEMENTS AND TERMS OF TRADE

Table 5 shows the prices of exports and imports and the terms of trade since 1924.

TABLE 5 Prices of Exports and Imports and Terms of Trade  
(1949-53 = 100)

	Export Prices	Import Prices	Terms of Trade <sup>1</sup>
1924-28 .....	32	33	98
1929-33 .....	19	25	78
1934-38 .....	15	20	76
1939-43 .....	15	36	42
1944-48 .....	39	66	60
1949-53 .....	100	100	100
1949 .....	76	85	90
1950 .....	84	88	97
1951 .....	115	108	107
1952 .....	120	115	105
1953 .....	105	104	101

<sup>1</sup> Terms of trade = export prices divided by import prices. Apparent discrepancies are due to rounding. A rise in this ratio indicates improved terms of trade.

SOURCE: For five-year averages: mission estimate; for annual figure: Department of Statistics, Lagos.

In the last 30 years the prices of Nigerian exports and imports have shown wide fluctuations, but the variations of export prices were much more pronounced than those of import prices. The terms of

trade resulting from these movements have gone through a full cycle. The prosperous period of the 'twenties, with relatively high prices for Nigerian exports, was followed by the depression of the 'thirties when export prices fell by much more than import prices. The terms of trade as roughly estimated from the available data fell by one-quarter. Ignoring year-to-year fluctuations, the terms of trade stayed low until the war, when they further worsened. Export prices during the war were kept stable, but import prices rose quite substantially and the terms of trade fell to less than half those of the 'twenties. This means that at that time Nigeria had to export twice as much in order to buy the same volume of imports.

After the war the terms of trade rapidly recovered and soon passed the immediate prewar level. The rise in export prices in the period 1949-53 was sufficiently great to return Nigeria to the favorable terms of 1924-28. Taking the figures for the last five years individually, it is apparent that a peak was reached in 1951 under the stimulus of the speculative buying following the outbreak of Korean fighting. By 1953 the terms had receded somewhat and were only slightly more advantageous than the average for the last five years.

These indications of the over-all terms of trade of the country are not of course directly indicative of the position of the individual African producer of export commodities. He purchases a collection of imported goods in which, for example, textiles would weigh more heavily than in the official index. Moreover, the producers are concerned with the price they receive rather than the export price, which includes Marketing Board "profits" (or "losses") and export duties. An index on this basis would indicate a somewhat less favorable position for recent years than the over-all index. The general trend would, however, be similar and the index of the producer terms of trade would show the tremendous recent improvement.<sup>1</sup> The main difference would be that the producer index would probably be still improving and would mark an all-time high in 1953.

<sup>1</sup> A detailed investigation of these producer terms of trade made by E. K. Hawkins of the West African Institute of Social and Economic Research, Ibadan, in an unpublished study, establishes the very considerable gains made.

## IV DIRECTION OF TRADE

In the last five years some three-quarters of Nigerian exports has gone to the United Kingdom. The United States is the next largest customer and accounts for more than all other countries combined, the most important of which are European. This marks a sharp change from prewar when the exports to the United Kingdom were much lower and the exports to the European continent much higher. The change is in part attributable to the bulk purchase arrangements with the U.K. Ministry of Food during the last five years.

Table 6 shows the direction of flow of exports and imports during the prewar years and for the last five years.

TABLE 6 Direction of Trade

*(% of Total)*

Exports			Imports		
	1934-38	1949-53		1934-38	1949-53
United Kingdom .....	46.0	78.3	United Kingdom .....	56.8	52.8
United States .....	9.4	12.4	Japan .....	5.0	8.9
Netherlands .....	8.9	2.1	Germany .....	8.2	5.9
Germany .....	17.2	1.7	India and Pakistan ...	5.9	5.8
France .....	8.9	0.5	United States .....	6.5	4.2
			Netherlands West		
			Indies .....	1.1	3.8
			Italy .....	2.0	3.5
			Netherlands .....	1.8	3.0

SOURCE: Digest of Statistics, Lagos.

The import pattern has been much more stable. The United Kingdom has consistently been the source of more than half the total imports. The remainder has been widely distributed among industrial nations. In spite of quite severe restriction, Japan has achieved the greatest increase over prewar and in the last five years provided the second largest group of imports. Germany, whose share has been expanding greatly in the last two years, is next in importance. The United States, third largest prewar supplier, has been reduced to fifth place through dollar import restrictions.

This pattern results in Nigeria's running a large surplus with the

United Kingdom and the United States, combined with a considerable deficit with the rest of the world. While trade with other dollar countries has been in deficit and there are net dollar payments involved in other transactions, such as petroleum purchases, Nigeria has clearly been a net dollar earner. On the other hand Nigeria runs a heavy deficit with Japan.

#### v TRADE AND PAYMENTS RESTRICTIONS

Nigeria is a member of the sterling area and maintains exchange and import controls similar to those of other members. Purchases from the dollar area have been restricted in over-all amount, with licenses granted only for a specified list of essential goods unobtainable elsewhere. The list and the over-all allocation are determined in London on the basis of Nigerian submissions.

Restrictions on imports from other countries have for the most part been relaxed, with the significant exception of Japanese goods. During 1952 restrictions on Japanese goods were sharply tightened by Nigeria as by most members of the sterling area, following an earlier sterling area deficit with Japan. These restrictions led to a reduction of £ 5.5 million, or 50%, in Japanese goods entering Nigeria in 1953, a cut in terms of total value much more severe than the dollar restrictions.

In 1954, after Japan had negotiated an agreement with the United Kingdom calling for a substantial relaxation of restrictions by the United Kingdom and her colonies, the Nigerian allocation of import licenses for Japanese goods was greatly increased. The requirement for specific licenses for Japanese goods has not been abolished, however. From intimations the mission received at the time of its visit, it was evident that there would remain a substantial volume of repressed demand for such goods.

In the allocation of licenses among importers the policy of the administration has been to favor the African importer. The proportion of import business for scarce goods granted to Nigerian importers has increased annually as compared with that allocated to expatriate importers.

Export controls are maintained, primarily to ensure that the proceeds of the sale are repatriated to Nigeria in accordance with exchange control arrangements. There is no attempt to use these controls to divert exports to the dollar area.

For the foreseeable future Nigeria will remain within the sterling area and while the sterling area maintains restrictions, so will Nigeria. It would be wise, however, if the administrative procedure were revised to provide for the presence of Nigerian representatives at annual discussions in London. In this way, Nigerians would be kept informed about sterling area problems and would be confident that Nigerian problems were presented and adequately taken into account.

## VI EXPATRIATE COMPANIES IN TRADE

Although the agricultural export goods are chiefly produced by numerous small landholders, the purchase from them of the export crops is highly concentrated in the hands of a small number of expatriate companies, which, together with other Nigerian and expatriate firms, operate as licensed buying agents of the Marketing Boards. Since the inception of the boards, the number of Nigerian firms so operating has increased, however. One expatriate company in particular occupies an extremely large place, purchasing in 1949 43% of all Nigerian nonmineral exports.<sup>2</sup> In imports, substantially the same picture is presented with the same firms dominating, although the share of the smaller firms is somewhat larger and has tended to grow recently.

This concentration has arisen chiefly from the great advantages derived in West African trade from large-scale operations backed by substantial capital. Originally there were few facilities available for services such as warehousing. Consequently, firms which provided their own obtained a substantial advantage. Many of the goods handled are standardized and there were economies in bulk handling. The absence of a local capitalist class necessitated the development of

<sup>2</sup> This figure is given by P. Bauer in his article "Concentration in Tropical Trade," *Economica*, Aug. 1953, p. 22. The article provides a detailed analysis of the share of the firms in the trade of Nigeria and an examination of the causes of the concentration.

internal distribution of imports. As communications were poor, unusually large stocks of goods had to be carried. The requirements for capital were further increased by the uncertainties of tropical trade; firms with small capital frequently were destroyed when price declines caused losses on stocks and ran them short of liquid capital. Large firms, well known in London, were able to weather such crises by borrowing abroad.

The large expatriate firms have played a very important role in developing Nigeria. Their distribution of imported goods into the interior has been among the most potent forces in bringing about an increase in production for sale by demonstrating to the farmer the benefits he can derive therefrom. In addition, several of the firms have reinvested their profits in industrial and other enterprises in Nigeria.

These firms have provided and are providing efficient service and their large share in trade will continue for many years to come. But with the passing of the special conditions which gave them their initial advantage, the share in trade of smaller firms and in particular of Nigerian firms will grow. In recent years this tendency has been encouraged by the more liberal allocation of import licenses to the smaller traders. In the future, too, government support and encouragement for the smaller traders will be justified. However, this should not take the form of restrictive action against the larger companies based purely on the size or ownership of the firm.

## VII BALANCE OF PAYMENTS ESTIMATES

While trade gives rise to the major part of Nigeria's payments and receipts with the rest of the world there are other transactions of substantial importance. There are payments of profits by expatriate companies, receipts of interest on investments in London, receipts of private capital from abroad and the investment of government surplus funds in London, to mention only a few. Estimates of all these transactions for 1950, 1951 and 1952 are given in Table 7.<sup>3</sup>

<sup>3</sup> See Appendix E for the basis of the estimates.

TABLE 7 Balance of Payments Estimates

*(Million £)*

	1950		1951		1952	
	R. <sup>1</sup>	P.	R.	P.	R.	P.
<b>Merchandise</b>						
Exports .....	88.9	—	119.6	—	128.6	—
Imports (c.i.f.) .....	—	63.1	—	86.1	—	115.2
Balance on goods .....	25.8		33.5		13.4	
<b>Services</b>						
Travel .....	0.1	1.4	0.1	1.8	0.1	2.1
Transportation & Insurance .....	2.4	2.0	3.1	2.5	3.4	2.7
Investment Income—Direct .....	—	5.8	—	6.7	—	7.0
Other .....	3.0	0.6	3.9	0.6	4.8	0.8
Other Government .....	1.7	2.7	2.3	2.0	2.5	2.2
Miscellaneous .....	—	0.7	—	0.8	—	0.8
Balance on services .....		6.0		5.0		4.8
1. Balance on goods and services...	19.8		28.5		8.6	
<b>Donations</b>						
Private .....	0.7	1.2	0.9	1.5	0.9	1.5
Government .....	3.1	—	1.3	—	4.6	—
2. Balance on donations .....	2.6	—	0.7	—	4.0	—
3. Private Capital .....	2.6	—	8.6	—	7.6	—
4. Errors and Omissions .....	0.4	—	—	1.0	4.8	—
Balance 1 through 4 .....	25.4		36.8		25.0	
<b>Official &amp; Banking Capital</b>						
Changes in Nigerian Liabilities ..	1.0	2.7	7.3	—	0.4	0.1
Changes in Nigerian Assets (Net):						
Marketing Boards .....	—	12.1	—	11.2	2.1	—
Currency Board .....	—	5.3	—	13.4	—	4.0
Banks .....	—	2.2	—	1.2	—	1.0
Other Official .....	—	4.1	—	18.3	—	22.4
Balance of Official & Banking Capital		25.4		36.8		25.0

<sup>1</sup> R. = receipts; P. = payments.SOURCE: Mission estimates based on data supplied by Department of Statistics, Lagos.  
See also Appendix E.

The most striking feature of the balance-of-payments situation is the substantial addition made in each of the three years 1950-52 to Nigeria's net official and banking capital abroad. For the three years

the net addition amounted to £ 87 million, an amount equivalent to over 25% of export proceeds. This is an extraordinarily high rate of exchange savings, which has rarely been exceeded in any country. Nigeria's payments position is consequently very strong.

While this surplus was invested abroad a smaller inflow of private capital was being provided by the expatriate firms. The amount recorded in the estimates, £ 19 million for the three years, refers to the physical additions to capital by the expatriate companies after allowance for depreciation. It does not include any allowance for the growth of their liquid assets in Nigeria—debts or cash holdings—and it is probable that the actual transfer of capital was several million pounds greater.

Among the service items the largest is the profits of the expatriate companies. This item, which amounts to about 6% of export receipts, is quite substantial although it does not approach the level reached in many other underdeveloped countries. Nigeria is, however, almost unique among underdeveloped countries in having a very substantial offset in the form of interest receipts on balances held in London. These receipts are sufficient to cover all the charges on Nigeria's own debt and half the profits of expatriate companies. In consequence, net payments of invested income are less than 3% of receipts for exports.

The other major outward payments by Nigeria occur in travel expenditure and in private remittances abroad. These together take a net amount of a little over 2% of total export receipts. In government donations are recorded the substantial receipts on Colonial Development and Welfare grants together with some minor items.

#### VIII STERLING ASSETS

The large additions to Nigeria's assets abroad, shown in the balance of payments, have through the years led to the accumulation of very considerable sums. The full total of the assets was not readily available, as the balances are held by a large number of organizations, but a tabulation made for the mission indicated the position as of March 31, 1953 shown in Table 8.

TABLE 8 Sterling Assets of Nigerian Official, Semi-Official and Banking Institutions, 1953

<i>(Million £)</i>	
Marketing Boards .....	51.6
Currency Board .....	55.5
Central Government .....	47.7
Regional Governments .....	5.4
Native Authorities .....	3.1
Regional Production Development Boards .....	15.1
Other (Semi-Official) .....	11.9
	<hr/>
	190.3
Net Balances of Banks Abroad .....	16.4
	<hr/>
Total Banking and Official .....	206.7

SOURCE: Financial Secretary's Office. See also Appendix E.

The values in Table 8 represent either cash balances or the market value of securities held in London; 11% of the securities was included at their nominal, and the rest at the market, value. At that time the market values of securities held by the Marketing Boards were at a discount of 12%. As the official United Kingdom sterling balance figures are in terms of nominal values, about £ 20 million should be added to the figures in the Table when comparing them with other countries' sterling balances.<sup>4</sup>

This level of external assets of banking and official and semi-official institutions is quite unusual. In March 1953 not one of the 20 Latin American republics had such reserves. In the independent sterling area only Australia and India had greater assets. South Africa's total gold and foreign exchange reserves were less than two-thirds as large. To look at the assets from another side, they were considerably greater than the investments of expatriate companies in Nigeria; actually they exceed the total of these investments and the Nigerian public debt, so that Nigeria is for the moment a net creditor.

The main part of the balances is held by the Marketing Boards, the Currency Board and the central government, each accounting for about £ 50 million. The other large block was held by the Regional

<sup>4</sup> The realizable value of the £ 207 million in March 1953 has probably increased further in the succeeding year. The market value of the securities has improved and there appear to have been some direct additions by most of the institutions.

Production Development Boards, which received them from the Marketing Boards. The remainder was made up by the surpluses and unspent capital allocations of all the many semi-governmental organizations and the regional and local governments. The bank balances shown are the deposits of the branches in Nigeria with the head office in London. These balances, although private in direct ownership, are half government-owned if the ownership is traced to the depositors, for about half of the private bank deposits are made by official bodies.

Nigeria is exceedingly fortunate to have such assets at the outset of an intensified development program. The assets are considerably in excess of the amount required for external solvency and the excess will be available for development needs.

The amount which should be held abroad to ensure external solvency can never be precisely indicated. It is probably true, however, that Nigeria should maintain for some time at least an above-average reserve. The terms of trade, although not greatly out of line with previous periods of prosperity, are likely to worsen. The price stabilization operations of the Marketing Boards and the use of accumulated reserves by government during times of adversity will lead to relatively great demands on reserves in a depression. On the other hand, the debt service payments are small and imports are fairly easy to compress. Allowing liberally for all factors suggesting higher reserves, there seems no doubt that a substantial proportion of the sterling balances could be regarded as available to meet the capital requirements of development.

It is equally clear that at the moment the use of existing balances for this purpose should be limited. In Chapter 5 we have indicated the amounts which can usefully be employed in financing the development program in the next five years. We do not believe that these amounts should be exceeded because the reserves may have to be relied on in the more distant future to supplement the country's current savings when the requirements for capital investment will be larger. This problem and the working determination of the safe level of reserves are matters for which the proposed state bank should have primary responsibility.

1 CURRENCY

The currency in circulation in Nigeria is the West African pound, issued by the West African Currency Board as the common currency of the British West African colonies of Nigeria, the Gold Coast, Sierra Leone and the Gambia. The currency system is based on sterling, and the value of the West African pound is tied directly to that of the pound sterling. West African currency is issued by the Board against the payment of sterling and, conversely, the currency is redeemable for sterling at all times. The issue and redemption take place at the rate of one pound West African currency to one pound sterling.

*The Currency Board*

The West African Currency Board was constituted by the Secretary of State for the Colonies, who also issued the West African Currency Board Regulations of 1949 which presently govern the Board's operations. They authorize the Board, subject to the legislation in force from time to time in the West African colonies, to provide, issue and re-issue coin and currency notes in the four colonies. The issue of currency notes in Nigeria is authorized by the Nigerian West African Currency Notes Ordinance, which provides that the currency notes shall be a charge on the assets of the Board and "failing them, on the general revenues of Nigeria."

The Board consists of five members appointed by the Secretary of State for the Colonies. The practice has been for one of the two Crown Agents for Oversea Governments and Administrations to serve as chairman, while the other members are from the Colonial

Office and the Bank of England. The secretariat is in the office of the Crown Agents and all meetings are held in London.

The sterling acquired by the Board against the issue of West African currency is credited to a Currency Reserve Fund. Part of this reserve is kept in liquid form to meet likely redemption demands. The Regulations authorize investment of the remainder in "sterling securities of the government of any part of Her Majesty's dominions or in such other manner as the Secretary of State may approve." In practice the Board has virtually limited its investments to U.K. securities which constituted 98% of its holdings in June 1953. At no time has the Board invested in any West African securities, although there is no legal restriction on its doing so. In consequence the currency issue has always been backed by external assets and there has been no fiduciary issue backed by securities of the local colonial governments.

The Board may, with the approval of the Secretary of State, distribute its income in whole or in part to the four governments. In practice, part of the income has been added to the Currency Reserve Fund. It is the broad policy of the Board to aim at a Currency Reserve Fund greater than the amount of currency outstanding, while at the same time making reasonably regular distributions to the four governments. The excess, normally of the order of 10%, is retained against possible depreciation of the securities held. At the end of 1952-53 the Board had reserves valued at 108% of the currency issue and distributed £ 400,000 for that year to the four West African colonies. Nigeria's share, determined by a formula based on trade, amounted to £ 213,000.

The Board will deal with any member of the public in the issue and redemption of currency, provided the amount of each transaction is £ 10,000 or more. It charges a fee of  $\frac{1}{2}$ % for issue or redemption. As the banks charge the same fee for transfers of funds between London and West Africa, all private transfers take place through the banks.

The Board maintains a main currency center in Lagos, and eight subcenters in Nigeria—all of which issue currency and accept currency for redemption. Transfers between all centers and subcenters in West Africa have been free of charge. No regulations have been

issued on the subject but apparently this service is not available to the public. It has been used only by the banks, which themselves charge the public  $\frac{1}{4}$ – $\frac{3}{8}$  % for such transfers.<sup>1</sup> Four of the subcenters were opened early in 1954, thereby relieving the banks of much of the cost of currency transfer.

Except for the subcenter in Victoria (Southern Cameroons) which is operated by Barclays Bank (D.C. & O.), the centers and subcenters in Nigeria are all operated for the Board by the Bank of British West Africa; the Board pays an agency fee to the banks. The charge is quite low and has not increased proportionately with postwar costs.

The advantages of the currency board system—used by most British colonies—are considerable. In many respects the result is equivalent to the local circulation of U.K. currency. It removes from commerce any exchange risk with the main markets. It relieves the local government of all problems of currency management and in particular eliminates the danger of locally created inflations or foreign exchange crises. The currency board system has one advantage over local circulation of sterling: profits arising from the currency issue accrue to the colonies rather than to the home government.

In spite of these advantages it is clear that the West African Currency Board will have to undergo changes in the near future. Nigeria and the Gold Coast are moving rapidly towards self-government and it will not long be possible to group under one currency board self-governing territories which will not necessarily want to pursue identical internal economic and financial policies.

The Board's policy of maintaining external reserves of 100% and over has often been criticized and the suggestion has been made that part of the reserve should be invested in local government securities, thus creating a fiduciary issue as is customary in all developed countries. This suggestion has considerable merit in principle, for circumstances may well arise under which it would be wasteful to keep the country's external reserves immobilized. However, the creation of a fiduciary issue to mobilize currency reserves or for any other purpose necessarily involves an element of discretion, and in the absence of responsible management may lead to external insolvency. Moreover, if

<sup>1</sup> Until 1951 only Barclays Bank (D.C. & O.) and the Bank of British West Africa had used this service. In that year the National Bank of Nigeria made the first transfer.

Nigeria's sterling holdings are pooled, as recommended in Chapter 4, the problem of departing from a 100% currency cover should not arise for many years. These holdings at present amount to more than three times the total currency issue and for the next five years at least there should be no question of their being reduced to a level anywhere near the amount of currency outstanding.

The currency board system as now applied is, however, open to criticism on another count—it does nothing to train Africans in monetary management. This is a serious shortcoming, since monetary management may present grave problems for Nigeria, once self-government is attained. The financing of an intense development effort requires the highest standards of monetary management if inflation and the resulting excessive loss of reserves are to be avoided. Education towards self-government will fail if an effort is not made at this stage to acquaint Africans as widely as possible with the principles of sound monetary management. This is one of the main reasons for the mission's recommendation for the early establishment of a state bank.<sup>2</sup>

#### *Recent Currency Trends*

Since 1939 there has been an extraordinary increase in currency in circulation in Nigeria, surpassing that of any independent sterling area country. During the war years the supply trebled, a very substantial change but one which was paralleled by many other sterling countries. At the end of 1945, the money supply in the United Kingdom and New Zealand stood at 2½ times prewar; it more than trebled in Australia and the Union of South Africa and rose to more than four times prewar in India and Ceylon. The reason for the increase was broadly similar for all these countries: a rise in money incomes, partly as a result of military expenditures, at a time when consumer goods were not available or were severely controlled. In the postwar years, however, the growth of Nigeria's currency in circulation did not slow down or cease as it did in many sterling area countries. In fact the rate of increase was almost maintained, with a further trebling occurring in the following seven years. As of March

<sup>2</sup> For detailed recommendations, see Chapter 4, p. 96.

31, 1953, currency in circulation was estimated at £ 51.4 million of which £ 4.8 million was held by the banks (see Table 1).

TABLE 1 Currency in Circulation

*(Million £)*

	Notes	Coin	Total	Held by Banks
1939 .....	0.3	5.5	5.8	n.a. <sup>1</sup>
1946 .....	3.2	14.9	18.1	1.5
1953 .....	20.8	30.6	51.4	4.8

<sup>1</sup> n.a. = not available.

SOURCE: Digest of Statistics, Lagos.

The postwar growth was clearly caused by the tremendous increase in export earnings. Although a strong attempt was made to limit the effect of this increase by siphoning off a large part of the earnings through Marketing Board and government action, these measures did not prevent the transmission to the Nigerian economy of the pressures of the rising sterling area price level.

The expansion of local circulation in this period is an interesting demonstration of the relative ineffectiveness of cautious Nigerian budgetary policies to prevent the transmission of general sterling area inflation to Nigeria when the currency is tied directly to sterling. Short of an appreciation of the West African pound, which would have been essentially inconsistent with the currency board system, there was no way in which the local administration could have avoided the price inflation which has occurred.

Of course, the growth in currency does not merely represent price inflation. The Nigerian economy has developed considerably in the past 14 years, internal trade growing very substantially in volume, so that there is a much greater quantity of transactions to be handled. Moreover, the development of the economy has undoubtedly led to a wider use of money as a medium of exchange transactions and for savings. The withdrawal from circulation of manillas<sup>3</sup> by the government left a gap which was filled by West African currency. The development of monetary habits is indicated in striking terms by the

<sup>3</sup> Small bronze hoops, shaped like horseshoes, used as unofficial token money in parts of the Eastern Region.

changed proportion of notes in the currency issue; in 1939 they represented only 4% of the total but by September 1953 the proportion had risen to 44%. In part this resulted from higher price levels which made the use of notes rather than coins more convenient, but more significantly it arose from a growing understanding on the part of the African public that notes were equivalent in security to coins.

## II BANKING

### *General Features*

Since Nigeria's economy is at an early stage of development, with most production in the hands of small peasant farmers, deposit banking plays a very much smaller role than it does in developed economies. Demand deposits are less than half the size of the currency issue. This may be contrasted with the situation in the United Kingdom where demand deposits are nearly three times the size of the note issue. Further, this comparison of deposits with currency overstates the use of banking facilities by the private sector, as nearly half the deposits are made by government or by semi-government organizations. For the private sector, currency outweighs deposits more than three to one, compared to a ratio in India, for example, of less than two to one. Finally, it should be noted that banking is even less significant for the African sector. An overwhelming part of the demand deposits is held by Europeans and European firms. Nigerian commercial interests and individuals, on the other hand, use currency probably 10 times as much as demand deposits.

The banks accept fixed and savings accounts as well as demand deposits (see Table 2). The amounts held in fixed and savings accounts are small but the savings accounts, in particular, perform an important function.

The fixed deposits include considerable sums of public moneys deposited with an African commercial bank—a recent development commented on below. The savings deposits, on the other hand, are almost entirely small African accounts. In keeping these accounts the commercial banks render a considerable public service by popularizing

TABLE 2 Deposits in Commercial Banks, December 31, 1953

*(Million £)*

Demand .....	24.5
Fixed .....	3.8
Savings .....	2.9
	31.2
Total .....	31.2

SOURCE: Digest of Statistics, Lagos.

savings. As the cost of operating such small accounts is high, it is probable that this service is operated at a loss.

The relatively underdeveloped financial system in Nigeria is strikingly illustrated by the assets held by the banks. The proportion held in cash at hand and with banks abroad (primarily with head offices) must be among the highest in the world. These two items cover 69% of all deposits and are nearly equal to the level of demand deposits (see Table 3).<sup>4</sup>

TABLE 3 Liquid Reserve Ratios of Commercial Banks, December 31, 1953

*(Million £)*

Demand Deposits .....	24.5	Cash .....	5.4
Other Deposits .....	6.7	Balances Abroad .....	16.1
	31.2		21.5
Total Deposits .....	31.2	Total Liquid Assets .....	21.5
		Ratio of Liquid Assets to Total Deposits	69%
		Ratio of Liquid Assets to Demand Deposits	88%

SOURCE: Digest of Statistics, Lagos.

The corollary of this high liquidity is, of course, a very low level of loans and advances. In December 1953 they amounted to one-third of total deposits. Moreover, loans and advances are highly seasonal.

<sup>4</sup> In a country with a developed securities market and a central bank which acts as lender of last resort, the cash reserve ratio to total deposits is frequently no more than 10%. For example, in India the ratio for the "scheduled banks" was only 7½% in December 1953 while in the United Kingdom the ratio was 8½%. The situation in Nigeria is not directly comparable since there the possibility of holding reserves in the form of readily saleable internal securities does not exist. A more comparable case was provided by Cuba at the time of an International Bank mission's visit in 1950. Liquid reserves were equal to 51% of total deposits, a ratio which was described as high, and recommendations were framed which would lead to its reduction.

December figures normally show a level nearly twice that of June, as shown by Table 4.

TABLE 4 Advances of Commercial Banks

*(Million £)*

	March 31	June 30	September 30	December 31
1951 .....	3.4	3.0	3.6	5.5
1952 .....	5.0	4.6	5.6	9.2
1953 .....	5.8	5.8	6.4	10.2

SOURCE: Digest of Statistics, Lagos.

The seasonal fluctuations reflect the high concentration of bank lending for import and export trade, and in particular the importance of financing export crops. Cocoa and groundnuts, the principal export crops financed, have seasonal peaks close together toward the end of the year. The composition of bank advances and their seasonal variations are summarized in Table 5.

TABLE 5 Classification of Loans and Advances of Commercial Banks

*(Million £)*

	Cocoa and Groundnuts	Other Export Products	Wholesale and Retail Trade	Others	Total
Dec. 31, 1952 ....	2.5	0.9	3.4	2.4	9.2
June 30, 1953 ....	0.7	0.6	2.8	1.7	5.8

SOURCE: Financial Secretary's Office.

Advances to the wholesale and retail trade are made primarily to finance imports. Other advances include (as of June 1953) loans for construction (0.4 million), for manufacturing (0.3 million), and a large number of miscellaneous loans (1.0 million) which includes many small consumer loans by African banks.

The low levels of bank advances and the consequent tendency to low income from local loans is partly compensated for by higher interest rates. The rates charged by the British banks appear to exceed those in British colonies<sup>5</sup> outside West Africa. Those charged by

<sup>5</sup> Ida Greaves quotes rates as being 4% to 6% in the West Indies compared with 6% to 8% in West Africa. *Colonial Monetary Conditions* (H.M. Stationery Office: London, 1953) p. 47.

the African banks are even higher and are very high in comparison with those of more advanced countries.

The business of the European banks has been to provide services rather than to extend credit. The greater part of their income comes from service charges. Internal remittances bear high charges, the rates ranging from  $\frac{1}{4}\%$  for short-distance transfers such as from Lagos to Ibadan to  $1\%$  for transfer to an outlying branch such as Maiduguri. These charges, and in particular high minimum charges, have frequently been criticized as excessive. Sir Cecil Trevor reported with respect to the Gold Coast: "Even although appreciable reductions have been made in recent years I was impressed by the high rates charged by the banks for internal remittances especially between centres at which they enjoy free transfers through the West African Currency Board."<sup>7</sup> This observation applies equally to Nigeria at present.<sup>8</sup> The banks defend these charges by asserting that the costs of maintaining outlying branches are high and that with few acceptable local borrowers there is no other way of recouping them. The mission is not in a position to say to what extent, if any, charges could be reduced, but it is of the opinion that the matter deserves study. The mission also feels that when the Currency Board opens additional currency subcenters, as was done recently, and thereby reduces the banks' costs, it should use its influence to see that the reduction in cost is passed on to the public.

### *The Banking Ordinance*

Since 1952, the banking business has been regulated. The Banking Ordinance requires banks to be licensed. The requirements for

<sup>6</sup> Banks charge up to  $9\frac{1}{2}\%$  per £ per month (i.e.,  $47\frac{1}{2}\%$  per annum) for unsecured loans.

<sup>7</sup> *Report on Banking Conditions in the Gold Coast and on the Question of Setting Up of a National Bank* (Government Printer: Accra, 1951), par. 123.

<sup>8</sup> These charges are frequently avoided by use of Post Office Savings Bank accounts for internal remittances (see p. 161). The mission also heard of instances in which merchants who had to transfer large sums between Lagos and Kano found it profitable to transport currency notes themselves by plane.

licensing are, broadly speaking, a minimum capital,<sup>9</sup> an "adequate" cash reserve against deposits and an indication of satisfactory conduct.

The licensing power is broad and is exercised by the Financial Secretary. The ordinance empowers him to deny a license if in his opinion the circumstances render the issue undesirable in the public interest, and he may cancel a license if a bank fails to maintain cash reserves which are adequate in his opinion, or, in general, conducts its affairs to the detriment of its creditors.

The ordinance contains various restrictions on transactions with "insiders" and contains an absolute prohibition against unsecured loans and advances in excess of £ 300 to directors. The ordinance also requires the formation of a reserve fund.

Every bank must file with the Financial Secretary quarterly statements of assets and liabilities and, in addition, an analysis of customers' liabilities at the end of quarterly periods, divided by size and type of loan. The Financial Secretary has the right at all times to inspect the banks' books.

When the ordinance was enacted in May 1952, existing banks were given three years within which to obtain a license. By December 1953 three European banks and three African banks had been licensed. Several other African banks have made application for licenses.

### *European Banks*

Banking in Nigeria before World War II could be described as virtually the monopoly of two large British banks, the Bank of British West Africa and Barclays Bank (D.C. & O.), which are closely associated with the leading banks of the United Kingdom.<sup>10</sup> They have provided Nigeria with a banking service which in security of deposits is equal to that of any other country. Since these banks came to

<sup>9</sup> Banking may be carried on only by registered companies with a minimum nominal capital of £ 25,000, at least one-half of which must be issued and paid up. Foreign banks operating in Nigeria must have an issued and paid-up capital equivalent to not less than £ 100,000.

<sup>10</sup> Barclays Bank (D.C. & O.) is a subsidiary of Barclays Bank Ltd. The Bank of British West Africa is owned largely by Lloyds Bank, the Westminster Bank, the National Provincial Bank and the Standard Bank of South Africa. The Midland Bank is represented on the Board of Directors. Consequently each member of the Big Five is represented in Nigerian banking.

Nigeria primarily to render services in connection with international trade, their relations have been chiefly with the European trading companies and with the government; their lending to and their business contacts with Africans have been very limited. They have derived their income largely from handling trade remittances and advances against the security of goods entering international trade. They have played virtually no part in developing local African entrepreneurship. Their lending policies in the Gold Coast have been described by Sir Cecil Trevor as "extremely conservative"<sup>11</sup> and it would seem that the remark applies equally to Nigeria. The two British banks were joined in 1949 by another European bank, the British and French Bank, which is affiliated with the Banque Nationale pour le Commerce et l'Industrie, a large French banking institution.

The economic development of Nigeria will require increased credit facilities, in particular for Nigerians. It is the mission's impression that the European banks, which at present control close to 90% of deposits, will contribute rather little to meeting that demand, at least until they feel that the level of business experience and sense of responsibility of the Nigerian community at large approaches European standards. The task of providing credit to African enterprise and of educating African businessmen to these higher standards of experience and responsibility will therefore largely fall to African banks and governmental lending institutions. As a result the share of the European banks in Nigerian banking is likely to decrease over the years.

#### *African Banks*

African banking is of recent origin. Two shortlived attempts to establish African banks ended in failure in the early 'thirties. In 1933 a group of Africans associated with the earlier attempts organized the National Bank of Nigeria on a very modest scale. Having learned from the earlier experience to be very cautious, the directors of the National Bank succeeded in laying solid foundations. By 1939 the Bank was firmly established although still on a very small scale. This Bank's progress since 1945 has been spectacular, its share of total

<sup>11</sup> *Op cit.*, par. 122.

Nigerian deposits having risen from about 1.3% in June 1945 to 9.1% in June 1953.

The success of the National Bank has led to a rapid growth of other attempts at African banking. The dangers of this rapid expansion were soon demonstrated by the failure of the Nigerian Penny Bank in 1946 with small depositors losing what were for them substantial sums. The government proceeded to inquire into the control of banking, and this led eventually to the adoption of the Banking Ordinance of 1952. But during the intervening period of six years another 20 African banks had been organized, many of them formed by people with little or no banking experience. Some appear to have been created simply to aid fraudulent activities. Consequently, it was not long before 15 failed. Among them was the Nigerian Farmers Bank, which went into liquidation in 1952-53, with deposits in excess of £ 500,000.

Surviving this unfortunate period were, as of March 1954, two large African banks—the National Bank and the African Continental Bank, founded in 1947—and four small banks. The National Bank has been licensed, while an application by the African Continental Bank was pending at the time of the mission's visit.

Unlike the European banks, the African banks invest a large percentage of their assets in loans and advances. The National Bank, for example, with an increase of £ 2 million in deposits between June 1952 and June 1953, reported in its balance sheet an increase of over £ 1 million in outstanding loans during the same period. This meant a trebling of its loan portfolio.

Expanded lending activity must be welcomed, and there is no doubt that the African banks, through their contacts with and their knowledge of the community in which they operate, are in a better position than the European banks to appraise credit risks. There is, of course, the danger that the African banks will be overly eager to expand their business and that where their European counterparts err on the side of conservatism, they will err on the side of optimism.

In the mission's view it is essential that banks maintain liquid reserves of at least 25% to 30% against deposits at all times. In more developed countries, part of such reserves can be invested in readily marketable local securities and in discounted bills of exchange

and recourse can be had in case of need to the central bank as a lender of last resort. In Nigeria these facilities are nonexistent at present and the reserves must therefore be maintained in cash. The creation of a market for government securities would do much to improve the position, especially for African banks.

The sudden increase in National Bank assets mentioned above resulted from large deposits made by the Western Regional Production Development Board and the Cocoa Marketing Board. This movement of public funds to an African bank is symptomatic of a widespread desire to "repatriate" Nigerian funds now invested in London or held in British banks and to use them to finance economic development, and in particular to strengthen the position of the African banks.<sup>12</sup>

Various governmental organizations have large balances, destined for use for development purposes and invested or held in London until needed. In Chapter 5, we have proposed that over the next five years a substantial part of those balances should be drawn down in the course of the recommended development program. We therefore strongly recommend against any large-scale transfer of governmental reserves to African commercial banks. If African bank advances were greatly to expand on the strength of this temporary source of deposits, a most dangerous contraction of credit would become necessary when the government began to spend its reserves and consequently reduced or withdrew these deposits.

There is another danger which must be pointed out. On the basis of its observation of the Nigerian political scene the mission fears that decisions regarding transfers of government deposits to African commercial banks would not always be free from party-political motives; this might have most serious consequences for the independence and integrity of the banks.

We have said in Chapter 4 that in our opinion the proper place

<sup>12</sup> The mission noted suggestions in the press that a major portion of the funds of the Eastern Regional Production Development Board should be transferred to the African Continental Bank.

The 1952-53 Annual Report of the Colony Development Board mentions a rejected application: "An application in August from the Nigerian Farmers and Commercial Bank Limited for the deposit by the board of £ 100,000 to earn 4% per annum was refused. On December 12 by a resolution at an extraordinary general meeting of the shareholders this Bank went into voluntary liquidation."

for government reserves is the proposed state bank; such reserves should not be held by commercial banks. Working balances could, of course, be kept in commercial banks, African and European, when to do so is convenient for the government organization involved and when the banks are able to provide the requisite services.

The African banks have tended to expand their branch coverage of the country rapidly, perhaps even too quickly. As is true of the expansion of their loans, this tendency has no doubt arisen from a commendable desire to offer increased services to Africans. However, it stems in part also from lack of experience and a consequent lack of caution. Although the expansion of banking facilities by the African banks should be encouraged as much as possible, a too rapid increase in the number of branches will strain their limited resources, especially of trained personnel, and adversely affect their profitability.

The problems of the African banks have arisen in the early stages of banking in all countries. African banks have a great task to perform and there are already some encouraging indications of competence for that task. After the unfortunate experience of the past it is doubly important to pursue a policy which will instill in the African public confidence in the soundness of African banking. The supervision provided for under the Banking Ordinance is useful in this connection and it has rightly been welcomed in sound African banking circles. The mission contemplates that further guidance and support for African banking will be provided through the activities of the proposed state bank.

### III OTHER SAVINGS AND CREDIT INSTITUTIONS

#### *Post Office Savings Bank*

The Post Office Savings Bank operated by the government has achieved a fair degree of success in Nigeria as elsewhere in the British colonies. The level of savings deposits held (more than £ 4 million) is considerably in excess of the savings deposits held by commercial banks. The rapid development of postal savings is shown in Table 6.

TABLE 6 Post Office Savings

	Total Balance (Thousand £)	Number of Accounts
1939 .....	185	45,289
1946 .....	1,697	123,184
1953 .....	4,059	197,656

SOURCE: Digest of Statistics, Lagos.

The system is operated through all the post offices and a number of post office agencies throughout the country; the total number of branches was 162 in 1953. This system, although very much more extensive than the coverage offered by commercial banks, still falls far short of adequately providing for the whole country. It is therefore necessary for the government to press for further extension of the system as fast as qualified local personnel can be found for the agencies.

The working balances necessary for the operation of the Post Office Savings Bank are provided without charge by the Post Office and the charges made for the time of post office personnel on Savings Bank business are nominal. Under the Savings Bank Ordinance any deficit in its operation is met out of the general government revenue. Surpluses may be transferred to the general revenue of Nigeria only if and to the extent that they exceed 15% of liabilities.

This assistance enables a relatively high rate of interest to depositors (2½%) to be combined with absolute security of deposits. The investments of the bank are all gilt-edged securities bought in London. No part of the funds is invested in local securities even though under the ordinance up to one-third may be invested in securities of the Government of Nigeria.

The system is used to some extent for purposes not normally intended for a savings bank. It has become a depository of rather large sums by native authorities, co-operative societies and charities. The system is also being used extensively for transfers of funds within Nigeria. The high bank charges for remittances are being avoided by use of the savings system which permits withdrawals without charge anywhere in Nigeria, irrespective of the place of deposit.

The present arrangements for the investment of funds fail to

achieve one of the most important aims of savings institutions in underdeveloped countries: the mobilization of capital for domestic use. At the moment the savings are entirely invested outside Nigeria. The mission agrees with the recommendation made by Mr. J. L. Fisher in his report<sup>13</sup> that this should be changed as soon as domestic investments of the required security become available.

*Co-operative Societies, Loans Boards and Other Sources of Credit*

Co-operative societies are discussed in Technical Report No. 9. Although their present scale of operations is modest, they can become important centers for savings and sources of credit. A Co-operative Bank (also discussed in Technical Report No. 9) was recently established in the Western Region and received a grant of £ 1 million from the Cocoa Marketing Board. The institution does not accept deposits from the public and is not a banking institution within the meaning of the Banking Ordinance.

The mission believes that every effort should be made to encourage the growth of the co-operative movement and particularly the operations of the co-operative credit societies, because for the time being they are the only important source of small-scale rural credit. Although we have not made a detailed investigation of rural credit facilities we feel that for the time being there is no need for a major rural credit institution. The credit requirements of subsistence farming as practised in most parts of the country are small, and export crops are by and large adequately financed under the existing arrangements with the buying agents. In early 1954, the government of the Western Region requested the regional loans board to make £ 100,000 available to local agricultural credit committees. We believe that this request has some merit but suggest that operations be kept on a small scale and under close supervision. The scheme may provide valuable experience on which a later expansion of rural credit facilities may be based.

The Regional Development Boards (loans boards) are discussed in Chapter 4 and Technical Report No. 5, where a number of recommendations are made for their future organization and operations. These boards have occasionally competed on the fringe of some African

<sup>13</sup> See p. 96.

banks' business, notably in loans for busses and lorries. As is said in Chapter 4, they should seek to supplement rather than to replace existing sources of credit and should only make loans which can not be handled on reasonable terms by the banks or other lenders.

An interesting and substantial seasonal source of credit to Africans comes from the buying agents of the Marketing Boards who in turn obtain much of it from the commercial banks. The agents advance large sums to middlemen for the purchase of the crop from the farmers. It is reported that these middlemen frequently use the funds in other business transactions before ultimately purchasing the crop. Several aspects of this type of credit are interesting. First, the size of the sums entrusted and the fact that losses are infrequent, give evidence of the creditworthiness of the middlemen. Second, the fact that the middlemen find profit in short-term trading indicates that there is a shortage of trading capital. Thus, it would seem that a wider credit distribution by the banks should be feasible if undertaken on a sufficiently selective basis.

A small additional source of credit to Nigeria is provided by the Lagos Building Society which channels some U.K. insurance funds into local investment. The society makes loans for various purposes<sup>14</sup> against the security of mortgages. Its operations have been limited to Lagos in the past, largely because of the greater difficulty of obtaining an undisputed land title outside of the Colony.<sup>15</sup> It is understood that there are plans to increase the scope of activities.

A serious gap in the credit structure is the lack of institutions designed to make long-term loans for home construction. Some provision is made for government loans to African civil servants but no other facilities are available. At some future time consideration should be given to the use of government funds, and possibly Post Office Savings Bank funds, to provide, through suitable intermediaries, building loans to private borrowers. As a first step towards that end a study should be undertaken of possible solutions of the legal difficulties which at present impede the development of the business of real estate loans.

<sup>14</sup> Building loans seem to be a minor aspect of its operations.

<sup>15</sup> Lagos and the adjoining districts of the Western Region.

## TECHNICAL REPORT 4

### *THE PRODUCE MARKETING BOARDS*

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The functions of the four Marketing Boards have been described in Chapter 4, where we have also referred to their impending reorganization on a regional basis. Supplementary information as to the boards' organization and activities is contained in this report. It also explains the basis of our recommendations for a price and reserve policy, presented in Chapter 4.

#### A ORGANIZATION AND ACTIVITIES

The Marketing Boards are relatively new institutions. The Cocoa Marketing Board was established in 1947; the Oil Palm Produce Marketing Board, the Groundnut Marketing Board and the Cotton Marketing Board in 1949. All exports of cocoa are controlled by the Cocoa Board; exports of groundnuts, benniseed, sunflower seed, groundnut oil, groundnut cake, groundnut meal and soya beans by the Groundnut Board; exports of palm oil, palm-kernel oil, meal and cake by the Oil Palm Produce Board; and exports of cotton and cottonseed by the Cotton Board. The establishment of the boards grew out of the systems of controls introduced at the outbreak of World War II. Under these systems, purchase prices were fixed by government decree but the trading firms continued the physical handling of the export business. In 1942 the West African Produce Control Board was set up. It continued to function until the Marketing Boards were established.

All board members (including the chairmen) are appointed by the Governor. The boards have at present a common official membership in the chairman (there is the same chairman for all boards),

the Inspector-General of Agriculture and the Director of Marketing and Exports. In addition, each Board has three African members appointed as representatives of the producers, and the Cotton Board has one more official member.

The four regional boards which will replace the present boards and have jurisdiction over all controlled commodities produced within their respective territories<sup>1</sup> will be constituted as the regional governments decide, and their members will be appointed by the regional governments. The Central Marketing Board will have nine members: a chairman and one member appointed by the Governor-General, and seven members representing the regional boards—two from each of the regions and one from the Southern Cameroons—nominated by the regional boards. The Central Marketing Board will set quality standards, arrange for transportation and sale overseas, and act as a co-ordinating body and a medium for consultation among the regional boards on matters of common concern. The boards will continue to be assisted by advisory committees representing the producers and the firms handling export of the controlled commodities.

At present, the central Department of Marketing and Exports acts as the executive agency of the Marketing Boards on a reimburseable basis; it will continue this function for the Central Marketing Board, and for the regional boards as well, until the latter establish their own executive organizations. Each regional government will have its own produce inspection service, but check-testing at the ports will be performed by the federal Produce Inspection Service. Produce inspection will continue to cover such non-Marketing Board produce as rubber and capsicums.

All controlled produce is sold in London through the Nigerian Produce Marketing Company, Ltd., the shares of which are held by the several boards.<sup>2</sup> They sell to the Company at the price at which it re-sells the produce, less a small margin to cover its expenses. With the exception of cocoa, sold on the open market by individual contract, most of the controlled exports have been sold under bulk purchase agreements. Until June 1954, all oil palm produce, groundnuts and cottonseed were sold to the British Ministry of Food, except for

<sup>1</sup> Produce sold in Lagos will be handled by the Marketing Board of the Western Region.

<sup>2</sup> These shares will be transferred to the regional boards.

small quantities of each commodity which were exempted from the agreements for sale on the open market. Bulk purchase agreements with food and soap manufacturers now cover a smaller proportion of total exports of oils and oilseeds and correspondingly greater quantities are being sold on individual contracts. Similarly, as from the 1954-55 season, cotton lint will be sold on the free market instead of to the Raw Cotton Commission as formerly.

The selling prices under the bulk purchase agreements were adjusted quarterly by relating them to the average market prices for the preceding quarter as determined by a Joint Price Advisory Committee set up by the appropriate British trade associations. Selling prices for cotton sold to the British Raw Cotton Commission were determined for individual contracts within agreed price limits related to prevailing market prices.

## B PRICE STABILIZATION AND RESERVE POLICY

In Chapter 4 we have recommended that the boards adopt a price stabilization policy aimed at keeping year-to-year differences in producer prices to a maximum of 10%.<sup>3</sup> Cocoa could be an exception: because of the abnormally great disparity between the 1953-54 producer price and current world prices, we would recommend an initial increase in the producer price of more than 10%. A range of 10% from year to year may appear large but in fact would cover only part of the wide price fluctuations for the controlled products: average year-to-year changes in world prices between 1922-29 were 15% for groundnuts and palm kernels and 20% for palm oil, cocoa and cotton.

<sup>3</sup> It has been suggested by some observers, among them P. T. Bauer and F. W. Paish in "The Reduction of Fluctuation in the Income of Primary Producers" (*Economic Journal*, Dec. 1952, pp. 750-780), that the objective of the Marketing Boards should be the stabilization of producers' *income*. The mission agrees that this would be a desirable policy objective but believes that its achievement through Marketing Board action is, under present Nigerian conditions, utterly unfeasible. Among other things, it presupposes a reliable system of crop forecasting which is unattainable now or in the near future. The wide fluctuations in agricultural income are largely due to causes other than price movements. In our view, action to reduce these fluctuations should concentrate on improvement in methods of cultivation, use of fertilizer, selection of drought- and disease-resistant strains, etc. (see Technical Report No. 7).

We think that such a price policy will effectively stabilize the prices of export commodities within Nigeria and that it can be carried out with the resources at the boards' disposal without risk of excessive losses. In Table 4 (p. 171), the effects of this recommended price policy are shown against an assumed development of world market prices which would repeat, over the period 1954-59, the experience of the Great Depression of 1929-34. There follows a comparison between the theoretical maximum losses which would be incurred by the boards<sup>4</sup> on these assumptions over a six-year period, and their reserves of £ 75.5 million at the end of the 1952-53 crop season, from which, however, working capital requirements of £ 12 million will have to be deducted:

(Million £)

	Theoretical Maximum Loss	Reserves at the end of 1952-53 crop year
Groundnut Board .....	15.6	18.5
Oil Palm Produce Board .....	39.0	25.7
Cocoa Board .....	18.4	25.8
Cotton Board .....	1.7	5.5

Since these calculations make no allowance for reductions in marketing charges or rates of export duties, even though such reductions would be highly probable during a period of such a drastic fall in prices, the theoretical losses are considerably overstated. Even were this not the case, the existing reserves of the boards, except for palm produce, are thus amply sufficient to cover price fluctuations equivalent to those of the Great Depression. At the same time, as shown by Table 4, producer prices paid by the boards at the time of the lowest world prices would still be at least twice as high as they would be if paid on the basis of those prices.

In our view there is no reason to expect a recurrence of the disastrous price decline of the depression. Present prices are, however, high; lower price levels may be assumed as more in line with the

<sup>4</sup> In order to bring out the differences between the four main crops, the calculations are made in the first instance for the old "products" boards; they are then applied to the new regional boards.

movement of raw material prices in general.<sup>5</sup> The possible order of magnitude of declines from 1953 world prices to "normal" prices may be estimated as shown in Table 1.

TABLE 1 Price Projection of Marketing Board Produce

*(£ per ton unless otherwise indicated)*

	Average Market Prices 1953	Long-run "Normal" Prices
Groundnuts and Bennisseed, c.i.f. European port . . . . .	80	60
Soyabeans, c.i.f. European port . . . . .	45	35
Cotton, New York futures . . . . .	33 <sup>1</sup>	25 <sup>1</sup>
Cottonseed, c.i.f. European port . . . . .	22.5	16.5
Palm kernels, c.i.f. European port . . . . .	63	45
Palm oil, edible, c.i.f. European port . . . . .	72	60
Palm oil, technical, c.i.f. European port . . . . .	62	45
Cocoa, c.i.f. U.S. . . . .	37 <sup>1</sup>	30 <sup>1</sup>

<sup>1</sup> U.S. cents per lb.

If such price declines occur, then under the price policy outlined above, the theoretical total losses of the boards would be as follows:

*(Million £)*

	Theoretical Maximum Loss	Reserves at the end of the 1952-53 Crop Year
Groundnut Board . . . . .	0.8 <sup>1</sup>	18.5
Oil Palm Produce Board . . . . .	12.3	25.7
Cocoa Board . . . . .	0.6	25.8
Cotton Board . . . . .	0.064	5.5

<sup>1</sup> Including 10,000 tons of soyabeans.

These prospective losses, with the exception of those on palm produce, appear small when compared with reserves at the end of

<sup>5</sup> See Technical Report No. 7 for an evaluation of the market prospects of the commodities in question.

1953. In the case of palm produce, the relatively large loss would be primarily due to the prevailing high producer prices.<sup>6</sup>

It thus appears that the board's reserves are ample for the purpose of price stabilization along the lines recommended by the mission, and that the boards need not seek to increase them. Only a portion need be treated as first-line reserves, to be kept in liquid form; the balance, after allowance for working capital, could be invested on a long-term basis. The mission recommends that sufficient first-line reserves be maintained to smooth the decline to more "normal" levels and thereafter to cover year-to-year world price fluctuations averaging 20%. Allowance must also be made for possible errors of judgment from time to time as to the magnitude, and even the direction, of price changes.

Taking all these factors into account, we suggest that the reserves of the boards may be allocated as shown in Table 2:

TABLE 2 Distribution of Marketing Board Reserves

(Million £)

	First-Line	Second-Line and Working Capital	Total
Groundnut Board .....	3.9	14.6	18.5
Oil Palm Produce Board .....	16.1	9.6	25.7
Cocoa Board .....	5.0	20.8	25.8
Cotton Board .....	0.5	5.0	5.5
Total .....	25.5	50.0	75.5

Upon the reorganization of the marketing boards on a regional basis, reserves will be apportioned among the new regional boards on the principle of derivation. The price stabilization reserve for each of the regional boards would be as shown in Table 3.

<sup>6</sup> The producer price for technical grade oil based on the 1953 world market price would be only £ 44 per ton for grade I and prices corresponding to the 1954 price might be even lower, but the actual producer price for 1954 has been fixed at £ 50 per ton. The producer price for special grade oil has been fixed at £ 65 per ton for 1954 against a 1953 breakeven price of £ 50 per ton. It seems doubtful that even with the large reserves of the board these producer price levels can be maintained for long. The imbalance between the present level of world and producer prices for palm oil should be corrected. Producer prices should be reduced by 10% stages to bring them into line with breakeven points. This would, however, not apply to producer prices for palm kernels; these are relatively low.

TABLE 3 Distribution of Regional Marketing Board Reserves

*(Million £)*

	First-Line	Second-Line and Working Capital	Total <sup>1</sup>
Western Region (inc. Lagos) .	7.6	26.8	34.4
Eastern Region .....	12.5	2.6	15.1
Northern Region .....	4.6	20.2	24.8
Southern Cameroons .....	0.8	0.4	1.2
Total .....	25.5	50.0	75.5

<sup>1</sup> As allocated by Lagos Conference.

We recommend that the boards use their second-line reserves to make long-term loans to government for development purposes. The amount available would be close to £ 40 million, a substantial sum in relation to Nigeria's financial requirements, although its distribution over the regions is unequal. Specific recommendations for borrowings from the boards are made in Chapter 5.

In the foregoing calculations it has been assumed that, in line with our recommendations in Technical Report No. 13, the Northern board will sell groundnuts to local processors at the local equivalent of the world market price and that the board will cease to have any direct responsibility for the marketing of groundnut products.

The mission believes that the estimates on which it has based its recommendations are conservative and that the recommended level of reserves would adequately protect against foreseeable risks. We recommend, however, that the level of reserves be reviewed periodically in the light of increases in the volume of crops handled by the boards and of the changing medium- and long-term outlook for prices of each of the commodities.

TABLE 4 Estimated Losses by the Marketing Boards Under a Fall in Prices Similar to That Between 1929 and 1934

	Theoretical World Prices	Boards' Breakeven Prices <sup>1</sup>	Producer Purchase Prices <sup>2</sup>	Loss (-) or Gain (+)	
	(£ per ton c.i.f. Euro- pean port)	(£ per ton)	(£ per ton)	(£ per ton)	(Total in Thousand £)
<i>Groundnut Board</i>					
1953 .....	80	44	36 <sup>3</sup>		
1954 .....	73	41	36	+ 5	+2,100
1955 .....	55	24	32	- 8	-3,480
1956 .....	46	18 <sup>4</sup>	29	-11	-3,520
1957 .....	57	28	29	- 1	- 320
1958 .....	42	14	26	-12	-3,840
1959 .....	36	9	23	-14	-4,480
<i>Oil Palm Produce Board</i>					
Palm Oil:					
1953 .....	67	46	65 <sup>5</sup>		
1954 .....	64	43	52 <sup>6</sup>	- 9	-1,800
1955 .....	47	26	47	-21	-4,200
1956 .....	33	14	42	-28	-5,600
1957 .....	32	12	38	-26	-5,200
1958 .....	28	8	34	-26	-5,200
1959 .....	24	5	31	-26	-5,200
Palm Kernels:					
1953 .....	63	47	34 <sup>7</sup>		
1954 .....	57	42	34 <sup>7</sup>	+ 8	+3,200
1955 .....	41	27	31	- 4	-1,600
1956 .....	32	19	28	- 9	-3,600
1957 .....	34	21	25	- 4	-1,600
1958 .....	27	14	22	- 8	-3,200
1959 .....	22	10	20	-10	-4,000
<i>Cocoa Board</i>					
	(U.S. cts. per lb. c.i.f. New York)				
1953 .....	37	202	170 <sup>8</sup>		
1954 .....	29.75	172	170	+ 2	+ 200
1955 .....	23.5	138	153	-15	-1,500
1956 .....	15	85	138	-53	-5,300
1957 .....	12.5	68	124	-56	-5,600
1958 .....	12.5	68	112	-44	-4,400
1959 .....	15	85	101	-16	-1,600

*Cotton Board*

Cotton:	(U.S. cts. per lb. New York futures)	(d. per lb.)	(d. per lb.)	(d. per lb.)	(Thousand £)
1953 .....	33	7.14	6.00 <sup>9</sup>		
1954 .....	27 <sup>3</sup> / <sub>4</sub>	5.78	5.40	+ .38	+ .76
1955 .....	16 <sup>3</sup> / <sub>4</sub>	2.86	4.86	- 2.00	- 400
1956 .....	13 <sup>3</sup> / <sub>4</sub>	2.00	4.37	- 2.37	- 474
1957 .....	10 <sup>1</sup> / <sub>2</sub>	1.15	3.93	- 2.78	- 556
1958 .....	14 <sup>1</sup> / <sub>4</sub>	2.21	3.54	- 1.33	- 266
1959 .....	20 <sup>3</sup> / <sub>4</sub>	3.97	3.89	+ .08	+ 16

<sup>1</sup> World price less present marketing costs and export duties; produce sales tax not deducted.

<sup>2</sup> Produce sales tax not deducted.

<sup>3</sup> Actual producer price for groundnuts and benniseed.

<sup>4</sup> Assuming transport problem solved and cost of long storage in Africa no longer incurred.

<sup>5</sup> Actual producer price: edible £ 75.10.0 per ton and technical grade I £ 58 per ton.

<sup>6</sup> Actual producer price: edible £ 65, technical £ 50.

<sup>7</sup> Actual producer price.

<sup>8</sup> Actual producer price for grade I.

<sup>9</sup> Actual producer price for seed cotton.

*Assumed Volume of Sales*

Groundnuts: Unsold stock 185,000 tons, new crop 320,000 tons, exports in crude and processed form; assumed 1953-54 export 85,000 tons unsold stock and 320,000 tons new crop; 1954-55 export 100,000 tons unsold stock and 320,000 tons new crop; following seasons' exports new crop only.

Benniseed: 15,000 tons.

Palm Oil: 1953 export edible grade 40%, 1954 export edible grade 50%, thereafter edible grade 130,000 tons and technical grade 70,000 tons.

Palm Kernels: 400,000 tons.

Cocoa: 100,000 tons.

Cotton: 48 million lbs.

*Maximum Losses*

Groundnut Board: £ 15.6 million with loss on soyabeans disregarded.

Oil Palm Produce Board:

Oil: £ 25 million	} £ 39 million
Kernels: £ 14 million	

Cocoa Board: £ 18 million.

Cotton Board: £ 1.7 million for cotton, profit on cottonseed disregarded.

## TECHNICAL REPORT 5 DEVELOPMENT INSTITUTIONS

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### 1 REGIONAL PRODUCTION DEVELOPMENT BOARDS

#### *Organization and Activities*

The Regional Production Development Boards (RPDBs) were established in 1949 to administer funds made available for development purposes by the Marketing Boards. A 1951 ordinance defined their authority more specifically and transferred to them all economic development activities of the Marketing Boards.

Each board is composed of members of the regional legislature, representatives of the Marketing Boards and government officials, one of whom, the regional Development Secretary, serves as chairman. The Lieutenant-Governor of the region has limited control over the operations of the board. All proposed contracts and projects must be submitted for his approval but approval may be withheld only if the Lieutenant-Governor considers them to be beyond the resources of the board or for an unauthorized purpose.

TABLE 1 Financial Position of Regional Production Development Boards, 1953-54

*(Thousand £)*

	Grants Received 1949-54	Net Disbursements 1949-54	Reserves at End of 1953-54
Northern Board .....	5,167	1,119	4,049
Western Board .....	11,317	2,834 <sup>1</sup>	8,484
Eastern Board .....	5,359	2,203	3,159
Total <sup>2</sup> .....	21,843	6,155	15,688

<sup>1</sup> Including reimbursement of £ 736,000 in respect of agricultural schemes initiated by the Cocoa Marketing Board.

<sup>2</sup> Totals do not equal sum of columns because of rounding.

SOURCE: Accounts of the Regional Production Development Boards.

Table 1 shows the financial position of the RPDBs at the end of 1953-54.

Actual and estimated expenditure by the boards is shown in Table 2.

TABLE 2 Expenditures of Regional Production Development Boards  
(Thousand £)

	Actual Expenditure		Estimated Expenditure	
	1949-53	1953-54	1954-55	
<i>Northern Board</i>				
Agricultural Projects <sup>1</sup> .....	516	228	303	
Industrial Projects .....	62	30	50	
Research .....	153	50	50	
Road Construction .....	198	100	100	
Scholarships .....	—	1	2	
Overhead and Miscellaneous .....	39	31	41	
Total—Northern Board .....	968	440	546	
<i>Western Board</i>				
Agricultural Projects <sup>1</sup> .....	246	260	316	
Industrial Projects .....	535	658	295	
Major industrial projects under investigation..	—	—	2,125	
Loans .....	3	290	—	
Road Construction .....	28	224	250 <sup>2</sup>	
Scholarships .....	1	2	120	
Overhead and Miscellaneous .....	447	238	720 <sup>3</sup>	
Reimbursements to Cocoa Marketing Board ..	536	200	200	
Total—Western Board .....	1,797	1,872	4,026	
<i>Eastern Board</i>				
Agricultural Projects .....	261	282	279	
Industrial Projects .....	818	242	250	
Loans .....	10	122	122	
Road Construction .....	224	71	51	
Scholarships .....	—	6	6	
Overhead and Miscellaneous .....	283	60	65	
Total—Eastern Board .....	1,597	783	774	
Grand Total <sup>4</sup> .....	4,362	3,095	5,346	

<sup>1</sup> Including participation schemes and (small) grants.

<sup>2</sup> Including £ 100,000 for port of Koko (see Technical Report No. 18).

<sup>3</sup> Including £ 500,000 for technical schools.

<sup>4</sup> Totals do not equal sum of columns because of rounding.

SOURCE: Accounts of the Regional Production Development Boards.

The Northern RPDB has concentrated on agricultural projects, including settlement of farmers and improvement of their production methods, particularly through mixed farming; tsetse control; distribution of superphosphate fertilizer, and groundnut cake for cattle feeding; tractor plowing of land for the growing of rice; and experiments with corn storage and meat canning.

The Western RPDB also has undertaken several large and a number of small agricultural projects. It operates citrus, oil palm and cocoa plantations; a livestock farm; and a rubber estate. It has sponsored partnership schemes under which it joins with local authorities or co-operatives in the establishment of medium-sized plantations. It operates oil mills for the processing of palm fruit, and has sponsored the establishment of rice mills. It has erected a large factory for the canning of citrus fruit and pineapples and two rubber processing factories.

The major effort of the Eastern RPDB has been directed to the establishment of oil mills for the processing of oil palm fruit; present plans call for 100 such mills, two-thirds of which are already in operation. In addition, the board has started a number of large-scale plantations for cashew nuts, oil palm, coffee, coconuts and rubber. The rubber project is particularly noteworthy since it is the only RPDB project in which foreign capital participates. The board and British interests, represented by Ethelburga Agencies, Ltd., of London, formed the Oban (Nigeria) Rubber Estates, Ltd. The board subscribed 49% of the capital requirements, estimated at £ 800,000; the balance was supplied by foreign capital. An affiliate of the British company has been appointed managing agent.

In addition to these directly productive undertakings, the boards have engaged in operations not usually considered the responsibility of development agencies. Between 1949 and 1954, the three boards expended £ 850,000 on road construction,<sup>1</sup> in part through private contractors but largely through reimbursements to the regional public works departments. For the fiscal year 1954-55 a further expenditure of £ 400,000 for road construction is planned. All three boards have contributed to the cost of Marketing Board publicity. The Northern board has employed 26 "production officers" to serve as agricultural

<sup>1</sup> Some of the road construction projects were taken over from the Marketing Boards.

extension agents advising on production methods and techniques; positions have been established for 45 more. It has also bought heavy road building equipment and rented it to the central Public Works Department for use in constructing a new runway at the Kano airport, not an RPDB project. The Western board has financed operations of the cocoa division of the regional agricultural department, and the Eastern board has made grants to the Eastern regional agricultural department for subsidies to rice mills established by the department.

#### *Future Organization*

Comments on the boards' activities and recommendations for future policy appear in Chapter 4, where the mission has also recommended that the regional governments assume direct financial responsibility for the RPDBs and that the boards be reconstituted. It there refers to the reconstituted boards as "development corporations." The mission further recommends that the operations of the development corporations be set apart from those of the government departments, particularly from the offices of the regional Development Secretaries. The Development Secretaries have too many other duties to permit their devoting the necessary time to the corporations. They might continue as members of the boards of the corporations, assuring coordination of activities with those of the respective regional governments. But it would be advisable that responsibility for general administration be vested in "working" chairmen who would have no other duties to perform, or else in full-time general managers if the chairmen are to serve only part-time because of other duties. The boards of directors should have jurisdiction over policy matters and their approval should be required for all projects and capital expenditures in excess of a stated minimum. The "working" chairmen or the general managers, however, should make the day-to-day decisions and should be free to employ their own staffs in accordance with the employment policies set by the boards of directors. The staffs should be qualified to appraise projects, investigate technical and commercial opportunities and prepare detailed plans. Individual projects should, as now, have their own operating and supervisory staffs.

The separate development agency recommended for the Southern

Cameroons in Chapter 4 should be similar in organization to the regional corporations, on a smaller scale. It is recommended in Chapter 4 that this agency be financed by a grant of £ 1 million from the federal government. The new agency should also assume responsibility for the Santa Coffee Estate, the only major Cameroons project of the Eastern RPDB, and should be given whatever share of the assets of the Eastern board may be attributable to the Southern Cameroons on the principle of derivation. From the report of the Committee on Marketing Boards, it appears that this share might exceed £ 300,000, including the investment in the Santa Coffee Estate and a loan by the Eastern RPDB to the Cameroons Co-operative Exporters, Ltd., an organization of co-operative marketing societies in the Cameroons (see Technical Report No. 9). The Eastern board in turn should be reimbursed for head office expenditures incurred in connection with its operations in the Southern Cameroons. The Cameroons development agency should also be given an appropriate share of the grant commitments of the Oil Palm Produce Marketing Board.

## II REGIONAL DEVELOPMENT BOARDS

### *Organization and Functions*

The Northern, Western and Eastern Regional Development Boards and the Colony Development Board, the "loans boards," were established by ordinance in 1949.

The members of the boards are appointed by the regional Lieutenant-Governors and the Commissioner of the Colony, respectively. A majority of the members of each of the three regional boards must be nonofficial members of the respective legislatures. The regional Development Secretaries and the senior district officer of the Colony serve as chairmen.

The boards are authorized to make loans or grants, or a combination thereof, for projects connected with public works, public utilities and similar projects; for the promotion and development of village crafts and industries and the industrial development of Nigerian products; for land settlement and utilization and similar projects; for the establishment and operation of experimental undertakings by public bodies

to test Nigerian products; and for projects of public value, authorized by the Lieutenant-Governor or the Commissioner. Loans and grants must be approved by the Lieutenant-Governor or the Commissioner, and loans over £ 10,000 and all grants must also be approved by the finance committee of the appropriate legislature.

The Nigeria Local Development Board, the predecessor of the loans boards, was established in 1946 with an initial government grant of £ 1.25 million, payable in equal installments over five years. By the end of 1948 it had received £ 750,000, of which it had committed approximately £ 300,000. The undisbursed £ 500,000 of the government grant and the Board's assets were transferred to the new loans boards. The Colony Board also received £ 50,000 from the government and £ 285,000 from the Oil Palm Produce Marketing Board; it set aside the latter sum for grants. The Western loans board added

TABLE 3 Available Funds of Loans Boards, March 31, 1953

(Thousand £)

	Northern Board	Western Board	Eastern Board	Colony Board	All Boards
<i>Funds Available for Operations</i>					
Grants received .....	486	369	355	374	1,584
Borrowings <sup>1</sup> .....	—	150	—	—	150
Net earnings <sup>2</sup> .....	6	21	15	5	47
Total .....	492	540	370	379	1,781
<i>Disposition of Funds</i>					
Grants made .....	—	—	26	73	99
Loans outstanding .....	227	212	243	77	759
Loan commitments .....	129	245	6	129 <sup>3</sup>	509
Miscellaneous <sup>4</sup> .....	— <sup>5</sup>	1	— <sup>5</sup>	— <sup>5</sup>	1
Total .....	356	458	275	279	1,368
<i>Uncommitted Funds</i> .....	136	82	95	100	413

<sup>1</sup> Loan from Western Regional Production Development Board; since raised to £ 290,000.

<sup>2</sup> Accrued interest, earnings on invested reserves, loans, etc., minus operating expenses, write-off of bad debts, etc.

<sup>3</sup> Grant commitment.

<sup>4</sup> Fixed assets, vehicles, office equipment, etc.

<sup>5</sup> Less than £ 500.

SOURCE: Annual Reports of Regional Development Boards.

to its loanable funds by borrowing from the Western Regional Production Development Board.

Table 3 shows the available funds of the loans boards at the end of the financial year 1952-53.

Grants were made only by the Eastern and Colony boards, the latter acting in effect as a channel for Oil Palm Produce Marketing Board grants.

Table 4 shows the amounts and purposes of loans granted through the end of the financial year 1952-53.

TABLE 4 Loans Granted to March 31, 1953

(*Thousand £*)

	Northern Board	Western Board	Eastern Board	Colony Board	All Boards
Agriculture, Forestry and					
Fishery .....	7	48	25	6	86
Food Processing .....	19	22	7	2	50
Rural Industries, Handicraft					
and Services <sup>1</sup> .....	8	35	21	6	70
Transport Equipment .....	2	232	3	—	237
Industries .....	132	68	39	65	304
Public Services <sup>2</sup> .....	86	82	27	2	197
Other Purposes <sup>2</sup> .....	100	19	172	—	291
Total .....	355	506	296	81	1,238 <sup>3</sup>

<sup>1</sup> Amounts up to £ 5,000, except for oil mills which are included under "industries" irrespective of amount. "Services" include garages, motor repair shops, and retail shops.

<sup>2</sup> Loans made to public bodies.

<sup>3</sup> Slight discrepancy in totals due to rounding.

SOURCE: Annual Reports of Regional Development Boards.

NOTE: Undisbursed portions of loans are included.

Loans for agricultural production, food processing and rural industries have in general been small, ranging from £ 50 to £ 1,000 to individual borrowers, partnerships or co-operatives. They include loans for the establishment of farms and purchase of farm equipment; rubber plantations and tobacco cultivation; lumbering; rice mills, corn mills and cassava grating machinery; and tailoring, blacksmith, motor repair, cabinet maker and weaving shops. Almost one-half of all

Western board loans have been made to finance the purchase of busses and motor launches.

A total of 17 loans may be classified as industrial, apart from those which financed rural industries and handicrafts; they include loans for the purchase of palm oil mills, sawmills and textile plants and for shoe, tire retreading and ceramics factories, a joinery, a woodworking shop and a dairy.

Loans for public services and "other purposes" were all made to public bodies; they account for more than half the Northern board's portfolio and for two-thirds of the portfolio of the Eastern board. Virtually all public services loans were for markets and slaughterhouses. Loans were made for such "other purposes" as purchase of corn by a native authority; a fish farm; purchase of ox plows by the regional agricultural department; construction of a native administration school (Northern board); and a resettlement scheme and road construction (Eastern board).

The conditions of the loans vary with their purpose, maturity and the type of borrower. Interest rates, which range from 2% to 5%, are very much lower than those charged by commercial banks and private lenders. A few loans to public bodies are interest-free. Maturities range from 2 to 20 years and loans are usually amortized in equal annual installments.

The loans boards meet no more than three or four times annually; the Eastern board actually met only once in 1951-52. Since decisions are made by the full board, usually on the basis of letters of application, supplementary correspondence and the advice of government officials, the infrequency of meetings causes considerable delay. There are no technical staffs to analyze applications. If additional information is required, action may be deferred until the next meeting. In one instance, a loan for oil machinery was granted after three years of negotiations, but funds were not made available for another two years, by which time an increase in the price of the machinery made a second loan necessary.

#### *Future Organization and Policies*

In Chapter 4 we recommend that the loans boards become departments of the new "development corporations," and we make recom-

mentations with respect to future activity of the loans departments. To those recommendations we add the following:

Loan policies should be formulated by the boards of the development corporations, while action on applications should be taken by three- or four-member committees, meeting perhaps every two weeks at the corporation's headquarters. Applicants should be dealt with in person, as in normal banking practice, rather than by correspondence alone. Approval of applications by an executive or legislative body should no longer be required. Such approval is unnecessary if the loans departments perform their function properly. If they do not, the requirement of such approval will not prevent the making of unsound loans, since neither the executive nor the legislature is in a position to make an independent investigation. Approval by the boards of the development corporations might be required in the case of large loans.

The loans departments should be headed by managers who, with their staffs, would be responsible for formal processing of applications, for on-the-spot investigations and evaluations of applicants and projects, and for supervision of loans during and after disbursement. They should be assisted by the development corporations' technical staffs. Although participation in loan processing and supervision by the latter will involve expenses which are not commensurate with the size of the loan portfolio, we think that the anticipated benefits to the emerging entrepreneurial class justify the expenditure. Moreover, by reducing the number of defaults, the additional staff will at least partly pay for itself.

The loans departments should consider declining to make loans in very small amounts, say less than £ 50 or £ 100. The native administrations or co-operative societies should be able to handle these.

Interest charges should be raised to bring them somewhat more in line with those charged by the commercial banks. An economically sound project should yield returns sufficient to support interest of, say, 7% on a medium- or long-term loan. It would be desirable, however, to provide for periods of grace in repayment of principal, to give the borrower a reasonable time to start operations.

As a rule, the borrower should be required to provide a substantial proportion of capital from his own resources. His investment is likely

to ensure his continued interest and best efforts for success, and should be at least as valuable an insurance against defaults as security or guarantees. Such a policy may also induce prospective entrepreneurs to pool resources in partnerships, co-operatives or other forms of association. When the borrower's investment is appraised, full account should be taken of the fact that, in most areas, land value is low.

While the primary purpose of the loans departments should be to assist African entrepreneurs, there is no reason why, if an application is otherwise meritorious, a borrower should be excluded because he is a non-African or does not live within the region, as has sometimes been the case. Moreover, in no instance should a loan be refused merely because the project would compete with one operated directly by the development corporation, for this would defeat the main objective of the corporations.

### III CAMEROONS DEVELOPMENT CORPORATION

#### *Origin and Purpose*

At the outbreak of the Second World War a number of German companies and individuals were operating extensive plantations in the Cameroons and the Tiko wharf was operated by a German company. More than 250,000 acres were owned by Germans, of which only a part was under cultivation. Under the Trading with the Enemy (Control of Property) Order, 1939, all enemy interests were vested in the Custodian of Enemy Property; he managed the plantations during the war. The Ex-Enemy Lands (Cameroons) Ordinance enacted in 1946 provided for acquisition of the plantations by the Governor of Nigeria, who was to hold them for the use and common benefit of the inhabitants of the Cameroons. The ordinance also provided for a lease of the plantations to the Cameroons Development Corporation, established by the contemporaneous Cameroons Development Corporation Ordinance.

The ex-enemy properties and rights were acquired for approximately £ 850,000 and were leased to the Corporation for sixty years, renewable for an equivalent term at the Corporation's option. Rental was set at approximately £ 40,000 per annum for 35 years, a charge cal-

culated to accomplish reimbursement of the cost of acquisition plus interest.

The purpose of the Corporation, as stated in the ordinance, is "securing the development of such lands as the Governor may from time to time place under their control and management." The Corporation was empowered to undertake a wide range of activities to carry out its purpose, including construction and maintenance of roads, waterways, railways, quays and wharves, and provision of social and other welfare facilities for its employees. Profits of the Corporation are to be applied for the benefit of the inhabitants of the Cameroons.

### *Agricultural Activities*

The Corporation assumed responsibility for the restoration and development of the plantations under serious handicaps. Acute wartime staff shortages had made it necessary to close down many plantations; on the other hand, the rubber plantations had been excessively exploited. Much valuable information concerning past operations had been lost while much machinery and equipment had become unusable.

The Corporation's chief crop is bananas. At the end of 1952 there were 19,282 acres of mature plants, 2,630 acres had been planted during the year and a further 2,900 acres had been prepared for new planting in 1953. The Corporation plans to continue extending banana acreage. Notwithstanding the bringing into cultivation of additional lands, production (3.8 million stems in 1952) has remained fairly constant during the last few years as a result of heavy storm damage and increasing losses through Panama disease and cigar end disease. The latter has caused losses as high as 60% in some of the best plantations. Nevertheless, in 1952 banana revenue of £ 1,480,735 represented about 70% of the total plantation revenue.

The rubber plantations taken over by the Corporation included a high percentage of unproductive varieties, badly planted and slaughtered during the war. Improved Malayan budding material, first imported in 1947, has proved highly successful; yields of 1,000 to 1,200 lbs. per acre are anticipated from the fifth and sixth years onward, compared with an average of roughly 300 lbs. per acre from the older plantations.

The oil palm plantations were scattered, uneconomic units; varieties

were poor, many of the trees were past productive age and milling facilities were of low standard. The Corporation has tried to improve varieties and to concentrate plantation areas for milling purposes. Its planting program has been slowed down by a seedling root disease which can most probably be attributed to soil deficiency of the nurseries.

The Corporation also grows cocoa, tea and pepper; possibilities for expanding the last two appear to be good. It also operates farms to produce food for its staff.

The Corporation's effort to rehabilitate and develop the plantations has been impressive. But its technical efficiency has been hampered by lack of a sufficiently strong organization to engage in research and experimentation on soil problems, plant improvement and disease control or to apply the results of such activities performed elsewhere. The West African institutes for cocoa and oil palm research give valuable help and the Corporation has invited the advice of other outside experts. However, such assistance can be fully effective only if a local staff is able to act on the advice and suggestions offered and to conduct the necessary continuing investigation. The Corporation urgently needs a scientific and research unit as part of its permanent organization.

#### *Other Activities*

The Corporation's palm produce and latex are processed in its own mills; it operates its own lorries, a banana railway, and river and coastwise shipping. It also has a monopoly of wharf operations in the ports of Bota (Victoria) and Tiko. While the Corporation is at present the principal user of these ports, they serve the entire Southern Cameroons. The mission therefore recommends in Technical Report No. 18 that in operating them the Corporation should be subject to policy directives by the government.

The Corporation provides extensive social welfare, medical and education services for its labor and is engaged in carrying out a housing program. Although the services are in no sense extravagant, their availability has made employment with the Corporation attractive. It is probably at least partly for this reason that independent farming, especially in Cameroons Province, suffers from a lack of

manpower. In the mission's view, this problem can be met by the gradual development of similar services by the government outside the areas administered by the Corporation, financed out of profits of the Corporation, as is envisaged by the ordinance establishing it.

### *Management, Staff and Labor*

At the end of 1952 the Corporation employed 173 senior service officers, 1,008 persons in the intermediate and junior service and a general labor force of 24,561. In 1951 the first Cameroonian was appointed to a senior service position.

The Chairman of the Corporation also was its chief executive and managerial officer until 1952, when a General Manager was appointed. The Chairman now spends only part of his time at the headquarters of the Corporation. Considering the relatively isolated location of the Corporation's activities and the desirability of regular contact with commercial, financial and agricultural circles overseas, the separation of the offices of Chairman and chief executive officer seems advisable. The organization was built up during a period of rapid expansion. It should be possible to reduce the number of senior service staff as the organization becomes more settled. In view of the importance of building a permanent operational and scientific career staff, it is recommended that the Corporation continue its efforts to create work conditions designed to achieve that purpose. Since its recruitment efforts compete with those of plantation enterprises in other parts of the world, it may be necessary to model the pay system on some of the systems followed in other countries.

Most of the Corporation's employees are Cameroonians, representing some 80 different tribes, but some Nigerians, mostly from the Eastern Region, are also employed. It is characteristic of the strong regionalism throughout the country that the Corporation should be criticized for the employment of what the Cameroonians consider "foreigners." However, until the level of education in the Cameroons is raised, the Corporation will have to employ a certain number of Africans of non-Cameroonian origin.

*Financial Policy*

The Corporation received no capital funds to run the enterprises transferred to it or to rehabilitate and expand the estates and other properties. It was, however, given the power with the Governor's approval to borrow up to a maximum of £ 1 million with or without a government guarantee.

In fact, the Corporation decided to finance its capital expenditure as far as possible out of current revenue. This policy was carried out consistently and by the end of 1953 the Corporation had financed improvements to leasehold concessions, equipment and motor vehicles of a value at cost of approximately £ 3.3 million and had net current assets of over £ 500,000; its outstanding borrowings amounted to £ 1.1 million, consisting of a government loan of £ 500,000 repayable over the period 1956-70, a short-term loan of £ 200,000 from the government, and a loan of £ 400,000 from Barclays Overseas Development Corporation.

The Corporation also decided to write off capital expenditure on its leasehold lands (planting, buildings, etc.) in full, and as far as possible out of revenue in the year in which they were completed. Capital expenditure on machinery, factory equipment and similar assets was to be written off over a period of five years. This policy was followed until the end of 1951, when it was decided to write off buildings and other construction on leasehold concessions over a period of three years.

The condensed balance sheet of the Corporation as of December 31, 1953 (Table 5) reflects the financial and accounting policies described above. The figures show that the Corporation's development efforts had strained its financial resources to the utmost, leaving it at the end of the year with cash funds below the level of average monthly expenditures. Moreover, according to a note appended to the balance sheet, the Corporation had, by December 31, 1953, entered into commitments for capital expenditure estimated at £ 450,000, which in the absence of new borrowings would have to be covered out of 1954 earnings.

During the year 1953 a number of steps were taken to prepare the way for further expansion. Short-term loans from Barclays Overseas Development Corporation were funded into a £ 400,000 eight-year

loan at 5½%, repayable in equal annual installments, and the limit of the Corporation's borrowing powers was raised from £ 1 million to £ 2.5 million. The mission understands that early in 1954 negotiations for an extension of the £ 200,000 3% short-term government loan were in progress.

TABLE 5 Cameroons Development Corporation, Condensed Balance Sheet as of December 31, 1953

		(£)
<i>Assets</i>		
Improvements to leasehold concessions.....	2,381,355	
Less: written off .....	1,819,775	561,580
	<hr/>	
Equipment .....	713,153	
Less: written off .....	412,595	300,558
	<hr/>	
Motor vehicles .....	192,400	
Less: written off .....	152,831	39,569
	<hr/>	
Work in progress.....		459,987
Stocks (stores and produce).....		894,568
Debtors, etc. ....		251,710
Cash at Bank and in hand.....		56,142
		<hr/>
		2,564,114
<i>Liabilities</i>		
Loans		
Government of Nigeria .....	700,000	
Barclays Overseas Development Corporation.....	400,000	1,100,000
	<hr/>	
Creditors and Provisions .....		657,634
Reserve for Retiring Gratuities to workers not members of Provident Fund.....		100,000
Deferred maintenance .....		46,195
Reserve in accordance with Section 19 of Ordinance No. 39 of 1946 (future development).....		600,000
Unappropriated Profit balance 1952.....		60,285
		<hr/>
		2,564,114

SOURCE: Cameroons Development Corporation, Condensed Balance Sheet, 1953.

*Financial Results*

The figures given in Table 6 show the growth of the Corporation's operations, with proceeds of sales in 1953 more than five times the 1947 figures. The heavy losses in banana production during 1952 and the sharp fall in the price of rubber account for the fact that, notwithstanding the increased banana acreage, sales proceeds in 1952 were at about the 1951 level, whereas costs had risen considerably. As a result, the margin of trading profit, which had remained close to 50% from 1947 to 1951, dropped below 35%. A recovery took place in 1953, due mainly, so the mission was informed, to the higher banana prices during the year and the increased weight per bunch.

As appears from the Table, the difference between the trading profit and the net profit is largely accounted for by the heavy depreciation charges discussed above.

TABLE 6 Cameroons Development Corporation, Summary of Profit and Loss Accounts

(Thousand £)

	1947	1948	1949	1950	1951	1952	1953	Total
Sales .....	513	948	1,306	1,632	2,221	2,166	2,786	11,572
Less Production costs...	274	470	670	840	1,122	1,423	1,551	6,350
Trading Profit .....	239	478	636	792	1,099	743	1,235	5,222
Less other charges (net after other income) ..	34	93	cr. 7	164	25	44	cr. 2	351
Profit before Depreciation	205	385	643	628	1,074	699	1,237	4,871
Less Depreciation .....	27	41	280	295	438	468	888	2,437
Net Profit .....	178	344	363	333	636	231	349	2,434
Less Provision for Income Tax .....	158	209	260	280	350	80	190	1,527
Net Profit after Income Tax .....	20	135	103	53	286	151	159	907
Less appropriation to reserves for future development, etc. <sup>1</sup> .....	—	100	80	—	230	100	99	609
Balance paid or to be paid to Governor of Nigeria <sup>1</sup> .	20	35	23	53	56	51	60	298

<sup>1</sup> In accordance with Section 19 of Ordinance No. 39 of 1946.

SOURCE: Annual Reports of Cameroons Development Corporation, 1947-52. Figures for 1953 derived from abridged financial statements.

*Future Development and its Financing*

During its first seven years the Corporation has made an impressive and considerably successful development effort. It now faces a double task. It must consolidate its gains and protect the plantations against the hazards of disease. It must improve and further expand production, and continue its program of staff housing and social welfare facilities.

The Corporation's development program calls for further heavy capital expenditure over many years. The sum total of all projects now being considered by the Corporation amounts to some £ 5 million. While the rate at which the projects are undertaken can be adjusted from time to time in the light of the Corporation's finances, nevertheless we think that the financial implications of a development program of this magnitude require a critical reappraisal of the financial policies of the Corporation and of the government vis-a-vis the Corporation.

As regards the past, the Corporation's policy of plowing back nearly all of its profit has been wise. It has built up a sizeable enterprise with a considerable earning capacity, while incurring only moderate debt. To have distributed its earnings during the early years and to have relied during that period on borrowings for development financing might easily have led to disaster had the Corporation's operations suffered reverses. Such a policy would certainly not have been in the interest of the people of the Cameroons. Moreover, while most of the earnings have been reinvested, the Cameroons have directly benefited from the Corporation's operations through payment of £ 1.3 million in income tax and distributed profits of £ 238,000 over the period 1947-52.

On the other hand, we question the wisdom of the write-off policy. This has resulted in a balance sheet which considerably understates the true value of the Corporation's assets and which accordingly gives a very unclear picture of earnings in terms of return on investment. Another unfortunate consequence is that borrowings are made to seem excessively large in relation to "net worth."

It seems to be the policy of the Corporation and the government that the Corporation's activities should be financed as far as possible without recourse to government or a government guarantee, yet the present accounting policy is likely to make it more difficult to achieve

that objective. It is true that, the leases to the Corporation being non-transferable, neither they nor the improvements to the leaseholds can be pledged as security. If this is deemed an obstacle to the Corporation's borrowing ability, the remedy lies in a reconsideration of the lease provisions. The fact that assets cannot be pledged is no reason for writing them off.

We think that the Corporation should revalue its assets (including improvements to leasehold concessions made prior to 1946) and recast its accounts. While this would not make the Corporation richer or justify distribution of a higher proportion of profits, it would give a clearer picture of the Corporation's financial status, thereby facilitating borrowing should that become necessary or desirable.

The future development and financial policy of the Corporation should be determined in the light of the broad interest of the Southern Cameroons. This interest unquestionably requires conservation and further development of the Corporation's extremely valuable assets. But it also requires a weighing of the investment needs of the Corporation against those of other sectors of the Cameroonian economy. This gives rise to the question whether to continue plowing back the bulk of the Corporation's profits or whether to pay out a substantial portion to provide investment capital for other sectors of the economy. If the latter, the Corporation would either have to slow down its development program or to borrow. We think a sound utilization of resources would now justify distribution to the Southern Cameroons of as large a share of the Corporation's profits as is consistent with prudent administration. We have included in our financial projections (Chapter 5, Table 3, and Appendix C) the sum of £ 200,000 annually over the next five years as distribution of profits to the government of the Southern Cameroons. We consider this sum to be a minimum, and recommend that a larger sum be paid out if earnings and financial position make it practicable.

The magnitude of the Corporation's development program makes it likely that borrowing would be necessary even if reinvestment of earnings continued. Present assets and earnings are such that in our opinion the Corporation could prudently borrow in London to finance its development program. In addition to the recommendation that

accounts be recast, to facilitate such borrowing, we recommend that the Corporation improve its liquidity, the only weakness in its position.

*Conclusion*

It was difficult to decide, in 1946, how to put the ex-enemy plantations to best possible use for the benefit of the inhabitants of the Trust Territory. The mission wishes to record its opinion that the establishment and operations of the Corporation have been of great benefit. It has made available the economic and technical advantages of plantation production, has provided for the social and educational welfare of its workers, and the earnings of the enterprise it has built up will contribute to the development of the Southern Cameroons.

## TECHNICAL REPORT 6

### *THE PATTERN OF NIGERIAN AGRICULTURE*

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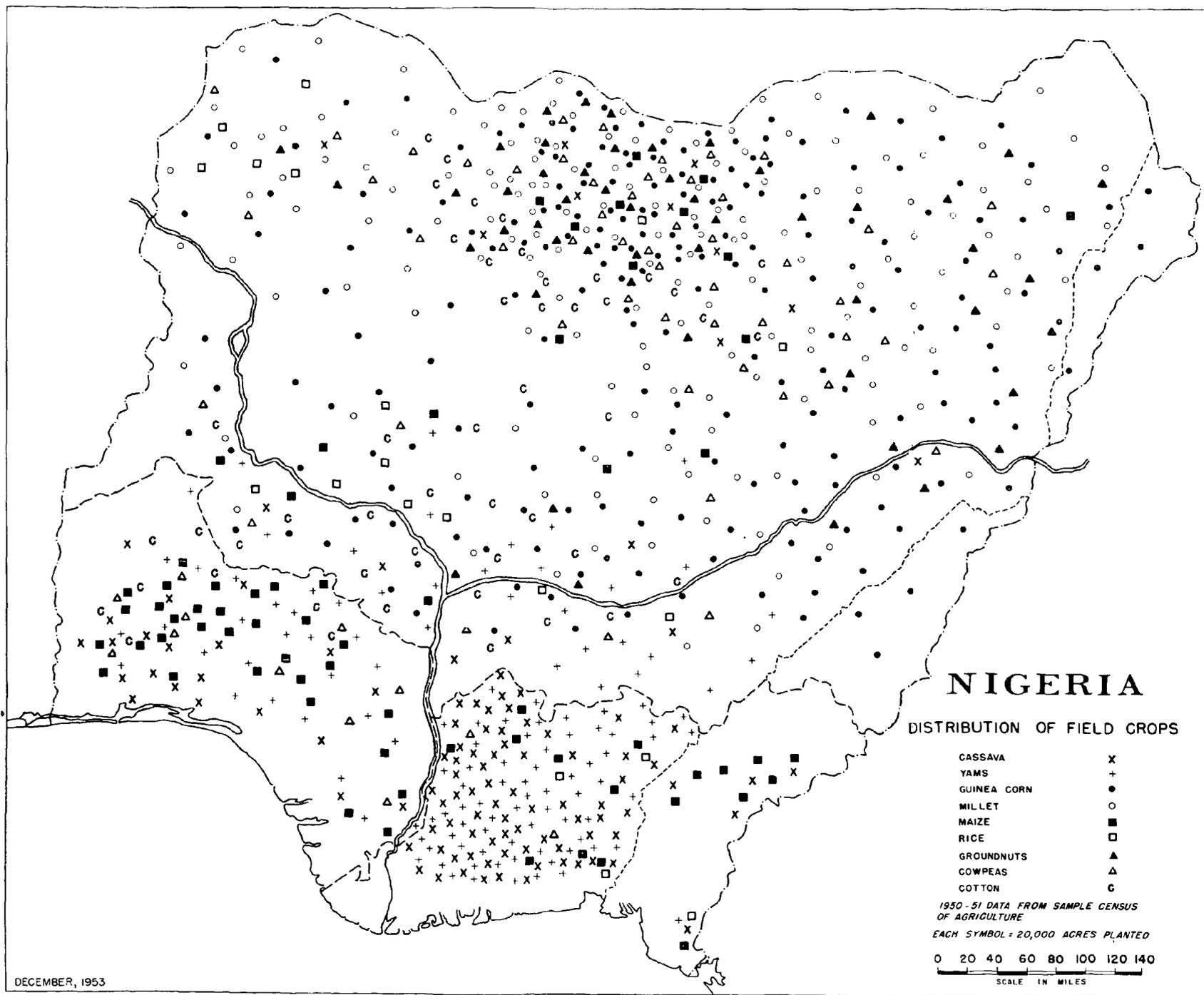
#### I INTRODUCTION

Agriculture, forestry and fishing occupy an estimated 80% of the active population of Nigeria and in 1952 produced 66% of its gross domestic product of £ 680 million. More than 90% of the country's exports result from crop and animal husbandry. Nigeria's economic development and the improvement of its living standards thus depend largely upon the growth and progress of the agricultural sector of the economy.

Nigeria's arable land resources are extensive, the water supply is abundant though not well-distributed, and the climate permits rates of growth close to the maximum attainable in any country. But productivity is often limited by mediocre soil fertility, primitive production methods and crop varieties with comparatively low yields. The following pages outline the physical environment of Nigerian agriculture, the vegetation which has naturally developed in this environment, the utilization of land and existing agricultural practices. Individual agricultural commodities and the means by which we think their output can be increased are the subject of Technical Reports No. 7 and No. 8.

#### *Production*

Field crops accounted for 44.8% of the 1952 gross domestic product; tree crops for 11.3%; livestock products for 5.1%; forest products for 4% and fish for 0.9%. Yams and cassava together constituted 40% of the total agricultural product; grains, 1.7%; palm





produce, 8%; cocoa and groundnuts, each 4%.<sup>1</sup> Numerous other crops are produced in relatively minor quantities.

In the North, the agricultural economy is based on grains, cattle and groundnuts; in the South, on root and tree crops and on forestry. Farming is concentrated around the numerous villages, separated by stretches of woodland and water in the South and by grass and scattered trees in the North. A variety of crops is grown in the village fields but there is usually a main crop of yams, cassava, groundnuts, guinea corn or millet. Irrigation is not common; in the North, production depends almost entirely on seasonal rains, which are copious but of limited duration.

The distribution pattern of major food and export crops is shown on Map 2. The areas under field crops are listed in Table 3 (p. 201).

### *Problems of Expanding Production*

In every region there is substantial capacity for expansion of production, if a number of problems can be solved. There is a fairly widespread insufficiency of soil nutrients (phosphorus, nitrogen, sulphur and some of the trace elements), intensified by pressure of cultivation, especially in some parts of the Eastern Region. This prejudices nutrition and increases plant, animal and human susceptibility to disease. Much of the Northern Region is liable to long periods of no rain; water supplies are often inadequate, especially toward the northern border.

Despite the variety of production in the country as a whole, most crops and types of livestock are identified with a specific climate and soil environment. Crop production tends to be specialized; alternative crops or rotational farming are the result of necessity rather than conscious planning. Cattle raising in the Southern and central parts of the country is inhibited by the prevalence of the tsetse fly.

Farming methods are primitive. The plow is seldom seen and hand tillage is the rule. Nevertheless, the mission was impressed by the innate wisdom of the people of Nigeria in devising ways of producing foods for their own consumption and adapting them to the local environment. They have an understandable and frequently justified distrust of foreign innovations which, though suited to the conditions

<sup>1</sup> See Appendix B, Tables 1-4.

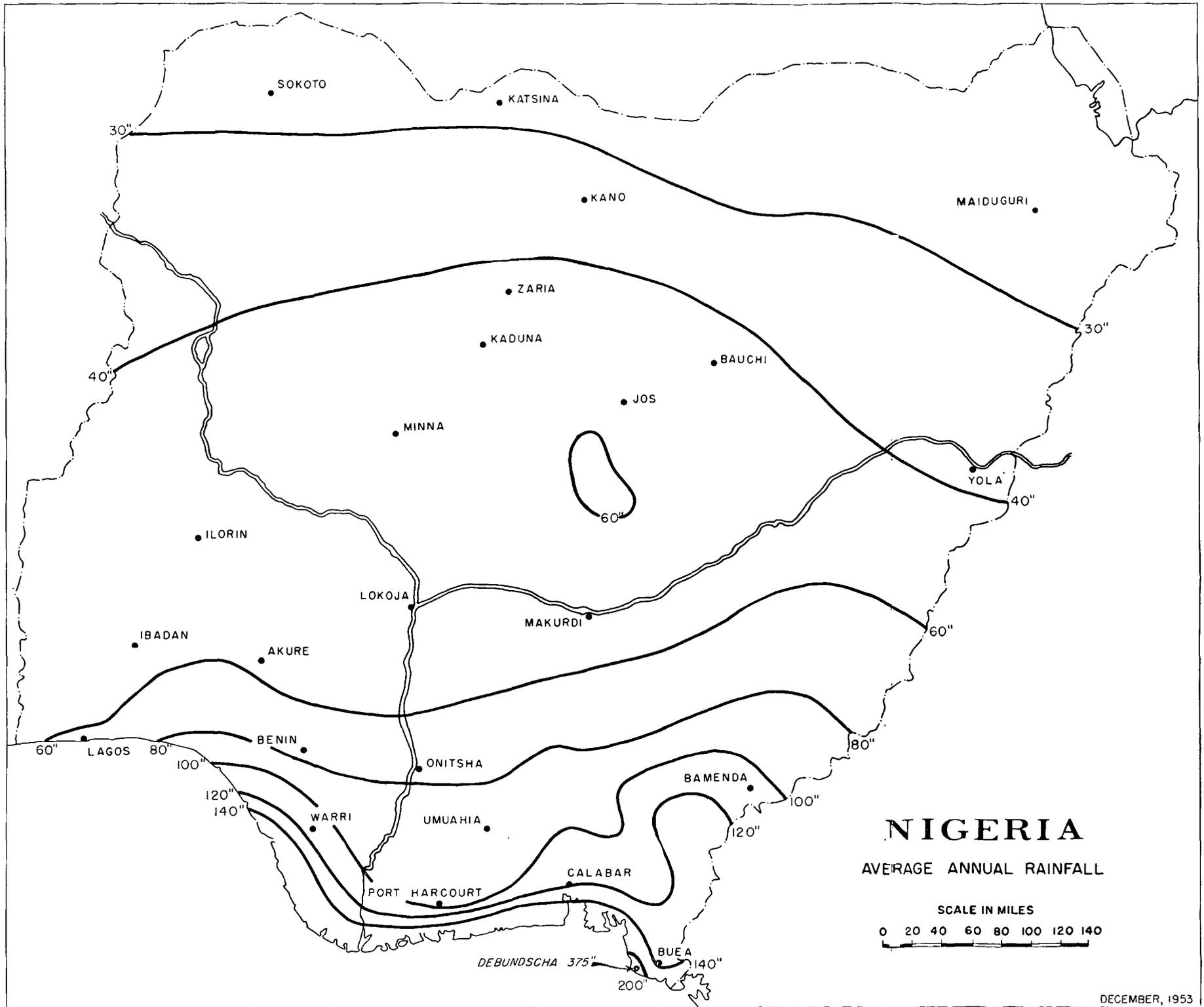
of the temperate zone, are often inappropriate to the environment of tropical Africa. But it is now possible to draw upon an increasingly large body of knowledge, based on the practical experience and research of countries with a technically developed agriculture and tested under tropical conditions. Provided such knowledge is effectively adapted to local practices and needs, it can produce substantial dividends in a country as well endowed with natural resources as is Nigeria.

To do this effectively, it is essential to have strong permanent technical services. The mission recommends that priority attention be given to building up the federal and regional services in agriculture, veterinary medicine and hydrology and to ensuring their long-term continuity and competence to serve as the primary source of technical guidance for the country's agricultural development.

## II CLIMATIC FACTORS

The Nigerian climate is generally favorable for quick plant growth. Day length varies from 11½ to 12½ hours in the North and from 11¾ to 12¼ hours in the South. In the South, clouds may seriously reduce the light at certain times of the year but on the whole the prevailing conditions of cloudiness, continuously high temperature, high humidity and reasonably sustained rainfall are ideal for the South's oil palm, cocoa tree, rubber tree and indigenous food crops.

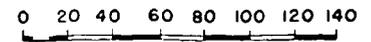
Atmospheric changes are governed by southwesterly monsoonal systems accompanied by rain and mist, and by dry northeasterly to easterly winds, the influence of which increases with distance from the coast. The easterly and southwesterly air currents are divided along an east-west axis which moves from the extreme south of Nigeria in January-February to the region beyond the northern border in July-August. This annual shift varies from year to year and its variability strongly affects seasonal crop fluctuation, especially in the North.



# NIGERIA

AVERAGE ANNUAL RAINFALL

SCALE IN MILES





*Moisture*

Moisture is abundant to excessive for much of the year except in the North; only in a small area between Nguru and Lake Chad, shown on Map 6 (facing page 201) as sahel savannah (dry open scrub-woodland), does the mean annual rainfall fall below 25 inches. The coastal region, except for the westerly portion, and the Southern Cameroons as far north as Mamfe and Bamenda, receive over 100 inches; as much as 400 inches is received southwest of Buea Mountain in the Cameroons. Much of the oil palm belt averages more than 80 inches. Most of the cocoa is grown with an annual rainfall of 45 to 60 inches, spread over eight to nine months; north of the Benue a similar rainfall spreads over six to seven months. North of Kaduna and Zaria the rainfall sharply declines to some 25 inches over the course of four to five months.

Table 1 shows for selected localities the distribution of rainfall through the year. The months of the wet season in each locality are indicated by figures in italics. Where monthly rainfall is significantly less than two inches, the rains are largely dissipated by evaporation and have little value for plant growth. Average annual rainfall over the country is shown on Map 3.

*Temperatures and Relative Humidity*

Maximum daily temperatures in the South are highest from February to April and in the North from March to June. The mean daily maximum and minimum temperatures over the year are 94°F and 66°F in the North, and 87°F and 72°F in most of the South. Such temperatures are very favorable for plant growth.

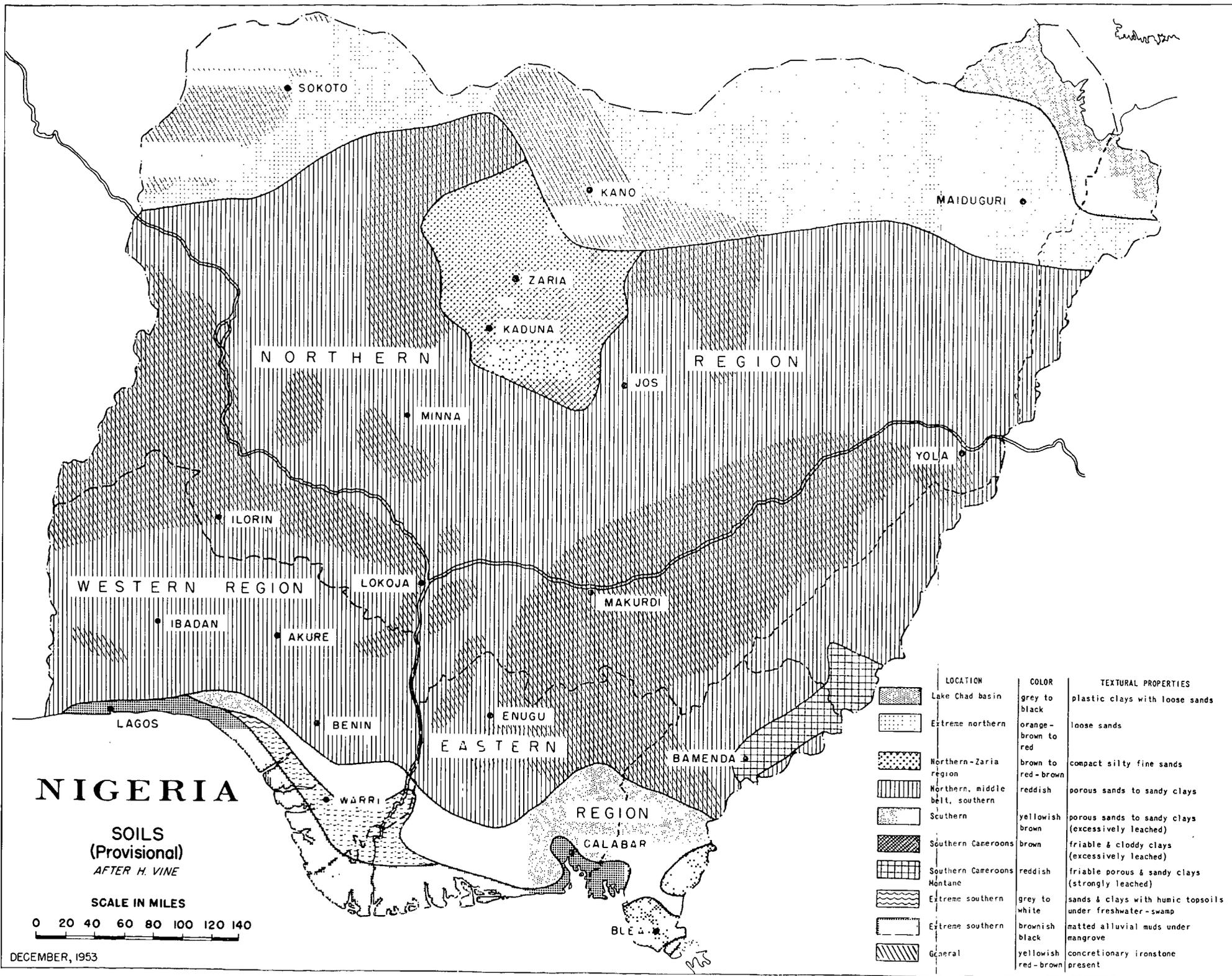
The relative humidity of the atmosphere near the coast is normally 95-100% at dawn, falling to 70-80% in the afternoon. Northward from the coast relative humidity steadily declines. At Kano it ranges from 90% at dawn to 60% in the afternoon from mid-June to October, falling to 35% at dawn and 12% in the afternoon between November and April. The skies are generally cloudy in the South, except in January and February; many successive days of unbroken cloud are common during July and August. To the North, clouds are slight to absent for much of the dry period but the *harmattan*, a dry wind from

TABLE 1 Mean Monthly Rainfall at Selected Centers

(inches)

	Yrs. of Record	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Benin .....	(44)	.76	1.25	3.63	6.62	8.17	12.04	12.28	8.07	11.94	9.45	2.98	.58	77.77
Enugu .....	(33)	.75	1.05	2.62	5.93	10.36	11.36	7.61	6.69	12.76	9.79	2.07	.54	71.53
Ibadan .....	(46)	.38	.88	3.49	5.49	5.88	7.46	6.31	3.38	7.00	6.12	1.65	.38	48.42
Jos .....	(29)	.11	.11	1.04	3.49	7.86	9.09	12.95	11.57	8.42	1.60	.12	.08	56.44
Kano .....	(46)	.00	.01	.07	.37	2.55	4.45	7.99	12.45	4.96	.48	.00	.00	33.33
Sokoto .....	(35)	.00	.00	.03	.42	1.97	3.52	5.84	9.31	5.73	.51	.00	.00	27.33
Maiduguri .....	(34)	.02	.01	.01	.26	1.58	2.69	6.93	8.80	4.07	.77	.01	.00	25.15
Nguru .....	(12)	.00	.00	.00	.09	1.11	2.07	4.99	8.93	4.41	.22	.00	.00	21.83

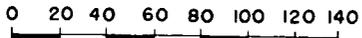
SOURCE: Meteorological Services Headquarters, Lagos.



# NIGERIA

SOILS  
(Provisional)  
AFTER H. VINE

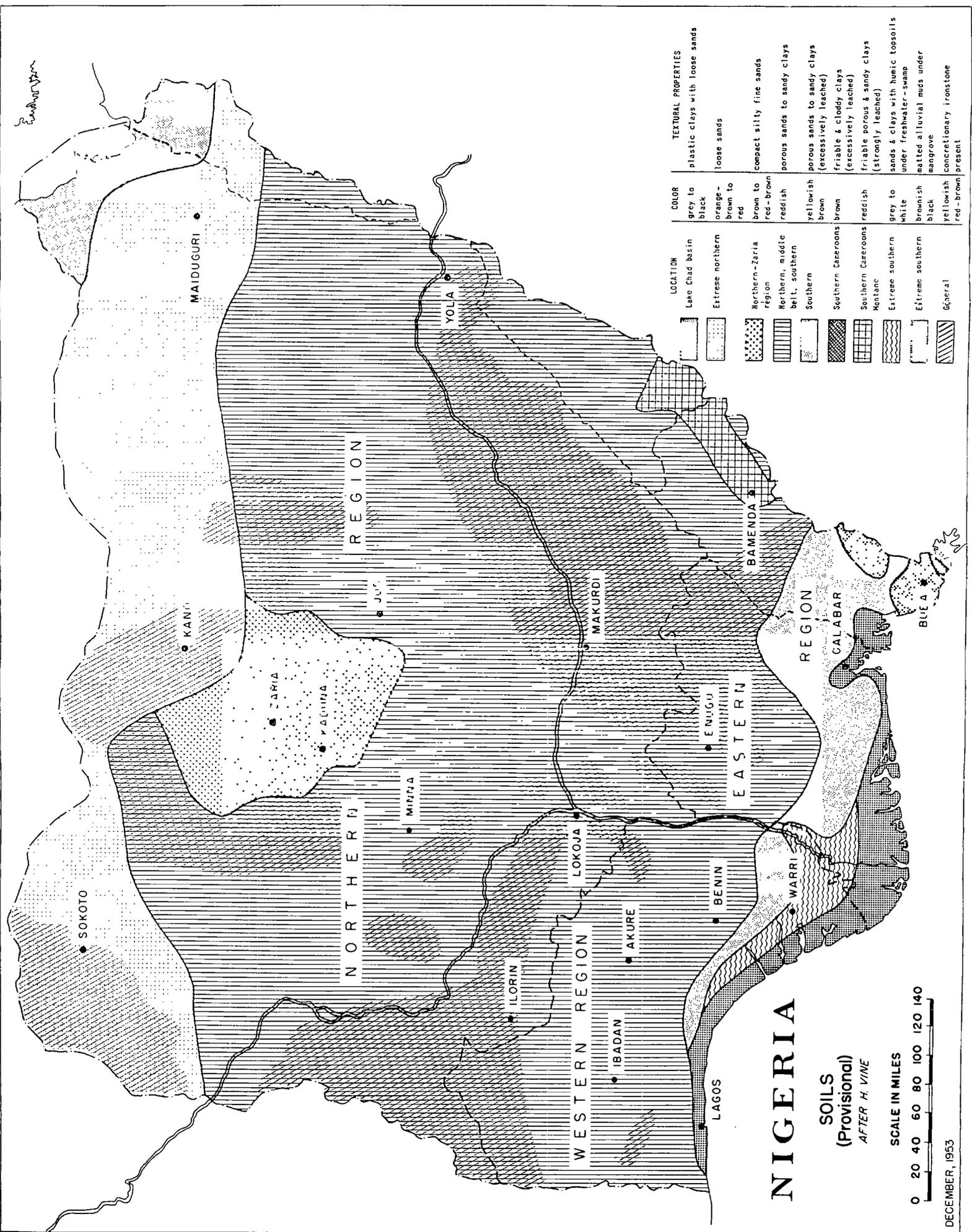
SCALE IN MILES



DECEMBER, 1953

LOCATION	COLOR	TEXTURAL PROPERTIES
Lake Chad basin	grey to black	plastic clays with loose sands
Extreme northern	orange-brown to red	loose sands
Northern-Zaria region	brown to red-brown	compact silty fine sands
Northern, middle belt, southern	reddish	porous sands to sandy clays
Southern	yellowish brown	porous sands to sandy clays (excessively leached)
Southern Cameroons	brown	friable & cloddy clays (excessively leached)
Southern Cameroons Montane	reddish	friable porous & sandy clays (strongly leached)
Extreme southern	grey to white	sands & clays with humic topsoils under freshwater-swamp
Extreme southern	brownish black	matted alluvial muds under mangrove
General	yellowish red-brown	concretionary ironstone present





LOCATION	COLOR	TEXTURAL PROPERTIES
Lake Chad basin	grey to black	plastic clays with loose sands
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Northern, middle belt, southern	reddish	porous sands to sandy clays
Southern	yellowish brown	porous sands to sandy clays (excessively leached)
Southern Caserooms	brown	friable & cloddy clays (excessively leached)
Southern Caserooms (Mentanc)	reddish	friable porous & sandy clays (strongly leached)
Extreme southern	grey to white	sands & clays with humic topsoils under freshwater-swamp
Extreme southern	brownish black	matted alluvial muds under mangrove
General	yellowish red-brown	concretionary ironstone present

# NIGERIA

SOILS  
(Provisional)  
AFTER H. VINE





desert regions north of Nigeria, carries minute particles of dust which reduce both light intensity and temperature. This condition lasts for approximately six months in the North and two to three months along the coast.

### III SOILS

Nigerian soils (see Map 4) are almost universally acid in varying degree; neutrality is rare and alkalinity virtually absent.

#### *Regional Characteristics*

The soils of the principal groundnut-producing areas, in the North, are derived from desert sand, formed in a past arid phase. Leaching by heavy rainfall has accentuated their acidity. The presence of granite or gneiss fairly close to the surface, as in the Kano and Zaria areas, makes available minerals lacking in the desert sand itself and these reserves of fertility are tapped by deep-rooted plants and legumes.

Gneiss is present around Zaria, where the soil is a fine, silky sand which sets on the surface when dry. It is suitable for guinea corn, millet and cotton but too compact for groundnuts. Acidity of the surface soil is comparable to that in the Kano area. The soil's tendency to set favors sheet erosion at the beginning of the rainy season, especially where cover is slight after clean cultivation or burning.

Farther south, especially in the Middle Belt and forest areas, soils other than the deep sands, river-borne sands and alluvial muds have been directly formed from the parent rocks beneath. Extensive areas are characterized by the presence of concretionary ironstone. Here the soils are acid, tend to set on the surface when dry, and are generally deficient in essential plant foods.

In the cocoa-growing areas, soils tend to be less acid and to have reduced leaching, better fertility, a high content of clay but good drainage and greater retention of moisture over a three- to four-month period of low rainfall. In the areas of highest rainfall, such as eastern Calabar Province, the surface layer is strongly acid.

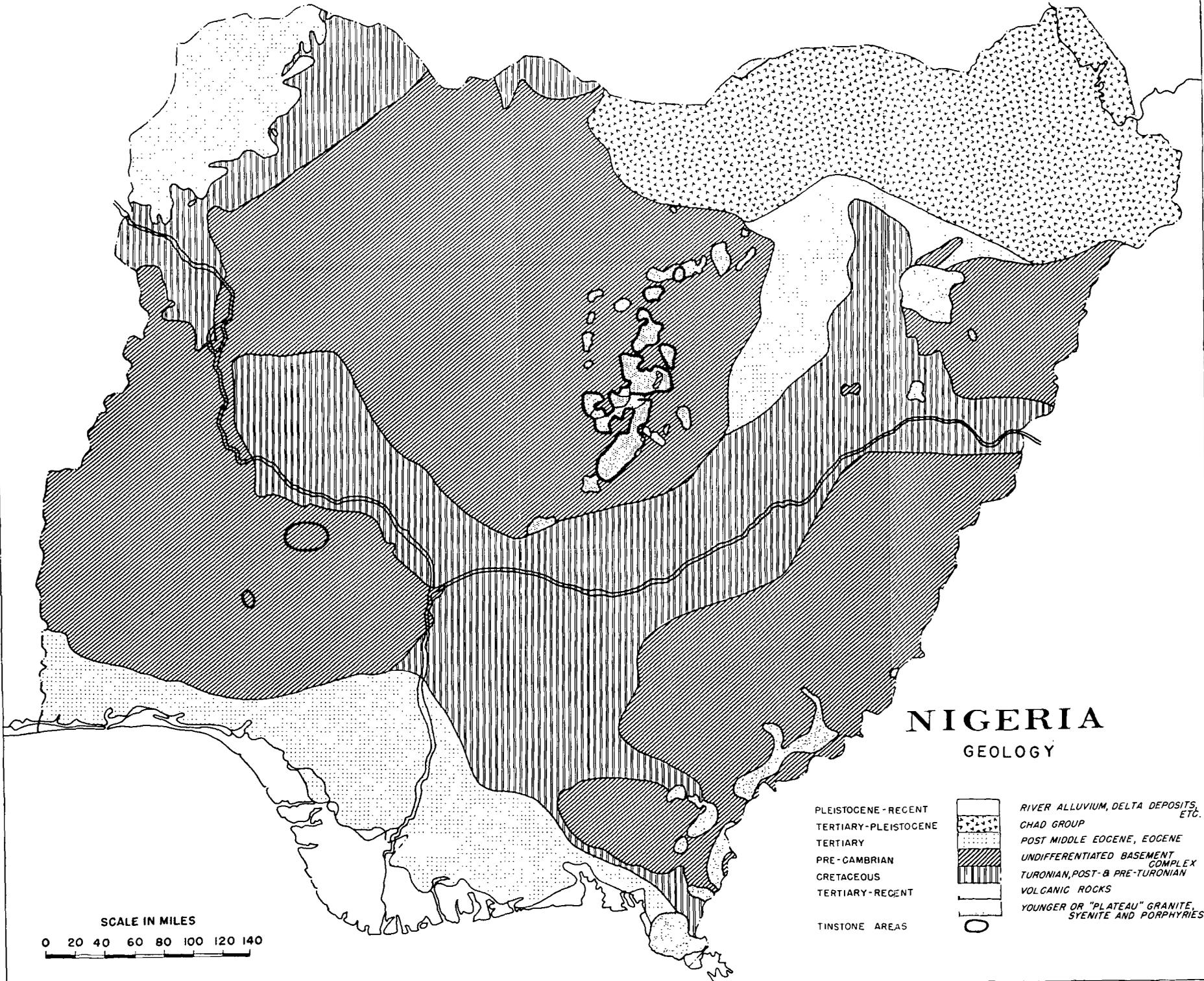
Very deep reddish sands of the Benin type occur widely over the area of cretaceous and tertiary sediments shown on Map 5. These lack reserves of mineral plant food and, although productive at first, they rapidly lose fertility under intensive cropping. The oil palm is well adapted to these soils and to the yellowish-brown sands of the South, provided that the young plants receive added nutrients where necessary and that fertility reserves at depth have not been depleted by earlier heavy production. Since the Benin sands, and allied types such as those occurring in the Middle Belt between Mokwa and Lafia, cover extensive areas over which rainfall is liberal and well distributed, we recommend that high priority be given to investigating deficiencies of these soils and finding economic means of overcoming them.

#### *Fertility and Productivity*

Persistent cropping leads inevitably to soil exhaustion; productivity is maintained by transferring cultivation to a new site. Where population is sparse, as in most parts of the North, land is abandoned for an indefinite number of years. In the South, land is left unused and uncontrolled generally for five to seven years, but sometimes, as in the Eastern Region, where population pressures are great, for no more than two or three years. In contrast to the North, the more abundant rainfall of the South induces a spontaneous regrowth of native herbs, thin-stemmed shrubs, small trees and creepers on untilled land. This practice is known as "bush fallowing."

The value of bush fallow is that the protective cover guards against erosion, while the soil is improved by the transfer of essential nutrients from the lower layers of the subsoil to the topsoil and by the surface accumulation of leaf and other plant residues. A speedier means of restoring and improving fertility must, however, be found.

Higher productivity may result from (a) occurrence of basement complex rocks beneath the surface soil and subsoil, as at Kano and Ibadan; (b) very deep penetration of roots, as by the oil palm; (c) accumulation of human and other wastes at the sites of villages and towns; or (d) deposition of animal manure. All these sources of enrichment are recognized by Nigerian farmers, but they have not generally realized that the extensive tracts of less productive land between the towns and villages can be greatly improved in fertility



# NIGERIA

## GEOLOGY

- PLEISTOCENE-RECENT
  - TERTIARY-PLEISTOCENE
  - TERTIARY
  - PRE-CAMBRIAN
  - CRETACEOUS
  - TERTIARY-RECENT
  - TINSTONE AREAS
- RIVER ALLUVIUM, DELTA DEPOSITS, CHAD GROUP, ETC.
  - POST MIDDLE EOCENE, EOCENE
  - UNDIFFERENTIATED BASEMENT COMPLEX
  - TURONIAN, POST- & PRE-TURONIAN
  - VOLCANIC ROCKS
  - YOUNGER OR "PLATEAU" GRANITE, SYENITE AND PORPHYRIES

SCALE IN MILES  
 0 20 40 60 80 100 120 140



and production by modern scientific methods of land development. Here again investigation of soil deficiencies and ways of overcoming them is called for as a first step toward making these large tracts more productive.

#### *Organic Matter and Nitrogen*

Organic matter is generally low even in soils under forest. Pre-dominance of grass in the Middle Belt has improved both the structure and the organic content of the soil, but the ratio of carbon to nitrogen is high. There is a relative shortage of available soil nitrogen for much of the year throughout the country, particularly in almost all parts of the South.

The long period of rainfall during which nitrate content is low, even in a relatively productive soil, accounts for the low protein content of food produced in southern Nigeria. It has been found that maize, rice and root crops respond to the application of nitrogen in the form of sulphate of ammonia but this procedure is expensive and does not build long-term fertility. The practice of alternating crops and soil-building green manure also improves crops but entails a loss by interrupting production.

We think that one major solution of the soil fertility problem lies in establishing legume-grass pasture mixtures and treating them with appropriate phosphate trace-element fertilizer mixtures, keeping disease-resistant livestock and developing mixed livestock-food crop farming. Investigations of soil deficiencies, then, should be closely linked with the programs of research on pasture and livestock improvement discussed in Technical Report No. 8.

#### IV LAND UTILIZATION

About 10% of the total area of Nigeria is under cultivation for farm or tree crops. Forests cover 32% and 57% is uncultivated or kept fallow (see Table 2). The low proportion of land used for agriculture indicates land resources are ample but it also reflects the primitive agricultural methods which require periodic fallowing and permit cultivated land to revert to bush.

Land utilization is to some extent affected by the Nigerian land

tenure system. The system is complicated and does not lend itself to a brief or general description. Essentially, it is communal in character. Individual ownership is rare and rights to land may be held by a small family group or a large village or tribal group.

The system of land classification in Nigeria does not permit a clear-cut distinction between fallow and uncultivated land; probably almost all land has been under cultivation at some time. Cropping periods vary from one to five years. The compound gardens around dwellings are farmed more or less continuously and human excrement and household wastes are used as fertilizer.

TABLE 2 Pattern of Land Utilization

(percent)<sup>1</sup>

Use	Northern Region	Western Region <sup>2</sup>	Eastern Region	Southern Cameroons	Average Nigeria
Under farm crops.....	6.8	9.3	20.5	3.0	8.8
Under tree crops <sup>3</sup> .....	—	7.0	2.7	2.7	1.2
Bush fallow .....	9.3	22.2	42.5	24.4	13.8
Forest reserves .....	6.1 <sup>4</sup>	15.6	8.1	13.9	7.8
Other forests .....	31.2 <sup>4</sup>	0.7	2.3 <sup>5</sup>	8.4	24.1
Built-on areas .....	0.8	1.0	1.7	0.7	0.9
Uncultivated bush pastures, wasteland .....	45.8	44.2	22.2	46.9 <sup>6</sup>	43.4
Total .....	100	100	100	100	100

<sup>1</sup> Total area of Nigeria, 373,250 sq. miles divided as follows: Northern Region: 281,782; Western Region: 45,403; Eastern Region: 29,484; Southern Cameroons: 16,581.

<sup>2</sup> Part estimate; data on Oyo Province not available.

<sup>3</sup> Includes plantations under crop; 34 sq. miles in the West and East, 118 sq. miles in the Southern Cameroons.

<sup>4</sup> 95% represented by savannah forest producing firewood only.

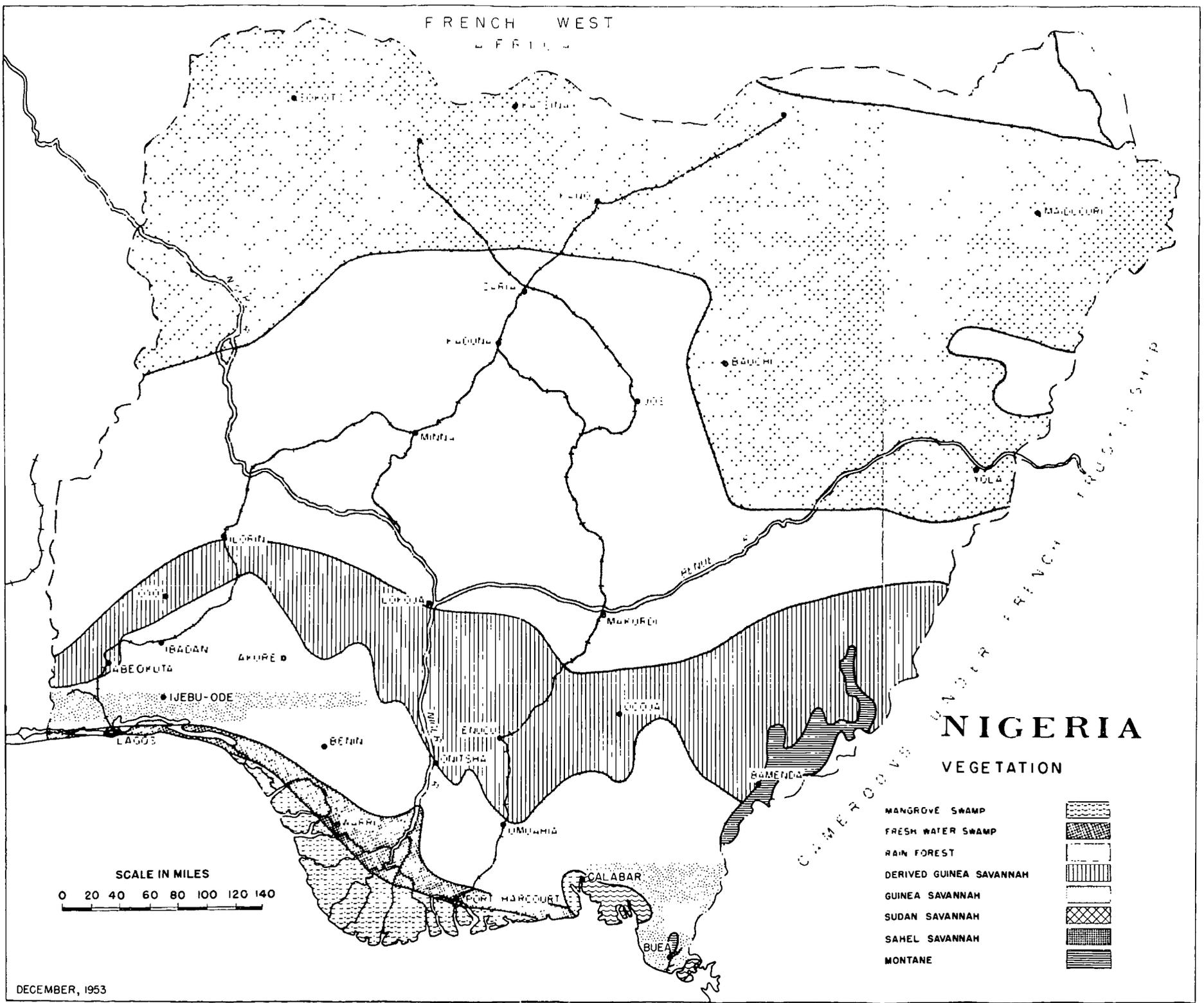
<sup>5</sup> Mangrove forests.

<sup>6</sup> Includes 1,141 sq. miles of good quality mountain grassland.

SOURCE: Sample Census of Agriculture, 1950-51 and Annual Report of the Forest Administration, 1952-53.

A substantial part of the farm land of Nigeria is inter- or double-cropped. Intercropping is practiced throughout the South, where cassava and yams are planted with a crop like maize or cowpeas; the latter is harvested when ripe and cassava root is left for a second year to round off the rotation. Double-cropping is possible where rains

FRENCH WEST  
AFRICA



# NIGERIA

## VEGETATION

- MANGROVE SWAMP
- FRESH WATER SWAMP
- RAIN FOREST
- DERIVED GUINEA SAVANNAH
- GUINEA SAVANNAH
- SUDAN SAVANNAH
- SAHEL SAVANNAH
- MONTANE

SCALE IN MILES  
0 20 40 60 80 100 120 140



occur through most of the year, or where the land can be irrigated in the dry season. New irrigation schemes can substantially increase the area of double-crop cultivation.

According to the 1950-51 census of agriculture, some 20 million acres of land were under farm crops, of which 62.5% was in the North, 15% in the West, 20% in the East and 2.5% in the Southern Cameroons. Table 3 shows the relative size of areas occupied by various field crops.

TABLE 3 Area Under Principal Field Crops

(% of first and second crop areas combined)

	Northern Region	Western Region <sup>1</sup>	Eastern Region	Southern Cameroons	Nigeria
Guinea corn .....	33.5	—	—	—	20.0
Millet .....	25.4	—	—	—	14.4
Maize .....	3.0	28.8	5.0	40.4	9.4
Paddy .....	2.4	0.4	0.9	1.8	2.0
Yams .....	4.1	26.0	35.5	1.6	14.3
Cassava .....	2.8	20.2	34.5	18.1	11.6
Cocoyams .....	0.1	6.0	9.6	15.9	3.2
Cowpeas .....	8.5	8.8	1.0	0.2	6.2
Groundnuts .....	8.3	—	0.2	0.8	4.8
Other farm crops <sup>2</sup> .....	11.9	9.8	13.3	21.2	14.1
Total .....	100.0	100.0	100.0	100.0	100.0

<sup>1</sup> Partly estimated; data for Oyo Province are lacking.

<sup>2</sup> In order of area planted: cotton, acha, melonseeds, pigeon peas, sweet potatoes, benniseed, tamba, bambarra groundnuts, peppers, okra, tobacco, sugarcane, onions, etc. (Acha and tamba are grass grains).

SOURCE: Sample Census of Agriculture, 1950-51.

## v ZONES OF VEGETATION

The combined resources of climate and soil and the resulting patterns of land use are reflected in the vegetation. Although there are considerable variations within short distances, certain distinct zones can be identified, each indicating a specific potential for agricultural development. The country has been broadly classified into eight zones, according to the dominant types of native vegetation, shown on Map 6.

*Mangrove Swamp*

The red mangrove (*Rhizophora racemosa*) occupies an estimated 99% of the coastal area, which consists of tidal swamp interwoven by numerous creeks and lagoons. The deltaic deposits tend to erode seaward but soft alluvial muds cover a million or more acres. Where they are stabilized and nonsaline for enough of the year, they offer good possibilities for rice. (See Technical Report No. 8.)

*Fresh-water Swamp*

Within the mangrove swamps are shallow lagoons of fresh water. Here grow the raffia palm (*Raphia* spp.), yielding "tombo" palm wine, mats, poles and stiff piassava fiber; the pandana palm (*Pandanus*), from which sleeping mats and baskets are woven; and floating grass (*Vossia cuspidata*). *Clappertonia ficifolia*, a possible source of fiber, is also common. Fish and fibers are the chief products of this zone.

*High Forest*

Within the belt of high forest lie the oil palm-, cocoa- and principal root crop- and maize-producing areas of the South. The oil palm, although native, attained its present dominance only through widespread clearing of the forest. Yams, cassava and bush fallow vegetation are plentiful. Timber trees tend to be sparsely distributed. This zone will remain the principal source of oil palm products and cocoa. Oil palm output can be greatly expanded, that of cocoa at least sustained. The zone is also well suited to rubber and banana production and to silviculture, as distinct from natural forest regeneration. A wider range of food crops could be grown, and eventually considerable livestock could be raised. However, to obtain increased yields of food, and especially of protein, a solution to soil fertility problems must be found.

*Derived Guinea Savannah*

The derived guinea savannah was originally high forest, now largely destroyed by burning and replaced by grass; forest still remains along

streams and in low-lying areas where surface water accumulates. Grasses are of poor quality; toward the northern limit *Andropogon*, *Hyparrhenia* and *Pennisetum* become prominent. A few oil palms remain. On heavy clay flats subject to inundation the fan palm (*Borassus aethiopum*) occurs. Livestock production should eventually be possible, once trypanosomiasis is controlled and good quality pastures developed.

#### *Guinea Savannah*

Annual rainfall, duration of the wet season and humidity in the dry season are less in the guinea savannah than in the derived guinea savannah; relative humidity in the driest month falls to 15%, compared with 40% in derived savannah. Tall grasses occur extensively and are annually swept by fire. The fire-resistant doka (*Isberlinia doka* and *I. tomentosa*) frequently dominates uncultivated land. Forest outliers of locust bean or dorowa, the shea butter tree and the mango are characteristic of previously cultivated areas. Kyasawa (*Pennisetum pedicellatum*) is abundant where soil fertility is moderately good or taller grasses have been reduced by cutting or grazing; this is said to be Nigeria's most valuable forage grass. Nomadic livestock are restricted by the availability of water in the dry season. Farming is most active around well-defined centers, such as Zaria, Bauchi and Yola. There are good potentialities for improved livestock raising and mixed farming. Tobacco culture is rapidly expanding and the production of guinea corn, groundnuts, cotton and forage can be greatly increased.

The Plateau, at 4,000 feet and over, has distinct geology, climate and soils. Its extensive plains are heavily farmed and grazed but here, too, methods are primitive and production is low in relation to climatic resources. Studies of methods to improve soil fertility and of hydrology are especially important for this zone.

#### *Sudan Savannah*

Annual rainfall in the sudan savannah is only about 25 inches, the wet season is reduced to four or five months, and relative humidity at 1 p.m. is only 8% in the driest month. This zone is the chief

source of groundnuts, guinea corn and millet. Permanently cultivated land extends far beyond the villages and towns although extensive areas have become unproductive from long-continued cropping. A saltbush-type vegetation remains, utilized for rough grazing. Economic pasture improvement based on the use of superphosphate, development of mixed farming in conjunction with livestock raising, improvement of crop varieties, grain storage, fodder conservation and mechanization can greatly increase productivity in this zone. Small irrigation projects can be undertaken.

#### *Sahel Savannah*

There is relatively little sahel savannah in Nigeria, although the country extends far northward. Annual rainfall in this zone is about 20 inches and the wet season lasts only three months in most years. The umbrella-topped *Acacia raddiana* and the gum arabic tree occur sparsely. A type of saltbush provides salt, obtained by burning its leaves. The grass is short and ephemeral. Papyrus borders Lake Chad, extending well out in the shallow waters. Possibilities for improved production in this zone are limited, apart from those of reclamation and irrigation adjacent to Lake Chad.

#### *Montane*

Altitudes in the Cameroons above 5,000 feet, and most characteristically at 6,000–7,000 feet, carry montane vegetation in patches separated by deep valleys or gorges, difficult of access by mechanized transport. This vegetation includes mountain forest with dwarf moss and lichen-bearing trees, and mountain grassland in the Bamenda area. Of all West African areas, this most closely approximates European conditions. Production of livestock, maize, coffee, tea and a wide variety of temperate climate crops could be expanded immediately. Temperatures are relatively low while rainfall is sufficient and humidity high throughout the year.

## TECHNICAL REPORT 7

### AGRICULTURAL EXPORT COMMODITIES

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#### 1 PRODUCE CONTROLLED BY MARKETING BOARDS

##### A OIL PALM PRODUCTS

The oil palm is native to Nigeria; stands extend throughout the South where it has multiplied in the high forest zone as forest clearing has permitted. It is one of the hardiest of tropical plants. Settlement, cultivation and the build-up of soil fertility through human waste have contributed to its transition from the wild to the cultivated state. Its improvement, in turn, has given Nigeria its most important export commodities. Although traders have purchased palm oil for at least four centuries, the current export trade has developed essentially within the past 50 years. Now palm kernels and palm oil combined account for over 30% of total exports in value.

Palm oil, a rich source of vitamin A, is an indispensable constituent of the basic diet in the Eastern and Western Regions. It is blended in cooking with carbohydrate-rich foods such as yams and cassava. The palm leaves and leaf ribs are used for a variety of structural purposes, including roofing. The sap contains substantial amounts of vitamin B complex; palm wine, a popular local beverage, is made from it.

##### *Production*

Exact data on total production of palm oil are not available. Oil purchases by the Oil Palm Produce Marketing Board <sup>1</sup> averaged some 186,000 tons per annum over the period 1949-53 and annual purchases of palm kernels during that period amounted to 378,000 tons. Palm

<sup>1</sup> See Technical Report No. 4.

kernels are not consumed locally; virtually the whole production is sold for export. On the basis of sales of palm kernels, contained in the fruit in the proportion of 7 parts of kernels to 10 parts of oil by weight, total yield of palm oil has been estimated at around 550,000 tons. The average extraction rate being only 60%, this suggests an effective yield of oil of some 330,000 tons per annum, of which somewhat less than half appears to have been consumed locally.

### *Exports*

Annual exports of palm kernels in the years since 1934 ranged from 236,000 to 410,000 tons, averaging 382,000 tons in the last five years. Palm oil exports since 1934 varied from 101,000 to 201,000 tons annually, with an average of 172,000 tons per year in 1949-53.

### *Efficiency of Extraction*

Most of the palm oil is still extracted by the traditional African method of pounding by hand after boiling; this method removes, as a rule, 45-55% of the oil in the pericarp or fleshy part of the fruit. The extraction rate of hand-operated presses (of which 5,000-6,000 are now in operation) is 65%. Power-driven Pioneer oil mills,<sup>2</sup> designed and introduced into Nigeria by the United Africa Company (UAC) extract up to 94.5%; in 1953 they accounted for only 3% of total output.

The mission believes that increased use should be made of power extraction wherever supplies of palm oil are sufficiently large and concentrated. The extension of mill operation would help to improve the quality as well as the amount of oil produced. Where power mills are not practicable, we recommend that wider use of hand presses be encouraged.

### *Quality*

Palm kernel oil and palm oil with a free fatty acid (F.F.A.) content below 4.5% are to some extent interchangeable with other vegetable oils in cooking and the making of margarine. The lower grades are used in the manufacture of soap and candles and in the tinplate

<sup>2</sup> See Technical Report No. 13.

industry. The 1954 producer price set by the Oil Palm Produce Marketing Board for special grade oil (not exceeding 4.5% F.F.A. content and less than 2% extraneous substance including water) is £ 65 per ton ex-scale port of shipment; the ex-scale bulk oil plant price for grade I oil (not more than 9% F.F.A.) £ 50 per ton, for grade II (9 to 18% F.F.A.) £ 38, and for grade III (18 to 30% F.F.A.) £ 33.

By offering premium prices for higher quality, a marked rise in standards has been obtained: whereas in 1949 only a negligible proportion of the oil purchased by the Oil Palm Produce Marketing Board was of special grade, by 1953 more than half of such purchases met the standard for that grade. These improvements resulted from more efficient harvesting to secure mature fruit, prompt transfer to the extraction site and cleanliness of the operation from harvest to final collection of the oil.

#### *Market and Price Prospects for Oils and Fats*

The long-term prospect is that prices of palm oil and palm kernels and of oils and fats in general<sup>3</sup> will be maintained at relatively high levels. The rise in world production of fats and oils has been sufficient only to maintain per capita consumption but the demand for margarine and compound cooking fats continues to rise. Increasing domestic consumption in advanced producing countries will tend to restrict exports; the limited possibilities for increased production (mainly of animal fats and marine oils) in importing countries should keep the demand for imports strong. Palm, palm kernel and coconut oils may be expected to provide an increasing proportion of the world supply, since the oil yield per unit area is higher than that of other vegetable oil crops and is capable of considerable improvement. Supply of and demand for these oils will strongly influence prices for all oils and fats.

During the next few years, however, prices for oils and fats may be expected to decline from present levels with fluctuations over a fairly wide range. Four main factors will influence price developments:

<sup>3</sup> The outlook for groundnuts is closely related to that for palm oil and palm kernels.

(a) Per capita consumption of oils and fats in Western European countries has recovered to, or exceeds, prewar levels; thus consumption is likely to increase at a reduced rate in the future.

(b) Production of coconut, palm kernel and palm oil has been greatly stimulated since the war and export supplies are increasing, while the demand for these oils for soap continues to decline and supplies of tallow are ample; this should cause oil prices to weaken.

(c) Demand for United States exports of soyabeans, lard, tallow and cottonseed oil, other than on an aid basis, may be expected to decline as increased supplies from nondollar sources become available. United States copra imports, on the other hand, are likely to decline because of the very great increase in the use of detergents, reported in 1953 to be manufactured in larger quantities than soap (a number of American coconut oil plants have closed down recently).

(d) United States stocks of soyabeans, cottonseed oil and butter overhang the international market and have already had a depressing influence on prices. Their final disposal will have a considerable effect, even if a sudden break in prices is avoided by spreading it over several years.

Assuming that general world economic conditions do not deteriorate markedly and that no sudden demand is generated by war or threat of war, world prices for oils and fats may be expected to decline by 15-25% to new normal levels, still subject probably to considerable fluctuations.<sup>4</sup>

The price outlook for Nigerian oils and fats is broadly similar to the world outlook, but some of the loss from declining prices may be offset in other ways. In the case of palm oil, improvement in the average quality of the product will reduce the impact of a general decline in prices; furthermore, output of oil can be increased even over a comparatively short period by the use of more efficient methods of extraction. In the medium and long term, Nigerian producers may offset a price decline by increasing yield per unit area through replacement of existing trees by better types and through improved maintenance of the stands generally. A more stable, scientific and

<sup>4</sup> See Technical Report No. 4.

organized production of palm oil should also materially increase the supply of kernels for export, by reducing the amount wasted.

### *Cultivation and Maintenance of Trees*

The culture and maintenance of the oil palm is done almost entirely by individual farmers; plantations account for less than 1% of total output. Commercial plantings are maintained by the UAC in eastern Nigeria and by the UAC and the Cameroons Development Corporation in the Southern Cameroons. There are some smaller plantations at which research is carried on. Although the available figures are not sufficiently accurate to permit exact comparison, it is certain that production per acre in plantations greatly exceeds that of native groves.

The optimum density in plantations is considered to be 50-60 trees per acre, spaced in a triangular arrangement with trees 27-30 feet apart. Generally, however, the palm has been allowed to grow spontaneously, after forest clearing for field crops has let in enough sunlight for the trees to become established; it is then left standing but untended during subsequent farming operations. As a consequence, most stands are overdense and irregularly spaced, frequently planted with 140-150 trees per acre or nearly three times the optimum. As a consequence, the light available for oil synthesis is substantially reduced and the root development of individual trees is limited. Thinning of overdense stands to 30-40 per acre and filling in with selected seedlings to give the optimum density will permit considerable increases in both oil palm products and interplanted food crops. The mission recommends that the Eastern and Western regional departments of agriculture develop field demonstration programs at selected centers to acquaint farmers with the advantages of thinning and replanting with improved stock. The aid of the co-operatives could usefully be enlisted in carrying out such programs.

### *Varietal Improvement*

Many of the naturally-occurring types and some of the strains used earlier for plantation development have thick-shelled nuts and a low yield of oil from the pericarp. Considerable progress has been made

in developing and propagating improved types. Their future use depends on research findings regarding nutrition and disease control.

### *Research*

The technical needs of oil palm producers in all of British West Africa are served by the West African Institute for Oil Palm Research (WAIFOR), an intergovernmental agency. The main station is near Benin and there is a substation in Calabar Province, in the heart of the palm belt.

Much of the Institute's expenditures to date have been for capital improvements such as housing, laboratories and ancillary services. Normal running costs will be met from an expendable endowment fund to which the Nigeria Oil Palm Produce Marketing Board has contributed 82%, the Sierra Leone Produce Marketing Board 12% and the Gold Coast Agricultural Products Marketing Board 6%, for the period up to 1967. The Institute is short of staff and we recommend active recruitment of qualified staff for both demonstration work and long-term research. The Institute should be the center for fundamental research and, in collaboration with regional departments of agriculture and co-operatives, it should test the applicability of the results of research under conditions of commercial production in the various production zones.

### *Short-Term Projects*

The need for improved harvesting and processing and the thinning of over-dense stands has already been referred to. Improved varietal material is available and the techniques of seed germination, maintenance of nursery stocks and successful transplanting to the field have been worked out. More attention should be given, however, to improved nutrition of new plantings and to the interplanting of soil-building crops that will furnish food and provide ground cover to avoid erosion. With this emphasis, the mission recommends an active expansion of replanting with high-yielding varieties.

*Longer-Term Research*

In the main oil palm belt the health, vigor and output of the oil palm stands are governed by both soil fertility and moisture supply. The root system has been found to extend 70 feet or more below the surface in the Benin sands; this provides abundant reserves of moisture in the dry season, as well as leached nitrates, sulphates and molybdates. Exceptionally dry conditions from December to March with low rainfall in April and excessive cloudiness can prejudice succeeding yields. Long-term research is needed to determine the relationship between oil production and seasonal climatic changes.

Knowledge regarding the nutritional needs of the oil palm is incomplete, and detailed investigation should be made of these requirements.

**B COCOA***Development of Production*

Cocoa is second only to oil palm produce in its contribution to Nigeria's export receipts. Like groundnuts, it was introduced originally from Brazil, but whereas groundnuts have become adjusted over several centuries of annual propagation and natural selection, there have been only a few generations of cocoa in the 60 or 70 years during which it has been grown in the Western Region. It is an extraordinary achievement of Nigerian cocoa farmers to have made the country a major world supplier in so short a time, especially as little technical guidance was available until production approached current levels.

Cocoa was introduced before 1890 and commercial plantings soon developed in the vicinity of Ibadan. Nigeria's first shipment of cocoa was 21 tons in 1895; exports were 205 tons in 1900, 9,260 tons in 1915, and rose steeply thereafter, reaching 103,000 tons in 1937. After a sharp drop during the war years, exports have fluctuated around the 100,000-ton level throughout the postwar period. The quick recovery of cocoa plantings after wartime neglect shows that better cultural management of existing trees can overcome or forestall serious decline in production of aging trees, until such time as recent and projected plantings can come into bearing.

The bulk of the cocoa of Nigeria is grown in a fairly limited area around Ibadan. The Western Region has accounted for 95% of total

output and about 3% has come from the Southern Cameroons. There are limited possibilities for further expansion into the Northern Region and new plantings can be made in the Southern Cameroons and the Eastern Region as suitable soil is found.

### *Quality and Price*

After being cut from the tree, the pods are left in covered heaps for some days, occasionally being turned, and are then cut or broken; the beans are extracted by hand. After a period of fermentation they are dried, graded and roasted. Fermentation is an important factor in the processing of cocoa-beans. During the war years under-fermentation was common, with a resulting deterioration in quality. In 1947 the Cocoa Marketing Board established four grades of cocoa with marked price differentials. In response to these incentives the proportion of top-grade cocoa produced rose from 23% in 1947 to 95% in 1951. The purchase of grades III and IV was discontinued in 1950.

Since the beginning of the 1951-52 cocoa season the purchase price paid by the Marketing Board has been £ 170 per ton. Before that it varied between £ 62 and £ 120. In most years selling prices were much higher, resulting in large profits to the Marketing Board. The present purchase price of £ 170 is also low, relative to world market prices.<sup>5</sup>

### *Market and Price Prospects*

World production of raw cocoa averaged 130,000 tons per year in 1901-05, 493,000 tons in 1926-30 and 702,000 tons in 1945-53; in the last few years, it has remained more or less stable. About 90% of production enters world trade. Over the period 1941-53, Nigeria was third in world production, supplying 14.8% of the total, compared with 34.2% from the Gold Coast and 18.2% from Brazil.

The United States, the United Kingdom, Germany, the Netherlands and France together account for about 80% of total cocoa imports; economic conditions in these countries consequently have a marked effect on cocoa prices. Before the war it was customary for importing countries to hold about a year's supply. While this should have had a stabilizing influence on prices, there were in fact great annual fluctua-

<sup>5</sup> See Chapter 4, p. 88.

tions, averaging 21% on the falls and 28% on the rises between 1922 and 1939. Since the war, when stocks in importing countries have been at a minimum, price fluctuations have been even more severe; the fall between 1948 and 1949 was 46% and the rise between the first half of 1953 and the first half of 1954 was 81%. These fluctuations were largely due to speculation engendered by the technical difficulty of estimating forward cocoa crops and the known wide variations in the size of crops from season to season.

The future course of world cocoa prices will depend on a number of factors that cannot be assessed with any degree of certainty. Age of trees, rate of new plantings and incidence of disease will affect future world supplies. Demand will depend primarily on changes in per capita income in the five major importing countries. But technological changes in the manufacture of confectionery and changes in consumer preference, brought about to some extent by the recent high cocoa prices, may adversely affect the long-run demand for cocoa.

Assuming that world economic and political conditions do not deteriorate seriously, world prices for cocoa can be expected to remain at relatively high levels for the next five years. However, very marked swings in prices are to be expected. A new "normal" level for cocoa might be put around 30 cents per lb. c.i.f. New York, with prices tending to rise suddenly from and to fall back to that level. Cocoa quotations averaged 32 cents per lb. over the past five years but actual sale prices were probably slightly lower.

Prices for Nigerian cocoa can be expected to follow world prices very closely. Fluctuations in the Nigerian crop, representing one-seventh of world production, will have only a minor effect on world prices.

### *Research and Improvement*

Although the demand and price prospects for Nigerian cocoa are good for the immediate future, it is important to safeguard the industry through research, rehabilitation and continuous improvement of quality. The Cocoa Marketing Board has allocated funds for West African cocoa research and has financed an economic survey of cocoa-producing areas. It has also made a further endowment of £ 1 million in

1950 for expansion of the faculty of agriculture at University College, Ibadan.

Establishment of the West African Cocoa Research Institute (WACRI) at Tafo, Gold Coast, in 1944 marked the beginning of well-organized and large-scale research on the cocoa production of West Africa. A cocoa survey was started in both the Gold Coast and Nigeria, so far directed primarily to disease and insect pest control.

#### *Maintenance and Extension of Plantings*

There are an estimated 560,000 acres of cocoa in the Western Region. The rate of planting steadily rose to a maximum in 1926-31, when perhaps 25,000-35,000 acres were planted per year. Since 1934-36 yearly plantings have tended steadily to decline. Scarcity of accessible new land, wartime conditions, increasing recognition of insect and disease problems and a growing appreciation of the need for approved conditions of soil, husbandry and sanitation have discouraged extensive replanting pending the outcome of current surveys.

In Nigeria, trees attain peak production between 10 and 15 years of age generally, although under exceptionally favorable conditions it may be reached at age 20-22. In 1953 it was estimated that approximately half the trees were more than 25 years old and that considerably more than 70% were 15 or more years of age; the bulk are thus past peak production under existing management conditions. A high percentage of the newer plantings may have limited production capacity owing to the difficulty of finding suitable soils.

While these circumstances may result in a considerable decline in production over the next 5 to 10 years, such a downward trend is by no means inevitable. Fairly good returns can be sustained up to 35 years or longer under good maintenance with proper disease control. The mission recommends intensification of the advisory and educational work of the Western Regional Department of Agriculture on improved cocoa management.

About 20,000 acres of new plantings should be made each year under favorable conditions of soil management. There is urgent need for improved planting material, combining adaptability to Nigerian

conditions with assured high quality. A competent examination and assessment of soils is essential, however, before planting is extended.

### *Cocoa Diseases*

Cocoa diseases include swollen shoot, a complex of viruses transmitted by mealy bugs; black pod disease, a fungus; and damage through toxicity caused by capsid insects. Swollen shoot has had most attention and publicity, but the other two conditions have produced more serious loss.

The preliminary cocoa farm survey, begun in 1944, found swollen shoot to be fairly widespread and to affect about 10% of the trees. Failure of an enforced cutting-out program, started in 1946, led to sealing-off in 1950. A determined attempt has been made to close off the area of mass infection, 479,000 acres, and to protect uninfected areas by a "cordon sanitaire." The cocoa farmer is given every possible assistance to control the spread of the disease by cutting-out. Where it is inadvisable to replant with cocoa, alternative crops such as kola, citrus and oil palm have been recommended. Average annual production from the area of mass infection has been estimated at 11,000 tons and loss of production due to the virus at more than 1,000 tons.

Black pod disease (*Phytophthora palmivora*), a fungus which attacks pods, pod stalks and eventually the trunk, has been known in the Cameroons since 1905; it is considered to account for 15% average annual loss of Nigeria's total crop, about 15,000 tons. Where it is present, a minimum loss of 50% is usual and damage frequently exceeds 70%. There appears to be a correlation between infestation and wet conditions in July and August but neglect has also been a major factor.

A proven method of control by spraying with a solution of copper sulphate and calcium carbide has been extended from the experimental to the pilot phase on 24,000 acres in Ondo Province. However, at present the cost of this method makes its use profitable only where yield capacity is high and loss from disease substantial.

Capsid insects (*Sahlbergella singularis*, *Distantiella theobroma*), which attack young plants especially, can be controlled by painting DDT emulsion on the stems. Treatment of mature trees is more difficult but could become practicable with spraying equipment. Where

capsids are present, effective treatment should improve yields by at least 30%.

### *Steps to Be Taken*

To meet the problems outlined in this section, several things must be done:

(a) Application of what is known about disease control, field management and cocoa fermentation, through intensified demonstration work carried out by the departments of agriculture, with the assistance of the co-operative societies.

(b) Continuation of field surveys, especially soil surveys, to find new areas for cocoa planting. Such surveys should be carried out by the regional departments of agriculture under the guidance of the agricultural research institute.

(c) Encouragement of new plantings following surveys, financed perhaps by the development corporations or the Co-operative Bank.<sup>6</sup> Financing should be confined to plantings on soils previously surveyed and should be conditional on adoption of officially approved planting and cultural methods.

(d) Development of cocoa plantations, preferably undertaken by the development corporations<sup>7</sup> in partnership with the co-operatives, and designed to foster settlement by approved farmers.

(e) Intensified research on production under Nigerian conditions; to this end a sub-unit of WACRI should be set up in the Western Region, with financial support of the regional government if necessary. It should be independent of, but work in close collaboration with, the agricultural research institute and the regional department of agriculture.

(f) Prompt application of substantiated research findings through the regional departments of agriculture.

The responsibility for these measures rests mainly with the regional governments, especially that of the Western Region.

<sup>6</sup> See Technical Reports Nos. 5 and 9.

<sup>7</sup> See Technical Report No. 5.

## C GROUNDNUTS AND BENNISEED

Groundnuts and benniseed are grown for edible oil principally in the Northern Region. The former originated in the Andean region of South America and has been cultivated in Nigeria for about four centuries. Benniseed, cultivated extensively in India and Ceylon, is considered native to tropical Africa.

### *Groundnut Production*

Groundnuts are third in importance among Nigeria's exports. They are grown on over one million acres primarily in Kano and Katsina Provinces (see Map 2 facing p. 193). A nitrogen-fixing legume, the crop is not dependent on soil nitrogen. The shelled grain has a high protein content (26% on the average) and contains 43% oil.

The 1950-51 sample census of agriculture indicated a total production of 299,000 tons in Nigeria and the Cameroons, but the 1950 season was affected by drought conditions. On the basis of the samples taken, the Northern Region produced 287,000 tons from 1.036 million acres.

Production is now about 35% above the prewar level after a decline during the period 1939-45. There are, however, marked year-to-year fluctuations in output. Purchases by the Groundnut Marketing Board, which averaged 303,000 over the last five years, ranged from 143,000 tons in 1950-51 to 431,000 tons in 1952-53. Domestic consumption is estimated to amount to 100,000 to 150,000 tons, tending to rise in years of poor crops.

The average selling price c.i.f. European ports ranged from £ 53 per ton in 1950 to £ 91.10.0 in 1952, dropping to £ 79.10.0 in 1953, while the basic producer price paid by the Board was £ 21.4.0 in 1950 and 1951 and £ 36 in 1952 and 1953.

### *Exports and the Export Market for Groundnuts*

Exports in 1934-38 were on the average some 230,000 tons a year; after a decline in the early years of the war, they recovered rapidly, and now exceed the prewar level by more than one-third. Oil exports began in 1949 following the introduction of commercial oil extraction

at Kano and have risen rapidly; the 19,000 tons of oil exported in 1953 correspond to about 50,000 tons of groundnuts. Exports of groundnuts during 1951-52 and 1952-53 have been very much less than the quantities purchased because of transport difficulties (see Technical Report No. 17).

Before the war, Nigeria accounted for 29% of African exports of groundnuts and 12% of world exports; it now contributes 50% of African exports and (because India is no longer a principal exporter) 30% of world exports. Its position as the world's largest exporter is not likely to be challenged in the foreseeable future.

Groundnuts are preferred over other oil seeds, nuts and kernels as a source of edible oil but current price relationships do not completely reflect this preference. The price outlook is closely related to the demand and supply position of all oils and fats and in view of the prospect of a slight decline in prices of these commodities over the long term,<sup>8</sup> it seems reasonable to expect that in the next few years the price of groundnuts will recede from its 1953 average of £ 79.10.0 per ton, c.i.f., to perhaps £ 60. If the Marketing Board is neither to make a "profit" nor absorb a "loss," this would require a reduction in the producer purchase price from £ 36 to £ 27.

The price relationship between groundnuts and groundnut oil may come to favor the latter, since the prices determined by the Joint Price Committee in London, which sets quasi-market prices for oils and fats every week, seem to have reflected a preference for groundnuts. There has been a keen demand for the smaller supplies of oil-bearing materials, for the United Kingdom mills have been working at about two-thirds of effective capacity. The price of groundnuts, which before the war was about 45% of the price of groundnut oil, is now about 54% of the price of oil. Since the Committee price for groundnuts seems to be in line with other groundnut prices, its price for oil appears low. Imports of groundnut oil into the United Kingdom have been relatively small until recently, but are likely to rise. It will become more important to ensure a correct price relationship between nuts and oil if Nigerian exports of oil increase.

<sup>8</sup> See pp. 207-208.

*Place of Groundnuts in Nigerian Agriculture*

A principal contribution of the groundnut to permanent agricultural welfare lies in its capacity as a legume to combine inert nitrogen from the air with hydrogen to form ammonia and subsequently plant protein. Emphasis on the oil production capacity of this crop has tended to obscure its importance as a basic, protein-rich food and perhaps under certain conditions as a soil-improving crop, at least as far as nitrogen is concerned.

*Factors of Climate and Soil*

The great fluctuations from year to year, both in the acreage planted to groundnuts and in the volume of production, are due to the variable rainfall in the North. Lack of effective rainfall in May or early June greatly prejudices the success of the subsequent crop; later plantings, especially under wet conditions and in soils of heavier texture than typical sandy groundnut soils, increase susceptibility to rosette virus.

We agree with the decision to conduct soil surveys of existing and possible new areas of production, along the lines already followed in the cocoa soil survey, but believe that special attention should be given to fertilizer needs.

At all Nigerian centers so far investigated, groundnuts have responded to superphosphate, containing both monocalcic phosphate and calcium sulphate.

Experiments with superphosphate at various Northern points produced increases in yields ranging from 30% to 50%. The fertilizer may be applied either in the production year or to a preceding crop of guinea corn. In an experiment conducted at Kano, the response to superphosphate was on the average equivalent to an increase of 200 lbs. to 300 lbs. of shelled groundnuts per acre, with a value, at a basic producer price of £ 36 per ton, from £ 3.4.0 to £ 4.16.0 per acre. For an expenditure of 10/- per acre—the cost at the time of the mission's visit of an application of 50 lbs. of superphosphate in the Kano district—the initial returns would be about £ 2 to £ 4 per acre with further increases in the two succeeding years at no additional cost.

Moreover, not only groundnut production but also the yields of associated crops grown in rotation, such as guinea corn, millet and cassava, are increased by the use of fertilizer; pasture and forage crops grown as leys in rotation with groundnuts are also improved. There is evident scope for a campaign by the Northern Regional Department of Agriculture to extend the use of superphosphate both for groundnuts and associated crops. The mission recommends that such a campaign be started as soon as possible and be pursued as vigorously as additional staff will permit.

The mission is aware of the difficulties and resistance which the introduction of phosphate fertilizer has encountered in the past. But we believe that they can be overcome by intensified extension work and the use of demonstration plots in the villages. We also think that the native authorities themselves should have a financial stake in the fertilizer program; we therefore recommend that initially at least part of the cost of the fertilizer be borne by the native treasuries and that funds be allocated for this purpose in the estimates of native authorities.

The groundnut crop will benefit by closer association with rotational cropping systems, instead of being grown on the same land year after year. There should be research on further varietal improvement and experiment with mechanization of planting, harvesting and decortication. The mission also suggests that there is scope for greater local oil extraction and local use of the protein-rich residue as human food and for supplementary animal feeding.

#### *Storage of Groundnuts*

Groundnuts are decorticated by the producers and stored in shelled form. Frequently a high percentage of nuts is broken in the process. Storage in the shell reduces insect damage and keeps the F.F.A. content low, but the extra cost of additional bags and present method of mechanical decortication before shipment makes it uneconomic.

Storage in the open air, in pyramids covered with tarpaulins, is preferred to warehouse storage. The better ventilation and more violent diurnal changes of temperature are considered to be less favorable to insect multiplication; damage to the bottom layer of the

stack by absorption of moisture from the ground is outweighed by other advantages.

Research on problems of groundnut storage is being undertaken by the West African Stored Products Research Unit (see Technical Report No. 9).

The principal insect pests are the flour beetle (*Tribolium castaneum*), the primary pest of groundnuts, which also affects guinea corn, millet and capsicums; the Khapra beetle (*Trogoderma granarium*), which is active at high temperatures and develops particularly in the center of the stack; the West African cocoa moth (*Ephestia cautella*), the chief cocoa pest, which also affects guinea corn and millet; and the groundnut bruchid (*Caryedon fuscus*), which affects groundnuts stored in the shell for seed.

The flour beetle and West African cocoa moth have been effectively controlled by means of contact poisons such as DDT applied over the outsides of the uncovered stacks. The Khapra beetle can be eradicated only by fumigation. A wide range of fumigants is now available and future research should determine those most economical to apply.

#### *Improvement of Groundnut Production*

Improvement should take the form of increased stability of annual production through wider use of superphosphate, rotational and mixed farming, increased local extraction of groundnut oil and better transport facilities. The work of the West African Stored Products Research Unit should be expanded with the support of the federal government. We estimate that the combined effect of these measures will be an annual increase of 5% in the volume of nut and oil exports over the period 1955-60, aside from a considerable increase in local consumption.

#### *Benniseed*

Benniseed (*Sesamum indicum*), known elsewhere as sesame and gingelly, appears in both a wild and a cultivated state. The local types are well adapted, especially to the Middle Belt, but are relatively inferior to those grown in other countries. The seed's oil content aver-

ages 51% and its protein content 18%. The oil, of high quality, is used principally for margarines and cooking and as a substitute for olive oil; it has long served as a food in Nigeria.

On the whole, the crop is easy to grow. It is of value as an alternative oil crop for the Northern Region, especially in the Middle Belt, but it requires a higher level of fertility than that of most soils on which it is currently grown and is susceptible to insect attack. Yields per acre are considerably lower than those in North, Central and South America, the Sudan, Pakistan and Europe, but higher than those in India and Burma.

#### *Exports of Benniseed*

Exports of benniseed have fluctuated considerably. They rose from 3,000 tons in 1927 to a peak of 18,000 tons in 1934-39. In 1953, 12,250 tons valued at £ 797,029 were exported.

The mission sees no immediate prospect for greatly increased exports; export levels over the next five years may increase by 5% per year, rising perhaps to 18,000 tons. Nevertheless, in view of its domestic importance, research should be directed toward finding means to improve varieties, establish their place in permanent farming systems, and determine the most productive fertilizer treatment, crop rotations, measures for insect control and methods of harvest that will minimize loss by shattering. In time, the development of local facilities for oil processing, as for groundnuts, may help to assure stability of the crop.

#### D COTTON

Cotton is cultivated by peasant farmers, but unlike the other export crops it is the product of deliberate scientific selection following numerous introductions and trials of types; seed distribution is controlled. The improvement of cotton furnishes a good example of varietal improvement for other Nigerian crops.

Asian cotton has long existed as a perennial in Nigeria but has no commercial value. American varieties were introduced shortly after discovery of the New World; types deriving therefrom are still cultivated, but not for export. The present-day cotton industry of Nigeria

owes its origin both to the British Cotton Growing Association, which sought to develop production in British Africa and the West Indies from 1902 onward, and to the Nigerian Department of Agriculture. The Association deserves great credit for its outstanding pioneering work.

Cotton requires loam to clay-loam soils, deep and of high fertility, a liberal rainfall and long periods of bright sunshine. Only a restricted area in Nigeria offers this combination. Known as the black soil region, it occurs largely in Zaria, Katsina and Sokoto Provinces, stretching from the vicinity of Gusau to Zaria, but extends also north-west in Sokoto Province and to the east in Bauchi Province. The cotton in the North is largely Nigerian Allen (*Gossypium hirsutum*), developed from North American Allen. An improved selection, "Samaru 26C," is now extensively grown. To the south, an earlier introduction from Peru, known in Nigeria as "Ishan" (*G. barbadense*), is grown and used in local handicraft manufacture; it is not suitable for modern spinning and only a small amount is exported. The two types are not separated in the distribution of cotton production shown on Map 2 facing p. 193. Samaru 26C is characterized by an unusually high ginning percentage for cotton of this type; it runs 33-35% in some gins. A relatively inferior type of American upland (*G. hirsutum* var. *punctatum*) occurs in peripheral dry areas of the North.

#### *Production and Local Consumption*

According to the national income estimates, total production of seed cotton<sup>9</sup> in 1952-53 was some 84,000 tons, equivalent to 26,000 tons of lint cotton.<sup>10</sup> During 1953 the Cotton Marketing Board purchased about 50,000 tons of seed cotton yielding 17,700 tons of lint cotton. This suggests that in 1952-53 about 34,000 tons of seed cotton remained in Nigeria or moved to French territory.

The producer price of seed cotton has been 6d. per pound for the

<sup>9</sup> Seed cotton, or cotton plus seeds, contains about 33% of lint cotton in the case of improved varieties, and below 30% lint cotton in local short staple varieties. A bale of Nigerian cotton lint weighs 400 lbs.

<sup>10</sup> This estimate is believed to be reasonably accurate and more reliable than the conclusion of the sample census of agriculture for 1950-51, that production of seed cotton amounted to 136,000 tons.

last three years for Nigerian Allen top grade. Quality of the cotton purchased has varied but on the whole the percentage of higher grade cotton is steadily tending to increase.

### *Ginneries*

Thirteen ginneries have been established by the British Cotton Growing Association, of which 10 were operating at the time of the mission's visit. The total ginning capacity is 146,000 bales per year; 20,000 bales capacity will be added during 1954. The Association owns and operates all ginneries and acts as the ginning agent of the Cotton Marketing Board.

In time, there may be considerable possibilities for industrial use of cotton seed to produce meal, cake and oil. About 400 tons are now fed to cattle. Cotton seed for sowing is given free to the farmers and transported at the expense of the Association.

### *Demand Prospects*

An increase of 50% over current production would be required to meet local textile needs. This alone would justify substantial expansion of cotton output. On the other hand, development of an efficient textile industry takes time and it is not clear how quickly it should be built up. The prospective overseas demand is immediately relevant, however.

It can be expected that even a substantially expanded production will find a ready market in the short term, although the more distant outlook is less assured. During the next five years, no very significant increase in world production outside the United States is foreseen. World consumption in recent years has been fairly steady at around 33 million bales, while synthetic fiber production capacity, now equivalent to 13 million bales of cotton, continues to increase. This competition will tend to keep cotton prices down. Since United States stocks of cotton are likely to be maintained or increased under its present production policy, there will be growing pressure to increase exports. Some fall in prices below the United States support level (or the equivalent in special deals for export) may be expected. On the basis of these factors, assuming no marked deterioration in the world eco-

conomic situation, the price of cotton as represented by United States Middling 15/16 might be expected to fall to between 25 cents and 30 cents per lb. spot United States during the next five years. A conservatively estimated price for Nigerian cotton would be the equivalent of 25 cents per lb. spot United States, corresponding to a Nigerian producer price of 5-5½d. per lb. for seed cotton, compared to the current price of 6d.

#### *Extension of Cotton Production*

The knowledge and improved varieties now available should permit doubling of cotton output in the next 10 years in existing areas of production by effective extension agronomy. The mission therefore suggests that the advisory services of the Northern Regional Department of Agriculture, in collaboration with the Empire Cotton Growing Corporation, foster an active extension program designed to improve acreage yields of existing farms and to open up new lands for plantings on the basis of soil surveys.

Cotton is now a proven crop and can be grown two years in succession. It tolerates the soils with a high carbon-nitrogen ratio common in uncultivated areas of the North, soils that are less suitable for grain crops. It is important, however, that the land be prepared efficiently and that seeding be accurately timed; cotton planted in early July yields twice as much as that planted three weeks later. Application of artificial fertilizers will become increasingly important; it appears certain that superphosphate and possibly some nitrogenous fertilizer will be required for the most efficient cotton production. Mechanization can be of considerable value in list-plowing, preparation for seeding, seeding and manuring, weed and grass control and control of insects. We therefore recommend experiments with mechanized equipment, although mechanized production may not be practicable for some time.

The chief limitations on production are soil fertility, decreasing rainfall to the north, and increasing insect attack towards the south. The cotton strainer (*Dysdercus supersticiosus*) is a principal pest from north to south, and four other types of bollworm, including the pink (*Platyedra gossypiella*), the spiny and American bollworms and the false codlin moth could also do serious damage.

## II OTHER AGRICULTURAL EXPORTS

## A RUBBER

Rubber exports have become increasingly important in recent years. Climatic conditions in the southern forest areas are excellently suited to rubber production. There are at least 10 indigenous rubber-producing plants. *Funtumia elastica*, the Lagos silk rubber tree, and *F. Africana* have both been extensively tapped. Several species of *Landolphia* occur as vines, with stems often four to five inches in diameter. Species of *Cardopinus* and *Clitandra* have also been tapped commercially. Moreover, the facility with which standard para rubber (*Hevea brasiliensis*) has been grown, and its yield in the Western and Eastern Regions and in the Cameroons, indicate potentialities for increased rubber production.

Since its introduction about 50 years ago, Hevea rubber has been grown by small landholders in the dense, irregularly spaced stands common in the eastern part of the Western Region, and in plantations in the Eastern Region and the Cameroons. The United Africa Company's rubber estates at Ikot Mbo, near Calabar, and near Sapele exemplify the efficiency attainable in both field culture and factory operation. Improvement of budding material and adoption of high field and factory standards by small landholders through co-operatives could assure a greatly expanded rubber export industry.

*Exports*

Exports from Nigeria and the Cameroons have increased from an annual average of some 2,300 tons in 1934-38 to over 21,000 tons in 1953.

*Smallholder and Plantation Production*

Between 1944 and 1952 the amount of rubber produced by smallholders and graded by the Department of Marketing and Exports ranged from 3,400 tons in 1947 to a peak of 15,600 tons in 1951. Plantation rubber, which is not graded, varied from 2,800 tons in 1948 to 5,900 tons in 1951. The peak output in 1951 corresponded

to a period of maximum world prices. Both smallholder and plantation production fell subsequently but recovered in 1953, when exports reached a new record volume though at prices far below those which prevailed in 1951.

### *Expansion of Production*

A mission of the London Rubber Trade Association, which visited Nigeria in the latter part of 1953, concluded that a substantial expansion of rubber production was advisable despite the uncertainty of world demand for natural rubber resulting from the growing competition of the synthetic product.

We agree with this conclusion. Nigeria's rubber output, even if it expands many times in the next few years, will represent only a minor addition to the total world production of over 2.5 million tons of natural and synthetic rubber, and Nigeria clearly has the potential to become an efficient low-cost producer.

Significant shortcomings in present methods of rubber production can be overcome on the basis of knowledge and materials already available. New plantings should be organized through co-operatives, with proper technical guidance.

Provision should be made for immediate collection by truck, organized tapping and appropriate factory accommodation.

Construction of two factories by the Western Regional Production Development Board provides a means for improving the quality of rubber from smallholders' latex and assuring fair prices to the producer. One, at Ikpobo, is to be supplied entirely by nearby smallholders.<sup>11</sup> The other is planned in conjunction with a plantation of 4,000 acres at Usonigbe to yield five million pounds of rubber per year. An area of 1,000 acres was planted in 1953. The latter project will combine commercial production with practical research on budding and on the most efficient spacing of trees, permitting intercropping with food crops such as cowpeas and cassava, and, when the trees are mature, with legume-grass forage.

<sup>11</sup> See Technical Report No. 13, p. 390, for comment on the commercial possibilities of this undertaking.

*Cameroons*

While much of the Nigerian rubber has been of the soft type, though with high modulus and good ageing properties, Cameroons rubber is said to be of a good quality hard type, with good wearing properties; it is suitable for tires.

The Cameroons Development Corporation is currently producing rubber on 17,000 acres with excellent results. Its current rate of planting is about 1,500 acres per year. It is estimated that a minimum of 25,000 acres of the lands leased to the Corporation could be effectively developed for rubber production.

We think considerable possibilities exist for additional rubber production outside the Corporation's plantations; they should be investigated through a survey of soil resources, taking into account food crop requirements, forest needs and the possibility of alternative export crops.

*Eastern Region*

Possibilities for increasing rubber development exist also in the Eastern Region, especially east of the Cross River in Calabar Province, but much of this area is occupied by forest reserves and consideration must be given to competing food and forest requirements.

*Organization Requirements*

The mission suggests that the production development recommendations of the London Rubber Trade Association be acted upon without delay. The first requirement for efficient operation of plantations in all regions is the training of tappers, tank collectors and processors. Trainees of the Western Regional Production Development Board have been given specialized training in nursery procedures, budding and grafting, plantation management, tapping and rubber processing. It is recommended that such training be intensified in the Western and Eastern Regions and the Southern Cameroons. For the time being, this type of training and experience can probably be best obtained in Nigeria, under the conditions that will govern future local production. Later, it may be desirable to select

a limited number of promising young Nigerians to take additional training at the Rubber Research Institute in Malaya, with a view particularly to providing guidance to smallholders through co-operatives.

The mission recommends appointment of several senior rubber production advisers, responsible to the directors of agriculture for the Western and Eastern Regions and the Southern Cameroons respectively. Their qualifications should include advanced technical training and extensive practical experience in rubber production.

The mission further recommends as a matter of high priority that, in order to overcome the reputation of Nigerian rubber for extreme variations of quality with a high proportion of inferior grade, produce inspection be more rigidly enforced and grades be adopted in strict conformity with accepted world standards. To facilitate the change from present methods of purchase and trade, a series of special grades may be required for a time, in line with those used at Singapore.

## B BANANAS

### *Sources of Production*

Bananas for export are grown in the Southern Cameroons. The variety is Gros Michel. Although the climate in the south of Nigeria proper is suitable on the whole, an entirely favorable combination of soil and atmospheric conditions is rare. The plantain banana (*Musa paradisiaca*) is grown extensively in the South, together with cocoyams, and banana trees are used increasingly to provide early shade in cocoa re-planting.

Except for a small quantity produced by the Bakweri Co-operative Union of Farmers, Ltd. which has over 100 members, banana exports have come entirely from plantations leased to the Cameroons Development Corporation and Messrs. Elders and Fyffes, a subsidiary of the United Fruit Company. These covered 8,400 and 5,000 acres respectively in 1946. Expansion has been pushed rapidly and plantings by the Cameroons Development Corporation alone have increased to approximately 25,000 acres. Under arrangement with the British Ministry of Food, shipping and marketing facilities were provided and a target for the Cameroons of four million stems was attained in 1948.

From 1951 onward the target was eight million stems per annum but, largely because of wind damage and disease, only 75% of this amount was produced and a little over 70% shipped in 1952. There was a marked gain in average weight per stem, however.

### *World Demand*

World exports of bananas now probably exceed the prewar level of some 2.5 million tons. During the war banana exports and production fell sharply. A supply shortage after the war, as trade was resumed, caused a substantial rise in prices to some 127% above the prewar level in 1952.

Central America supplies almost half, South America one-third and Africa (including the Canary Islands) one-sixth of world exports. The Southern Cameroons contribute 3% of the world total. Europe accounted for 30% of world imports before the war; by 1952 European imports exceeded the prewar level. Increased European, and particularly U.K., consumption should maintain a strong demand for the Cameroons' exports.

### *Soil Conditions and Fertility*

A 1949-50 soil survey by the United Fruit Company, on behalf of the Cameroons Development Corporation, rated 28,900 out of 82,800 acres surveyed as first-class banana land, a further 9,900 acres as second-class and the remaining 44,000 acres as unsuitable for banana cultivation from the standpoint of soil texture. The basis of selection was primarily physical, however, and did not take adequate account of nutritional properties; on many of the sites surveyed natural leaching, past cropping and to some extent erosion have impoverished soils. Moreover, hazards of exposure to wind and occasional sudden drops of temperature were not considered. The soil fertility problem in particular requires further investigation. The mission believes that it is particularly important to apply fertilizer in the early stages of development. But since no investigations have been made in the Cameroons of the nutrients required by the soils in which bananas are grown, it is uncertain that sulphate of ammonia, which has been extensively supplied, meets the specific requirements of the Cameroons.

The mission hesitates to suggest a reduction of the fertilizer program but stresses the need for a continuous program of field tests to determine the amounts of sulphate of ammonia required on different soil types according to the age of the banana plant, and the amounts of additional nutrients such as phosphorus, copper, molybdenum, magnesium, zinc and potassium that may be required. It is most important that fertilizer tests be conducted during the various seasons and over a period of years, so that the effect of seasonal changes on nutritional needs may be observed. These tests should be conducted by co-operative arrangement between the Southern Cameroons department of agriculture and the Corporation.

#### *Wind Damage and Disease*

When the Corporation's activity began in 1947 it was recognized that storms of unpredictable incidence and severity were likely to occur at the start of the wet season, so that the Corporation would have to budget for a loss of between 10% and 20% of its annual production. The mission believes, however, that the damage could be reduced by establishing forest plantations at strategic points, as wind-breaks.

The two principal diseases of the export banana are Panama disease (*Fusarium oxysporum* var. *cubense*) and leaf spot (*Cercospora musae*). The latter has not been troublesome in the Cameroons but the former has spread rapidly. Cigar end disease (*Stechybidium theobromum*) has not previously been regarded as a particularly serious cause of loss in exporting countries but in the past two years crops in some of the best plantations in the Southern Cameroons suffered severe damage from this disease. The downward movement of cold air currents from Cameroon Mountain at critical times may be partly responsible.

#### *Research on Bananas*

The mission's recommendations for the proposed agricultural research institute at Ibadan and for the establishment of a Cameroons department of agriculture provide means for attacking the research problems of banana production. Research in four main fields is needed:

- (a) determination of nutritional requirements of the Cameroons banana soils and of practical ways to overcome the deficiencies;
- (b) tests of disease control by spraying;
- (c) varietal improvement; and
- (d) tests of forest plantations as shelter belts.

The work of varietal improvement should include the breeding of disease-resistant types of good marketable quality. Tests in comparison with standard Gros Michel should be made with Cavendish (*Musa cavendishii*) and new hybrid material as it becomes available from the Imperial College of Tropical Agriculture, Trinidad. The tests of forest plantations should be carried out by the Corporation in consultation with the Institute of Forest Research, Ibadan, and the Cameroons Forestry Department. No time should be lost, however, in establishing plantations of trees already known to grow rapidly in the Southern Cameroons.

The mission has already stressed the importance of soil survey generally; we recommend that surveys be undertaken to locate additional good banana-growing areas.

#### C HIDES AND SKINS

Hides and skins are among the 10 most important Nigerian export commodities, accounting in 1953 for receipts of £ 3.4 million. The record exports of 1951 reached almost £ 8 million.

In most years goat skins make up more than half the exports. They come almost entirely from the Northern Region, largely from domestic slaughterings but partly also from animals in French territory. Cattle hides also come mostly from the Northern Region and French areas, although some are bought in meat-consuming centers in the South.

Some 95% of all goat skins and almost all hides and sheep skins are exported untanned, after a minimum of processing.

Tanning of goat skins is practised as a rural craft in the Northern Region, using a local extract from the pods of *Acacia arabica*. Tanning is not a major industry, although some expansion to cover local leather requirements is possible.<sup>12</sup>

Nigerian hides and skins enjoy a reputation for good quality in export markets. The skins of red Sokoto goats are widely used in

<sup>12</sup> See Technical Report No. 13, p. 388.

the production of "Moroccan" and other fine kid leathers. Nigerian sheep skins make good grain and suede glove leather. Careful handling on the part of export firms further assures high quality standards. The Veterinary Department has helped to spread improved methods of flaying and drying.

Exports of Nigerian origin are likely to increase in the future, in line with the expansion of the livestock industry and the growth of meat consumption. There are, however, two aspects of the trade which require attention. One is the heavy incidence of skin diseases, particularly the Kirchi disease, which adversely affects the quality of cattle hides. Investigations and tests to find the most effective remedial measures under Nigerian conditions are required. The other is the need to provide economic incentives for more efficient processing. The fact that payment of slightly higher prices for suspension-dried hides and skins has resulted in general adoption of suspension drying indicates that improvement may be expected from the introduction of quality differentials.

#### D OTHER PRODUCTS

##### *Present Production and Exports*

A large number of export products is derived from plants occurring naturally, minor crops and other sources. There has been considerable variation in the volume exported from year to year, depending on price levels and available supplies. It is not proposed to deal with these minor exports in detail; a summary of their volume and value in 1952 and 1953 is given in Table 1.

##### *Possibilities for Development*

Some of the products listed in Table 1 and others not specified in the Table offer good possibilities for improvement and development. Chief among them are copra, gum arabic, peppers, citrus fruit and cashew nuts.

Copra, from the coconut plant (*Cocos nucifera*), has frequently been of low quality. Artificial drying, if successful, would greatly enhance the prospects for this product. The coconut palm grows readily on

TABLE 1 Exports of Miscellaneous Produce

*(all figures in thousands)*

Commodity	Unit	Quantity		Value (£)	
		1952	1953	1952	1953
<i>(a) Nuts and dried fruit</i>					
Shea nuts .....	ton	15	1	497	18
Copra .....	ton	4	6	200	402
Coconuts .....	no.	520	416	8	7
Kola nuts <sup>1</sup> .....	lb.	554	487	7	7
Dried bananas .....	lb.	524	519	27	26
Other .....	lb.	1	557	0.2	17
<i>(b) Gums</i>					
Gum arabic .....	lb.	5,633	4,098	218	134
Other .....	lb.	445	374	37	57
<i>(c) Spices</i>					
Ginger .....	lb.	1,022	465	62	16
Peppers, chillies .....	lb.	413	717	37	50
Capsicums .....	lb.	9	11	0.4	0.7
Other .....	lb.	60	33	5	4
<i>(d) Fibers</i>					
Piassava .....	lb.	3,547	5,545	114	202
Kapok .....	lb.	530	575	54	36
Other fibers .....	lb.	217	4	8	0.3
<i>(e) Fresh fruit and fruit juice</i>					
Pineapples .....	lb.	17	9	0.2	0.2
Other fruits .....	lb.	175	843	2	16
Fruit juice .....	gal.	46	39	19	8
<i>(f) Other</i>					
Beeswax .....	lb.	110	98	17	14
Bones and horns .....	—	—	—	62	52
Chee (clarified butter) .....	lb.	5	52	0.3	7
Oilseeds other than benniseed and cotton seed .....	—	—	—	317	264
Grains, pulses, flour, meal <sup>2</sup> ....	—	—	—	301	446

<sup>1</sup> Estimated total production 1952-53, 120,000 tons; domestic long-distance shipments by rail and lorry, 60,000 tons.

<sup>2</sup> Including maize and palm kernel meal.

SOURCE: Nigeria Trade Summary, Lagos.

the light, sandy soils bordering the coast. Coir from its fibers could probably be used in a wide range of locally manufactured products; it has an overseas market for use in filling upholstery and mattresses. In view of the adaptability of the coconut palm to conditions in the South, the variety of products that can be obtained from it, and a reasonably certain overseas demand for some of these products, the mission believes that the development of this crop should be given early attention. We recommend that plantations be developed at first on a moderate scale by the proposed development corporations of the Eastern and Western Regions, in consultation with the proposed agricultural research institute and the departments of agriculture of the two regions.

Investigation of the possibilities for expanding the output of gum arabic and measures to improve methods of tapping and preparation should be undertaken by the Northern Regional Department of Agriculture.

Peppers include the red peppers, chillies and capsicums (*Capsicum* spp.), and the black and white pepper (*Piper nigrum*). Nigeria's exports are species of *Capsicum*. The mission believes that the departments of agriculture of the regions, in consultation with the agricultural research institute, should undertake a study of both the red pepper group and black pepper, with a view to improving the types grown, production per acre, preparation for market and quality to suit overseas demand.

Citrus grows exceptionally well in the Ibadan area and some orange trees have produced good yields up to the age of 20 to 30 years. Excellent budding material from proven stock is available at Moor Plantation; because of scab on sour orange stock in the nursery, sweet orange stock has been employed.

Since large exports of fresh fruit from Nigeria have not been considered practicable, the aim has been to produce concentrated orange juice for canning (see Technical Report No. 13, p. 379). To supply this project, a target for citrus plantings was set originally at 1,750 acres and in 1952 was revised to 3,000 acres to be planted by 1954; actual production has lagged three years behind the target figures.

The planting of some 350 acres of citrus was planned as a partnership project of the Western Regional Production Development Board

and the Asejire and Odeyika group of co-operatives but a soil survey indicated that most of the land was unsuitable. Since it is still planned to proceed with such projects the mission emphasizes the importance of prior study by the expanded technical services recommended in Technical Report No. 10.

The cashew nut tree (*Anacardium occidentale*), native to Central America and the West Indies, had been developed on 800 acres up to 1953. Expansion of this plantation and the establishment of other plantations has been planned by the Eastern Regional Production Development Board, which allocated £ 200,000 for the project. Useful production is expected in five years with maximum production in about 10 years. The cashew nut is the only economic source of natural phenol. The fruit contains 20% of kernel and 20% phenol, plus drying oil in the pericarp. In view of the overseas demand for the nut and the adaptiveness of the tree to the poorer sandy soils in the Eastern Region, the mission recommends extension of this crop after soil surveys by the Eastern development corporation in consultation with the regional department of agriculture.

#### *Other Crops*

Coffee (*Coffea arabica*) has been grown successfully in the Bamenda area of the Southern Cameroons and could well be extended in this region. First, however, the appropriateness of the varietal material now in use, the requirements of the soil and the present techniques of planting and management should be reviewed. The mission recommends that an expert on coffee production be asked to report on whether the crop is ready for immediate expansion or whether further local research is needed, and in the latter event to define the lines of such research.

Tea (*Camellia sinensis*) has been grown successfully near Buea in the Southern Cameroons. It is likely that a considerable area could be planted to tea at suitable elevations. The mission recommends that an expert on tea production be employed to make a survey and report on the areas in which tea could be developed, the varieties that should be subjected to local test, safeguards against soil erosion and methods of pruning, harvesting and preparation for producing a high quality product. If the report is favorable to development, a tea adviser should

be appointed to the department of agriculture of the Southern Cameroons, and commercial plantings should be undertaken by the Cameroons development agency when the necessary studies have been made.

Pineapples (*Ananas sativa*) and tomatoes would be valuable crops for canning. Pineapples have been grown successfully in both the Western and the Eastern Regions but initial testing is still at an early stage. Many varieties have been grown; it is essential to utilize the smooth cayenne type. Tomatoes, a source of vitamin C, could be developed on sufficiently fertile soil in all three regions.

Pawpaw or papaya (*Carica papaya*), indigenous to Central America and the West Indies, is readily grown in the southern part of Nigeria and in the Southern Cameroons, where fruit forms within 12 months from planting. The unripe fruit produces latex containing the enzyme papain which is used in medicine, beverage manufacture and meat tenderizing. There should also be a good local demand for the ripe fruit. Before developing this crop the improved American varieties should be tested in comparison with local types, and soil requirements, cultural methods and techniques of tapping and processing papain should be verified locally.

The avocado or alligator pear (*Persea gratissima*) is also suited to Nigeria and should receive early attention because of its high nutritive value. The types so far grown in Africa are inferior, on the whole, to the improved varieties now available in Central America and the United States; these should be imported and tested locally before commercial development is planned.

## TECHNICAL REPORT 8

### *DOMESTIC CROPS, LIVESTOCK AND FISHERIES*

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For many years scientific research and commercial enterprise have concentrated on export crops, while locally consumed foods have received little attention. Yet the future welfare of the country and its capacity to support an increasing population depend largely on increased production of foodstuffs for local consumption.

Food production is largely on a subsistence basis; only a small proportion of the vegetable food grown enters into trade beyond the village markets. The collection of wild vegetable produce has been important in the past, but will probably give way to a greater dependence on cultivated foods as development progresses.

#### 1 THE BASIS OF NUTRITION

##### *General Nutritional Standards*

Average food consumption in Nigeria compares favorably with that in many other underdeveloped countries although it is unsatisfactory by European or North American standards. Since only a small proportion of arable land is under cultivation, gross food shortage will not be a problem for some time to come. In some areas, however, particularly in the Eastern Region, population pressures have become serious in recent years, leading to disregard of traditional fallow methods; soils are being exhausted and yields lowered. In the North, the high variability of seasonal rainfall causes alternating periods of abundance and scarcity; this situation is aggravated in the Middle Belt by failure to employ proper storage techniques.

Comprehensive data on nutrition are not available. From production figures, however, and some studies of diets in particular areas,<sup>1</sup> a

<sup>1</sup> Studies made by Dr. B. M. Nicol, adviser on nutrition to the Inspector General of Medical Services.

reasonably accurate general picture of nutritional standards and the composition of the diet can be obtained.

### *Calories*

Average calorie intake in Nigeria is about 2,250 calories per day. In the grain-producing North it is higher; in most of the high forest areas it is well below the average.

### *Protein*

Vegetable protein is available in sufficient quantity in the North, where guinea corn, groundnuts, pulses and locust beans are part of the diet, and in urban areas. It is insufficient in the South generally, particularly in the diet of the fishermen in the area of the mangrove swamps.

The animal protein intake is generally very low because meat production is severely restricted by the prevalence of the tsetse fly. Most of the animal products are consumed in urban centers, in prosperous sections of the Western Region, in fishing districts and in tsetse-free areas where animal husbandry is concentrated. Imported dried fish is consumed principally in urban areas of the South, two-thirds by the Eastern Region. The animal protein available for the majority of the population is considerably lower than the national average. Milk is wholly absent from the diet of at least three-fourths of the population.

### *Protective Nutrients*

Calcium is deficient in all rural diets except that of fishermen. Iron may be considered generally adequate by European standards but is not sufficient to counteract the heavy infestations of malaria and intestinal parasites prevalent in Nigeria. Iodine is deficient in parts of the Middle Belt and the Plateau area where potassium carbonate is used instead of salt. The palm oil and palm wine of the forest zone are sources of Vitamin A but that vitamin is deficient in some parts of the North. Vitamin B<sub>1</sub> is generally sufficient and vitamin B<sub>2</sub> (riboflavin) deficient. Vitamin C is deficient, although partly supplied by

chillies. Vitamin D is sufficient in areas where there is not an important deficiency in calcium and where the exposed body receives enough ultraviolet rays from the sun.

In Table 1, estimates for Nigeria are compared with data on other countries. The Table indicates a per capita calorie intake similar to that of Egypt, Brazil and Southern Rhodesia, substantially below that of Europe, North America and Cuba, and significantly higher than that of the Belgian Congo and India. A Nigerian average over several years would possibly be lower than 2,250 calories; 1952-53 was a good crop year. The Table also shows the exceedingly low level of protein consumption, particularly of animal protein.

TABLE 1 Calorie and Protein Content of National Average Food Supply

Countries	Years	Number of Calories per Capita per Day	Protein per Capita per Day (grams)		
			Vegetable	Animal	Total
<i>Nigeria</i> .....	1952-53 average of recent years	2,250	45	5	50
Developed Western countries ....		3,000	45	45	90
Cuba .....	1946-49	2,740	42	26	68
Brazil .....	1946-49	2,340	38	26	64
Southern Rhodesia .....	1949	2,300	52	16	68
Egypt .....	1946-49	2,290	58	11	69
Belgian Congo .....	1946-49	1,930	37	5	42
India .....	1949-50	1,700	38	6	44

SOURCE: Nigeria: estimates of mission; Other countries: *Second World Food Survey*, United Nations Food and Agriculture Organization, Rome, 1952.

Underlying the national average are wide variations within the country in calorie and protein intake. Table 2, which summarizes the findings of the enquiries mentioned earlier shows the extent of these variations.

TABLE 2 Variation in Nutritional Standards

	Occupation	Calories	Protein in grams		
			Vegetable	Animal	Total
<i>Northern Region</i>					
Bida .....	Farmer	2,639	70	5	75
Kontagora .....	Farmer	2,431	72	1	73
Zuru .....	Farmer	2,947	87	2	89
<i>Western Region</i>					
Warri .....	Trader	3,003	34	50	84
Illu .....	Farmer	2,252	26	17	43
Soragbemi .....	Fisherman	2,191	12	68	80

*Requirements for Improvement*

Correction of the main dietary deficiencies will require increased consumption of animal protein in the villages and by the poorer urban population, increased calorie and vegetable protein intake in the forest belt, and provision of additional calcium and riboflavin for the whole population.

The solution of the problem of animal protein deficiency will require time and effort. Production of animal protein is expensive in terms of agricultural resources, since it takes seven vegetable calories to produce one animal calorie, and there is no surplus of vegetable products available for animal feed. Nevertheless the general pattern of climate and soils provides a good basis for expanding livestock production and building soil fertility at low cost. Pasture improvement and livestock husbandry can utilize these natural resources, while providing for an expansion of food crop production as a long-term consequence. Intercropping with leguminous forages and the extended use of animal manure will also do much to improve soil fertility. But Nigeria will also need to secure better animal disease control in order to take full advantage of the opportunities available for livestock production. Specific recommendations on disease control and pasture improvement are made at pp. 265-275. In other tropical countries protein deficiency has been partly met by increased supplies of fish, the cheapest form of animal protein. Recom-

mentations for the expansion of fisheries production can be found on p. 281 below.

The vegetable protein deficiency in the forest belt is believed to be due primarily to a lack of soluble nitrogen in the heavily leached soils and a relative paucity of legume grains. Soil analyses have shown that the nitrate content of the soil may be high at the beginning of the rainy season but that it soon falls acutely with the ensuing heavy rains. Here increased cultivation of legumes, which provide vegetable protein and at the same time correct the nitrogen deficiency, should be undertaken. A change from roots to grains as staple food in the forest belt would also improve the intake of vegetable protein. Rice production in the mangrove swamps, as well as maize production, could be developed in the South. Studies should be made of the comparative nutritional value of various available supplements to the basic diet of root crops in the South, such as palm oil, groundnut products, other pulses and animal protein.

In the North, apart from some overpopulated areas, the supply of both calories and vegetable protein is generally adequate in good crop years. The main problem is the periodic occurrence of droughts. Their effect can be reduced through tilling and sowing at appropriate times and through better fertilizer practices. Improved grain storage also can help to overcome both the annually recurring shortages and the acute famines of the drought years.

## II FOOD CROPS

### A ROOT CROPS

#### *Relative Importance*

Root crops represent an estimated 53% of the value of all food produced for domestic consumption. They are the basis of nutrition throughout the South. Yams and cassava are the most important, accounting for over 90% of total root crop production as against 5% for cocoyams and 2.5% for sweet potatoes. Yams (*Dioscorea rotundata*, *D. cayenensis*, etc.) grown in Nigeria are of West African

origin; cassava (*Manihot utilissima*), commonly used in the form of meal (gari), is a native of South America. According to the sample census of agriculture, 1950-51, 3 million acres under yams produced 9.3 million tons, and 2.5 million acres under cassava produced 10.6 million tons.

The root crops are essentially producers of calories. Their protein content is low: 0.9% for cassava and 2.1% for yams. These two crops have made available for human consumption 11,410 billion calories a year as compared to 8,900 billion from guinea corn and millet. But although the volume of root crop production in 1950-51 was seven times that of guinea corn and millet (19.9 million tons and 2.8 million tons respectively), the root crops produced only 182,400 tons of protein as against 215,000 tons from the grain crops.

The census data indicate that cassava produced a higher gross yield than yams from a smaller acreage; the more modest nitrogen requirements of the cassava, which is reflected in its lower protein content, chiefly accounts for this. The yam crop is generally more exacting: it requires a more liberal, extended and dependable rainfall; it has to be staked, will perish if left in the soil after harvest-time, and a comparatively high proportion of the crop has to be used for replanting. For these reasons farmers tend to prefer cassava, especially under conditions of soil depletion, despite the higher nutritive value of yams. The suitability of cassava for pig feeding will further encourage its cultivation.

### *Distribution*

Map 2, facing p. 193, shows the distribution of these and other food crops based on the 1950-51 census. The Eastern Region accounted for almost 60% of Nigeria's total output of both roots. Yams were grown in greatest quantity in Ogoja and Owerri Provinces of the Eastern Region and Benue Province of the Northern Region. Most cassava was produced in Owerri, Onitsha and Calabar Provinces of the Eastern Region.

Yields per acre tended to increase from west to east; for yams they ranged from approximately 4,000 lbs. to 10,000-11,000 lbs. per acre, and for cassava from 3,000-4,000 lbs. to 11,000-12,600 lbs. per acre. The emphasis on yam production toward the more north-

erly parts of the Eastern and Western Regions and in the drainage areas of the Benue and Niger valleys reflects higher soil fertility and coincides with heavy demand in the larger cities and towns immediately to the south. Cassava predominates on the less fertile lighter soils nearer the coast, with some production in the Kano, Bauchi and Bamenda areas.

#### *Responses of Yams to Fertilizers*

The importance of increased soil fertility for food crop production in the Eastern and Western Regions is stressed by numerous field experiments of the departments of agriculture. In one such experiment, conducted in Onitsha Province, a 50% increase in yield per acre was obtained after application of artificial fertilizers in the proportion of two parts of sulphate of ammonia to one part of superphosphate and one part of potassium chloride, at the rate of three cwts. per acre.

#### *Cocoyams*

Cocoyams (*Colocasia esculenta*), supposedly introduced from India via Northeast Africa, are confined mainly to wet areas, principally in Ogoja, Calabar and Owerri Provinces of the Eastern Region, with smaller amounts in the Western Region and the Southern Cameroons. According to the 1950-51 census, production was 965,000 tons, about two-thirds from the East. Yields per acre are low, reflecting the poverty of the soils in which the crop is grown.

#### *Sweet Potatoes*

Sweet potatoes (*Ipomaea batatas*), indigenous to South America, are intermediate between yams and cassava in nutrient value, but require friable soil of good fertility. The sugar content of the tubers and the value of the leaves and stalks for livestock feeding or for human consumption in the form of greens make them advantageous.

Total production in 1950-51 was 475,000 tons, of which 23,000 were grown in the Cameroons. The crop is cultivated most extensively in the area south of the Benue and Niger, with yields approxi-

mating 5,700 lbs. per acre; higher yields of 8,300 lbs. per acre were obtained further north where the soil is more fertile, and in Bamenda Province.

#### *Research and Extension*

Local studies should be made on both yams and cassava, with regard to varietal differences, nutritional requirements, their role in mixed farming systems, storage and possibilities for improved processing.

The short-run value of sulphate of ammonia in improving soil fertility has been demonstrated but it should be supplemented by research on permanent soil-building leguminous forage. The mission recommends that the departments of agriculture intensify current programs of fertilizer trial and demonstration with yams and cassava in localities where the crops exhibit clear symptoms of the need for soil improvement. The lack of success of the fertilizer program of the Eastern Regional Production Development Board indicates clearly the need for a vigorous educational campaign to convince producers of the advantage of fertilizers. One aspect of this campaign should be the establishment of demonstration plots with the co-operation of village authorities and co-operatives. It is also recommended that the departments of agriculture collaborate with the proposed agricultural research institute in a research program on methods of permanent soil improvement through the growth of legume forages and legume-grass herbage mixtures, combined with fertilizer application and sound crop-rotation systems.

The usual practice of leaving the crops in the ground after harvest time entails heavy loss through spoilage. The mission recommends investigation by the departments of agriculture of the most effective means of storage for both yams and cassava.

In view of the importance of root crops in the food economy of the South and Middle Belt the recommended research should have high priority in the agricultural program.

## **B GUINEA CORN, MILLET AND RELATED GRAINS**

### *Guinea Corn*

Guinea corn (*Sorghum* spp.) is currently the most important grain crop of Nigeria. According to the 1950-51 census, 1.9 million tons

were grown on 4.3 million acres in 1950, more than one-quarter in Kano Province and a further 25% in Adamawa and Bornu Provinces. Yields averaged 950 lbs. per acre but were as high as 1,300 lbs. in Sokoto Province.

Guinea corn commonly grows 10–12 feet high in northern Nigeria. The dry stems are used for fuel, basket and mat making and a variety of structural purposes, and as stakes for climbing plants such as yams, gourds and beans. Green leaves can be used as fodder for livestock. The entire crop may be cut for direct feeding, silage or hay. Guinea corn is more drought-resistant than maize, is safer to store and possesses a comparable food value. An increase in yields can be obtained by the use of improved varieties, by raising soil fertility, by more effective use of the crop in rotational mixed farming and by increased mechanization.

Work on improvement of guinea corn varieties was started at Samaru in 1951 by arrangement with ECA, following a 1949 report on agricultural problems and research needs in British Africa. It has since been interrupted because of shortage of technical staff. Improved material, including varieties with shorter straw adapted to mechanical harvesting, was brought to Nigeria from the United States. The mission recommends that breeding work on guinea corn be intensified and continued at a number of selected Northern centers.

The soil requirements of guinea corn are similar to those of maize but it is adapted to more arid conditions. Guinea corn requires a good level of soil fertility; this has long been recognized by the Hausa farmer, who places a high value on animal manure. It is probably uneconomic to apply nitrogenous fertilizer but the application of superphosphate to groundnuts not only improves groundnut yields (see p. 219) but also those of guinea corn grown in rotation with groundnuts. This appears to be the most economic method of increasing guinea corn yields.

The mission therefore recommends more extensive rotational growing of guinea corn and groundnuts, in order to derive greatest advantage from the increase in soil fertility contributed by the groundnut crop, to assist livestock maintenance and production and to gain better control of diseases and insects attacking each crop.

The mission also believes that increased mechanization would be

advantageous in land preparation, seeding and harvesting the crop—the last requiring use of shorter, more appropriate varieties. Although failures have occurred as a result of unsuitable machinery, unskilled operators and insufficient provision for maintenance, mechanization experiments should be intensified.

### *Millet*

The term “millet” refers to several relatively inferior tropical or subtropical small grains. In northern Nigeria bulrush or pearl millet (*Pennisetum typhoideum*) is grown, frequently in association with guinea corn, the earlier types maturing some two months before the guinea corn crop. The guinea corn and millet crops in Nigeria together produce more protein than the root crops and more than the combined total of maize, rice, pulses and legume kernels consumed in the country.

The estimated production of millet in 1950 was 958,000 tons, grown on 3.1 million acres. Its distribution is shown on Map 2 facing p. 193. The crop is adapted to a shorter growing season and less rainfall than guinea corn; it can withstand more drought. Yields per acre are smaller, in line with its more modest requirements.

Guinea corn and millet are frequently intersown. Dates of planting vary considerably with location and season. Millet becomes available when reserve stocks of grain from the previous harvest are low and before the guinea corn crop comes in. The earliest varieties, maturing three months after sowing, are used in the far north where there is a high risk of drought; later types are associated with more rainfall, farther south.

Our comments on improvement of guinea corn also apply to millet, but we believe research on guinea corn should receive first priority.

### *Acha and Tamba*

Acha (*Digitaria exilis*) and tamba (*Eleusine corocana*) are low-grade crops restricted to the wetter and poorer soils of the Plateau. They are essentially grasses, the seeds of which are harvested as human food in a primitive economy, much as higher-grade grain crops are cultivated under the more fertile conditions of European

agriculture. The mission believes research for the Plateau area should be directed toward finding economic ways of improving soil fertility. When these have been found it is almost certain that higher-grade crops, such as wheat and barley, can take the place of acha and tamba.

## C RICE

### *Present Production*

According to the sample census 246,000 tons of paddy were produced on 422,000 acres in 1950. More than four-fifths was produced in the Northern Region with water from natural flooding or irrigation. Niger and Sokoto Provinces each produced almost 50,000 tons.

The yield of paddy per acre varies widely, but the sample census indicated an average of 1,306 lbs. in 1950. This is one-third of yields customarily obtained in Japan, about half the average for the United States, slightly below yields in Indonesia, Burma and Pakistan and comparable to those of Thailand and India. The sample census indicated 950–1,000 lbs. per acre in Benue, Sokoto and Zaria Provinces, and 1,600–1,650 in Bauchi and Ilorin Provinces. The yields of paddy in the Western Region were lower, ranging from 500–750 lbs. per acre.

Yields of rice depend on variety, duration of water supply, soil fertility and efficiency of harvesting. The varieties G.79 and GEB.24 have proved suited to conditions in Nigeria but there is need for seed purification, multiplication and controlled distribution and for tests to discover still more productive strains. Mechanization would help to improve land preparation, planting and harvesting.

### *Future Development*

Given the rapidly rising demand for rice, the adequacy of natural water resources, a suitable climate, the relative ease of cultivation and less susceptibility to disease compared to other crops requiring large amounts of water, it should be possible to expand rice production by many times. There are four typical situations in which rice may be grown in Nigeria: on naturally flooded areas, irrigated land, land neither flooded nor irrigated but receiving a sufficient rainfall, and tidal mangrove swamp.

*Naturally Inundated Areas* The production of rice in Nigeria began on periodically flooded or inundated river-bottom land, known as *fadamas*. Such lands are usually physically suitable and of fair initial fertility but the variability of the floods introduces a hazard in some seasons. The rice cannot be sown or planted until moisture is available; if land is flooded too soon after planting the entire crop may be lost. This danger can be insured against by raising the plants in nursery beds and planting them out after flooding has receded, and by effective flood control.<sup>2</sup>

The mission believes that Sokoto Province and extensive areas to the west of Makurdi have good possibilities for expanded rice production in *fadamas* and on irrigated land. To the northeast of Makurdi, in the direction of Yola, are numerous smaller locations that merit survey and evaluation. A further likely area lies north of Maiduguri in the direction of Lake Chad. Some 20,000 acres in the drainage system of the Ngadda River in that area are suitable for early development under rice; field plots established in 1952 produced yields of a ton of paddy to the acre.

*Irrigated Land* The Badeggi irrigated rice scheme should provide valuable guidance for future rice production. About 20,000 acres near Badeggi can be irrigated under small schemes. Taking the plains of the Bida-Badeggi area as a whole, from the Kaduna River eastward, more than 100,000 acres could eventually be developed for rice production with supplementary irrigation under the guidance of the irrigation branch of the regional department of agriculture and, whenever necessary, with the technical assistance of the proposed federal department of hydrology. Irrigation could also be extended in the Rima valley of the Sokoto area.

*Uplands* Yields of paddy under upland conditions have been very much less, mainly because of soil factors. But upland rice development has potentialities in both Western and Eastern Regions and the respective departments of agriculture should undertake necessary field trials and research.

*Mangrove Swamps* Rice could be produced on roughly one million acres of mangrove swamp in the South. Areas subject to tidal inunda-

<sup>2</sup> For technical recommendations on flood control and irrigation and some technical problems of rice cultivation, see Technical Report No. 12.

tion may be used if the salt content of the water is not too high. Experimental plantings in 1952 gave average per acre yields of 2,000 lbs., and a peak yield of 2,250 lbs.

In view of the need for greater food supplies in the Eastern Region, plans should be prepared for developing extensive areas of mangrove swamp alluvium for rice production.<sup>3</sup>

The present rate of development, approximately 200 acres per year, should be sustained until the necessary surveys are completed and areas suitable for expansion satisfactorily defined; the rate of expansion can then be greatly accelerated. The mission recommends that the first surveys aim at locating 100,000 acres of mangrove swamp land for rice culture, at an estimated developmental cost of £ 1 million. The work should be undertaken by the development corporation of the Eastern Region under the guidance of the Eastern Regional Department of Agriculture in consultation with the proposed agricultural research institute.

#### *Organization of Development*

Future rice development will be closely allied to the findings of the federal department of hydrology recommended by the mission and of the Rice Research Station at Badeggi working with the West Africa Rice Research Station at Rokkupr in Sierra Leone. Reciprocal exchange of information between Rokkupr and Badeggi should benefit both Nigeria and Sierra Leone. The mission recommends that the staff at the Badeggi station be increased as soon as possible, that the technical advisory work for improved rice production be the responsibility of the regional departments of agriculture in consultation with the federal agencies for hydrology and rice research and that development be undertaken by the development corporations of the regions concerned. In view of the serious food problem in the Eastern Region, the mission recommends early expansion from the experimental site near Calabar, where operational headquarters should be established.

<sup>3</sup> The technical aspects of this scheme are described in Technical Report No. 12.

## D MAIZE

*Present Production*

On the basis of the 1950-51 sample census, 1950 production of maize was 535,000 tons on 1.4 million acres.<sup>4</sup>

Bamenda, Ibadan and Kano Provinces together produced 44% of the crop, and the Western Region accounted for more than one-third. Yields in the latter region ranged from 500-1,400 lbs. per acre for early maize; in Bamenda Province early maize yielded 1,200 lbs. per acre and in Calabar and Onitsha Provinces about 1,100 lbs. per acre. In the North, yields averaged 940 lbs. per acre. These yields are comparable to those in Asia, Central America and South Africa; they are lower than in Egypt and South America. United States and Canadian yields are substantially higher. The conditions of climate, especially in southern Nigeria, should permit at least a doubling of current yields and a considerable expansion of the area planted to maize, provided the problems of varietal limitation, heavy incidence of disease and insufficient soil fertility are overcome.

*Disease Control*

In 1950 an unprecedented epidemic of maize rust (*Puccinia polysora*), not previously recorded in Nigeria, seriously affected early maize in the Western Region, as well as in Dahomey and the Gold Coast, with losses up to 50% of the crop. The disease can be effectively controlled only by developing strains that combine local adaptability and high production capacity with resistance to maize rust. Research on the control of the disease is being undertaken at Moor Plantation. More than a hundred varieties of maize from Central America and the Caribbean area, which show a higher order of resistance, have been imported for breeding experiments under local conditions. Tests showed that American varieties in the presence of rust, although partially susceptible, gave substantially higher yields than local types.

<sup>4</sup> The total of 1.997 million acres given in the census report results from double-counting of some 588,000 acres of the Western Region, on which two crops of maize were grown in the same year.

The importance of this work cannot be too much stressed. Testing and breeding centers should be established in all three regions and the Cameroons, in co-operation with the local departments of agriculture. Breeding for maize rust resistance should be accompanied by research into effective methods for controlling bacterial rots and stem borer. The mission's recommendations and projections for an agricultural research institute, in Technical Report No. 10, include provision for this and other research on control of disease and insects.

### *Soil Fertility*

Experiments carried out in the Western Region have demonstrated increased yields of maize following application of fertilizer, but it is doubtful whether the use of artificial fertilizers alone will solve the problem of soil fertility. Use of appropriate legume-grass mixtures, now being tested at Moor Plantation with supplementary phosphate and trace elements, would bring about permanent improvement in soil fertility for maize production as well as foster livestock production. Interplanting of cowpeas, soybeans and other legumes with the maize crop, appropriately fertilized, should also increase yields.

### *Future Development*

Expansion of maize production will be a longer term process than that of rice, largely because the necessary plant breeding and soil improvement programs may take as much as 10 years. The importance of both crops for raising the standard of nutrition has been recognized by specific financial provision for maize and rice research at Ibadan and Badeggi respectively; research findings should be significant not only for Nigeria but also for all West Africa. The capital cost is met in each case from Colonial Development and Welfare funds, which also cover a major part of recurring costs. In order to minimize any bias due to locality, research on either crop should not be over-centralized; in the case of both crops, emphasis should be placed on regional requirements and specific environmental situations.

## E PULSES

*Importance*

Pulses are field crops of legumes, such as peas, beans, groundnuts and vetches. The acacias (e.g., *Acacia senegal*), *cassia* spp., alfalfa or lucerne, clovers and other kinds of herbage legumes belong to the same family. All produce seeds in pods and bear nitrogen-fixing bacteria in nodules on the roots.

They are unique in possessing the capacity to derive inert nitrogen from air and convert it to protein while increasing soil fertility. In view of the fact that Nigerian soils are frequently deficient in available nitrogen and that the country as a whole is poorly supplied with protein, the mission believes that increased cultivation of pulses and herbage legumes should be given major emphasis.

*Cowpeas*

Apart from groundnuts, discussed in Technical Report No. 7, the most important legume grown for kernels is the cowpea (*Vigna* sp.). According to the sample census, 237,000 tons of shelled cowpeas were obtained in 1950 from 1.3 million acres. Four-fifths of the crop was grown in the Northern Region, of which 23% was produced in Kano Province and 20% in Bauchi Province. Cowpeas are a principal source of vegetable protein for domestic consumption and an important article of trade in the North.

The average yield for Nigeria in 1950 was close to 400 lbs. per acre, varying, chiefly with soil fertility, from 150–200 lbs. per acre in Ijebu, Ilorin, Plateau and Bornu Provinces to about 500 lbs. per acre in Katsina and Adamawa Provinces.

Experiments conducted at Ibadan in the Western Region and Umuahia in the Eastern Region indicate that early maturing strains, such as New Era and Mauritius C.70, are superior in yield to local varieties, and can be recommended for general adoption in each region. As already noted, cowpeas can be advantageously combined with maize. In future trials special attention should be given to nutritional requirements of cowpeas and the correction of soil deficiencies; the place of cowpeas in crop rotation, type of soil preparation re-

quired, and best time for planting according to seasonal characteristics should also be determined. Additional varieties should be introduced, with appropriate quarantine measures, and should be tested over a period of years.

#### *Other Pulses*

The pigeon pea (*Cajanus cajan*) is a deep-rooted shrub growing to six feet or more. Production in 1950 was estimated at 60,000 tons (shelled) or one-quarter that of cowpeas. The crop was produced from only 181,000 acres, mainly in the Middle Belt.

Bambarra groundnuts (*Voandzeia subterranea*), a genus distinct from the ordinary groundnut, were produced on 120,000 acres, yielding in 1950 some 41,000 tons. Three-quarters of the crop was grown in Bamenda Province of the Southern Cameroons, the remainder in the Northern Region. The kernels are harder than those of the exported groundnut and cannot be eaten raw. They contain only 6% oil but are high in protein.

The soyabean (*Glycine soja*) has not so far been very successful in Nigeria. The mission believes that the crop can be grown satisfactorily but expansion must be preceded by considerable research to determine which of the several hundred varieties are most suited to Nigerian conditions.

#### *Future Research on Legumes*

The mission recommends that an intensive program of research on legumes be given high priority by the agricultural research institute; extensive tests on both pulses and herbage legumes for pasture should be conducted by the regional departments of agriculture and the research institute; strains of the legumes discussed above and additional legume species should be tested along the lines suggested for cowpeas. The mission suggests that assistance be sought from the Food and Agriculture Organization both in the acquisition of varieties for testing and in the conduct of the research.

## F FRUITS AND VEGETABLES

Many varieties of fruit and vegetables can be grown successfully in Nigeria. Farmers, particularly in the North, already plant or foster

such food-producing trees as the mango (*Mangifera indica*), the locust bean (*Parkia filicoidea*), dorowa (*Tephrosia vogelii*) and the shea butter tree (*Butyrospermum parkii*). The wild date (*Phoenix dactylifera*) is prized in the dry zone of the sahel savannah. The bread fruit tree (*Artocarpus incisa*) grows well in the wetter parts of the South. Kola is grown in cocoa areas.

Okra (*Hibiscus esculentus*), the principal vegetable product of southern Nigeria, is mucilaginous and is used for thickening soups and stews; production was estimated at 16,000 tons for 1950-51. Onions also are an important item in the Nigerian diet and in internal trade; estimated production in 1950-51 was 60,000 tons, chiefly in Sokoto Province. Melonseeds are used in the preparation of stews; an estimated 25,000 tons of unshelled seeds were produced in 1950-51, mainly in the Middle Belt and the Western Region.

The mission saw numerous small vegetable-growing projects, most of which indicated considerable promise. Tomatoes are well adapted to the climate of the country, and beans, carrots, cabbages, cauliflowers, beetroot, sweet potatoes, spinach, parsnips and numerous other vegetables grow successfully where soil fertility is improved by compost or farmyard manure and water for irrigation is present. Vegetable-growing projects are naturally most important near the larger towns, where both water and organic wastes are available.

The most efficiently run market garden seen was at Enugu where, under the guidance of the Eastern Regional Department of Agriculture, an exceptionally wide range of vegetable crops was grown for sale at moderate prices. The mission recommends that the development of market gardens be fostered by the regional departments of agriculture, in consultation with research agencies where necessary.

### *Need for Research*

The horticultural department of the proposed agricultural research institute at Ibadan should test the major fruit and vegetable crops for their suitability in different parts of Nigeria. Much material already exists within the country; some species, such as kola, citrus, cashew nuts, avocados and pawpaws, have been grown long enough in Nigeria to ensure a high degree of local adaptation. These are referred to in

Technical Report No. 7. There is need, however, for testing improved South and Central American and Indian horticultural varieties.

Introduction and initial testing of this material should be the function of the proposed research institute, but field tests should be carried out by the regional departments of agriculture in a number of carefully selected centers. It is important to ensure that new material is most effectively placed, that all the adapted types growing in different parts of the country are made available, and that attention is given to problems of nutrition, insect and disease control.

## G SUGAR CANE

### *Production and Consumption*

According to the sample census of 1950-51 Nigeria produced in 1950 550,000 tons of sugar cane on 24,000 acres. Production is largely confined to the watershed country extending from the Jos-Bauchi area through Zaria and Makarfi, and northwest to Gusau, in the direction of Sokoto. Zaria Province is the most important source of production.

The cane is grown in small plots of two acres or less, mainly in the swamp alluvium which develops in local catchments near the summit of the watershed.

The estimated sugar content of the 1950 crop was some 50,000 tons. Much of it is consumed by chewing cut pieces of raw cane. According to the Annual Report of the Agriculture Department for 1950-51, there were 689 cane crushing mills in the Northern Region, of which 655 produced an estimated 10,200 tons of crude brown sugar. There are no facilities for producing refined sugar. Imports of the latter have ranged in recent years from 8,000 to 13,500 tons.

### *Improvement of Sugar Production*

The production of refined sugar on modern lines would require minimum units of 5,000 acres of first-class sugar-producing land, each within easy reach of a modern mill. Suitable land presupposes a combination of high soil fertility with a liberal supply of soil moisture, either from natural sources or supplementary irrigation, for at least 9 or 10 months of the year. It is doubtful that these conditions can

readily be found in Nigeria. It is suggested that surveys be directed to finding units that might be developed economically for sugar production, either with natural rainfall or with supplementary irrigation. Areas meriting consideration occur to the south of Jos, in the Benue area, northeast of Mamfe and around Kumba in the Southern Cameroons.

Meanwhile, the mission recommends that investigations directed toward increasing sugar production per acre in the existing areas of cultivation be intensified.

### III OTHER CROPS

#### A TOBACCO

##### *Production*

Nigerian conditions of climate and soil are favorable to tobacco. Its cultivation is an old practice and numerous types have become adjusted to the country's varying conditions. Stimulated by the Nigerian Tobacco Company, a subsidiary of the British-American Tobacco Company which started the manufacture of cigarettes in Nigeria in 1933, production of leaf tobacco increased sharply in recent years from 835,000 lbs. in 1949 to about 3.36 million lbs. in 1952, and to an estimated 5 million lbs. in 1953.

There are three principal types of tobacco. Northern air-cured tobacco comes chiefly from Zaria Province, with lesser quantities from Sokoto, Kano and Katsina Provinces. In parts of this area, where flooding occurs regularly (*fadamas*), a second or dry-season crop is planted as the water recedes. Such plantings, which produce better quality leaf, have increased considerably in recent years. Southern air-cured tobacco comes entirely from Oyo Province in the Western Region, around Ogbomosho and Oyo. The planted areas are somewhat scattered. Flue-cured tobacco is grown only in the northwest portion of Oyo Province.

Statistics on production for each category are shown in Table 3.

TABLE 3 Tobacco Production by Type of Leaf

	Area Planted (acres)				Production (thousand lbs.)			
	1949	1950	1951	1952	1949	1950	1951	1952
Northern air-cured .....	950	2,206	4,280	7,769	301	739	1,315	2,210
Southern air-cured .....	1,035	734	1,029	1,327	362	335	412	670
Flue-cured .....	435	740	830	863	163	349	400	333

SOURCE: Nigerian Tobacco Company, Lagos.

For the last few years, the tobacco company has pursued a price policy designed to encourage improvement in quality. It raised the price of grade I tobacco by 50–150% but left the price of grade III unchanged. As in the case of palm oil, this incentive for quality improvement has been highly successful. It is unlikely that tobacco will be exported for many years to come. Substantial improvement in quality would be required to make Nigerian tobacco competitive in the markets of the tobacco importing countries. However, there is a growing demand in Nigeria for better quality tobacco, which is now imported; increased domestic output of higher grade leaf can come to supplant imports.

#### *Survey and Research*

The effective technical reconnaissance and experimental work done by the Nigerian Tobacco Company, in advance of its efforts to promote expanded production, contributed greatly to the rapid success of those efforts. It demonstrates the practical value of such investigations for new agricultural projects generally.

In 1953, the Nigerian Tobacco Company engaged in experimental work at Gombe, east of Bauchi, and in a wide area of the Middle Belt, north of the Niger and on both sides of the Benue.

Tobacco seedlings are grown by arrangement in village communal nurseries. The company selects and pegs out the seed beds, usually some 60–100 to a village. The timing of *fadama* nursery seedlings is staggered to follow up the water as it recedes. Incentive payments are made to assure proper nursery bed supervision and maintenance. Seedlings are distributed free for the first three years in a new area and the farmers are then persuaded to grow their own seedlings.

This work has been attended by numerous technical difficulties. Now that initial reconnaissance is done, the mission recommends selection of a small number of fiber plants for more intensive future trial and research—clappertonia, urena, sunn hemp, rama and coir, with exploratory tests of manila in the Southern Cameroons and of flax (linseed) at altitudes above 5,000 feet.

#### *Future Investigations*

Local research on both the culture and processing of fibers should precede any large-scale development. Experience throughout the world has demonstrated the hazard of embarking on large-scale fiber development projects without careful investigation of such technical factors as the adaptability of the crop, its soil and cultural requirements, the effectiveness of retting or decortication, the availability of supplies in sufficient concentration to supply a mill and the problems of grading, baling and storage.<sup>5</sup>

The mission recommends that each regional department of agriculture conduct tests on a maximum of three fiber-producing crops and that the problems of retting and processing be investigated by the proposed technical research institute. Should large-scale commercial possibilities affecting more than one region appear practicable, a committee to advise on the technical and economic aspects of fiber development should be set up by the development corporations and the federal government.

## IV LIVESTOCK PRODUCTION

### A INTRODUCTION

#### *Importance*

The livestock industry has long been an essential part of the Northern economy and recently there has been intensified official interest in its improvement throughout the country. In 1949, the

<sup>5</sup> See, for illustration, the discussion of the sack factory project at Onitsha, in Technical Report No. 13, p. 384.

Some disease has appeared, leaf curl being the most serious. Future needs for technical work on disease control, varietal and agronomic improvement, soil fertility maintenance, and the place of the tobacco crop in permanent agriculture in different localities should be met adequately by the proposed strengthening of technical agricultural services through the proposed agricultural research institute and the regional departments of agriculture.

## B FIBER CROPS

### *Background*

Fibers are needed in Nigeria as raw material for bags, fabrics, carpets, mats, ropes, twines, fishing nets, filling for mattresses and upholstery, and wrapping paper. About 10 million bags are imported and re-exported each year and the cost of bags, cordage, twine and other fiber products amounts to about £ 2 million annually. Climatic conditions favor fiber production; 21 species recognized as commercial sources are grown. But aside from the recent expansion of cotton acreage, fiber production has not been an important part of Nigerian agriculture.

The Department of Commerce and Industries appointed a fiber officer in 1947 and a fiber utilization officer in 1951. Fairly extensive surveys have been carried out, with particular attention to rama (*Hibiscus cannabinus*), also known as kenaf. Rama is one of the soft or bast fibers. Varieties from a dozen countries have been tested at Samaru and a small pilot rettery has been established there.

Other species examined have included clappertonia (*Clappertonia ficifolia*) known in Nigeria as *bolobolo*, another bast fiber, which occurs extensively in the fresh water swamp region of the South; sunn hemp (*Crotalaria juncea*), also a bast fiber, which is of interest as a legume that improves soil fertility and as a source of raw material for paper pulp; ramie (*Boehmeria nivea*), known also as China grass, which has given promising results in the Southern Cameroons; coir, an important source of unretted mattress fiber; and urena (*Urena lobata*), closely related to rama, which is being grown in parts of Ilorin, Bida and Benue Provinces. Some limited tests have been conducted, including retting trials at Samaru.

Colonial Office appointed a Livestock Mission to study the industry in Nigeria and make recommendations for its development. Although the Nigerian government has decided to accept few of the recommendations, the Mission's report served to focus attention on the many problems of livestock husbandry in Nigeria. Subsequent reports on cattle published in the United Kingdom also include much valuable information on Nigeria and on West African breeds of livestock.<sup>6</sup>

Livestock in Nigeria is important as a source of animal protein and other essential nutrients and of hides and skins for export; it is a crucial factor in soil improvement and the development of a permanently balanced agriculture. The acute deficiency of the Nigerian diet in animal protein and milk has already been stressed. The mission believes that a fourfold increase of present livestock production is justified on this ground alone. Such an expansion, of course, will take considerable time. Our recommendations are designed to indicate the conditions and means for such long-term growth and for accomplishing it as fast as possible.

### *Livestock Population*

No reliable data on Nigeria's livestock population are available. There are gaps in the 1950-51 census figures, and furthermore, where they are based on the annual count for tax purposes they are probably understated. There is considerable variation among estimates by FAO, the Nigerian Veterinary Department and the Livestock Mission. Table 4 is based on the best data available, still with a wide margin of error.

### *Conditions and Problems of Livestock Production*

Nigeria seems to have excellent livestock material on which a multiplication and breeding program can be based.

<sup>6</sup> T. Shaw and G. Colville, *Report of Nigerian Livestock Mission* (Colonial Office Publication No. 266; London, HMSO, 1950); Colonial Advisory Council of Agricultural Animal Health and Forestry, *The Improvement of Cattle in British Colonial Territories in Africa* (Colonial Office Publication No. 2; London, HMSO, 1953); I. L. Mason, *The Classification of West African Livestock* (Technical Commonwealth No. 7 of the Commonwealth Bureau of Animal Breeding and Genetics: Farnham Royal, Bucks. 1951).

See also *Proceedings of a Conference called to consider the Report of the Nigerian Livestock Mission* (Government Printer: Lagos, 1953).

TABLE 4 Livestock Population, 1953

	(Thousand head)					
	Cattle	Goats	Sheep	Horses	Donkeys	Pigs
Northern Region .....	4,830	5,510	2,015	212	940	62
Western Region <sup>1</sup> .....	70	650	295	— <sup>2</sup>	—	108
Eastern Region <sup>1</sup> .....	200	1,220	590	— <sup>2</sup>	—	22
Southern Cameroons .....	200	120	110	—	—	28
Total .....	5,300 <sup>3</sup>	7,500	3,000	212	940	220

<sup>1</sup> Mostly dwarf animals.

<sup>2</sup> Negligible.

<sup>3</sup> FAO figure for 1950.

SOURCE: Mission's estimates on the basis of the agricultural sample census of 1950-51, estimates of the Livestock Mission of 1949, Reports of the Veterinary Department 1949-50 and 1951-52, FAO Yearbook of Statistics 1952. Reports of Department of Commerce and Industries (Lagos), 1953.

The chief limitation to a wider distribution of livestock is the incidence of the tsetse fly (*Glossina* spp.), the carrier of the wasting disease trypanosomiasis which affects (according to the species of trypanosome) both humans and livestock. The various species of tsetse, each a potential transmitter of the disease, infest 80% or more of the country. Other livestock diseases, such as bovine pleuro-pneumonia, rinderpest and parasitic diseases, also cause considerable losses. It is possible to reduce the damage caused by the tsetse fly through the use of trypanosome-resistant strains of cattle, prophylactic measures, and the control of uninhabited woodland and bush in which the tsetse fly thrives.

The quality of livestock as well as its resistance to disease are substantially affected by nutrition. There is little reliable information about the carrying capacity of the many types of pasture in Nigeria. In the North it is said that one ox requires 15 acres; in the valleys further south, where pastures are better, six acres will probably maintain one head of cattle. There is considerable room for pasture improvement and for use of supplementary feeding. Much of the grass in both the valleys and upland pastures rapidly declines in value for grazing as the season progresses, becoming fibrous, unpalatable and low in protein content. These stands of tall, tough grass are fired and wasted each year; if they were mowed early and conserved, their productivity would be much increased.

Improved processing and marketing of products would greatly increase the efficiency of livestock production. The mission's recommendations on all these matters are discussed in more detail in subsequent parts of this section.

### *The Fulani Problem*

The nomadic Fulani are the most skillful graziers and breeders of livestock in Nigeria. They keep cattle for milk; the sale of slaughtered bullocks is incidental. In the northeast many of the Fulani possess large flocks of sheep, but for the most part their economy is based on cattle.

Fulani cattle have a strong constitution, are admirably suited to their environment and living conditions and are among the finest to be found in Africa. Their various breeds provide excellent foundation stock for both beef and milk production; great care should be taken to avoid degeneration through too drastic changes in Fulani husbandry practices.

Stabilization of the Fulani is considered of major importance in the expansion of livestock production. There are indications that many of the Fulani would prefer to follow a settled existence. Nomadism has probably been a matter of necessity rather than of choice; if permanent water and year-round tsetse-free pastures can be developed, the need for seasonal movement will disappear, although the excellent practice of rotational grazing should continue. The mission was advised that in Sokoto Province more than 60% of the Fulani families is already partly settled; they keep a small milk herd on a home pasture while trusted relatives take the bulk of the herd to valley pastures. It is unlikely, however, that more than limited settlement of the Fulani can be achieved for many years to come.

Nevertheless, the mission believes that some of the problems involved should be faced immediately. The Fulani now have few, if any, land rights in Nigeria or the Cameroons. At present they are tolerated if they do not damage standing crops; but the expansion of cultivation and the development of mixed farming will exclude them from many of their traditional grazing facilities. The mission recommends that early steps be taken in the Northern Region to establish land rights for the Fulani.

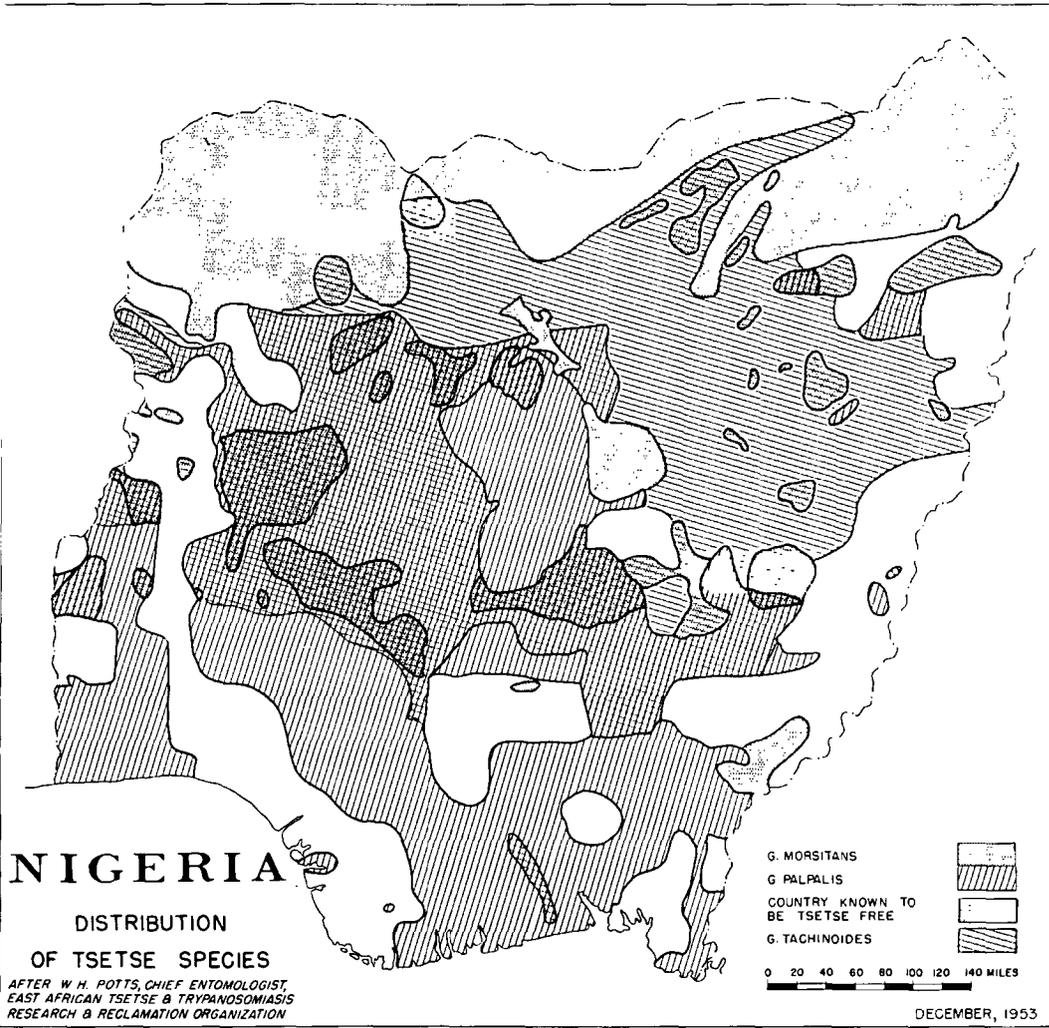
Two lines of action are suggested: (a) establishment of grazing reserves protected by law, where cultivation would be restricted under permit and grazing rights would be subject to supervision, the reserves to be selected on the basis of a reconnaissance survey, taking account of water supplies and the scope for pasture improvement; and (b) study of the Fulani problem in all its aspects, with special attention to the possibilities for their permanent occupancy of land.

We believe that the Shendam-Shemankar area between the Plateau and the Benue is most suitable for pasture and pasture improvement. We therefore recommend that a grazing reserve of 100,000 acres be set aside in this region and that the Northern development corporation, in co-operation with the regional agricultural department and veterinary services, prepare plans for the project, including provision for tsetse control, pasture improvement, permanent water supplies, soil conservation and some timber production. If this project proves successful, other grazing units should be developed elsewhere in the Middle Belt; we believe that suitable land is available in the areas of Yola, Kontagora and Mokwa.

#### *Mixed Farming*

Disease, fear of theft and the labor of feeding and watering have discouraged a settled husbandry in Nigeria. Peasant farmers generally maintain only a few goats, sheep and poultry; the Hausa farmers in the North also keep horses and donkeys. These animals receive little care apart from being fed hay and crop residue. In the Eastern and Western Regions, small numbers of tsetse-resistant dwarf cattle occur in a semi-wild state and are slaughtered at tribal ceremonies. Water buffalo, occurring in Calabar Province, are trypanosome-resistant.

In the North the agricultural department has introduced the plow and the cart to integrate cattle with peasant farming. The scheme is for two working bulls, a hand plow (and, recently, two heifers) to be provided for each mixed farm. This is done by means of loans through native treasuries, some of which in turn obtain funds from the Regional Production Development Board, but so far only some 10,000 mixed farms have been established in the Northern Region.





*Role of Technical Services*

The central and regional veterinary services have full responsibility for animal health and the control of disease in livestock. Animal breeding and nutrition concern both the agricultural and the veterinary departments; no hard and fast division is made or is desirable. The whole problem of animal production involves so many different factors that any suggestion for division of responsibility beyond that already established would be unwise.

Nigeria is fortunate in having, in the Northern Region, the West African Institute for Trypanosomiasis Research (WAITR), which has done outstanding research on the factors governing the distribution and possible control of the tsetse fly. Its future work deserves full support by Nigeria.

Needs for research vary with different projects: research on the control of tsetse, bovine pleuro-pneumonia, tuberculosis and certain diseases of the smaller animals is sufficiently advanced to proceed to the project stage. Further research is required on problems such as pasture improvement and rinderpest control before a final solution will come in sight.

Pasture improvement involves research on numerous interrelated factors: soil; climate; and species, strains and mixtures of herbage plants, their physical and nutritional requirements, their management and their value for animal production. Basic research should be carried out under the auspices of the proposed agricultural research institute, with regional departments of agriculture and development authorities taking primary responsibility for the application of findings. Each regional department of agriculture should include a strong pasture improvement section.

**B ANIMAL HEALTH***Trypanosomiasis*

Map 7 shows the general distribution of the three main species of tsetse—*Glossina morsitans*, *G. tachinoides* and *G. palpalis*—all of which transmit both the *Trypanosoma congolense* and *T. vivax*. One of the key problems in Nigeria appears to be to control *G. morsitans*.

The mission recommends an entomological survey to define its present limits. Near the coast, under the conditions of high forest, the tsetse infestation is light; in the "orchard bush" savannahs of the Middle Belt, it is heavy; and under the progressively drier conditions to the north, the tsetse virtually disappears.

Much of the scientific knowledge now available concerning tsetse and trypanosomiasis in Nigeria has resulted from the work of Dr. T. A. M. Nash of WAITR. It was found that game harboring the fly retreats as bush clearance removes its shelter and settlement advances; the movement and settlement of people from overcrowded areas to tsetse belts is therefore advocated. The mission believes that such settlement, organized under proper conditions with the fullest technical advice, can have substantial value for tsetse control in the Middle Belt. The mission supports the concept of cleared farm areas with a minimum size of 10,000 acres and with clear-cut peripheries to separate game and fly on the one hand from man and domestic animals on the other. Experience has shown that a buffer zone created by further clearing outside the farmed area and, in some cases, the erection of stock-proof and game-proof fences is necessary to keep the settlements free from infestation.

The use of trypanosome-resistant breeds of cattle such as Ndama and Muturu and provision for prophylactic drug treatment where necessary are essential features of settlement in tsetse-labile country. Carefully controlled trials of aerial spraying with certain insecticides already used with success in South Africa and in Southern Rhodesia are also recommended.

### *Rinderpest*

The policy in the Northern Region has been to foster immunity in the herds rather than to try to eradicate rinderpest by compulsory measures. As yet, no satisfactory immunizing procedure has been found for hyper-susceptible breeds of cattle, such as the Ndama and Muturu of the Eastern and Western Regions. Research at the Veterinary Research Laboratories in Vom is limited by lack of quarantine accommodation required to test vaccine production and immunity. The matter is urgent; it would be a national calamity if rinderpest were

to gain a hold in the valuable Ndama and Muturu herds now being built up at various points.

Wild fauna such as buffalo, antelope, pig, etc., which are susceptible to rinderpest and which may act as carriers of the disease, appear to be widely dispersed and so far have not proved a significant factor in control. Eradication of the disease in West Africa appears possible but it will largely depend on international co-operation, especially with the French authorities in neighboring territories. The assistance of FAO should be sought in this matter.

#### *Bovine Pleuro-Pneumonia*

There were 294 outbreaks of pleuro-pneumonia in 1952-53, indicating an urgent need for special control measures. The disease has spread down the stock routes from the northeast to the south and west. It seems to be endemic in Bornu Province and French Equatorial Africa. International co-operation is required for its complete eradication. Repeated mass vaccinations at short intervals over a number of years are likely to be necessary and clinical cases should be removed and quarantined. Such measures have been successful in Northern Rhodesia, Tanganyika and Australia but they depend on reasonable control of herds and on efficient vaccines.

#### *Tuberculosis*

Tuberculosis is prevalent in the highland country of Bamenda Province in the Southern Cameroons; recent tuberculin tests established 100 reactors out of 700 in one herd. The mission recommends a one-year survey, followed by an eradication program involving removal of reactors to quarantine and their slaughter under strict government control.

#### *Tick-Borne Diseases*

Nigeria appears at present to be free from East-Coast fever but it is possible that tick-borne diseases will become more of a problem as the southern, more humid areas suitable for the propagation of ticks, the transmitters of these diseases, are developed for livestock

production. The danger lies in indiscriminate stock movements from the East and the mission recommends that an epidemiological survey of the problem be carried out with the object of devising effective quarantine measures against the introduction of these diseases.

#### *Diseases of Sheep and Goats*

There is high wastage from disease, thought mainly to be due to parasitic causes. The mission recommends a survey of sheep and goat diseases in each region over a period of three years.

#### *Poultry Diseases*

Newcastle disease, fowl cholera, fowl pox, fowl typhoid, coccidiosis and verminosis occur extensively and epidemics often exterminate the poultry of an entire area. At least one poultry disease specialist should be included on the staff of each regional veterinary department.

#### *General*

Effective control of livestock disease in Nigeria requires strengthening of the federal and regional veterinary services. Expansion of veterinary, quarantine and other disease control services is recommended in Technical Report No. 10. The mission also believes that establishment of a West African veterinary research organization, with headquarters in the Northern Region of Nigeria, would be desirable; it recommends that the governments of the Gold Coast, Sierra Leone and the Gambia be approached for their co-operation and financial assistance. Long-term plans for disease control should be drawn up, and each district should set up a livestock improvement committee which would include representatives of the farming communities as well as officers from the administrative, agricultural and veterinary services.

### C ANIMAL BREEDING

There has been a long history of selective breeding in Nigeria and survival of the fittest has provided a locally adapted basis for future improvement.

*Northern Types of Cattle*

The breeds developed by the Fulani have zebu characteristics, and resemble the Boram and Masai types of East Africa and the Harriana and Sind types of India. They are adapted to dry conditions, can travel long distances and consume fibrous fodder but they mature slowly, a bull reaching 850–900 lbs. in five years. Milk production is poor by European standards, rarely exceeding 200 gallons in a lactation period of seven to eight months, but the content of butter fat is usually above 5%.

The Fulani types have some resistance to rinderpest but are susceptible to trypanosomiasis. Other Northern types—including the White Bungai, Red Rahaji, Sokoto Gudale, Shuwa, Biu, and Adamawa—are well defined, although there is considerable intermixture. Together they provide a good foundation stock for improved dairy, beef or draft breeds.

The mission endorses the agricultural department's policy of working toward higher milk production from indigenous stock rather than attempting short cuts by introducing European breeds. It notes, however, the artificial insemination breeding experiment with imported British Holstein sperm being carried out by the Veterinary Department at Vom. This experiment might give valuable evidence regarding the practical use of European breeds in selected environments such as the Jos Plateau.

Milk production in Nigeria is estimated at 250,000 tons, averaging only  $\frac{1}{2}$  lb. of milk per day per cow for the whole year, or approximately 1 lb. per day while lactating. At stock farms of the agricultural department yields of 6–10 lbs. have been achieved, demonstrating that a substantial increase of milk production through proper feeding and selection is possible.

The development of early maturing beef cattle, with a high proportion of dressed to live weight, offers substantial possibilities. On good pastures in the Bamenda hill country of the Southern Cameroons, Adamawa Gudale cattle have reached 800 lbs. live weight in four years without supplementary feeding.

Continuity of supervision is essential in the breeding and the maintenance of herds at the government's Shika and Daudawa stock farms. The mission recommends that programs of trypanosomiasis and rin-

derpest control be undertaken on each farm, that a resident veterinarian be stationed at each, and that livestock multiplication programs be expanded.

#### *Muturu Breed*

The Muturu, or West African shorthorn, is a dwarf humpless type occurring in the forest and semi-forest areas south of the Niger and Benue rivers. Kept mainly for ceremonial purposes, it is semi-wild and hard to handle. Because of its marked resistance to trypanosomiasis, the breed's potentialities for both meat and milk production should receive scientific study. Breeding experiments to increase size without losing trypanosomiasis resistance are being undertaken at various government stations.

#### *Ndama Breed*

The Ndama, or West African longhorn, is also a humpless breed, originating in French Guinea. It is a light, fertile, strongly trypano-some-resistant, beef-producing strain which does extremely well on rough grazing under humid conditions; its milk production is poor, however. It is regarded as the most likely breed to develop in the tsetse-infested high rainfall belts. The mission suggests that ranches be developed for their multiplication in both the Eastern and Western Regions. These projects should be undertaken by the regional development corporations, with technical guidance from the agricultural and veterinary services.

#### *European Breeds of Cattle*

The mission believes that a few selected exotic breeds of the European type may be needed for dairy production in the South. The experience of Central American countries is relevant in this regard. It is recommended that a limited number of selected Brown Swiss bulls be imported for experimental crossing with selected Ndama cattle in both the Eastern and Western Regions.

Breeding programs, conducted under expert technical guidance and with careful attention to feeding, should be associated with commercial dairy projects, proposed in Technical Report No. 10.

*Montbeliard Cattle*

Montbeliard cattle have long been established by the French in the Cameroons highlands. Crossed with the zebu types they produce good dual purpose animals, with the accent more on beef than on milk production. At Jakiri Veterinary Investigation Center a cross breed of one-quarter Montbeliard and three-quarters Adamawa reached 900–1,000 lbs. in three years, and many cows topped the 300-gallon mark in 305 days on pasture alone.

Cattle multiplication projects in all three regions and the Southern Cameroons should be undertaken by the respective development corporations; advice should be sought from the departments of agriculture and the veterinary departments. The mission believes that these projects offer considerable possibilities, and has suggested financial provision for them in Technical Report No. 10.

*Sheep*

Sheep breeding has been given little attention in Nigeria. A desert type bred by the Fulani is tall, tough and well adapted to travel on the hoof over long distances. Mutton and wool production may be improved by selection and better feeding. The “dwarf forest” types of the South are remarkably resistant to parasites under humid tropical conditions; studies of these types undertaken at University College, Ibadan, should be intensified.

*Goats*

Goats are important in both North and South. The Red Sokoto breed of the North provides a world-famed pelt. In order to keep the stock pure, the government's policy, which the mission endorses, is to protect it from intermixture.

The dwarf types of the South should be studied with a view to improving the area's milk supply. Experimental crossing with milch types imported from India is recommended. If consumer resistance to goat's milk is encountered, we suggest the milk be distributed free to primary school pupils. Close attention should be paid to feeding, and courses in goat husbandry should be developed in schools, par-

ticularly with a view to encouraging the keeping of livestock by people unversed in any form of animal husbandry.

### *Equines*

Northern Nigeria has a long tradition of horse breeding. Both Hausa and Fulani value horses for transport and sport. The mission recommends establishment of a government-controlled stud in Katsina Province for breed improvement and to demonstrate the value of mules and donkeys for transport.

### *Pigs*

Indigenous pigs feed themselves and survive despite numerous hazards. The imported Large White Yorkshire type has proved highly successful on government farms, and commercially, at Kano. Persistent efforts by the agricultural and veterinary services to establish pigkeeping among peasant farmers have, however, had little success; with few exceptions husbandry has deteriorated on withdrawal of assistance and supervision. In view of the demonstrated possibilities and value of pig production, the mission recommends that a pig husbandry adviser be appointed in both the Eastern and Western Regions and that programs of demonstration and extension be developed through co-operative societies and in schools.

### *Poultry*

The indigenous breeds of poultry are small and of low productivity. Epidemics frequently eliminate or greatly reduce both native and European flocks but the Rhode Island Red and Leghorn types do well under good husbandry. Until disease control is more satisfactory, however, little progress in village poultry raising may be expected. Nevertheless, the mission recommends that the Western development corporation, assisted by the regional veterinary department, start poultry battery projects at Lagos and Ibadan.

Ducks of a Muscovy type seem more resistant to disease in Nigeria than other forms of poultry and it is suggested that more attention be given to them. Projects should be started by the regional departments of agriculture, in consultation with the veterinary services.

## D PASTURE IMPROVEMENT

There are no estimates of the area grazed in Nigeria. At least 200,000 square miles of grassland could be used for pasture but a high percentage is ungrazed. Tall grass of low feeding value provides little but soil cover and a sanctuary for wild game. Lack of water, prevalence of tsetse or incapacity to feed livestock adequately for most of the year render vast tracts unusable at present. The area actually used for grazing probably does not exceed 150 million acres and little of the land maintains livestock throughout the year.

### *Types of Pasture*

The kinds of pasture vary widely with altitude, rainfall, amplitude of temperature changes in the course of the day, local variations in topography, run-off or local accumulation of water and soil fertility. The herbaceous plants, shrubs and trees providing livestock sustenance fit the general pattern of the vegetation types shown on Map 6.

### *Northern Region*

Herbage legumes and grasses may be grown to advantage in many parts of the North. Research on pastures, begun recently at Samaru, is sound but more attention to problems of soil fertility and herbage plant nutrition is needed.

While pasture work has been based on Samaru up to now, the mission believes that key centers should also be established in the Kano-Katsina area, where pasture research should form an important part of the applied research program recommended for the groundnut-producing areas. Reclamation of depleted land, now growing useless bush, is already being attempted by fencing in 600 acres and applying superphosphate. Fencing is important to safeguard and control land with greatly improved pasture. Durable borassus palm fence posts can be secured cheaply in some areas, while increased supplies of fencing wire from Europe will permit fencing costs to remain low enough to make it profitable.

*Plateau*

On the Plateau a program of intensive research on soil deficiencies should be combined with tests of a wide range of pasture legumes and grasses.

*Middle Belt*

In the Middle Belt field crop production has preempted the areas of highest fertility and it is clear that fertile land should not be turned over to pasture. Efforts in this area should aim at building up naturally unproductive or depleted soils through livestock production. Tsetse control and provision of permanent watering points are essential complements of pasture improvement. Fundamental research is required on the lighter sandy types of soil in the area.

*Western and Eastern Regions*

In the northern part of the Western Region a productive sward grows where soil fertility is sufficiently high. Throughout the Western and Eastern Regions there is urgent need for developing herbage legumes; research should concentrate on their nutritional requirements.

*Southern Cameroons*

In the montane environment of the Southern Cameroons, pastures of Kikuyu grass and true clovers are capable of high productivity. A pasture research program at Bamenda should be a major activity of the department of agriculture, collaborating with the proposed agricultural research institute and the Southern Cameroons veterinary department.

*Forage Crops*

Production of cultivated forages—including guinea corn and millet cut early for silage or hay, legumes such as groundnuts, cowpeas and pigeon peas now cultivated for their seeds, and legume forages grown specifically for hay—can be considerably increased.

The mission recommends extending research and tests on forage production directed toward determining the most productive types,

their fertilizer requirements and their place in crop rotations and mixed farming systems. We also recommend extensive demonstration of legume forage crop conservation, to supplement the harvesting of young natural grass that would otherwise go to waste.

#### *Research Centers*

The mission recommends that pasture research stations be located at Samaru, in the Kano-Katsina area, Maiduguri, Shendam, Yandev and Mokwa in the Northern Region. Each of these stations should build up, in time, a series of field stations to cover additional soil types. The proposed agricultural research institute should keep in touch with fundamental pasture research throughout Nigeria. The work at Moor Plantation will be of considerable benefit to the Western Region, which should also be served by pasture research stations at Agege near Lagos, Ado-Ekiti and Benin. In the Eastern Region, stations are suggested at Enugu, Umuahia and Calabar.

#### E ANIMAL NUTRITION

The seasonal grazing movements of the Fulani have developed good breeds of livestock and reasonable levels of nutrition. Among other stock owners, the feeding of livestock is frequently haphazard but some conservation of crop residues and hay is practised by the Hausa for dairy cows, horses and donkeys, while the home grinding of guinea corn and maize produces a bran that is fed to livestock.

The mission recommends that Northern native authorities develop communal village grazing reserves as a means of bringing livestock into peasant farming. Such reserves must have sufficient permanent watering points sited according to expert advice. They should be of adequate size—at least 30 acres per family—dressed with super-phosphate and trace element fertilizer where necessary, properly managed, fenced where possible and fully protected by law.

#### *Feeding of Concentrates*

Scientific feeding by private enterprise has proved successful at one large commercial piggery near Kano, where guinea corn, groundnut

cake, locust bean and blood meal have been fed, together with grain. Many concentrated feeds are available in Nigeria, partly as by-products of the processing of export crops; they include groundnut cake, palm kernel cake, cotton seed and rice polishings. Demand for them has been limited, however, although the fattening of cattle for slaughter with purchased feedstuffs would in our opinion be highly profitable at current prices. It will take active extension work to overcome the reluctance of cattle producers to make use of concentrates.

#### F MARKETING OF LIVESTOCK PRODUCTS

Apart from the Fulani, few but town dwellers drink milk. Milk is essential for effective nutrition and it should be produced at low cost not only for consumption in towns, but later also in villages. Production is easiest to develop in the higher areas. Programs for increased dairy production should be undertaken at Jos and Bamenda and the dairy project at Agege should also be maintained with improved, fertilized pasture.

The mission recommends that pasture research work in the Plateau area be designed primarily to assist dairy production and that the Northern development corporation undertake cheese and butter production projects following practices developed at the Vom dairy and butter factory.

In Bamenda Province in the Cameroons, there are good prospects for dairying on approximately 1,000 sq. mi. where grasslands occur, intersected by wooded valleys at 4,000–6,000 feet. The mission recommends a survey to determine the areas in the Cameroons best suited for dairy production and for the site of a pilot creamery and clarified butter and cheese factory.

Town dairies should be established in such population centers as Ibadan, Kano, Jos and Umuahia; the one at Agege, serving Lagos, should be expanded. At most of the locations mentioned, except Bamenda, hay and concentrates will have to be fed at first. It is hoped, however, that the pasture research recommended earlier will permit development of good outside grazing conditions within a fairly short time, wherever sufficient land is available. It is recommended that

the regional development corporations undertake projects along these lines as quickly as possible.

Advice on technical aspects should be sought in all cases from the agricultural and veterinary services, and courses of training in dairy technology should be organized by these services. The mission further recommends that both FAO and UNICEF be invited to assist in the development of town dairy projects.

### *Beef*

Probably some 40% of the entire cattle trade is located at four centers—Lagos (Apapa), Ibadan, Kano and Umuahia—with production of dried meat at Nguru. In order to reduce the spread of disease and the wastage of meat following on the movement of livestock on the hoof, movement by rail should be facilitated. Loading points should be improved, the number of cattle wagons should be increased, special trucks should be provided for the transport of sheep, goats and pigs, and the time between loading and delivery by rail reduced to a minimum.

In the past, recommendations have been made for the centralization of slaughtering and the establishment of meat canneries in Nigeria. The government has probably wisely adopted a cautious approach to these proposals. However, the mission noted with interest the successful experimental canning venture at Kano and it considers there is justification for encouraging private enterprise to develop meat processing in the North.

Bearing in mind the considerable advantages to be gained by the establishment of a meat canning factory, (not least being the stabilizing effect on the slaughter stock trade and the restriction of tradestock movements) the mission is of the opinion that a pioneering factory should not be restricted in the exportation of canned meat or meat products.

Many of the principal abattoirs in Nigeria are in urgent need of modernization and considerable funds for this purpose will be needed for expenditure in the main towns.

The feeding of the concentrates to livestock has already been mentioned. The mission emphasizes the possibilities of fattening cattle on a large scale on holding grounds with rich grasslands close

to rail and in the vicinity of a meat processing plant. Units of approximately 10,000 acres should be sought near Makurdi, Kafanchan, Minna and possibly later at Mokwa, when it is free from tsetse. Some of the established cattle-trading groups of the North, in addition to the Northern development corporation, should be encouraged to lease such areas and to develop these fattening practices. The observance of stringent disease control in these undertakings is of course essential and would require special attention from the Veterinary Department.

### *Mutton*

Improvement of pastures and breeds, veterinary supervision and better transport are essential to mutton as well as to beef production. Multiple-deck motor lorries could be used to bring sheep from the more remote areas of the North either to the railway or to slaughtering centers.

### *Pig Products*

Pig raising is the quickest means of solving the meat shortage problem of the South. Both government and private enterprise have demonstrated that it can be carried on with profit. The mission's earlier recommendation for increased demonstration and extension in the South should be implemented before the development corporations undertake projects in this field; in the meantime private enterprises, such as that operating successfully near Kano, should be given every encouragement.

### *Poultry*

The mission feels that poultry battery units offer the best prospects and recommends that a 5,000-bird unit be developed by the Western development corporation as a commercial project to serve the Lagos market; it should have close veterinary supervision for disease control. Wider acceptance of eggs as human food should be fostered by a sound extension campaign.

## G VETERINARY MEDICINE

The value of animal products, currently estimated at £ 30 million, could be trebled within 20 years. If this is to occur, Nigerians, especially in the South, must learn to value livestock and to appreciate sound methods of husbandry. A large increase in the number of locally trained veterinarians is necessary to meet the needs for research, education and control. Plans put forward in the Ellicott Report <sup>7</sup> for the establishment of a professional faculty of veterinary medicine at University College, Ibadan, should be implemented.

The mission agrees with veterinary officers in Nigeria that the resources of the Veterinary School at Vom should be co-ordinated with those of the University. Basic or preclinical instruction could be given at University College, clinical and advanced instruction at Vom. It should not be difficult for the University College and Vom to make necessary adjustments according to their respective staffs and facilities.

*Veterinary Curriculum*

The mission believes that the veterinary courses should place special emphasis on tropical diseases; and that treatment methods should stress techniques of flock and herd management, with emphasis on mass inoculations rather than individual treatments. The curriculum should cover four years of study, and include in the first year physics, chemistry, botany and zoology; in the second year anatomy, histology, animal physiology and chemistry. Third year courses might be given at Vom and should cover parasitology and pathology, veterinary medicine, obstetrics and surgery, pharmacology and materia medica; substantial clinical work should be required at this stage. The fourth year should be devoted to more advanced work in pathology and veterinary medicine; dairy hygiene and law should also be taught. Much of the time should be taken up by clinical work at Vom.

The reasons for proposing that the faculty of veterinary medicine be located at Ibadan include:

1. Availability of staff and facilities for teaching the physical and

<sup>7</sup> Command Paper 6655.

biological subject matter on which agricultural, medical and veterinary sciences are based;

2. University associations and atmosphere, required for developing the necessary personal and professional standards;
3. The advantage of providing a realistic and useful link between University College and the national needs for future livestock development; and
4. The opportunity for students of nutrition and health to take courses, and later undertake postgraduate research, in veterinary medicine.

It is recommended that the faculty of veterinary medicine be administratively separate from the faculty of agriculture. There should, however, be the fullest co-operation in use of facilities and staff. Officers of the Veterinary Department who teach at Vom should hold staff appointments on the faculty of veterinary medicine of University College.

#### *Facilities*

The first need is for a building to house classrooms and laboratories for preclinical subjects, administration and staff offices, a reading room, lounge, and an assembly hall. It should be located near the site now under development by the faculty of agriculture, with sufficient contiguous land for expansion of veterinary facilities later.

A difference of opinion exists within Nigeria on the advisability of offering both the veterinary assistants' course and the full professional course at Vom. The mission believes that when circumstances permit, veterinary courses should be available to students of agriculture at the northern and western units of the Nigerian College and at the agricultural school at Umuahia in the East. This assumes that administration of agricultural training in the northern and western departmental schools of agriculture will be transferred to the respective branches of the Nigerian College.

In addition to general veterinary courses given to all agricultural students, advanced work in veterinary science should be provided for students wishing to become veterinary assistants. The final year of the advanced course should be an internship at Vom.

It is suggested that veterinary assistants continue to be trained as at present until the full program can be put into effect. It may be desirable to offer basic veterinary science to all agricultural students at each unit of the Nigerian College but to limit veterinary assistants' training to one or two such institutions, depending on the demand by students and the needs of government. Brief apprenticeships at Vom might also be provided for agricultural graduates who wish to qualify as inoculators grades 1 and 2, or third class veterinary assistants.

#### *Veterinary Research*

The mission considers that veterinary research should be intensified both at Vom and within the faculty of veterinary medicine recommended at University College, Ibadan. The plan of the Colonial Office for developing Vom into a West African veterinary research organization is also endorsed. This would permit a concentrated attack on common problems of vaccine production and animal physiology, the recruitment of first-class veterinary research officers and the provision of up-to-date laboratories and library facilities. The mission also recommends that Nigeria continue and increase its support of the West African Institute for Trypanosomiasis Research.

## v FISHERIES

### *Importance*

Fish have traditionally been important in the Nigerian diet as a source of animal protein. In view of the rapid growth of population and the protein deficiency in the diet noted earlier, the production and consumption of fish needs to be substantially increased.

Fishing is carried on with traps, cast nets and other implements by the populations living near lagoons, creeks and rivers. In less populated districts the rivers are fished by itinerant bands, who take as much fish as possible in a short time, often by highly destructive means, and immediately cure the catch for sale in nearby markets. Until recently sea fishing was negligible, except for bonga and shrimp fishing near the estuaries of the big rivers.

Exact data on fisheries production are not available. The natural income study roughly estimated a catch of 42,000 tons of fresh fish in 1952-53 valued at £ 6.3 million; this corresponds to nearly 1% of gross national product. Of the total, an estimated 18,000 tons of fish came from creeks and coastal waters, 16,000 from the rivers and 8,000 from Lake Chad. A substantial part of the fish production is consumed in dried or smoked form.

#### *Present Resources and Practices*

Nigeria's thousands of miles of rivers and streams, and many isolated swamps and ponds, contain some 150 different varieties of fish. The catfish (*Synodontis*) and various mud-fish varieties (*Clarias*, *Bagrus*, *Chrysichtys*, *Heterobranchus*) constitute 75% of the catch where fishing is done with traps or lines rather than nets. Mud-fish are able to survive in pools during the dry season, and sometimes even leave the water and travel over land for 100-200 yards to reach deeper waters.

During the rainy season, floods, although disturbing the environment, bring abundant food for the fish which then feed heavily. This is also the spawning time for most of the species and they migrate from the lower reaches upstream into the tributaries and swamps. During the dry season, the streams break up into pools or lagoons of still water, where fish may be stranded. It is believed that the resulting heavy loss of fish could be substantially reduced by maintaining an adequate area and depth of water by means of weirs placed at the lower end of the pools. This would provide space and feeding facilities for the fry and small fish, whose rate of growth would be rapid in these tropical waters. But in view of the fact that the carrier of onchocerciasis (river blindness) breeds in highly aerated water, construction of weirs should be undertaken only after consultation with health authorities.

Local fishing practices are often very destructive. The government should prohibit or limit destructive fishing methods and regulate the types of nets and other devices. So far, specific regulations have been issued only against the use of poison. Native authorities have prohibited certain practices but the rules are often not enforced.

There seems little immediate prospect of increasing the output of

fish from the lower reaches of rivers and creeks. There is danger that the fish population may be depleted. It is difficult to enforce conservation measures over the wide and often inaccessible areas involved. Native authorities in some districts have introduced fishing rules, however, and their operations should be closely watched with a view to adopting them elsewhere if they succeed.

Until recently, fishermen living near the sea have preferred to fish in the lagoons, going to sea only at the season when fish were abundant. The output of sea fish is now being increased by use of more and better-designed canoes and motor boats, and by large-meshed encircling nets for bonga and hemp set nets for sharks and sawfish. Two trawlers are also operating.

### *Fish Culture*

Establishment of fish ponds is of recent origin and no satisfactory controlled experiments have yet been carried out. In southern Nigeria, there are many suitable sites for small and medium-sized ponds. In recent years village communities, schools and leper colonies have constructed several ponds at a reported cost of about £ 100 per acre and dams and reservoirs have been stocked. The results seem in general to be satisfactory, with annual yields per acre ranging from one-half to one ton of fish.

Near the coast, the Fisheries Administration is experimenting with construction of brackish water ponds, locally called *tambaks*, and stocking them with bonga fry. Fish production is also being combined with paddy cultivation.

Some experiments of stocking with fish waters impounded by dams are being made near Funtua and are planned in Sokoto Province. Most of this work in northern Nigeria is concentrated on the Plateau, where a good market for fish exists. There are good possibilities for ponds in that area if suitable sites are selected and the ponds are protected from floods.

The Northern Regional Development Board has recently started commercial fish farming in Panyam under expert supervision. The project will cover 600 acres, of which 100 acres are already stocked with *Tilapia* and another 250 acres will be soon under water. Its

results, which will be known in a year or two, should indicate the practical possibilities of fish farming on the Plateau.

### *Curing of Fish*

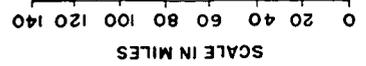
The greater part of the annual catch, including sea fish when the catch is heavy, is dried in the sun or smoke-cured by the fishermen and sold at local markets to middlemen or consumers. The chief inland centers of the industry are the rivers of the Northern Region and Lake Chad.

### *Fisheries Development*

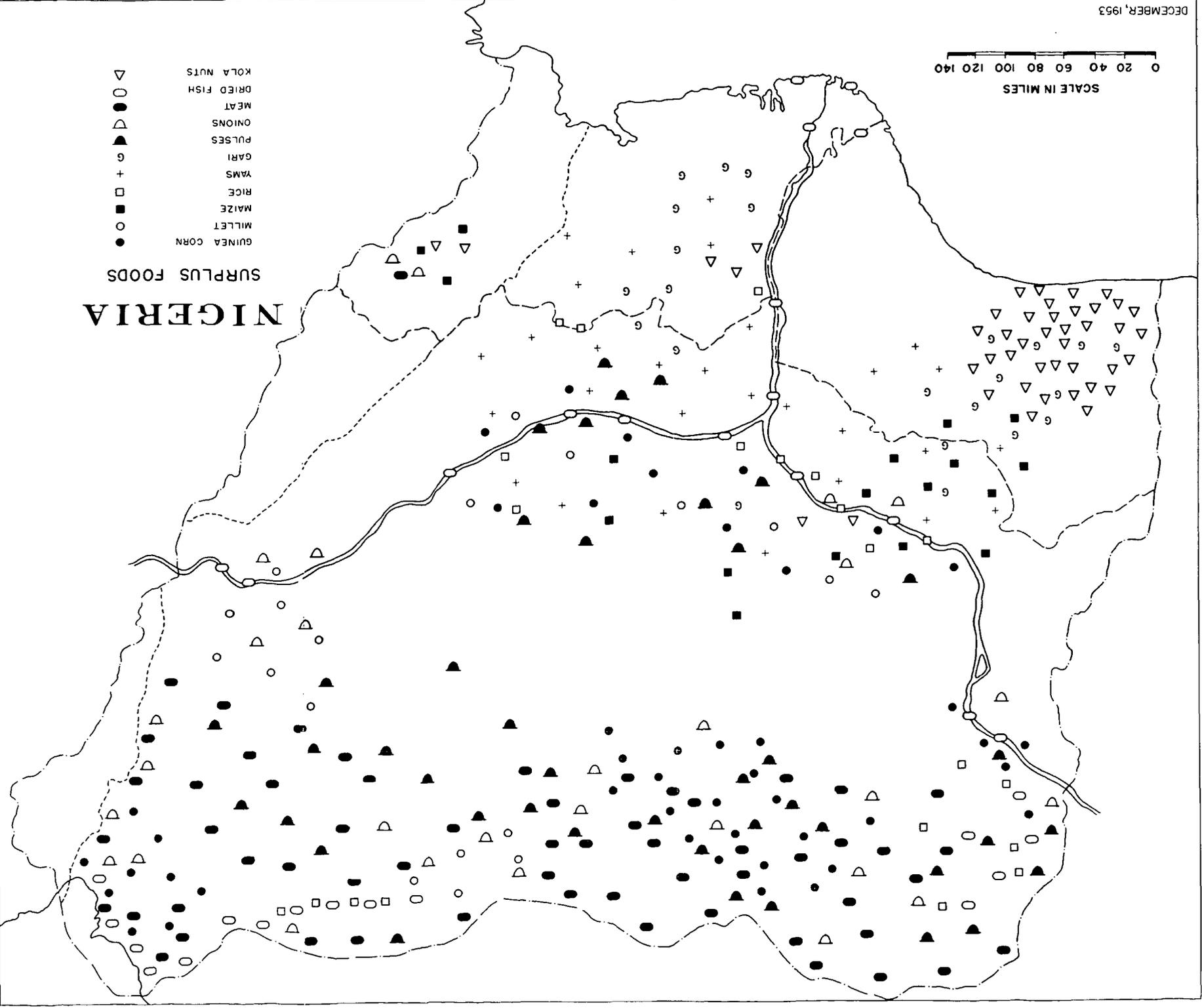
The need and demand for fish is fast increasing, while stocks are being progressively depleted. High priority should be given by the government to measures for a sustained increase of fisheries production. The mission recommends enactment and effective enforcement of more adequate conservation rules, the ban on the use of poison in particular; expansion of staff for development and regulation of fisheries—the present staff of eight for the entire country being inadequate to carry out the necessary investigations and pilot operations and to produce early improvement in existing fisheries; establishment of a central research and demonstration unit, to be responsible for research work for all of Nigeria;<sup>8</sup> continuation and acceleration of the stocking of pools, dams and reservoirs; introduction of better methods for sea fishing with small motor boats and trawlers; and finally improvement of curing methods.

Estimates of the cost of implementing these recommendations are given in Technical Report No. 10.

<sup>8</sup> This would make unnecessary Nigeria's continued participation in and financial support of the West African Fisheries Research Institute in Sierra Leone.



- NIGERIA**  
SURPLUS FOODS
- GUINEA CORN
  - MILLET
  - MAIZE
  - RICE
  - RICE
  - △ YAMS
  - △ GARI
  - △ PULSES
  - △ ONIONS
  - MEAT
  - DRIED FISH
  - △ KOLA NUTS





## TECHNICAL REPORT 9

### MARKETING, STORAGE AND CO-OPERATIVES

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#### 1 DOMESTIC MARKETING

The trade in commodities produced in Nigeria extends to foodstuffs such as grains, animal products, kola nuts, roots, pulses and vegetable oils, and to cloth, leather products, earthenware, soap, cotton, skins, rock-salt and tobacco. Some of the movement is from countryside to nearby urban areas but much is long-distance. The latter has been stimulated by the presence in the South of communities of Northern migrants and by Southern "stranger" settlements in the North; these retain a preference for products of the region of their origin.

Local trade is carried on almost entirely by Nigerians; they control the well-organized cattle and kola nut trade. In most parts of the country, internal trade is handicapped by lack of draft and pack animals but there is considerable waterborne traffic, via the Niger and the Benue, between the savannah country and the forest belt. The development of the railway and roads has substantially increased the volume of overland trade; this is likely to grow more rapidly in the future as the population becomes increasingly concentrated in urban areas.

This very concentration makes it important to foster local trade, and to overcome deficiencies in transport and marketing facilities and the absence of organized trading at the wholesale level for all commodities except cattle and kola nuts. Unless this trade is developed, the flow of supplies to the larger consuming centers may become inadequate to meet demand.

#### *Volume of Domestic Trade*

Map 8 shows those areas which produce surpluses of locally traded foodstuffs. All kola nut shipments originate in the West, livestock in

the North, grains and cowpeas in the North and the Middle Belt, and gari and yams in the Middle Belt and the South.

About 40% of kola nut production, estimated at 120,000 tons, is carried by rail to the North. Another 10% is shipped by lorry from the production centers around Ibadan and Abeokuta to the East and to other parts of the West. The long-distance kola nut trade is closely connected with the livestock trade. The traders who buy cattle from Fulani herdsmen in the North and bring them to Western urban centers also act as kola nut buyers, either on their own account or for Northern wholesalers.

Trade in livestock is confined largely to beef cattle, although goats and sheep are also moved from the North to southern urban centers and the establishment of piggeries in the North has led to an increased trade in hogs in recent years. In 1952 an estimated 270,000 head of cattle were marketed in the South, 160,000 traveling on the hoof and the balance by rail. About two-thirds of the total was destined for the Western Region and the rest for the East. Cattle driven south travel through tsetse-infested areas. The route to the West lies partly along tsetse-free corridors; losses on this route are less than 1%. But it may take 60 days to travel the route to the Eastern markets and losses may be as high as 3%.

Supplementing the livestock trade is the trade in dried meat, carried on mostly by Yoruba merchants. The meat-drying centers are concentrated around Nguru, in the northwestern part of Bornu Province. Railway shipments of dried meat amounted to 2,100 tons in 1952-53, the equivalent of some 35,000 head of cattle.

If meat-drying methods were improved, substantially larger quantities could be produced, providing an important source of animal protein. We therefore suggest that the Northern regional government investigate the techniques employed in those Near Eastern countries in which dried meat figures prominently in the diet, with a view to introducing these methods.<sup>1</sup>

Compared with the kola nut, livestock and dried meat trade, local commerce in grains and other basic foodstuffs is poorly organized. Only slightly more than 3% of these other agricultural products are shipped by rail, although the trade in guinea corn, millet, pulses

<sup>1</sup> See Technical Report No. 13 for recommendations with respect to meat processing.

(mainly cowpeas), onions, peppers and dried fish is reported to be considerable.

The absence of organization in the grains trade is particularly serious because it prevents economic utilization of local surpluses and the carry-over of stocks between harvest seasons. It is probably attributable mainly to meagreness of financial resources, but the lack of storage facilities and the negative, sometimes even hostile, attitude of native authorities toward this trade, considered "speculation," are partly responsible.

In the North, native administrations have established famine stocks in an attempt to prevent local shortages from assuming famine proportions, particularly in drought years. But these stocks are only a disaster reserve; they are insufficient to prevent periodic local shortages, particularly in urban areas, or to mitigate the sharp seasonal price fluctuations between harvests. Active participation in the food-stuffs trade by the regional or local government authorities, aside from the maintenance of famine stocks, would be neither feasible nor advisable. But we think that that trade, so far from leading to speculation and high prices, would help to smooth out price differentials and would on the whole be beneficial. We therefore think it should be encouraged by government. Improvements in road transportation (discussed in Technical Report No. 17), storage facilities and improved markets (see below) will go a long way to foster this trade. It may also be necessary to assist private commercial activities through credits by banks and co-operatives.

### *Markets*

Apart from the business done by the stores and canteens of expatriate companies, all commerce takes place in town and village markets. All towns and most villages have market days at least once a week. Most markets lie within a 1-to-10-mile radius from the communities they serve and can be reached on foot in a day. Depending on the area and the distance they must travel, goods are head-loaded or carried by canoe, bicycle, donkey or lorry.

The larger towns also have a number of daily markets. Some markets extend over areas of 150-200 acres; merchandise is brought by railway, water and lorry. Attendance has been reported to be

20,000 in Onitsha, 14,000 in Kano, and 10,000 in Ikare (Western Region). Traders are often organized in guilds which frequently try to restrict the activities of traders not belonging to the community.

Many markets are badly organized and unsanitary. There is constant danger that they will spread disease and epidemics. Foodstuffs and other commodities often spoil because of the lack of shelter and storage facilities.

In some areas, native authorities and local governments have taken measures to improve market facilities. The loans boards have made funds available to several local authorities for market improvements; the loans are serviced out of the proceeds of market fees. In one instance a loan was made for a survey of the Onitsha market in the East with the understanding that the Regional Production Development Board would finance a major market improvement project estimated to cost £ 500,000; execution of the project has been delayed.

Improvements of local market facilities are desirable and should be encouraged by government authorities. However, they should be financed not by the regional development corporations but rather from funds of local authorities, supplemented if necessary by loans from the Local Development Funds proposed in Chapter 5. The improvements should include permanent stalls, bituminous surfacing of the market area, drinking water facilities and centrally-located scales. In larger markets, there should be storage lockers. In cattle-trading centers, enclosed stockyards and watering facilities should be provided. The cost of these improvements has been estimated at £ 10,000 to £ 15,000 for markets serving small towns or several villages, with correspondingly higher amounts for those in larger towns.

We also recommend that local authorities in localities with large markets set up committees to be responsible for market administration and the collection and dissemination of information on market prices. These activities should be supplemented in each region by a domestic marketing section of the regional department of marketing and exports,<sup>2</sup> to provide technical guidance and to serve as a center

<sup>2</sup> This refers to the organizations which we have assumed will be established to serve as executive agencies for the new regional marketing boards. See Appendix C, p. 624. If the establishment of such organizations is delayed or it is decided not to establish them, the recommended domestic marketing functions could be performed by the regional produce inspection services.

for the collection of price data, to be made available to the local market committees. Token allocations of funds for this purpose have been included in the mission's projection of expenditures of the regional departments of marketing and exports.

### *Weights and Measures*

Outside the large commercial centers, traditional weights and measures, varying from place to place, are still in use. The kerosene tin, the cigarette tin and baskets of varying sizes are common standards of measurement.

The absence of standardized units of weight and measure is a severe handicap to the conduct of trade; it will be felt more and more in the future as commercial relations between the various parts of the country expand. Although we are aware of the difficulty of introducing standardized weights and measures, we suggest that consideration be given to the establishment of a federal office of standardization which would set a fixed relation between local units and the weights and measures generally used in international trade.

## II STORAGE OF FOOD PRODUCTS

Closely connected with the organization of domestic trade is the problem of storing and warehousing local products, particularly food-stuffs. Storage methods are primitive and proper facilities are lacking. As a consequence, food production itself is adversely affected, since there is little inducement to produce amounts larger than required in the farmer's immediate household or readily saleable in the local market immediately after harvest. Although the problem of storage has become acute only in the case of groundnuts (see Technical Report No. 7), it is by no means confined to that product. The periodic recurrence of drought years in the North makes it necessary to provide storage facilities for the carry-over of grain from one harvest year to the next and to devise methods of maintaining local famine stocks without heavy loss from mold and insect damage.

At present, food storage is particularly important to the North, where the staple diet consists largely of grains and pulses. In the

South, where roots comprise the staple diet, the storage problem is less serious. However, since maize and rice are becoming basic foodstuffs in the South, it is desirable to devise economical storing and warehousing methods in that area too. The technical problems are less difficult in the North. There the moisture content of the grain crops at harvest time is low, usually less than 10%, so that damage to stored foodstuffs is slight during the dry season. Heavy insect damage, associated with a high moisture content, occurs during the rainy season only and thus affects only those stocks carried from one harvest to the next. In the South, on the other hand, the moisture content of foodstuffs is high, making them susceptible to insect damage throughout the year.

### *Storage Methods*

Storage methods in rural areas, though primitive, are adequate for small quantities of foodstuffs. Apparently they cannot be easily adapted to storing and warehousing of large quantities.<sup>3</sup> Farmers and small traders generally store food crops in mud and wattle rooms with earth floors; the necessary ventilation openings give easy access to insects and rodents. In parts of the country where rainfall is light, grain is stored in underground pits. If the site is well selected and the pits are airtight, damage is limited to the grain directly in contact with the ground. In some areas, maize is stored by hanging on the cob and guinea corn by hanging on the stem; this reduces both moisture and insect damage.

In some of the larger Northern towns, famine stocks are stored in concrete warehouses. For some time the government of the Northern Region has been considering the construction in 15 towns of famine-stock warehouses with a total capacity of 60,000 tons, at an estimated cost of £ 450,000. We believe the project should be postponed until it has been determined what is the most efficient and economical method of grain storage.

The West African Stored Products Research Unit in Kano, financed jointly by the governments of the Gambia, Sierra Leone and Nigeria,

<sup>3</sup> Expatriate firms and Nigerian buying agents of the Marketing Boards generally have storage facilities with cement or laterite floors and corrugated iron roofs. They are used exclusively for storage of export produce and, sometimes, of imported merchandise.

and by the Nigerian Marketing Boards, undertakes research in storage and pest control. It has, however, concentrated its attention on the groundnuts stored in pyramids at Kano and other railheads of the North.<sup>4</sup>

The mission recommends that research on storage and pest control be continued and expanded to local foodstuffs. The Kano laboratory of the Stored Products Research Unit should investigate problems relating to rainy season storage, and a new unit should be set up in Ibadan to concentrate on the storage of maize, rice and Northern grains and pulses regularly shipped to the South. For the Kano unit, experiments with storage in airtight concrete hangars is recommended. At Ibadan, special attention should be given to the work done at the Inter-American Institute of Agricultural Sciences in Turrialba (Costa Rica) on drying and storing of grains with a high moisture content. The expenditure which the mission suggests for storage research is shown in Technical Report No. 10.

### III CO-OPERATIVES

The co-operative movement in Nigeria originated in the nineteen thirties. Table 1 shows its progress since 1939. In recent years it has made considerable headway and promises to become an important factor in the country's social organization, particularly in rural areas.

TABLE 1 Development of Co-operatives

Year	Produce Marketing Societies	Thrift and Loan Societies	Thrift and Credit Societies	Consumer Societies	Secondary Societies and Others
1939 .....	113	9	8	—	—
1943 .....	152	129	40	—	—
1947 .....	242	265	141	4	40
1950 .....	309	314	388	38	43
1953 .....	350	260	589	29	108

SOURCE: Digest of Statistics, Lagos.

Co-operatives have been developed, and are organized, along regional lines. There is a registrar for co-operatives in each region. The

<sup>4</sup> See Technical Report No. 7, page 220.

movement enjoys great popular support in the Eastern Region and plays an important role among cocoa farmers in the West; it is least developed in the North.

#### *Northern Region*

There were in 1953 157 primary societies in the Northern Region, with a membership of 5,973 and a working capital of £ 79,000; secondary societies (co-operative unions) numbered five. Eighty-six of the primary societies were urban thrift and loan societies, established largely by government clerical workers from the South into whose home towns and villages co-operatives had been introduced some years earlier. The societies are well run and have made better progress than their Southern counterparts. They have established co-operative unions in various Northern towns.

Rural thrift and credit societies have not shown much success in this region. Recently, however, interest in the co-operative credit movement has been on the increase in cotton-growing districts. In Katsina Province the co-operative movement is being encouraged by the native authorities and a course for co-operative inspectors was given there in 1953. Some of the societies are branching out into marketing activities and two have applied to the Northern loans board for funds to finance cotton marketing operations.

There are four marketing societies in Ilorin and Kabba Provinces where some 400 tons of cocoa are produced annually. They market about one-fourth of the local crop and their activities are financed by the United Africa Company.

In recent years, native authorities, among them the Emir of Katsina, have shown a growing interest in the co-operative movement. Officials familiar with the movement believe that with sufficient education and under proper supervision rapid progress can be made.

#### *Western Region*

The co-operative movement in the West consists largely of two types of societies: urban thrift and loan societies, two-thirds of which are concentrated in Lagos, and cocoa-marketing societies. After a setback during the late 'forties, the number of societies is rising once more

and in the last three years their financial position has improved. By 1953 the Western Region had 485 primary societies with 32,690 members and working capital of £ 970,000. Three hundred twenty of these were cocoa-marketing societies with a membership of 20,479 and working capital of £ 127,000, and there were 115 thrift and loan societies with 9,803 members and £ 325,000 of working capital.

Marketing societies play an important role in the economic life of western Nigeria. They have 10 years of operating experience and are well run. In 1952, 335 primary marketing societies and 16 co-operative unions formed the "Association of Nigerian Co-operative Exporters," which became a buying agent of the Marketing Boards. The aggregate working capital of the Association and the societies had reached £ 300,000 by the end of 1953, while the turnover in 1953 was £ 2 million. The Association marketed 9,700 tons of cocoa, almost one-tenth of the entire crop, 4,300 tons of palm kernels and 150 tons of palm oil, 1,500 tons of copra and 500 tons of coffee. It has asserted that its entry into the copra and coffee market substantially raised the producer price. With a loan of £ 5,000 from the Western loans board, it is building new storehouses to bring its storage capacity to 4,000 tons.

The marketing societies engage in activities other than marketing. Some provide seasonal short-term credit to their members. Others have purchased rice mills. A group of palm produce marketing societies has acquired a Pioneer oil mill. Several provide medium-term loans for the rehabilitation of members' cocoa farms and the establishment of cocoa, oil palm, pineapple and citrus fruit plantations. Several, in partnership with the Western Regional Production Development Board, are setting up new plantations.

The financial position of the co-operative movement in this region was greatly strengthened by the establishment of the Co-operative Bank of the Western Region at the end of 1953, financed by a Cocoa Marketing Board grant of £ 1 million. It will act as the co-operatives' central financial institution and hopes to attract the savings of the region's thrift and loan societies, amounting to some £ 300,000. Its rate of interest will be higher than that of the Post Office Savings Bank, where the funds are now deposited. The Co-operative Bank plans to use its resources to supply credit to finance marketing activi-

ties and to establish plantations, nurseries, etc.; to make funds available to the Co-operative Supply Association, which is to be established as the apex organization of the consumer co-operative movement; to give financial assistance to building societies, craft societies, etc.; and to provide funds for short-term production credits to co-operative societies.

### *Eastern Region*

The co-operative movement in the Eastern Region consists mainly of urban thrift and loan societies and rural thrift and credit societies, concentrated largely in Calabar Province.

In March 1953 there were 659 primary societies in the Eastern Region and the Southern Cameroons, with some 35,000 members and working capital of £ 250,000. The number of co-operatives is fast increasing; thrift and credit societies are mainly responsible for the increase, despite the failure of a large number of these societies in earlier years. Between March and October 1953, more than 100 new societies were registered.

The thrift and credit societies are now well managed. The amount of savings and loans is increasing regularly and the percentage of overdue loans is less than 1%. The societies established the Calabar Provincial Co-operative Bank in Uyo with a membership of local unions and thrift and loan societies. In November 1953 the bank's working capital amounted to £ 13,000 and the number of member societies was 499.

In Owerri Province the development of the credit movement was slower. But 20 new societies were formed recently and the Aba Divisional Co-operative Thrift and Credit Union was transformed into the Owerri Provincial Co-operative Bank.

There are at present few marketing societies in the East outside the Southern Cameroons but preparations are being made to set up co-operatives for the marketing of oil palm produce in the Eastern Region under schemes financed by the Oil Palm Produce Marketing Board. In this connection the Oil Palm Produce Marketing Board has been asked to provide financial assistance for the establishment of a co-operative bank.

*Southern Cameroons*

There are three rural thrift and credit, three urban thrift and loan, 29 marketing co-operatives and three marketing unions in the Southern Cameroons. The marketing movement is new but it is developing rapidly despite some setbacks; turnover is increasing and the societies are also engaging in lending activities. The marketing union among the Bakweri markets bananas grown outside the Cameroons Development Corporation plantations; it delivered 10,000 stems in 1953. Seventeen societies are marketing cocoa and 10 societies market coffee. A coffee-marketing union owns a hulling mill.

The success in the field of marketing led in 1953 to the formation of the Cameroons Co-operative Exporters, representing some 2,000 farmers. It acts as a buying agent of the Cocoa Marketing Board. It is financed through commercial overdraft facilities guaranteed by the Marketing Board and also received a loan of £ 8,000 from the Eastern Regional Production Development Board to cover the initial cost of employing an expatriate officer. The co-operative plans to build storehouses, to market palm produce and to provide equipment and chemicals for the spraying of cocoa trees.

*Lines of Co-operative Development*

The mission believes that the co-operative movement can provide a valuable organizational basis for agricultural development. The social structure, based upon the greater family and the local community, and the fact that land is not individually owned, facilitates the organization and operation of all kinds of co-operative societies.

The co-operative movement has developed well and on sound lines, by and large. Its further development should be encouraged and assisted by government. However, it must be realized that the co-operative movement has to develop from below. The members themselves must run the societies and assume responsibility for their operations. The primary societies which are the basic units of the co-operative structure cannot afford salaried executive staffs because their operations and resources are limited. Thus a membership competent to handle day-to-day business is essential for the efficient running of the societies. In many countries where co-operatives were sponsored

and financed from the outside, the movement proved a costly failure. Enthusiasm for it declined as its financial resources diminished and it took many years to rebuild the co-operatives along sound lines.

The mission therefore believes that schemes allocating large sums to societies not yet ready to make effective use of them should be avoided. On the other hand, societies and co-operative unions which are well run should be given financial assistance in the form of loans from the regional development corporations.

The mission sees no present need to establish co-operative banks in the Northern Region and the Southern Cameroons. The co-operative movement is not sufficiently developed there to warrant setting up special financial institutions. It recommends, however, that assistance funds of about £ 5,000 per year be made available to the registrars of co-operatives in these regions for advances to co-operative unions in need of funds. The co-operative movement of the Eastern Region, on the other hand, has developed to a point where the setting-up of a regional co-operative bank is desirable. We suggest that it be financed through a grant or interest-free loan from regional funds and that in the next five years £ 150,000 be made available to it.

The mission also feels that the rural thrift and credit societies should be encouraged to broaden the scope of their activities and to engage in co-operative marketing and processing of produce. Such multi-purpose societies could strengthen their financial resources by profits from commercial transactions. The Marketing Boards should continue to assist the co-operative movement by licensing qualified co-operative unions and societies as produce-buying agents.

Regarding the organization and promotion of co-operatives, the mission offers the following recommendations:

1. *Office of the Registrar:* The offices of the registrars of co-operatives should be substantially strengthened through the employment of more assistant registrars and inspectors.

2. *Regional Co-operative Unions:* The organization of the co-operative movement should be strengthened by the formation of regional unions, with an expatriate officer as secretary. Auditing of local unions and societies should become the responsibility of the regional unions. Each regional union should have an education and promotion team composed of a senior officer and several junior

officers. These teams should give courses to co-operative secretaries and committee members and should prepare and distribute literature on co-operative activities. In the Southern Cameroons, the Cameroons Co-operative Exporters could perform the functions of a regional union.

3. *Co-operative Training School*: The co-operative training school established in the Western Region should be strengthened and used as a training center for auditors and inspectors of the co-operatives for all of Nigeria. Since it will continue primarily to serve the needs of the West, the cost of its operation should be borne by the government of the Western Region. Students from other regions should be charged tuition, to be covered, together with their living expenses, by scholarships from their own regions. A permanent building should be provided. The duration of the training courses should be increased from 6 to 10 months.

Estimates of the financial requirements for the support of the co-operative movement are shown in Technical Report No. 10.

## TECHNICAL REPORT 10

### *THE AGRICULTURAL DEVELOPMENT PROGRAM*

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In Technical Reports Nos. 6 to 8 we described Nigeria's resources and their utilization, and analyzed in some detail major crops and livestock, and the specific factors affecting their production; we have indicated in many instances how in our opinion the country's agricultural services can assist in raising and improving agricultural output. In Technical Report No. 9 we outlined problems of domestic marketing and storage, and the organization of the co-operative movement.

The following pages provide additional information on proposed federal and regional government programs and expenditures for agricultural development. Tables 1-9 summarize recommended government expenditures for agricultural and related services on a year-by-year basis, and investment expenditures for agricultural projects which we think should be undertaken by the regional development corporations.

#### *Federal Program*

Our projections of federal expenditure for agricultural services are shown in Table 1. The federal estimates include funds for the establishment and operation of an agricultural research institute, to engage in research on soils, the agronomy of field crops and pastures, horticulture, genetics and plant health, including the control of diseases and insects affecting economic plants. The institute, to be established by expanding the facilities of Moor Plantation at Ibadan, should be responsible to the federal Minister of Natural Resources but should have considerable independence of action in all scientific, technical and practical details of the research programs it undertakes. Its board of governors, which should be appointed jointly by the federal government and University College, Ibadan, and should include the institute's director, should be primarily concerned with matters of

finance and general policy. Its director should have full jurisdiction in matters of technical administration. Close co-operation between the institute and the University College is essential: the director of the institute should be a member of the University's faculty of agriculture and there should be interchange of staff and facilities between the two institutions.

The director of the institute should be assisted in his work by a deputy director. Our estimate of recurrent expenditures allows for the employment of 25 to 30 senior and sub-senior officers. We suggest aiming at a total staff of 75 by 1959-60. While we recognize that for the most part personnel for the more senior positions must be recruited from overseas, we hope that the junior and assistant staffs will be largely African from the outset.

We also recommend that the federal government establish a small plant quarantine office, which should work in close co-operation with the agricultural research institute and with the regional departments of agriculture. £ 5,000 is provided in our projections for the establishment of the office, and £ 5,000 per annum to cover salaries and other recurrent expenditure.

Other responsibilities which we think should be assumed by the federal authorities are contributions to international organizations (£ 30,000 per annum), and continuation of grants for mines and land reclamation and the Jemaa Resettlement Scheme.

### *Regional Programs*

*Northern Region* Our projections of expenditure by the Northern regional government on agricultural services are shown in Table 2. Most of these projections are extensions of work already begun; the extent of each is an indication of the relative importance attached to it by the mission.

The project for pasture improvement should tie in with planning for tsetse control, and with mechanized land clearing and fodder conservation. The livestock feeding project is designed to provide storage facilities and supplies of concentrated feeds for better nutrition of livestock for meat and milk production. While the project is to be financed and guided by the regional agricultural department, it should be administered by the native treasuries.

TABLE 1 Projection of Agricultural Expenditure: Federal Services

*(Thousand £)*

	Approved Estimates				Projections of Mission												
	1953-54		1954-55		1955-56		1956-57		1957-58		1958-59		1959-60		Total 1955-60		
	R	C	R	C	R	C	R	C	R	C	R	C	R	C	R	C	
Research and Administration .....	100	13	108	20	—	—	—	—	—	—	—	—	—	—	—	—	—
Nigerian Agricultural Research Institute ....	—	—	—	—	180	150	210	150	240	60	270	40	300	20	1,200	420	—
Contributions to International Organizations..	29	—	28	—	30	—	30	—	30	—	30	—	30	—	150	—	—
Plant Quarantine Office .....	—	—	—	—	5	5	5	—	5	—	5	—	5	—	25	5	—
Mines Land Reclamation <sup>1</sup> .....	—	—	—	50	—	50	—	50	—	50	—	50	—	50	—	250	—
Other Federal Expenditure <sup>2</sup> .....	—	258	—	310	—	10	—	10	—	10	—	10	—	10	—	50	—
<b>Total<sup>3</sup> .....</b>	<b>130</b>	<b>271</b>	<b>135</b>	<b>380</b>	<b>215</b>	<b>215</b>	<b>245</b>	<b>210</b>	<b>275</b>	<b>120</b>	<b>305</b>	<b>100</b>	<b>335</b>	<b>80</b>	<b>1,375</b>	<b>725</b>	<b>—</b>

<sup>1</sup> Grants to Northern regional government.<sup>2</sup> Includes the following items: Niger Agricultural Project Ltd. (in 1953-54); loan to Cameroons Development Corporation (1953-54: £ 200,000; 1954-55: £ 300,000); grant to Jemaa Settlement Scheme (£ 10,000 per annum from 1954-55 onward).<sup>3</sup> Totals may not be equal to sum of components because of rounding.

NOTE: R = Recurrent; C = Capital.

TABLE 2 Projection of Agricultural Expenditure: Northern Region

(Thousand £)

	Approved Estimates		Pre-liminary Estimates		Projections of Mission												Total 1955-60	
	1953-54		1954-55		1955-56		1956-57		1957-58		1958-59		1959-60		R	C		
	R	C	R	C	R	C	R	C	R	C	R	C	R	C				
<i>Department of Agriculture</i>																		
Regular Expenditure of Departments:																		
General Activities .....	358	124	389	110	400	160	430	100	470	80	510	80	550	80	2,360	500		
Production Division <sup>1</sup> .....	(105)	(14)	(125)	(20)	145	20	168	—	170	—	170	—	170	—	823	20		
Additional Laboratory Facilities .....	—	—	—	—	—	20	—	20	—	20	—	—	—	—	—	60		
Agricultural School Samar <sup>2</sup> .....	23	—	24	—	—	—	—	—	—	—	—	—	—	—	—	—		
Grants to Native Treasuries .....	(19)	—	(19)	—	(20)	—	(20)	—	(20)	—	(20)	—	(20)	—	(100)	—		
Special Projects:																		
*Regional Research Center .....	—	—	34	146	35	50	38	—	42	—	46	—	50	—	211	50		
*Groundnut Decortication Project .....	—	—	3	7	3	—	4	—	4	—	5	—	5	—	21	—		
*Cotton Development .....	78	25	76	6	80	20	85	20	90	20	95	20	100	20	450	100		
Irrigation Projects .....	1	60	1	60	2	60	2	70	2	90	2	120	2	160	10	500		
Rice Development .....	2	—	3	—	10	—	12	—	13	—	14	—	15	—	64	—		
Pasture Improvement .....	—	—	—	2	3	18	3	20	4	24	5	30	6	36	21	128		
Land Clearing, Fodder Conservation, Mechanization Tests .....	5	24	6	30	10	50	11	55	12	60	5	25	5	25	43	215		
Livestock Feeding Project .....	—	—	—	—	15	10	17	15	20	25	20	40	20	60	92	150		
Cattle Multiplication Project .....	6	10	12	5	15	20	16	30	18	30	20	30	25	30	94	140		
Sugar Cane Survey .....	—	—	—	—	5	—	—	—	—	—	—	—	—	—	5	—		
Mines Land Reclamation <sup>3</sup> .....	18	20	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Locust Control .....	1	—	1	—	1	—	1	—	1	—	1	—	1	—	5	—		
Total <sup>4</sup> .....	492	263	550	366	724	428	787	330	846	349	893	345	949	411	4,199	1,863		

See footnotes at end of table.

TABLE 2 Projection of Agricultural Expenditure: Northern Region (Continued)

(Thousand £)

	Approved Estimates		Pre-liminary Estimates		Projections of Mission												Total	
	1953-54		1954-55		1955-56		1956-57		1957-58		1958-59		1959-60		1955-60			
	R	C	R	C	R	C	R	C	R	C	R	C	R	C	R	C		
<i>Northern Native Treasuries</i> <sup>5</sup>																		
General Activities .....	188	74	194	76	200	78	210	82	221	86	232	90	244	95	1,107	431		
Communal Grazing Reserves .....	—	—	—	—	—	—	—	—	5	50	10	100	15	150	30	300		
Fodder Conservation .....	—	—	—	—	40	—	45	—	50	—	55	—	60	—	250	—		
Superphosphate Scheme .....	—	—	—	—	60	—	90	—	120	—	150	—	180	—	600	—		
<b>Total .....</b>	<b>188</b>	<b>74</b>	<b>194</b>	<b>76</b>	<b>300</b>	<b>78</b>	<b>345</b>	<b>82</b>	<b>396</b>	<b>136</b>	<b>447</b>	<b>190</b>	<b>499</b>	<b>245</b>	<b>1,987</b>	<b>731</b>		

<sup>1</sup> Now financed by Northern Regional Production Development Board.<sup>2</sup> Recommended to be transferred to the Nigerian College.<sup>3</sup> To be financed by federal government, beginning 1954-55; excluded from Northern Region accounts to avoid double counting.<sup>4</sup> Total may not be equal to sum of components because of rounding.<sup>5</sup> Figures for 1954-55 are mission estimates.

\* Expenditure reimbursed by Marketing or Production Development Boards.

NOTE: R = Recurrent; C = Capital. Figures in parentheses are not included in the totals, either because they do not represent an expenditure of government (as in the case of the Production Division in 1953-54 and 1954-55) or because they represent regional grants to local authorities, omitted from regional government totals to avoid double counting.

The cattle multiplication project is designed to promote the increased multiplication of selected livestock at Shika and Daudawa farms and at other centers.

The sugar cane survey should be made to ascertain possible future scope for improvement and expansion of sugar cane production. A report on the results should be made to the regional Director of Agriculture.

No increase has been projected in expenditures for locust control; it is intended only that existing measures be maintained.

Projections for the northern native treasuries include a large item for superphosphate application; the proposed investment will provide for the treatment of a million acres, or quadruple that already dressed. Cash should not be advanced for purchase but the fertilizer should be supplied as an advance against subsequent production.

Provision for communal grazing reserves is not made before 1957-58 because it will take at least two years of study on pasture development and livestock watering before the reserves can be satisfactorily established. The steeply rising expenditures projected thereafter are to cover purchase or lease of suitable areas, seeds, fertilizer, development of watering facilities and erection of fences where needed.

The fodder conservation project would cover the cutting for silage or hay of good quality grass which now goes to waste. The project will tie in to the establishment of grazing reserves and the livestock feeding project.

The facilities of the regional Department of Agriculture should be confined to office accommodation, housing, and field laboratories of a modest type in which essential field experimental work can be undertaken. Where scientific research is required, temporary transfer or secondment of research staff from the agricultural research institute should be made, at least initially; the necessary facilities could be provided by arrangement between the institute and the regional agricultural department. Should existing facilities prove inadequate for the expanded program, additional laboratory facilities may have to be provided. The mission recommends an allocation of £ 60,000 to be used as required for this purpose.

We believe that existing facilities for field trial and demonstration are adequate to serve each of the Northern provinces; we do not

recommend the establishment of any new experimental farms or research stations apart from the new research station to serve the groundnut producing areas, for which we have made a separate allocation, and extension of facilities at Samaru. Native treasuries should co-operate with the regional authorities in providing facilities for experimentation and demonstration for provincial agricultural officers.

We suggest that the officers of the "production division" (extension service) of the regional development corporation be transferred to the regional agricultural department and that their number be increased so that at least one officer may be stationed in each administrative district. We further suggest that the personnel of the department, in addition to extension officers, be brought to a strength of 50 senior officers, with a corresponding increase in junior and non-professional staff, by 1959-60.

There should be official stations for the use of the department at Maiduguri, Yola, Yandev, Mokwa, Badeggi, Shendam, Kontagora, Jos, Bauchi, Birnin-Kudu, Daudawa, Birnin-Kebbi, Sokoto and Nguru. In some cases experimental farms are already available; in others, small areas of land may have to be acquired for nursery facilities and testing grounds.

The future organization of departmental staff will be largely a matter for the Director of Agriculture. We believe that the Department should place great emphasis on permanent field work at the various stations; each officer of the Department should regard one of these stations as his working base. Officers serving specific provinces should have a general background of training and experience enabling them to advise broadly on the problems of their particular province; in addition senior specialists will be required to deal with problems of pasture improvement, groundnut, cotton and tobacco production, horticulture, soil conservation, animal husbandry and general agronomy.

*Western Region* Projections for the Western Region's agricultural services are shown in Table 3. We recommend that these services be separated from the research activities at Moor Plantation, as a corollary to the recommendation that Moor Plantation serve as a nucleus of the proposed research institute. The proposed general budget of the Department of Agriculture therefore includes £ 375,000 for new

TABLE 3 Projection of Agricultural Expenditure: Western Region

(Thousand £)

	Approved Estimates		Pre-liminary Estimates		Projections of Mission										Total 1955-60	
	1953-54		1954-55		1955-56		1956-57		1957-58		1958-59		1959-60		Total 1955-60	
	R	C	R	C	R	C	R	C	R	C	R	C	R	C	R	C
<i>Department of Agriculture</i>																
General Activities .....	189	29	181	98	200	85	210	80	220	75	230	70	240	65	1,100	375
Agricultural School .....	54	17	49	17 <sup>1</sup>	—	—	—	—	—	—	—	—	—	—	—	—
Special Projects:																
*Cocoa (except soil survey) .....	156	11	156	11	170	—	180	—	190	—	200	—	210	—	950	—
*Soil survey .....	69	1	69	1	70	—	75	—	80	—	85	—	90	—	400	—
Establishment of sub-unit of WACRI ....	—	—	—	—	—	300	—	—	—	—	—	—	—	—	—	300
Agricultural engineering .....	8	4	6	6	8	10	9	15	12	15	16	5	20	5	65	50
Farm Schools .....	4	—	7	—	10	5	12	5	14	5	16	—	18	—	70	15
Group Farming .....	5	5	8	15 <sup>2</sup>	—	—	—	—	—	—	—	—	—	—	—	—
Regional Stock Farms and Livestock																
Development .....	11	3	12	7	13	10	14	10	15	10	16	10	18	10	76	50
Poultry Development .....	8	2	9	2	10	5	12	5	12	5	12	5	12	5	58	25
Fertilizer Trials .....	2	—	7	—	8	—	10	—	12	—	14	—	16	—	60	—
Rice Experiments and Demonstrations ...	3	—	5	—	6	—	7	—	8	—	9	—	10	—	40	—
Pilot Dairy Projects .....	1	5	1	2	1	2	3	12	4	6	5	—	5	—	18	20
Total <sup>3</sup> .....	510	77	511	160	496	417	532	127	567	116	603	90	639	85	2,837	835
<i>Western Native Treasuries and Local Governments<sup>4</sup></i>																
Governments <sup>4</sup> .....	33	—	34	—	35	—	36	—	37	—	38	—	39	—	185	—

<sup>1</sup> Recommended to be transferred to the Nigerian College.<sup>2</sup> Recommended to be transferred to the regional development corporation.<sup>3</sup> Totals may not equal sum of components because of rounding.<sup>4</sup> Figures for 1954-55 are mission estimates.

\* Expenditure reimbursed by Marketing or Production Development Boards. 1954-55 estimates were not available for these items, so that 1953-54 expenditure is carried over unchanged in this Table.

NOTE: R = Recurrent; C = Capital.

headquarters, laboratories and housing; it should also cover the cost of facilities at substations, some of which are already in operation. The mission suggests that Abeokuta, Fashola, Ijebu-Ode, Ife, Ado-Ekiti, Owo and Benin, together with possible additional locations to the north of Oyo and in the neighborhood of Warri, would be appropriate sub-stations for work by the Western Regional Department of Agriculture. The regular staff, which we propose be expanded to some 190 by 1959-60 (a senior staff of 40-50 and junior staff of 150), should include at least two senior general advisory officers for each province, and specialists in horticulture, general agronomy, live-stock husbandry and pasture improvement. Staff employed on cocoa and other special projects should be additional to this number.

Establishment in Ibadan of a sub-unit of the West African Cocoa Research Institute is proposed because of the difference between conditions of the Gold Coast and those of Nigeria's Western Region cocoa-growing areas. Expenditure for the sub-unit has been projected as an expenditure of the regional government because the sub-unit would be of benefit primarily to the Western Region; we do not think its cost should be a charge on the endowment of WACRI.

Our other projections have been constructed on a rising scale of such projects, already in operation, as agricultural engineering, farm schools, stock farm and livestock development, poultry development, fertilizer trials, rice experiments and demonstrations and pilot dairy projects. The mission believes these projects to be sound and has allowed for their continuance and extension. All have been retained at moderate stature, since they are all more or less in a pilot phase and are likely to remain so for some time.

*Eastern Region* The projected general budget of the Department of Agriculture (see Table 4) would permit a substantial expansion, which we recommend be concentrated on extension services. The projected increase in recurrent expenditures, together with appropriations for the school of agriculture at Umuahia and special projects, should permit an increase in the senior staff from 20 to 40 officers and an addition of approximately 50 to the junior staff. Experimental stations should be established at Calabar, Port Harcourt, Aba, Abakaliki, and at appropriate locations to the north of Enugu and inland from Calabar. The departmental headquarters staff should include special-

ists in soil conservation, animal husbandry, horticulture, rice production, pasture improvement and general agronomy.

Soil problems in this region are particularly in need of attention. Our projections for soil conservation rise steeply because a year or two will be required for the assessment of specific needs and the planning of particular projects; after that, financing on a more liberal scale will be required for the carrying out of the projects.

Mechanization tests, rice development, maize production and storage, and soil improvement under pastures are highly important, to establish a sound technical basis for future expansion. Mechanization tests should be directed primarily to use of small-type tractors and attachments suitable for ridge plowing, grading, contour banking and the working of land generally in such a way as to inhibit soil wastage. Funds for pasture improvement should be used to demonstrate to farmers techniques for pasture improvement and to assist them in the application of these techniques.

We propose that the agriculture department undertake projects for maize production and storage at an estimated capital cost of £ 12,000. For recurrent expenditure £ 5,000 has been allocated for 1955-56 rising to £ 10,000 in 1959-60. This project should be primarily experimental; should a stage be reached where commercial storage of maize becomes practicable, the development corporation might take it over. The mission has emphasized in Technical Report No. 8 the desirability of developing small animal husbandry as a means of increasing meat production and improving soils. The need for increased meat consumption and production is particularly urgent in the Eastern Region; education in the care of small farm animals is therefore important. A modest capital outlay of £ 6,000 should enable schools to acquire animals for demonstration purposes.

The mission believes that in the Eastern Region, expenditure by the regional agricultural department, the co-operatives and the development corporations would be more productive than expenditure by native treasuries and local governments. Accordingly, little increase in the expenditures of the last two has been projected.

*Southern Cameroons* We recommend that a separate department of agriculture and an agricultural school be established for the Southern

TABLE 4 Projection of Agricultural Expenditure: Eastern Region <sup>1</sup>

(Thousand £)

	Approved Estimates		Pre-liminary Estimates		Projections of Mission												Total	
	1953-54		1954-55		1955-56		1956-57		1957-58		1958-59		1959-60		1955-60			
	R	C	R	C	R	C	R	C	R	C	R	C	R	C	R	C		
<i>Department of Agriculture</i>																		
General Activities .....	184	22	166	57	180	30	190	50	210	60	230	60	250	50	1,060	250		
Agricultural School .....	5	48	10	41	20	15	24	10	28	—	32	—	36	—	140	25		
Special Projects:																		
Soil Conservation .....	1	—	1	—	5	5	15	15	25	15	35	15	50	20	130	70		
Mechanization Tests .....	4	26	6	10	8	15	10	10	12	10	14	10	16	10	60	55		
Rice Development .....	—	4	—	8	10	—	12	—	14	—	16	—	18	—	70	—		
Maize Production and Storage .....	—	—	—	—	5	5	10	7	10	—	10	—	10	—	45	12		
Soil Improvement under Pastures .....	—	—	—	—	10	—	12	—	15	—	20	—	25	—	82	—		
Education in care of Small Animals (Grants to Schools) .....	—	—	—	—	—	3	—	3	—	—	—	—	—	—	—	6		
*Cocoa (Cameroons) .....	15	—	17	3	—	—	—	—	—	—	—	—	—	—	—	—		
Survey of Over-populated Areas .....	—	—	—	—	6	—	—	—	—	—	—	—	—	—	6	—		
Total <sup>2</sup> .....	209	100	199	119	244	73	273	95	314	85	357	85	405	80	1,593	418		
<i>Eastern Native Treasuries and Local Governments<sup>3</sup></i>																		
Governments <sup>3</sup> .....	6	—	6	—	6	—	7	—	7	—	7	—	8	—	35	—		

<sup>1</sup> In 1953-54 and 1954-55 includes expenditure in the Southern Cameroons.<sup>2</sup> Totals may not equal sum of components because of rounding.<sup>3</sup> Figures for 1954-55 are mission estimates.

\* Expenditure reimbursed by Marketing or Production Development Boards.

NOTE: R = Recurrent; C = Capital.

Cameroons, in view of its separation from the Eastern Region. It is suggested that departmental headquarters be located at the site of the old Botanic Gardens at Victoria and that substations be located at Bamenda, Buea, Kumba and Mamfe. Projected expenditure should permit a senior staff of 12 and a junior staff of 40 by 1959-60. In addition to the director and his deputy, there should be specialist officers in livestock husbandry, pasture improvement, horticulture and general agronomy, plus six general advisory officers for extension work, who would use the stations suggested above as bases.

The agricultural school should be established at Victoria and be guided by the agricultural department.

Work on cocoa should be centered at Kumba and follow the lines developed in the Western Region. Particular emphasis should be placed on control of black pod disease, determination through soil survey of suitable areas for new planting, and improved plantation husbandry. The agricultural department should take over the cocoa survey program of the Cocoa Marketing Board.

An expert on tea production should examine and report on existing plantings, and the possibility of some production in the montane area should be investigated. Our projections of expenditure by the regional administration of the Southern Cameroons on the proposed agricultural services are shown in Table 5.

#### *Expenditure on Veterinary Services*

Our projections of expenditure by all public authorities on veterinary services are shown in Table 6. Federal research on problems of animal health and husbandry should be intensified and co-ordinated with work on pasture improvement, forage crops, and soil and water surveys being performed by other federal and regional agencies. The following comments relate to the programs of regional and local services:

*Northern Region* To strengthen veterinary services in the Northern Region, we recommend an increase in recurrent general expenditure of the regional veterinary department from £ 160,000 in 1955-56 to £ 220,000 in 1959-60, and a capital outlay of £ 35,000 over five years. In addition, we have projected an increase in regional government re-

TABLE 5 Projection of Agricultural Expenditure: Southern Cameroons<sup>1</sup>

(Thousand £)

	Projections of Mission											
	1955-56		1956-57		1957-58		1958-59		1959-60		Total 1955-60	
	R	C	R	C	R	C	R	C	R	C	R	C
<i>Department of Agriculture</i>												
General Activities .....	30	50	40	50	60	20	70	20	80	10	280	150
Agricultural School .....	10	10	12	10	13	—	14	—	15	—	64	20
Cocoa .....	20	3	22	3	24	3	26	3	28	3	120	15
Tea Investigation .....	5	—	5	—	5	—	5	—	5	—	25	—
Total .....	65	63	79	63	102	23	115	23	128	13	489	185
<i>Southern Cameroons Native Treasuries</i> .....	2	—	2	—	2	—	2	—	2	—	10	—

<sup>1</sup> Expenditure for 1953-54 and 1954-55 included in Eastern Region Budget.

NOTE: R = Recurrent; C = Capital.

current expenditure on tsetse control from £ 35,000 in 1955-56 to £ 50,000 in 1959-60. This comprises expenditure on the planning of control measures only. Actual clearing operations should be conducted and financed by the regional development corporation. We recommend that from £ 1 million to £ 1.5 million be set aside for this purpose. In view of the importance to the local communities of practical veterinary work, the Northern native treasuries should also increase their recurrent expenditure from its present level to £ 100,000 in 1955-56 and to £ 150,000 by 1959-60; capital expenditure of £ 50,000 has been projected over 1955-60.

*Western Region* Projections for veterinary services in the Western Region should permit a substantial expansion of the work of the veterinary department; recurrent expenditure should increase by 50% over the next five years, to £ 75,000 in 1959-60; a capital outlay of £ 30,000 may be required for the establishment of additional facilities. The work of the veterinary department should place emphasis on health problems of poultry, and pigs and other small domestic animals, as well as cattle.

*Eastern Region* The task of the Eastern veterinary services is similar to that of the Western services. Small animal husbandry should be fostered and increased attention be paid to poultry diseases; work on cattle disease is important here as elsewhere in Nigeria. The budget of the Eastern Regional Veterinary Department which we propose should allow for an increase in recurrent expenditure from £ 30,000 in 1955-56 to £ 50,000 in 1959-60 and for capital expenditure of £ 20,000.

*Southern Cameroons* We recommend the establishment of a veterinary department for the Southern Cameroons; this will require a comparatively large capital outlay. We have allowed £ 27,000 for this purpose. As the service is built up, recurrent expenditure may be expected to rise rapidly, from an initial £ 15,000 in 1955-56 to a projected £ 30,000 in 1959-60.

### *Fisheries*

Our projections of government expenditure on fisheries are shown in Table 7. We recommend that the contribution to the West African

TABLE 6 Projection of Expenditure on Veterinary Services

(Thousand £)

	Approved Estimates		Pre-liminary Estimates		Projections of Mission											
	1953-54		1954-55		1955-56		1956-57		1957-58		1958-59		1959-60		Total 1955-60	
	R	C	R	C	R	C	R	C	R	C	R	C	R	C	R	C
<i>Federal Services<sup>1</sup></i>																
Research .....	78	31	86	38	85	20	93	10	100	—	105	—	110	—	493	30
School <sup>2</sup> .....	15	—	15	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Northern Region</i>																
Veterinary Department .....	136	3	144	10	160	20	180	10	200	5	210	—	220	—	970	35
Tsetse Control <sup>3</sup> .....	(14)	(1)	35	—	35	—	40	—	45	—	50	—	50	—	220	—
Grants to Native Treasuries .....	(45)	—	(25)	—	(25)	—	(25)	—	(25)	—	(25)	—	(25)	—	(125)	—
Native Treasuries <sup>4</sup> .....	84	11	95	10	100	10	108	10	120	10	132	10	150	10	610	50
<i>Western Region</i>																
Veterinary Department .....	45	9	47	12	50	15	55	10	65	5	70	—	75	—	315	30
Native Treasuries <sup>4</sup> .....	7	—	7	—	8	—	9	—	10	—	11	—	12	—	50	—
<i>Eastern Region</i>																
Veterinary Department .....	33	—	41	—	30	10	34	5	38	5	44	—	50	—	196	20
Native Treasuries <sup>4</sup> .....	1	—	1	—	2	—	2	—	3	—	4	—	4	—	15	—
<i>Southern Cameroons</i>																
Veterinary Department .....	—	—	—	—	15	12	20	10	25	5	27	—	30	—	117	27
Native Treasuries <sup>4</sup> .....	3	—	3	1	4	1	5	1	6	1	7	1	8	1	30	5
Total <sup>5</sup> .....	402	54	474	71	489	88	546	56	612	31	660	11	709	11	3,016	197

<sup>1</sup> Figures for 1954-55 approved Estimates.<sup>2</sup> It is recommended that this school be transferred to University College, Ibadan, and expanded to a Faculty of Veterinary Medicine; in the main tables expenditure is included with the University College after 1954-55.<sup>3</sup> Financed in 1953-54 by the Northern Regional Production Development Board. <sup>4</sup> Figures for 1954-55 are mission estimates.<sup>5</sup> Totals may not equal sum of components because of rounding.

NOTE: R = Recurrent; C = Capital. Figures in parentheses are not included in the totals, either because they do not represent an expenditure of government (as in the case of Tsetse Control in 1953-54) or because they represent regional grants to local authorities, omitted from regional totals to avoid double counting.

TABLE 7 Projection of Expenditure on Fisheries

*(Thousand £)*

	Approved Estimates		Pre-liminary Estimates		Projections of Mission												Total 1955-60	
	1953-54		1954-55		1955-56		1956-57		1957-58		1958-59		1959-60		Total 1955-60			
	R	C	R	C	R	C	R	C	R	C	R	C	R	C	R	C		
Federal: Total <sup>1</sup> .....	31	1	32	6	20	10	20	—	25	—	25	—	25	—	115	10		
of which: Contribution to West African Fisheries Research Institute <sup>2</sup> .....	13	—	13	—	—	—	—	—	—	—	—	—	—	—	—	—		
Northern Region <sup>3</sup> .....	10	—	12	—	15	5	20	5	20	—	20	—	20	—	95	10		
Western Region .....	7	—	7	—	10	5	20	10	30	5	30	—	30	—	120	20		
Eastern Region .....	5	—	5	—	10	5	15	10	20	5	25	—	25	—	95	20		
Southern Cameroons .....	—	—	—	—	5	—	5	5	10	5	10	—	10	—	40	10		
Total .....	53	1	56	6	60	25	80	30	105	15	110	—	110	—	465	70		

<sup>1</sup> 1954-55 figures are approved Estimates.<sup>2</sup> It is recommended that Nigeria discontinue its contribution to this organization after 1954-55.<sup>3</sup> Including estimated expenditure on fisheries by the Northern Regional Department of Local Industries.

NOTE: R = Recurrent; C = Capital.

Fisheries Research Institute be discontinued and that Nigeria establish its own research unit in Lagos. Total recurrent expenditure for fisheries should be increased from £ 60,000 in 1955-56 to £ 110,000 in 1959-60.

The mission recommends employment of the following staff, additional to those engaged in fisheries work in the regions: for the federal research unit, one engineer; for the Northern Region, two engineers; for the Western Region, one master fisherman and one shipwright; for the Eastern Region, one master fisherman, one shipwright mechanic and one engineer; and for the Southern Cameroons, one fisheries officer and one master fisherman.

Projected capital expenditures of £ 70,000 for the five-year period should cover the provision of housing, office accommodation, laboratory facilities, and transportation for fisheries officers; equipment for a master fisherman and a shipwright mechanic; and machinery and equipment for pond building and stream control.

#### *Food Storage*

Planning and preliminary work for the improvement of storage facilities will require the appointment of a small staff including warehouse experts and entomologists. Funds will also be required for the establishment and equipment of laboratories in Kano and Ibadan for experimental material, and for staff housing and transportation. The total cost of such a project over the five years to 1959-60 has been estimated at £ 100,000.

#### *Co-operative Movement*

Table 8 summarizes the annual expenditure for the support of the co-operative movement, as recommended in Technical Report No. 9.

#### *Development Corporations*

The mission's proposals for projects to be undertaken by the development corporations are brought together in Table 9, which also indicates the minimum capital outlay which we consider desirable.

TABLE 8 Projection of Government Expenditure in Support of the Co-operative Movement

(Thousand £)

	Approved Estimates		Pre-liminary Estimates		Projections of Mission										Total 1955-60	
	1953-54		1954-55		1955-56		1956-57		1957-58		1958-59		1959-60		R	C
	R	C	R	C	R	C	R	C	R	C	R	C	R	C		
Federal <sup>1</sup> .....	4	—	4	—	—	—	—	—	—	—	—	—	—	—	—	—
Northern Region .....	9	—	13	—	25	20	35	20	45	—	50	—	55	—	210	40
Western Region <sup>2</sup> .....	43	—	44	—	65	40	75	58	90	—	100	—	110	—	440	98
Eastern Region:																
Department of Co-operatives .....	31	—	34	—	35	20	45	20	55	—	65	—	70	—	270	40
Funds for Co-operative Bank .....	—	—	—	—	—	20	—	20	—	30	—	40	—	40	—	150
Southern Cameroons .....	—	—	—	—	10	7	15	8	20	—	20	—	20	—	85	15
Total .....	87	—	95	—	135	107	170	126	210	30	235	40	255	40	1,005	343

<sup>1</sup> 1954-55 approved Estimate; provision recommended to be discontinued after 1954-55.<sup>2</sup> Including support of co-operatives in Lagos for which the Western regional government is to be reimbursed by the federal government from 1955 on. See also Appendix C, p. 625.

NOTE: R = Recurrent; C = Capital.

TABLE 9 Projection of Minimum Capital Expenditure by Development Corporations

*(Million £)*

<i>Northern Region</i>		
Land Settlement Schemes .....		1.00
Fulani Grazing Reserve .....		1.00
Livestock Fattening Centers .....		0.80
Dairy Farms .....		0.15
		2.95
<i>Western Region</i>		
Partnership Schemes for Cocoa Plantations .....		0.50
Partnership Schemes for:		
oil palm	} plantations .....	2.00
citrus fruit		
coconut		
rubber		
Livestock Breeding Centers .....		0.10
Dairy Farms .....		0.10
		2.70
<i>Eastern Region</i>		
Partnership Schemes for Oil Palm Plantations .....		1.00
Development of Rice Production .....		1.00
coconut	} plantations .....	2.00
cashew nut		
rubber		
		4.00
<i>Southern Cameroons<sup>1</sup></i>		
Partnership Schemes for:		
rubber	} plantations	} .....
banana		
oil palm		
Bamenda Province Coffee Plantation		1.30
		10.95

<sup>1</sup> Proposed development agency.

# TECHNICAL REPORT 11 FORESTRY

## I THE ECONOMIC SIGNIFICANCE OF NIGERIAN FORESTS

For centuries the people of Nigeria have lived in and upon the forest. It has provided them with shelter, food and fuel, with spices, drugs,

TABLE 1 Regional Distribution of Forests

(Thousand sq. mi.)

	Forest Reserves			Total Forest Land <sup>1</sup>
	Government Reserves	Native Administration Reserves	Total Reserves	
<i>Northern Region</i>				
High Forest .....	—	0.5	0.5	4.5
Savannah .....	0.3	16.4	16.7	100.7
<i>Western Region</i>				
High Forest .....	1.7	2.4	4.1	4.4
Savannah .....	0.7	2.3	3.0	3.0
<i>Eastern Region</i>				
High Forest .....	2.3	—	2.3	2.3
Savannah .....	0.1	—	0.1	0.1
<i>Southern Cameroons</i>				
High Forest .....	—	1.9	1.9	3.3
Savannah .....	—	0.4	0.4	0.4
<i>Total Nigeria</i>				
High Forest .....	4.0	4.8	8.8	14.5
Savannah .....	1.1	19.1	20.2	104.2
Mangrove Forests .....	—	—	0.1	0.7
Grand Total ....	5.1	24.0	29.1	119.4

<sup>1</sup> Reserves and unreserved forest stands combined.

SOURCE: Annual Report of Forest Administration, 1952-53. Figures on the Cameroons provided by the Inspector-General of Forests.

fibers, flosses, gums, resins, tanning material, dyes, oil seeds and nuts, and it has harbored the animals on which they depended for food and many other products.

Today, 32% of the area of Nigeria is classified as forest land—119,400 square miles out of 373,250. Table 1 shows the distribution of forests among the regions.

The savannah forests, which account for seven-eighths of the area, now have value for firewood only. The high forests—essentially evergreen (although individual species are deciduous for some periods), with massive trees that shade the forest floor almost completely—occupy 14,500 square miles, of which 28% is in government reserves and 33% in native administrations reserves. The unreserved areas lie mostly in the Northern Region and the Southern Cameroons.

Even the high forest, however, is not rich in commercial timber; only some 2,000 square miles, or 14% of the total area, have economic value. According to the Inspector-General of Forests, many Nigerian forests have no valuable timber in terms of what is popular in overseas markets today; others yield only one or two trees, or 5–10 tons of marketable timber, per acre.

The better forest stands are in the Western Region, where the timber trade and timber exports have been established for centuries. Here rivers, creeks and roads facilitate extraction of timber. The Eastern Region has comparatively few of the more valuable species and many of its forests are virtually inaccessible.

## II PUBLIC PROTECTION AND CONTROL OF FORESTS

Until the beginning of this century there was no forest administration in Nigeria. Mahogany, ebony and other luxury woods were freely exported. Around 1900 the production of wild rubber was emphasized but this tree has since lost its economic importance. The alarming destruction of forests, as a result of uncontrolled timber cutting and the traditional practice of shifting cultivation, led to the establishment in 1903 of a forestry organization to control the timber trade and take conservation measures.

It was recognized that to carry out successfully a sustained yield

policy it would be necessary to set aside areas specifically for national exploitation. An ordinance making full provision for forest reserves was enacted in 1908; in 1916, after the unification of Northern and Southern Nigeria, it was replaced by a more comprehensive measure. Originally only government forest reserves were created but a 1927 amendment provided for the creation of native authority forest reserves as well. A 1938 ordinance and regulations in 1943 simplified certain aspects of the control of forest produce and the granting of concessions. Model rules, similar to government regulations, were prepared for native administrations and were adopted by a number of them. After the war, a forest administration plan for the years 1946-55 was published but because of shortage of staff it has not been fully carried out.

Under the new constitution, forest control and administration are regional functions while the Forest School at Ibadan remains a federal responsibility;<sup>1</sup> research becomes a matter of both federal and regional competence.

#### *Forest Reserves*

The original objective of Nigeria's forest policy was a permanent forest estate comprising 25% of the country's area. This goal has not been attained. The increasing population, the land tenure system and the bush fallow method of cultivation have prevented the full figure from being reached and have even necessitated taking some forests out of reserves. In the Eastern Region, 2,000 square miles of actual or potential forest estate have now been lost in this way. The remaining regional reserves are ill spaced and mostly concentrated in large patches in the Cross River basin.

In 1953, government and native administrations forest reserves

<sup>1</sup> The Lagos constitutional conference expressed the view that in maintaining the school, the federal government should have special regard to the wishes and needs of the region in which the school is situated (the Western Region), particularly in such matters as the standards of qualification for entry and the courses of instruction.

occupied 7.8% of the total area of Nigeria and the following percentages of the several regions:

Northern Region	6.1%
Western Region	15.6%
Eastern Region	8.1%
Southern Cameroons	13.9%

An increase of the reserves in the South will be virtually impossible. In the Northern Region, on the other hand, a slow expansion of forest areas is continuing.

Management of forest reserves has been possible only in the Western Region; there the regular exploitation of the forests not only provided the revenue which was largely allocated for forestry purposes in the case of both government and native administrations reserves but also effected the very necessary removal of a large part of the old crop. Two-thirds of this region's high forest is being exploited under a plan for regeneration of the cut-over areas through the "tropical shelterwood" system, by which natural seedling regrowth is stimulated and fostered by the gradual admission of light to the forest floor.

In the savannah areas, there is constant danger of bush fires during the dry period. The forest administration tries to reduce potential damage by deliberately starting fires at the beginning of the dry season when they are not yet destructive to the trees.

#### *Forest Plantations*

The forest administration has not undertaken to establish forest plantations on a large scale but has given preference to natural regeneration of the stocks of existing forests, mainly in the Western Region. The Inspector-General of Forests has estimated the cost of new plantations at £ 7,000 to £ 13,000 per square mile, as against £ 1,500 to £ 3,000 for stimulated natural regeneration.

In savannah areas, bush fires make it difficult to establish plantations. One hundred and nineteen different species have been tried as reforestation material in northern Nigeria alone but no really successful tree has been discovered; only two species, the neem (*Azadirachta indica*) and *Dalbergia sissoo*, have proved moderately suitable for certain localities.

In the dense forest belt only a few local trees have done well in plantations. The mahogany (*Khaya ivorensis*) and the Iroko (*Chlorophora excelsa*) are both attacked by insects; the Opepe (*Sarcocephalus diderrichii*) and two species of *Terminalia* grow better. On the other hand, such imported species as teak (*Tectona grandis*), *Cassia siamea* and *Gmelina arborea* have proved adaptable to Nigerian conditions.

In Bamenda Province (Southern Cameroons), certain eucalyptus species have been tried with some promise; here public reforestation attempts are supplemented by private plantings, but only on a very small scale.

Up to now, plantations in Nigeria have been established only to produce pitwood for the Enugu mines, building poles or firewood for towns. Present plantations cover only 24½ square miles.

#### *Forestry Research and Education*

The forestry departments have confined their activity to acquiring reserves and setting up machinery for their protection and management. There has been very little research. A Forest Research Branch was only recently established, near the Forest School at Ibadan; it has botanical, silvicultural and engineering sections. Because of staff deficiencies, however, the range of its operations is limited.

The Ibadan Forest School, created in 1941, is the only institution for education in forestry. It provides instruction in the elements of forest botany, vegetation, tropical silviculture, plantation practice, forest management, simple engineering and surveying and offers a one-year course to train technical assistants for forest administration. After a few years of field work, some of the students are sent abroad for further study and promotion to senior positions after their return.

### III TIMBER EXPORTS AND DOMESTIC CONSUMPTION

In prewar years Nigerian timber exports were one to two million cubic feet annually. They increased to more than 18 million cubic feet in 1951, declined to 9 million in 1952, and in 1953 amounted

to 13 million cubic feet (Table 2). Because of the many scattered trees still left standing in farmlands, it is at present possible for Nigeria to export two to three times as much timber as the comparatively small permanent forest reserves could, in their present condition, be expected to yield.

Domestic consumption has been estimated at one-half cubic foot per capita per year, or some 15 million cubic feet in all. Most of it appears to be below export quality but domestic consumption and demand for better quality lumber is likely to increase. The supply situation may become difficult if the country's timber resources are not improved. The area of permanent forest should be increased and the ground should be better stocked. A more complete use of the very mixed forest might be possible if the less durable timbers were treated with suitable preservatives.

In former years 90% of the exported timber came from unreserved forests, but the quantity of exportable timber in these forests is rapidly decreasing and during the last few years the share of the forest reserves has increased to some 25% of the export supply.

Obeche (*Triplochiton*) accounts for half the timber exports. It is followed in importance by Abura (*Mitragyna*); African mahogany (*Khaya*), upon which the Nigerian timber trade was founded; Agba (*Gossweilerodendron*), a species which is becoming more and more popular; Sapele wood (*Entandrophragma*); and Iroko (*Chlorophora*).

The volume of sawn timber exported has almost doubled in recent years although it constitutes a smaller proportion of total timber exports than it did in 1944-48. About half of it comes from the United Africa Company sawmill in Sapele. Exports of veneers and plywood, also produced in Sapele, have risen sharply; their value is now roughly equal to that of lumber exports. Only 10% of plywood and veneer products is sold domestically.

The timber industry is discussed further in Technical Report No. 13.

#### IV A RECOMMENDED FORESTRY PROGRAM

The mission believes that Nigeria's forestry resources hold considerable promise of substantially increased returns to the economy

TABLE 2 Exports of Timber and Wood Products

*(all figures in thousands)*

	Logs	Sawn Timber	Logs	Sawn Timber	Plywood & Veneers	Total
	(Cu. ft.)		(£ )			
Average 1934-38....	n.a. <sup>1</sup>	n.a.	146	19	—	165
“ 1939-43....	1,213	476	86	101	—	187
“ 1944-48....	2,395	696	321	162	77	560
“ 1949-53....	9,958	837	2,705	408	442	3,555
1951 .....	16,845	956	5,078	478	441	5,997
1952 .....	7,706	949	2,153	507	523	3,183
1953 .....	11,821	1,137	3,223	627	541	4,391

<sup>1</sup> n.a. = not available.

SOURCE: Inspector-General of Forests.

as a whole. They can and should be exploited more efficiently to permit both an expansion of timber exports and an increase in domestic consumption of timber and firewood.

It was formerly believed that under the warm moist conditions of tropical forests productivity would take care of itself and that the main problem was merely to extract timber. But it is now recognized that a program for maintaining and replenishing forests is indispensable to provide a satisfactory basis for their long-term exploitation. Forest reserves for protective and productive purposes should be maintained, and in some areas expanded, and their permanency assured by appropriate legislation. The mission considers that additional forest reserves in the eastern and southwestern part of the Northern Region and the western part of the Eastern Region would be desirable, the exact location of such additions to be determined on the basis of soil and vegetation surveys. We are, on the other hand, of the opinion that serious consideration should be given to an adjustment of the reserves in the Cross River area in the Eastern Region and to the restoration of part of these reserves to use for settlement purposes if equivalent areas elsewhere can be reserved in substitution. The mission is fully in accord with the Nigerian policy that changes in the status of reserved areas should not be made lightly; it believes, however, that the size of the reserves in the Cross River area and the population pressure in the Eastern Region warrant an adjustment in this case.

At the present rate of extraction, there is danger that the most valuable timber stands will be exhausted in a few decades. Provision must be made, therefore, for new plantations and the regeneration of forests, principally for the production of timber. Everywhere, particularly near large settlements, firewood needs should also be taken into account. Considerable further research and survey work will be required to identify the species able to be developed most rapidly and to yield the greatest economic return under the diverse conditions of climate, soil and competition in different parts of Nigeria, and to determine their ecological, cultural and nutritional requirements. It will take time to find the proper solutions but it would be unwise to spend large sums for a program based on wrong premises. Hence the mission believes that the research program should be considerably intensified and that expenditures for forest regeneration and plantations should meanwhile be confined to purposes whose value has been demonstrated by adequate experimentation.

Research in forest products should also be emphasized; at present only a fraction of forest material is put to effective use. Cellulosic derivatives deserve first priority. Recently developed pulping techniques have made it possible to make paper from mixed tropical woods. The technical research institute proposed in Technical Report No. 13 should undertake technical investigations regarding use of Nigerian woods for pulp and paper making.

The mission feels also that the Forest School at Ibadan should be substantially strengthened. The normal period of study may have to be kept at one year as long as there is a need for large numbers of technical assistants in forestry; as soon as possible the course should be lengthened to two years. This school should not attempt to graduate professional forestry officers; the most urgent need is for some 350 technical assistants, as against only 100 at present.

The mission believes, however, that a faculty of forestry should be established at University College, Ibadan, to provide advanced training. The Inspector-General has estimated that 130 professional foresters are needed, compared with 50 working now. Only six of the present senior staff are Nigerians. Within the next 10-15 years, therefore, about 80 students will have to be trained. In preparation

for such university training, students should have two years of preparatory courses in science such as are offered to agricultural students.

We envisage the recommended program as the first stage in a long-range forest development effort. It should not be expected to yield substantial tangible results, in the form of increased forest output, during the next five years. Since the prerequisites to such results in the longer run are a strengthening of the forestry organization and expanded research and training activities, these basic requirements should be provided without delay.

The staffing problems that have hampered expansion of the forestry organization, particularly since the war, will not easily be overcome and we have taken them into account in estimating expenditures for the next five years.

The mission believes that the actual exploitation of forest resources should be left to private enterprise, Nigerian and foreign. Some expenditure in the North and the West for forest improvement and establishment of new plantations is recommended. All such expenditures should be financed by native treasuries and local governments, under the guidance of the regional forestry departments. Local authorities will benefit financially from forest improvements, through felling fees.

#### *Federal Government Expenditure*

The estimated recurrent expenditure of the central (federal) government for 1953-54 amounts to £ 34,000, of which £ 11,000 represents Development and Welfare expenditure. Expenditures of the Lagos headquarters of the Inspector-General of Forests are included, as are those of the Forest School.

It is planned to abolish the position of Inspector-General and to create the position of Director of Forest Research. The mission suggests that the dean of the proposed forestry faculty in the University College assume responsibility for education, leaving the Director of Forest Research free to devote full attention to research activities. The mission also suggests that the dean be appointed not later than the beginning of the fiscal year 1955-56, that construction of the faculty building be started in the same year and that teaching start during 1957-58. It is further recommended that the research unit

be established on the grounds of the Forest School and not on the University premises.

The mission proposes a total expenditure of £ 400,000 for research and secondary education in forestry during the period 1955-60, of which £ 120,000 is capital expenditure. Recurrent expenditure is projected to rise to some £ 80,000 by 1959-60. A further breakdown of this expenditure is shown in Table 3. The cost of the faculty of forestry is not included, but is shown in Technical Report No. 21.

#### *Expenditures by Regional Governments and Local Authorities*

The regional governments expected to spend £ 296,000 on forestry in 1953-54, of which £ 22,000 was capital expenditure, not including grants to local authorities. Native treasuries' and local governments' estimated expenditure (including expenditure from grants) was £ 195,000, of which £ 8,000 was for capital purposes. Additional detail is shown in Table 3.

Capital expenditure for the proposed 1955-60 program includes housing for newly appointed staff, equipment, and expenditure for the development of forest resources of £ 400,000 in the West, £ 150,000 in the East and £ 50,000 in the Southern Cameroons. These development funds should be used by the forestry departments for the development of suitable forest land. Where native administrations and local governments benefit through these forest developments, a portion of these funds could be advanced to local authorities on a long-term loan basis; reimbursement to the regional governments could be made out of the increased local revenues from forest operations. It has been assumed that forestry expenditure by native treasuries and local governments in the Northern and Western Regions will increase moderately.

The projection envisages a gradual expansion of forestry service personnel through 1959-60 (see Table 4), but even with this increase the number of professional staff, technical assistants and junior employees will still be below the optimum level and further expansion may be required after 1960.

TABLE 3 Projection of Expenditure on Forestry

(Thousand £)

	Approved Estimates		Pre-liminary Estimates		Projections of Mission												Total	
	1953-54		1954-55		1955-56		1956-57		1957-58		1958-59		1959-60		1955-60			
	R	C	R	C	R	C	R	C	R	C	R	C	R	C	R	C		
Federal																		
School																		
Research	34	4	34 <sup>1</sup>	4 <sup>1</sup>	14	6	15	7	16	7	17	—	18	—	80	20		
Northern Region	81	11	85	7	25	30	25	40	30	30	55	—	65	—	200	100		
Grants to Local Authorities <sup>2</sup>	(19)	—	(20)	—	(20)	—	(20)	—	(20)	—	(20)	—	(20)	—	(100)	—		
Western Region—Forestry Department	118	—	129	—	130	8	130	8	140	8	140	8	150	8	690	40		
Forestry Development	—	—	—	—	—	80	—	80	—	80	—	80	—	80	—	400		
Eastern Region—Forestry Department																		
Forestry Development	75	11	85	8	65	15	70	10	70	5	75	5	90	5	370	40		
Southern Cameroons—Forestry Department																		
Forestry Development					25	4	25	4	30	3	30	2	35	2	145	15		
Northern Local Authorities	96	8	100	8	—	10	—	10	—	10	—	10	—	10	—	50		
Western Local Authorities	87	—	90	—	110	10	120	10	130	10	140	10	150	10	650	50		
Eastern Local Authorities	3	3	1	—	95	5	100	10	110	10	120	10	130	10	555	45		
Southern Cameroons Local Authorities	4	—	4	—	2	—	3	—	4	—	5	—	5	—	19	—		
Total	495	34	528	27	5	—	5	—	5	—	5	—	5	—	25	—		
	495	34	528	27	561	223	593	234	645	213	707	165	783	165	3,289	1,000		

<sup>1</sup> Approved Estimates.<sup>2</sup> Figures placed in parentheses and excluded from totals to avoid double counting. See Appendix C, p. 619.<sup>3</sup> Less than £ 500.

NOTE: R = Recurrent; C = Capital.

TABLE 4 Forestry Personnel in 1953-54 and Increases Proposed by 1959-60

	Professional Officers		Technical Assistants	
	Positions filled 1953-54	Positions 1959-60	Positions filled 1953-54	Positions 1959-60
Northern Region .....	20	30	26	74
Western Region .....	20	24	44	58
Eastern Region .....	12	18	22	40
Southern Cameroons .....	<sup>1</sup>	6	<sup>1</sup>	20

<sup>1</sup> Included in Eastern Region.

1 INTRODUCTION

The water resources of Nigeria, though ample, are not evenly distributed among the different sections of the country and are subject to great seasonal variation. There are very few water control schemes in existence and progress of water control is impeded by a lack of knowledge of the characteristics of Nigerian water flow and evaporation. Improved control of water resources can be of vital importance to several sectors of the Nigerian economy. Agricultural production in some parts of the North could be expanded by irrigation, which could extend the growing season to permit cultivation of new crops or to enable two crops to be grown in one year. Flood control could make farming possible in fertile areas now subject to annual devastation. The Niger and Benue rivers are important transport routes, but their level in the dry season precludes year-round navigation over much of their courses. Improved navigability, especially of the Benue, would open an avenue of cheap transportation for the growing output of the northeast.<sup>1</sup> There may also be hydroelectric sites on Nigerian rivers. Provision of year-round rural water supplies, for human and animal consumption, would help to spread mixed farming while expansion of both rural and urban water supplies would make a notable contribution to public health.

However, introduction of many of these improvements will proceed slowly until the knowledge of water resources is much more advanced than it is at present. The mission therefore considers it important that studies of water resources be carried out as quickly as possible.

This report deals first with the problem of river survey. It then discusses prospects for flood control, irrigation and drainage in the North and for reclamation of mangrove swamps in the South.

<sup>1</sup> See Technical Report No. 18.

## II SURVEY OF RIVERS

## A GENERAL

Nigeria is well provided with rivers (see Map 13, facing p. 512). More than half the country is drained by the Niger, through numerous tributaries of which the most important is the Benue. The Niger is about 2,600 miles long, rising in French Guinea. About one-third of its length is in Nigeria. It crosses the country in a southeasterly direction down to Lokoja where it is joined by the Benue, which, rising in the French Cameroons, flows through 500 miles of Nigeria. The Niger empties into the Gulf of Guinea through many mouths, forming a protruding delta. Besides the Benue, the Niger's most important tributaries are the Sokoto and Kaduna rivers, which drain northwestern Nigeria. The Benue's two important tributaries are the Gongola and the Katsina Ala. The northeastern part of the country is drained into Lake Chad, a large body of water with no outlet to the sea. In the South, many small rivers empty into the innumerable creeks and lagoons all along the coast, both east and west of the Niger delta. The largest of these coastal rivers is the Cross, which flows from the Southern Cameroons highlands through the Eastern Region. The coastal rivers are generally well fed by a catchment area located in the most humid part of Nigeria. Elsewhere, rivers are of the torrential type with high floods during the rainy season and a very small flow, if any, during the dry season.

The Niger is at its lowest in May just before the beginning of the rainy season. As soon as the rain starts in May, the level rises and in a few weeks water inundates miles and miles of flood plain. The peak of the flood is reached at the end of September or the beginning of October. In December the flood ends but the flow is still steady. At Onitsha, for example, the recorded depth of water is about 4 feet in May, rising to 31.5 feet in September-October, dropping to 9 feet in December and to 5 feet by April.

The Niger is said to have two successive floods: the first a "white" flood, laden with silt washed away by the rains in Nigeria, and the second a "black" flood, when the water is clear. The latter presumably results from rains in French Guinea occurring at the same time as rains in Nigeria; water from the upper catchment area of the

Niger arrives only about two months later in Nigeria, its peak flattened by the long run of more than 1,600 miles through very sandy stretches of desert where the Niger spreads, almost disappears, and gathers again several times. Silt eroded in the upper part of the catchment area is deposited before reaching Nigeria. The time it takes this flood water to reach Nigeria accounts for the prolongation of high water in the Niger beyond the end of the rainy season.

This phenomenon of two successive floods was not apparent on any of the readings which the mission saw. It should be carefully checked, for if true it would greatly assist the future planning and operation of reservoirs along the Niger. Siltation, which would occur if the waters of the "white" flood were retained, would be greatly reduced if the silty floods were allowed to flow through a reservoir and if the gates were closed as soon as the flow was clear enough to avoid heavy siltation.

The Benue behaves very much like the Niger, with the difference that the peak of the flood is generally a little earlier and that the drop in the water depth is faster. Other northern rivers have similar flows: little or no water between December and April or May with a high peak of flood in September or October.

#### B DEPARTMENT OF HYDROLOGY

Present arrangements for collecting data on the rivers are most unsatisfactory. Survey and measurement are not conducted systematically, and there is no center for collecting what information exists. The navigation companies are interested in the depth of water on the Benue and on the navigable portion of the Niger, and keep regular records of the stages at fixed points. The Nigerian Railway maintains reading staffs at river crossings. The Public Works Department also maintains some reading staffs. None of these measurements is linked to river profiles or gaugings of flow. The Electricity Corporation of Nigeria has in the last few years established flow measurement stations on the Niger near Jebba, on the Kaduna and on a number of minor streams. Finally, the irrigation branch of the Northern Regional Department of Agriculture has for two or three years maintained some stage reading staffs and a few gauging stations at points where irrigation schemes have been under consideration.

As a result of the unsystematic and scanty data, there does not exist a body of information sufficient to indicate whether or not it will be economically feasible to engage in major river control works to improve navigation and make possible large-scale irrigation, flood control or hydroelectric works. Data on smaller rivers is even more fragmentary. With a view to filling this serious gap in Nigeria's knowledge of its resources, the mission recommends creation of a federal department of hydrology. We also believe that the proposed systematic survey of the Niger and the Benue by Nedeco, the Netherlands organization now surveying the mouths of the delta, should be undertaken as soon as possible.

The department of hydrology should gather data on the run-off of rain and on evaporation; it should institute surveys and measurements needed to determine river flow and the feasibility of river control; it should centralize all data on water in Nigeria; and it should keep this information in a form in which it will be available for studies of specific irrigation, flood control, navigation and hydroelectric projects. The principal activities of the department of hydrology may be outlined as follows:

1. Establishment of a co-ordinated chain of stage readings and gauging stations. Each station should record the stages of the river from reading staffs, survey profiles of the river at the station, measure the current by gauging, construct discharge curves and draw hydrographs showing the flow. Data should be collected throughout the year, in order that both floods and dry-season flows may be properly observed.
2. Construction of a hydraulics laboratory. The laboratory should be equipped to study on models the flow of the flood and the shape of dams and embankments needed for irrigation, flood control, electric power generation and navigation. Analysis of water for soluble salts and for silt content should be undertaken. Expensive equipment would not be needed for routine studies. Studies requiring more elaborate equipment should be referred to better-equipped laboratories abroad.
3. Close collaboration with the groundwater section of the Geological Survey and with the soils division of the proposed agricul-

tural research institute (see Technical Report No. 10) in studies concerning water penetration, surface flow and erosion.

4. Contact with the meteorological services of both Nigeria and French West Africa.

5. Mapping, on a large scale, of catchment areas, with contours at two-foot intervals on and adjoining the flood plains. In this work it should draw heavily on the resources of the federal and regional survey departments.

We estimate the capital cost of the department of hydrology at about £ 120,000, including buildings and staff housing (see Table 1, p. 344). Annual recurrent expenditure is projected gradually to rise to £ 130,000 in 1959-60. We suggest that the initial target for staff be one senior engineer as director, five junior engineers (one at headquarters, one in the laboratory and three in the field) and about forty surveyors, overseers and clerks. We have purposely confined our recommendations to what we regard as staff obtainable within the next five years. Heavier expenditure will be justified as and when appropriate personnel can be recruited.

#### C SURVEY OF THE NIGER AND BENUE RIVERS

Survey of the Niger and Benue rivers presents a special problem. Although studies of these rivers are urgently needed, it will not be possible to organize the proposed department of hydrology soon enough, or on the requisite scale, for it to undertake a systematic survey in the near future. The mission therefore endorses plans to have this work performed by Nedeco, the Netherlands organization now surveying the Niger delta; Nedeco should undertake the survey as soon as its present work is completed. £ 400,000 for this survey is included in the mission's detailed projections of expenditure on inland waterways (Technical Report No. 18).

The survey should be undertaken in close co-operation with French engineers who have worked on the Niger in French West Africa and on the Benue in the French Cameroons. Nigeria should receive daily stage readings of the rivers obtained at the various gauging stations in operation in the French territories. This will permit forecasts to be made of the stage of these rivers in Nigeria, extremely useful for navi-

gation and flood control. Studies made of the Niger and Benue in French territories in connection with water control projects would also prove valuable for Nigerian engineers. In 1948, the French completed a dam at Markala in French Sudan in connection with a major irrigation scheme. Another is being made in connection with a proposed dam on the Niandan, the most important Niger tributary in French Guinea, which indicates that a reservoir could be used to raise the dry season flow of the upper reaches of the Niger. Another study has been conducted to ascertain the practicability of a dam and reservoir on the Benue which would permit navigation six months of the year down as far as Garua in the French Cameroons. In 1950, the International Conference on Transport in Central Africa South of the Sahara recommended joint consideration by the French and British of the problems of the Benue route and the port of Burutu. A Nigeria-French Cameroons Conference was held early in 1954 for the purpose of co-ordinating studies of the Benue.

The mission recommends that international co-operation be placed on a permanent basis by the establishment of a Niger basin permanent advisory committee, composed of representatives of all interested governments, whose first task would be to collect and co-ordinate all information relating to the basin and arrange for the regular exchange of river data. Later it should co-ordinate the various surveys and evaluate proposed projects. During the first years at least, no special staff would be necessary.

### III FLOOD CONTROL, IRRIGATION AND DRAINAGE

#### A RIVER AREAS

It is in the Northern Region that the need for improved water control is most acute. Some of the most fertile land is in the flood plains (*fadamas*) of the Niger and Benue and their tributaries, built up with silt deposited by the rivers during their flood. The silt retains moisture far better than the upland soils, which are generally highly pervious, drying quickly after the end of the rainy season. But cultivation in the *fadamas* is impeded by the height and speed of waters in flood. In years of heavy floods, crops planted before the flood may

be destroyed while those planted afterwards may not have sufficient moisture to mature. When floods are normal, cultivation may be possible, but the occasional years of heavy flooding have discouraged farmers from settling on much of the river bottom land. There are also considerable upland areas which in some years do not receive sufficient rainfall, though in normal years they receive enough for cultivation. Thus in flood plains flood control and drainage are needed; in upland areas, irrigation. Often both can be achieved by a single river control project: the river bottom land is protected from the height of the flood by the storage of water in a reservoir and the stored water can be used at the end of the rainy season to irrigate adjacent upland areas. The projects also build up underground water levels, assist in the control of erosion and make possible increased fish production.

The storage of water in the Northern Region encounters a number of difficulties in addition to the usual problem of finding a suitable reservoir site. These are the high rate of evaporation, the high perviousness of the soil and the heavy siltation which can be expected when waters are retained during the flood. Since the evaporation rate is highest in April and May, it will not in general be possible to store water for more than four months after the end of the rainy season, that is, beyond the month of March. This must be borne in mind in selecting crops suitable for growing on irrigated land. Nevertheless, it should be possible greatly to extend the cultivation of rice by such projects and to institute a second growing season for many food crops.

Apart from primitive works irrigating tiny plots, the only irrigation scheme in Nigeria until recently was at Kwarre, on the Rima river near Sokoto. Built in the 1920's, the bank constructed to protect farm land from flood waters was breached on three occasions and was abandoned in 1940 after a flooding of the protected area by a flood, not of the Rima, but of a small tributary flowing through the protected area. The project failed to take into account both exceptionally heavy floods on the Rima and possible flooding of the tributary. Plans have been formulated to remodel this scheme so that it will again protect 600 acres of good farm land. Cost is estimated at £ 7,500, or about £ 12.10.0. per acre, a modest amount. The mission recommends that this project be executed soon, not only to provide

additional cultivable land but also to help overcome the reluctance of farmers in the area to participate in irrigation schemes since failure of the project.

Establishment of the irrigation branch of the Northern Department of Agriculture in 1949 was important for the development of water control in the Northern Region. Slow in getting its work under way because of the difficulty of recruiting staff, the branch had by 1953 obtained the services of seven qualified engineers in addition to the assistant director in charge of the branch. It has undertaken a number of small irrigation and flood control schemes near Bida in the Middle Belt and has been active in Sokoto Province where twelve small projects for irrigation, flood control, swamp drainage and cattle-watering reservoirs have been built or are planned.<sup>2</sup> The branch has also been studying the Lake Chad irrigation project discussed below and has established in Sokoto an irrigation training school, which has begun to train irrigation overseers and surveyors.

The immediate objective of the irrigation branch has been to gain experience in the problems of water control and to determine the attitude of farmers with respect to water control projects, rather than to bring large new areas under cultivation quickly. Except for two schemes near Bida, projects have been limited to areas of 50 to 700 acres. At present the branch is concentrating on Sokoto Province. It plans soon to turn its attention to another part of the Northern Region, allowing the projects in Sokoto to operate for a few years so that operational problems can become known before irrigation on a larger scale is undertaken.

The mission considers that the early irrigation work of the Northern Regional Department of Agriculture has been extremely valuable. The experience acquired and to be acquired in the construction and operation of small water control schemes will provide a useful basis of information for later irrigation development. The irrigation branch should be expanded as quickly as new staff can be obtained. Recruitment of qualified engineers has been difficult and will doubtless remain so. We recommend a program of recruiting young engineers, without specialized experience with irrigation, who can be trained to work under Nigerian conditions.

<sup>2</sup> Including the rehabilitation of the Kwarre scheme.

In our detailed projections of government expenditure on agriculture (Technical Report No. 10), we propose capital expenditure on small irrigation schemes (not including salaries and other items of overhead) amounting to £ 500,000 between 1955 and 1960. For the time being, the scale of projects must remain small; larger schemes can be undertaken only at considerable risk until sufficient data have been obtained on the behavior of rivers and operational experience has been acquired. As experience is gained, however, and as the work of the department of hydrology progresses, new projects can be more surely based and their scope can be greater. Thereafter the proposed Northern development corporation might undertake irrigation and flood control schemes on a commercial basis. At the experimental stage, however, we believe that construction of irrigation projects is more properly a function of the Department of Agriculture than of the development corporation.

Problems encountered in the water control projects already undertaken provide valuable experience for future schemes:

1. Irrigation and flood control schemes are frequently undertaken primarily as an aid to rice cultivation. Where rice cultivation is new (for example at Gummi on the Zamfara River south of Sokoto), it has been difficult to secure the co-operation of farmers. While irrigation is still in its infancy, priority should be given to projects in localities where rice cultivation is already established, as for example at the Edozhigi scheme on the Kaduna River near Bida.

2. Where the characteristics of a site demand a very large and shallow reservoir area, evaporation losses are high. The cost of water control can be reduced by selecting sites with this in mind. The Gummi project and a water storage and drainage project at Bukwium, also on the Zamfara, at both of which relatively shallow reservoirs have been built, will provide valuable information on evaporation rates.

3. Because of the heavy load of silt carried by Nigerian rivers in their flood, siltation of reservoirs is likely to be a serious problem. The problem is aggravated by the fact that projects were undertaken before the silt content of flood water was known, and that there is sand in river beds near dam sites, as at the Geben Kabasha

cattle dam project near Chafe (on the railway between Funtua and Gusau). These projects will provide experience with problems of siltation. We recommend that at Geben Kabasha profiles be taken of the flooded area each year, to enable the siltation of the reservoir to be watched. We also suggest that in the case of reservoirs likely to be subject to heavy siltation an undersluice be provided in the dam. Although the effectiveness of an undersluice is limited, we believe it would be worth while in a small project, since its range of action would comprise a relatively important part of the reservoir. It is also useful to empty the reservoir if repairs to the dam should become necessary.

4. Because of the failure of the original Kwarre project, there is much scepticism in Nigeria about the possibility of constructing levees that will withstand peak floods. The difficulty of determining the proper height of levees will continue to some extent until river flow measurement has been carried out for a sufficient number of years to enable the plotting of probability curves showing the height and frequency of the heaviest floods. In the meantime, destruction of levees by higher than normal floods can be prevented by building masonry spills into the embankment, at a level slightly higher than the maximum recorded flood, or by preparing in advance locations at which embankments can be breached, bordered by masonry to prevent large-scale destruction of the embankment.

5. Nigerian officials have also been cautious about flood control projects because of the danger that diversion of the flow would cause heavier damage outside the protected area. Whenever this appears possible, the laboratory of the proposed department of hydrology should build a model of the scheme so that the effect of the proposed diversion of flow can be determined.

6. Cost of irrigation and water control works has varied between £ 7 and £ 50 per acre of cultivable land affected. While water control is still in an experimental stage costs may tend to be high, but when larger projects are considered, careful attention should be paid to the economics of the scheme. One of the most effective projects visited by the mission, the Badeggi project near Bida, has made possible the cultivation of 3,500 acres at a cost of only £ 7 per acre. The entire area can be used only to the end of the rainy

season but on half of its cultivation should be possible from June to May. The mission believes that there are many projects of this type which can be developed on the tributaries of the Niger in Ilorin and Niger Provinces, and recommends that the Northern Regional Department of Agriculture investigate these possibilities thoroughly.

#### B LAKE CHAD PILOT PROJECT

Plans have been formulated by the Northern Regional Department of Agriculture for a promising pilot project for reclaiming fertile areas adjacent to Lake Chad. The mission recommends that this project be carried out soon, for if successful it would make possible much larger works which could bring several hundred thousand acres of new land under cultivation.

Lake Chad is a large expanse of shallow water without any surface outlet, whose area varies greatly from season to season. It is situated in the northeastern corner of Nigeria, where it marks the border between Nigeria and the French Chad Territory. The waters of the lake are not used economically except for fishing and watering cattle. It is fed mainly by a perennial river, the Chari, flowing from the southeast and draining a catchment area of more than 250,000 sq. mi. in the French Territory of Ubangi-Chari. Many small rivers, dry in the dry season, empty into the lake in the wet season. Because the bed of the lake is very flat, the waters retreat in the dry season as much as 10 miles from the rainy season shoreline. Two peaks occur every year: the lower, generally in September, corresponds to the floods of the small rivers feeding the lake; following a recession, generally in October, the higher peak appears in December and corresponds to the flood of the Chari. The reading staff which measures the level of the lake is located at a place where it is not possible to measure the water level during the driest weeks of the year. Except when rain is particularly scarce, the September peak is about 3 feet above the zero of the staff and the December peak varies from 3 to 6 feet above zero.

We do not believe that the frequently expressed view that Lake Chad is gradually drying up can be substantiated. Readings of the high water level taken over 35 years show that 15 years ago, after a

season of abundant rain, the level of the lake rose above the normal high water level and the fluctuations of the level were affected by this rise for about 10 years thereafter. It is possible that the subsequent return to normal conditions gave rise to the rumor of a drying lake.

Surprisingly for a lake without outlet to the sea, the water of Lake Chad is fresh and appears to be suitable for irrigation. Information on the salt content is not yet accurate enough, however, to determine the exact crop varieties to be grown in the area.

The climate of the Chad area approaches that of the desert and so little cultivation has been possible. Its soil, however, classified as Firki, black soil and sandy loam, is considered one of the best for cultivation. Firki is similar to the black cotton soil of India, difficult to work but extremely fertile. Black soil is ideal for paddy and numerous other crops; it can be worked mechanically. Sandy loams are found in isolated patches varying from irrigable loam to very light sand not suitable for irrigation. Cultivation can be started on the fringe of the lake at the end of the rainy season but generally the soil dries quickly after the water subsides.

Cultivation would be possible, however, if an area normally flooded during the rainy season were to be protected by dikes and if the distribution of water within the area during the season of high water, i.e. from about September to March, were controlled by gates and channels. Full drainage would be allowed in June and July when the lake water retreated miles away.

The Lake Chad pilot scheme is to be built at the south end of the lake. It is planned to enclose an area of 1,500 acres on three sides by a five-mile bund, the fourth side, opposite the lake, being at a higher level than the highest flood level of the lake. The top of the bund would be about five feet above normal flood level and two feet above high flood level. Water will be conveyed around the area by main and secondary distributories fed by sluices in the dike. Six regulators will be built on the main distributories to control the level of water. A drainage system will allow drainage of the land when the water of the lake subsides. In the middle of the area there will be a depression where the water will gather in a pond during the wet

season. This pond will become dry during the dry season either through evaporation or drainage.

The estimated cost of the pilot scheme, as of December 1953, was £ 28,000,<sup>3</sup> less than £ 30 per acre of cultivable area. This does not include the cost of a medical control project needed to prevent the spread of malaria and bilharzia, which involves capital expense of £ 19,000 and a yearly expenditure of £ 7,500 (£ 6,720 of which is for destruction of bilharzia-carrying mollusks). In the mission's opinion the cost of medical control could be much reduced by stocking canals with one of several varieties of fish that feed on mosquitoes and mollusks. Research already in progress in the fisheries department should be encouraged.

The success of the project depends mainly on the possibility of providing adequate drainage. As long as the level of the lake is lower than the outlet of the drainage system, the drainage will be satisfactory, but during the high water season, after closure of the drainage outlet, the run-off will flow into the pond in the center of the protected area. The pond level must remain low enough to prevent water-logging of the protected area. For this two conditions are necessary: the run-off of the protected area must not exceed the capacity of the pond, and the dikes and the soil must be sufficiently impervious to prevent seepage of the lake water when it is at high level.

Construction of the scheme was scheduled to start during the low-water season of 1954 and to take two years. Three more years are needed for the agricultural experiments. In order that in about five years' time preparations will have been made for extension of the system tested in the pilot scheme, we recommend:

1. The establishment of a reading staff in the lower part of the lake to allow readings of the lowest stages in dry season;
2. A succession of aerial photographs of the edge of the lake taken systematically at different stages of the lake, say foot by foot from the lowest to the highest level. We attach great importance to this succession of photographs for, without any ground survey, they would provide an idea of the irrigable area and of the topographic relief accurate enough to plan new projects;

<sup>3</sup> £ 18,000 construction cost plus two years of operating cost at £ 5,000 per year.

3. Water analyses giving detailed information on salt content;
4. A detailed soil survey, starting as soon as the irrigable area is known roughly from the aerial photographs; and
5. Perviousness tests in many sites, to determine the practicability of irrigation and drainage projects.

### C RECLAMATION OF MANGROVE SWAMPS

In the southern part of Nigeria water is abundant and the chief problem is drainage. From an economic point of view, the most promising prospect for better use of water resources is the growing of rice in reclaimed mangrove swamps along the coast.<sup>4</sup>

Pilot projects have been undertaken near Calabar, in the Eastern Region, and the mission believes that the results obtained to date offer good prospects for a very substantial extension of rice cultivation. The projects are located in mangrove swamps, where the ground is covered with water twice a day by the action of the tide. In the area selected, the water is slightly salty and rice grows well. Clearing of mangrove is easy and cheap, cheaper in fact than the clearing of fresh water swamps, where trees are larger and stumps decay less quickly.

An accurate appraisal of the possibility of extending this practice is hampered at present by the paucity of data on the salinity of tidal waters in different areas and at different seasons of the year. Obviously, salt content increases with proximity to the sea. It is also higher during the dry season and lower during the rainy season. During the rains the abundant flow of the rivers pushes downstream the boundary between fresh and salted water; the boundary goes upstream again when the flow of the rivers lowers. We recommend that systematic salinity tests be made in order to determine exactly what areas are suitable for rice cultivation. When the salt content of a particular area is known, the variety of rice which is best suited to that degree of salinity can be chosen for planting.

Reclamation will be facilitated if a fringe of mangrove is left along the bank of the creek to prevent the erosion of soil into the creek. Drainage canals should be similarly protected by planting mangrove or nipah palm along both banks.

<sup>4</sup> Rice cultivation practices are discussed in Technical Report No. 9.

Although the pilot projects near Calabar show promise of success, similar projects near Brass, in Rivers Province, appear to be less successful because of the resistance of the local population, traditionally engaged in fishing. If this resistance can be overcome where it occurs, the reclamation of some 100,000 acres of mangrove swamp should be possible within the next few years. This, we believe, would be an appropriate activity for the proposed Eastern development corporation.

#### IV URBAN AND RURAL WATER SUPPLIES

The Ten-Year Plan of Development and Welfare for 1946-55 made provision for a substantial expansion of water supplies in rural villages, especially in the North, and also for the construction of new waterworks in urban centers. In the Northern Region expenditure on these projects was higher than anticipated in the years up to 1953-54, so that the funds allocated for the full plan have been exhausted before the end of the plan's life. As a result, appropriations for water supplies have been cut in 1954-55. Urban water supplies, for which £ 140,000 was appropriated in 1953-54, have received no funds in 1954-55. In the Eastern and Western Regions rural projects appear to have been carried out satisfactorily, but much of the money appropriated for urban supplies has remained unspent. In the East, dissolution of the legislature delayed passage of a law permitting the Eastern Region to borrow from the federal government a large share of the funds needed for the program. In the West, local authorities will not be empowered to borrow money until they become "local governments" under the Western Region Local Government Law.

The water supply program can make a valuable contribution to public health, and, in the North, to agricultural output, by making mixed farming possible. The mission considers it essential that the flow of funds to these projects be assured. In Table 1, we have projected a high level of capital expenditure and rising recurrent expenditure, both on new projects and on existing undertakings managed by the Public Works Departments.

TABLE 1 Projection of Expenditure on Water Resources

(Thousand £)

	Approved Estimates		Pre-liminary Estimates <sup>1</sup>		Projections of Mission										Total	
	1953-54		1954-55		1955-56		1956-57		1957-58		1958-59		1959-60		1955-60	
	R	C	R	C	R	C	R	C	R	C	R	C	R	C	R	C
<i>Federal</i>																
Rural water supplies.....	15	—	13	—	—	—	—	—	—	—	—	—	—	—	—	—
Urban water supplies:																
New undertakings .....	6	16	4	—	—	—	—	—	—	—	—	—	—	—	—	—
Existing undertakings (P.W.D.) .....	57	32	60	46	62	50	64	50	66	50	68	50	70	50	330	250
Department of Hydrology .....	—	—	—	—	50	60	70	60	90	—	110	—	130	—	450	120
Total <sup>2</sup> .....	78	48	76	46	112	110	134	110	156	50	178	50	200	50	780	370
<i>Northern Region</i>																
Rural water supplies.....	103	570	121	427	153	600	161	600	169	600	177	600	186	600	846	3,000
Urban water supplies:																
New undertakings .....	24	131	—	—	30	150	35	200	40	250	45	300	50	350	200	1,250
Existing undertakings (P.W.D.) .....	25	11	25	91	26	100	28	100	29	100	30	100	32	100	145	500
Total <sup>2</sup> .....	151	712	146	519	209	850	224	900	238	950	252	1,000	268	1,050	1,191	4,750
<i>Western Region</i>																
Rural water supplies.....	12	36	9	34	15	40	20	60	24	80	28	100	30	100	117	380
Urban water supplies:																
New undertakings .....	25	104	26	28	40	100	60	300	80	500	80	800	80	800	340	2,500
Existing undertakings (P.W.D.) .....	12	<sup>3</sup>	22	—	23	10	25	10	26	10	27	10	29	10	130	50
Total <sup>2</sup> .....	48	141	56	62	78	150	105	370	130	590	135	910	139	910	587	2,930

<i>Eastern Region<sup>4</sup></i>																
Rural water supplies . . . .	14	33	7	17	15	40	20	80	25	100	28	130	30	150	118	500
Urban water supplies:																
New undertakings . . . . .	9	45	11	86	15	125	20	150	25	200	30	250	35	300	125	1,025
Existing undertakings (P.W.D.) . . . . .	40	13	41	36	43	20	45	20	47	20	50	20	52	20	237	100
Total <sup>2</sup> . . . . .	64	91	60	138	73	185	85	250	97	320	108	400	117	470	480	1,625
<i>Southern Cameroons</i>	—	—	—	—	10	20	15	40	20	60	21	75	22	75	88	270
<i>Native Treasuries and Local Governments</i>																
North . . . . .	94	58	97	61	100	65	105	70	110	75	115	80	120	85	550	375
West . . . . .	100	26	103	30	106	35	109	40	113	45	116	50	119	50	563	220
East . . . . .	13	7	13	7	14	10	15	10	16	10	17	10	18	10	80	50
Southern Cameroons . . . . .	<sup>3</sup>	—	<sup>3</sup>	—	1	2	1	2	2	4	2	4	2	4	8	16
Grand Total . . . . .	548	1,083	551	863	703	1,427	793	1,792	882	2,104	944	2,579	1,005	2,704	4,327	10,606
<i>Related Expenditure</i>																
Irrigation, Northern																
Region <sup>5</sup> . . . . .	1	60	1	60	2	60	2	70	2	90	2	120	2	160	10	500
Niger-Benue survey and improvements <sup>6</sup> . . . . .	—	—	—	—	—	80	—	80	—	80	—	80	—	80	—	400

<sup>1</sup> For federal government, approved Estimates; for native treasuries, projections by mission.

<sup>2</sup> Totals may not equal sum of columns because of rounding.

<sup>3</sup> Less than £ 500.

<sup>4</sup> Includes Southern Cameroons in 1953-54 and 1954-55.

<sup>5</sup> Included in projection in Technical Report No. 10, Table 2.

<sup>6</sup> Included in projection in Technical Report No. 18, Table 7.

NOTE: R = Recurrent; C = Capital.

I NIGERIAN INDUSTRY TODAY

Industrial output does not yet account for a significant part of the gross domestic product. Manufacturing and public utilities, the fastest-growing activities, together in 1952-53 represented less than 1% of the whole. Using "industry," as we do in this report, to include the craft industries, timber sawing, cotton ginning, cereal and groundnut milling, palm oil extraction and similar factory operations whose precise contribution is not always calculable, aggregate industrial "value added" does not exceed 3% of the gross Nigerian product.

Present industries include a few fairly large- or medium-sized undertakings, mainly in the South, and a wide assortment of small factories or producing shops throughout the country. Other than those closely related to traditional native crafts, not many were operating 20 years ago; most have been started within the last 5 or 10.

Among the larger units are a veneer and plywood mill (one of the world's biggest), a modern cigarette factory, a steel drum fabricating plant, a brewery, three soap factories, four groundnut oil mills, three palm oil mills and 10 cotton gins, together with a number of bulk palm oil refining plants, sawmills, rubber mills, soft-drink bottling plants and a margarine factory. These and some others have been established with external (chiefly European) private capital. The greater part of these have been financed from the reinvested local profits of trading firms. Few new firms have invested in Nigeria in recent years.

Several factories of significant size have been started by Nigerian private investors, in some cases with the financial help of public development bodies or private trading firms. Among these are two textile mills, two singlet factories, a tire retreading plant and a ceramic factory.

Most of the smaller plants or industrial shops are owned and operated by Nigerians, some in association with larger European enterprises. Many have been financed without help; others have obtained loans from banks and public sources. A few are co-operatives and there are some all-African joint-stock companies. A partial list of their products includes palm oil, lumber, boxes, millwork, furniture, pottery, brick, tile, builders' lime, textiles, knitted goods, garments, leather, shoes, tins, nails, small metal castings, wrought iron work, plaster ornaments, soap, bone meal, cleaned kapok, bottled beverages, bread, yam flour, milled rice, smoked meats, ice, ground and packaged beans, cereals, roasted coffee and spices. There are also blacksmiths, tin-smiths and small shops doing tire repairing, dry cleaning, automobile and bicycle repairing, printing, ruling and bookbinding.

On a still smaller scale are the traditional craft shops and cottage industries. In addition to pottery, hand weaving, dyeing and wood-carving, these turn out such articles as straw hats, dolls, raffia bags, leather work, cast and beaten brass, glass beads and ornaments.

In the last few years governmental agencies concerned with development have initiated several industrial projects with public funds. Probably the most important of these are the so-called Pioneer oil mills for the expression of palm fruit, of which some 80 are in operation. A government-operated creamery in the North produces butter, cheese and ghee. Several small boatyards are making river craft. The Public Works Department has been manufacturing furniture for many years. Other publicly-owned projects have included a cold storage plant and a small cannery; a larger cannery and two rubber factories are under construction.

Lest this recital prove misleading, it must be emphasized again that the majority of enterprises are quite small. In a country of Nigeria's size and population this degree of industrialization is hardly noticeable. Nevertheless there is enough to provide a background for study and to indicate some of the practical problems that an industrialization program must face.

## II THE INGREDIENTS OF INDUSTRY

In the basic resources needed for industrial development Nigeria is more fortunate than many another country. It has a good labor

supply, numerous important raw materials, fuel, water, a home market of 32 million people whose incomes are gradually rising and at least a part of the necessary investment capital. The principal ingredients in which the country is deficient can be grouped under the heading of human experience, which can and will be acquired in time.

### *Labor*

Judging by the success of recruitment efforts of private employers in various parts of the country, the supply of unskilled industrial labor is adequate. The general agricultural underemployment provides a reservoir of potential industrial labor, and a preference for cash income causes many persons to migrate to the towns. Labor moves freely even from region to region, despite differences in religion and custom. This is particularly true of the Eastern Ibo and the Northern Hausa, the one because of competitive conditions at home and the other motivated at least in part by trading traditions.

Differences in productivity seem to depend less on inherent attributes of the workers than upon the quality of management and training supplied. For example, the mission could not fail to be impressed with the rapid advance and high output of labor in the Ibadan cigarette factory and the Sapele plywood mill, or the success of the training programs of Shell-d'Arcy at Owerri—all three outstanding but by no means isolated illustrations.

Under competent guidance, Nigerians learn skills easily and show considerable ingenuity. Literacy is a tremendous advantage and it is often demanded by the larger industrial employers. The workers are careful, have surprisingly few accidents, and in the better plants show a low rate of absenteeism. There are many unions<sup>1</sup> but comparatively few strikes, and organized resistance to modern labor-saving improvements is very rare.

Nigerian workers promoted from the ranks perform well as foremen, handling crews of 40-50 capably and sympathetically, although sometimes they are too hesitant to assume authority. It is notable that

<sup>1</sup> Registered Nigerian trade unions number 145, with a combined membership of over 148,000. Most are limited to a single company or to units of an industry within a locality. Only a few are countrywide and there are no major countrywide federations. Both the coal mines and the railway have had labor difficulties, referred to in Technical Reports Nos. 14 and 16, respectively.

the private industrial enterprises which show the best worker productivity use a high proportion of Nigerian foremen and supervisors.

There is no evidence of regional differences in abilities, although environment and tradition undoubtedly have produced differences in inclination. Employers report, for instance, that while Northerners make first-class machine workers, their traditional interest in trading occupations reduces the number of applicants for mechanized jobs. Similarly, in the West, close to the seat of the colonial government, interest in law, government service and theoretical studies is greater than in the mechanical arts.

To an appreciable extent in all regions there is a leaning toward government employment. For generations the Nigerian has associated responsibility, social position, security and modern comfort almost exclusively with government employment; it is natural that he should aspire to it. Only as more Nigerians see equal rewards and dignity achieved locally in private business will this tendency diminish.

The mission found less regional or local variation in wage rates for industries and the building trades than is generally supposed. Moreover, industries in or near major cities pay about the same as those in rural or isolated areas. Differences in the degree of skill and training are of much greater significance.

Rates paid by both industry and government for unskilled workers generally range from 2/2d. to 2/9d. per day. The highest daily wage for unskilled help encountered was 3/-. For factory work requiring some experience but not artisan training, wages may range from 3/2d. to 4/9d. per day. Fully qualified foremen generally draw from 8/- per day upward, the more responsible positions of this kind paying salaries from £ 220 to £ 600 per year or even more. Wages for skilled artisans and specially trained workers vary from 6/- to about 15/- per day.

Straight piece-work wage payment is not popular, but there are numerous successful incentive plans in operation, most involving a regular daily wage plus a bonus based on output. One factory has set production quotas for a day's pay; when the worker's quota is filled, at whatever hour of the day, he is free to go home. Employment in those few factories which provide health and recreation facilities and similar amenities confers an enviable prestige and social standing

and a worker will put forth his best effort at all times rather than risk losing his place.

### *Raw Materials*

Nigeria is not lacking in industrial raw materials. Mineral resources, reviewed more fully in Technical Report No. 14, include tin, columbite, lead, zinc, gold, iron, ceramic clays, quartz, feldspar, silica sand and limestone, as well as carbonaceous fuels. Even more numerous are the agricultural materials (see Technical Reports Nos. 7, 8 and 11), among which are cotton and other fibers, oil seeds, rubber, hides and skins, root starches, grains, fruits, hardwoods and a group of forest products such as gums, resins, tannins and extracts. Additional raw materials for industry may be disclosed by continuing survey and research.

The commercial properties of many of these materials remain to be investigated and the use of some may have to be deferred until Nigeria has reached a higher stage of technological development. Another factor limiting their use may be the present size of markets at home and abroad.

Nigeria should bear in mind, moreover, that it may not necessarily be economically or commercially sound to process a raw material within the region in which it is found or even within the country. To insist on local processing as a condition for the grant of export licenses or minerals concessions, for example, in the absence of economic justification and purely for reasons of national or regional pride, would retard rather than promote development.

### *Markets*

The home market is the most important outlet for manufactured goods—the potential export market includes neighboring countries, especially for assorted articles of local use, and the world at large for certain products of primary processing.

Income levels are low for most of the home customers. Nevertheless, they already buy about £ 100 million worth of industrial products annually from overseas in addition to their own manufactures. The home market's capacity to absorb these products is expanding

by 5% or more per year and if the current development efforts succeed, an even faster expansion can be expected in coming years.

#### *Fuel, Water and Power*

Supplies of coal are ample (see Technical Report No. 14) and present production capacity is greater than demand. Its present high price may limit its economic use. There are also lignite deposits, and explorations indicate a strong possibility of petroleum.

Firewood is used as a household fuel and even by some local industries. The mission cannot recommend basing major Nigerian industrial developments on firewood, however. Numerous projects of this kind have been launched in other tropical countries, seldom without a well-intentioned plan for "perpetual-yield" cutting; few succeed and even fewer are of net benefit to the country. Too often they not only prove uneconomical but end in disastrous forest destruction, with attendant soil erosion.

Despite localized shortages, most areas can provide reasonable water supplies for industrial needs. Industries requiring an unusually large volume can find inexhaustible supplies in the main rivers.

While power-generating capacity is low, the mission believes that available resources, supplemented by extensions being undertaken and those recommended (see Technical Report No. 15) are sufficient to absorb a moderate industrial load. The difficulties resulting from present power shortages could be reduced substantially by a modification of the policy regarding generation of power by industries for their own use. This policy has in some cases discouraged or delayed the establishment of new industries, for occasions have arisen when the Electricity Corporation of Nigeria (ECN) required quite some time to decide whether it could provide service. For the time being, new large factories will in most cases find it more economical to generate their own power, at a capital cost which will usually represent only a small fraction of total capital invested, than to purchase it from ECN as they are now required to do unless ECN cannot supply it. Even smaller factories may sometimes find it advantageous to operate their own generating sets. In many cases, the difficulties now experienced by industries as a result of power shortages could be largely overcome if they were permitted to install their own generat-

ing capacity. In many areas, ECN power is exceedingly variable. Voltage fluctuations are sometimes heavy enough to damage industrial equipment. Frequent power failures force an unusual number of factories to maintain stand-by generators. For example, lines in Kano are so overloaded that certain industries, required to purchase ECN power, must nevertheless switch to their own stand-by sets daily at peak hours. .

### *Capital*

Most underdeveloped countries suffer from a general shortage of liquid capital. The situation in Nigeria is unusual: not only has the rate of saving in recent years been as high as in many developed countries, but a large part of these savings, in liquid form, has been concentrated in the hands of public bodies; liquid capital accumulation in private hands is relatively small. Understandably, this had led to demands that public funds be used to develop industry.

Some use of public funds for this purpose is certainly justified. Before deciding to what extent and in what manner this can best be done, however, it is well to consider realistically what industrialization means in terms of capital requirements. Excluding many of the more capital-intensive industries, a conservative estimate made recently for one of Nigeria's neighbor countries<sup>2</sup> calls for about £ 1,000 of capital investment for each industrial worker involved. On this basis, merely to create enough new industries to engage an additional 1% of Nigeria's present working population would demand an aggregate investment of £ 165 million.

While industry is one of the most voracious of the competing claimants for development funds, it is also one of the few capable of interesting private capital.<sup>3</sup> Limited government funds may most efficiently be used in developing industry by supplementing private capital in such ways as may be necessary to bring the maximum amount of the latter into play.

How much can be achieved with Nigerian private capital is difficult to estimate. The problems are characteristic of underdeveloped coun-

<sup>2</sup> W. A. Lewis, *Report on Industrialisation and the Gold Coast* (Government Printing Department: Accra, Gold Coast, 1953).

<sup>3</sup> See also the more general discussion in Chapter 2 of the role of private capital and of the attitude of African businessmen toward industrial enterprise.

tries: (1) as long as it is possible to make large and quick profits in commercial transactions which do not require the immobilization of funds over a long period of time and which can be financed in part by bank credit, there is likely to be only limited interest in investment in industry; (2) few individual accumulations are large enough to finance more than a very small manufacturing enterprise by themselves; (3) the joint-stock concept is not yet familiar; and (4) industrial credit is difficult to obtain. The government can encourage and support African industrial initiative by measures which will reduce the initial capital outlays necessary, provide more accessible credit and competent advice and stimulate the pooling of capital through co-operatives and joint-stock companies.

But whatever success the foregoing measures may have, they can bring into action only enough capital for a limited industrial growth. If Nigeria wants a faster rate of development, it will have to make full use of foreign capital, and of the managerial and technological skills that accompany it.

In Chapter 2 we have discussed the importance for economic development of foreign private investment, the difficulty of attracting it and the consequent need, if Nigeria wants foreign capital, for a clear and consistently applied policy designed to encourage it. It may be useful to restate here that there is no reason why Nigerians should not be given an opportunity to participate with overseas investors in industrial financing. In the mission's view, foreign and domestic capital working in partnership offer the best opportunities for effective and stable economic development. Indeed, we should not be surprised if some overseas investors made their coming to Nigeria conditional upon such participation. While financing may be shared, it would be reasonable for foreign investors, in appropriate cases, to insist on sole responsibility for technical and commercial management during the first years at least. The foreign investor will thus be acting both as shareholder and managing agent.

The shortage of private Nigerian venture capital is likely to constitute a severe limitation on Nigerian financial participation in industrial development. There is, therefore, much to be said for the type of arrangement worked out a few years ago with a prospective foreign investor, under which a certain percentage of the share capital

of the enterprise would be offered to the Nigerian public, with the proviso that the government would have the right to take up any shares not subscribed to by private African capital. The government should, however, stand ready at all times to sell these holdings to private Nigerian investors.

The latter comment applies to government investment in industry in general. At this stage of Nigerian development, it is inevitable that public institutions will have to engage in a certain amount of industrial investment which in more developed countries would be undertaken by private capital. These institutions should make active efforts to dispose of their investments as soon as private purchasers can be found. The sales proceeds can then finance new projects for which private capital is not yet available. In this manner a limited use of public funds can stimulate industrial development to a far greater degree than the amount of investment would suggest.

### *Management and Technology*

As is pointed out in Chapter 2, with practically no background of industrial production, Nigeria has had little opportunity to develop managerial skills, and much of its supply will have to be imported for many years to come.

At present, African-owned industries, if they can afford it, hire managers as well as technical specialists from abroad. The smaller local enterprises often look to the government for management advice.

For some of the larger industrial projects it is necessary to arrange for management by an overseas firm with experience in the particular branch of industry. A number of such arrangements are already in existence. In selecting outside management, we believe preference should be given, as a general rule, to firms which are sufficiently confident of the success of the project to be willing to participate in its financing.

In the long run, if Nigeria is to take its place in a competitive world there must be created a substantial body of Nigerians capable of assuming top management responsibilities in local industry. Managers, even more than workers, require on-the-job training. The most progressive expatriate firms have made a beginning by promoting trained Nigerians to executive posts. In other sectors, both public

and private, the prevailing attitude has often been one of paternal caution. A more confident approach to this question would contribute greatly to the development of competent Nigerian management.

Industrial technology must also be imported at present. It is erroneous to think that a shortage of local technology, because it can be taught in schools, may be more quickly remedied than a shortage of local management. Technology and management are interrelated and often must be embodied in the same person. The element of experience is essential in both cases. To develop these skills, promising students should be encouraged to select advanced technical studies, and, when academically prepared, should be brought into technical posts of progressively increasing responsibility.

Meanwhile, the heavy dependence upon imported technical personnel, if a handicap in some respects, at least offers the advantage of acquainting Nigeria with the latest technology, not only from the United Kingdom but from other areas as well.

#### *Shop Facilities*

A factor in early industrial growth whose importance is often underestimated is the availability of general shop facilities for special fabrication jobs, installation assistance, emergency repairs and maintenance. On these, Nigeria makes a poor showing. The best are the government railway shops at Ebute Metta, Zaria and Enugu, to which the public has no access. Limited commercial services are available in Lagos; elsewhere there are almost none.

Without such facilities each industrial enterprise must invest in its own, or, alternatively, suffer rapid deterioration of production equipment and the risk of prolonged shutdowns. Either course burdens local industries with abnormal costs. At present the problem extends not only to special industrial machinery but even to the routine servicing of motor vehicles and bicycles.

### III AGENCIES CONCERNED WITH INDUSTRIAL DEVELOPMENT

In recent years a number of public agencies have been concerned with the promotion of Nigerian industry. Chief among them are the

central Department of Commerce and Industries, the Regional Production Development Boards and the loans boards. The activities of the latter are described in Technical Report No. 5.

The Department of Commerce and Industries, established in 1946 in connection with the adoption of the Ten-Year Development and Welfare Plan, was created "to assist, to advise and, where necessary, to participate in such economic improvements and developments as may be decided upon."

The commerce branch is responsible for commercial information, procurement and internal distribution of supplies, import and export controls, etc. The industries branch conducts research, builds and operates pilot plants and demonstration projects, initiates and conducts commercial enterprises, runs training centers for village industries, participates in administering industrial legislation, advises other agencies on loans to small business and sometimes administers loans.

Of all the agencies concerned with industrial development, this department alone has an appreciable technical staff. Accordingly a large part of its work consists of technical assistance to local enterprises, both private and public. The demand for this type of help is far heavier and more diversified than the department, as presently organized, can meet.

African-owned industrial ventures have probably benefited more from the practical help of Commerce and Industries' technicians than from most of the other development measures to date, and although it has had its share of unfortunate experiences, the department has established some valuable principles of public service toward industrial development which other agencies could profitably adopt. It has also launched a number of significant developments such as the Pioneer oil mills and textile, canning and boatbuilding projects. Most of these have been turned over as soon as possible to regional agencies or, in a few cases, to African entrepreneurs. As part of a decentralizing move intended eventually to extend to the other regions, many of the department's responsibilities in the North were transferred in 1952 to a regionally administered Department of Local Industries, and a similar department has been started in the East.

To date the central Department of Commerce and Industries has played the most important and constructive role in industrial develop-

ment. The revised constitution designates the field of industrial development as one in which the regional, as well as the federal, governments may act. It does not distinguish between industries of local interest, to be the subject of regional action, and industries of national interest, to be the subject of federal action, and we do not think it practicable, the constitution apart, so to delimit spheres of action. We anticipate, as a logical continuation of the pattern as it has been developing, that the principal activity will be on the regional level and that the federal government will confine itself to the financing of a limited number of large industrial projects and to giving technical support and advice to the regions.

In 1953, prior to the London and Lagos constitutional conferences, the government tentatively considered establishing a central industrial development corporation, presumably with branches in the regions, to "focus thought and activity on nongovernmental development by bringing investment opportunities, capital and management together." We think there was much merit to this suggestion but it has in our view become impracticable as a result of the political reorganization of the country.

Our recommendations for the reorganization of the existing regional development agencies into regional development corporations, set forth in Chapter 4, are designed to enable the regions to shoulder the increased responsibilities which they want to assume. We believe it would be logical for the Department of Commerce and Industries, which has already transferred most of its pilot schemes to regional agencies, to transfer the remainder of those schemes, as well as the function of technical help to industry, to the regional development corporations. Technical guidance on rural crafts, training centers and other matters now handled by the department will under the new political organization be a proper subject for regional departments of local industries. At present, the Department of Commerce and Industries and some other agencies are conducting various research projects. We believe that these activities could be strengthened by transferring them to a specialized research institution, recommended below.

As a result of the changes suggested above, the technical staff of the Department of Commerce and Industries could be substantially reduced, although a number of specialists should be retained to advise

on technical problems relating to the department's own activities and to assist the regional agencies. These agencies will have a difficult staffing problem even if they can secure the services of some of the technicians who will be released by the department, and in the meantime a small central group of technical specialists would be particularly helpful.

The mission hopes that the development agencies will give the fullest support to private initiative, both Nigerian and foreign. In the past this has not always been the case. Examples will be found in the discussion, later in this report, of specific fields of industry. The promotion of Nigerian entrepreneurial activity is declared government policy and there is no reason why it should not be pushed vigorously. The overcautious attitude sometimes shown by officials to foreign capital is undoubtedly to a certain extent the result of uncertainty as to the willingness of the Nigerians to receive foreign capital. In our view, however, government officials, as well as the officials of the autonomous development agencies, could have been much more active than they appear to have been in stimulating discussion of, and clarifying the issues involved in, the role of foreign capital.

#### IV MEASURES TO STIMULATE INDUSTRIAL GROWTH

##### *Aid to Pioneer Industries Ordinance*

In 1952 private industrial development received legislative encouragement through the liberalization of tax deductions for certain types of capital expenditure and the enactment of the Aid to Pioneer Industries Ordinance. Under the latter, registered Nigerian public companies may qualify for complete exemption from income tax for periods from two to five years, depending on the amount of fixed capital expenditure incurred.<sup>4</sup>

Before a company can receive these benefits, the industry in which it proposes to engage must have been declared a "pioneer industry," and the company must have obtained a "pioneer certificate." The decision on these matters rests with the Governor in Council, acting upon the recommendation of the Minister of Commerce and Industries.

<sup>4</sup> The two-year minimum exemption period will be extended for one year if fixed capital investment is at least £ 15,000 and for three years if it exceeds £ 100,000.

To qualify for pioneer status, it must first be shown that an industry is not being carried on in Nigeria at all, or not on a commercial scale sufficient for the country's needs. Then the government must consider it "expedient in the public interest to encourage the development or establishment of the industry." If the Ordinance is to be effective, this broad discretionary power must be exercised in the most liberal manner. Indeed, if industrialization through private enterprise is desired as a matter of policy, then unless it clearly appears that a particular industry would be harmful to the country, we suggest that it is "expedient in the public interest" to encourage every new industry and every existing industry not yet sufficiently active in Nigeria for which private capital is available. At the time of our visit, the merits of a petition for pioneer status for the match industry were being questioned on the ground that chemicals for the match head would have to be imported. Such a consideration is, in our opinion, irrelevant, because they have to be imported in the match in any case.

Between enactment of the Ordinance and mid-December 1953, many informal approaches had been made to the Department of Commerce and Industries and 25 companies representing 15 fields of industrial activity had indicated their intention to submit formal applications. But only five applications had actually been filed; one, asking pioneer status for the recovery of columbite, had been rejected, while the remaining four (dealing with the manufacture of soft drinks, ground-nut products, safety matches and cabin biscuits) were still pending. By the end of 1953 not a single industry or company had benefited from the Ordinance.

There are certain explicit provisions of the Ordinance itself which deserve comment. In determining whether to grant a pioneer certificate to a given company "on grounds of expediency in the public interest," the Governor is directed to take into account the number and output of other pioneer companies already established or about to be established. The mission considers this an unfortunate provision, because it empowers and presumably even obligates the government to determine the "proper" level of production in a given industry. If the object is to preclude tax exemptions to companies entering a pioneer industry at a time when "pioneer" conditions no longer exist, we think this can be accomplished more equitably and effectively—for

example, by adopting the provision of Cuban law that once a pioneer certificate has been granted, subsequent applicants can obtain an exemption only for the balance of the exemption period granted to the first enterprise.

In directing the Governor to consider who are directors or proposed directors and the class of persons who are shareholders or to whom shares are to be offered, and in authorizing issuance of a certificate conditioned upon certain action with respect to these matters, the purpose is presumably to enable the government to assure to Nigerians opportunities to participate in the share capital and the direction of industrial companies. We see no difficulty in these provisions if they are reasonably applied.

It is too early to say whether the inducements of the Ordinance are sufficient to attract many investors, assuming that administration will be efficient and liberal. Laws of some other countries are more generous, offering among other inducements longer periods of exemption, freedom from customs duties on imported raw materials and construction materials and special benefits for the use of local raw materials. In view of the world-wide demand for foreign capital, Nigeria would do well continuously to review the scope of the benefits offered by the Ordinance.

#### *Industrial Sites*

It is extremely difficult to acquire land for factory construction. In part the difficulty is attributable to the confused state of the land laws. In parts of the South native law and custom recognizes a right of permanent alienation, but this is by no means universal and even where it exists it is frequently impossible to obtain clear title because of disputes as to ownership and the lack of any system of registration of title. In the North and in the Cameroons all land is held by the Crown in trust for the indigenous population and "strangers" must obtain rights of occupancy from the government. Save in the Colony area, non-Nigerians may not own land, and leases (in the South) or certificates of occupancy (in the North and the Cameroons) require government approval.

In the Lagos area the situation is somewhat better. The Lagos Executive Development Board is reclaiming an extensive industrial

zone at Apapa. The number of plots is limited, however, and they are not suitable for all industrial purposes.

In other countries one of the most effective methods used by individual communities or areas to attract industries is to assist them in securing a good site. What is done beyond that depends upon how strongly the area wants industries. The community may furnish certain improvements free of charge, grant low tax rates, offer the land at token rental or supply a building.

Nigerian regions and communities can adopt this technique without too great an expense. Under present conditions the mere existence of a good site, already earmarked for industrial purposes and available without delay or interference, would be an attractive inducement to many. Once the community has designated the site, government approval of a tenancy should not ordinarily be withheld from any bona fide industrial prospect, or be used negatively to select industries or to direct industrial endeavor into or away from specific localities or groups.

### *Industrial Estates*

Many desirable African industrial enterprises are handicapped by the scarcity of suitable building space for rent. It is difficult enough for the small industrialist to raise capital for machinery and a working reserve; if land must be purchased and a factory built, the total investment is often out of reach. The expatriate investor, who may not have a financial problem, is often hesitant to build a factory because of uncertainty concerning Nigeria's political future.

Toward meeting both situations, the mission strongly favors the proposal of the Department of Commerce and Industries to develop a system of "industrial estates." To quote from a memorandum prepared for the mission:

"Briefly, the idea is to provide modern factory facilities which can be rented, thus providing assistance to industry indirectly from government funds without the embarrassment and risk of loss which direct loans to entrepreneurs can so frequently cause."

In a good location, the investment in such facilities would be rather safe, since there is a general shortage of building space and a

factory-type building can always be put to use. There are several possible variations. For large- or medium-sized industries, buildings may be built to suit the tenants' needs and leased with or without an option to purchase. For the smaller enterprises, including factories employing perhaps up to 50 workers, divisible space which can be rented by the square foot is probably more satisfactory.

For this last purpose the type of building now contemplated by the Department appears more elaborate and costly than necessary, and at the same time not sufficiently flexible. Long, narrow structures, which can be divided by semi-permanent masonry partitions in any way desired, permit individual units in a complete range of sizes up to the full length of the building. They are simpler to build, permit straight flow lines and need no waste corridors or complex system of external roadways. If built of lightweight concrete block, it is not difficult to alter doorways or to make special openings. Such a structure can always find a profitable use, a point to consider in the event that demand for small workshop space should decline in a given locality.

As a rule this type of industrial estate should be placed in an urban locality where it can accommodate not only small factories but also service enterprises, such as repair shops, which must be accessible to the public. For the larger industries there is more freedom of choice, yet even for these a rented building should not be placed where it would be difficult to get a second tenant. In general, we would not recommend setting up industrial estates in remote areas where costly housing and related facilities must be built for personnel.

For the present at least, we do not recommend establishment of large individual industrial centers. A beginning should be made with one or two buildings for small enterprises in selected localities, rather than by attempting to plan major "industrial communities." While heavily centralized industries can share certain advantages, the proper economic location of these centers is determined best by natural growth.

In meeting existing need in various sections of the country, units should be placed where local initiative has shown itself ready to take advantage of opportunities provided. From this aspect some of the more promising locations would appear to be Aba, Abeokuta, Enugu,

Ibadan, Jos, Kaduna, Kano, Lagos, Onitsha, Port Harcourt, Sokoto and Warri.

This project offers a logical investment field for the regional development corporations, as well as one of the best means by which these organizations can promote local industry. We suggest that it be the subject of a conference between Commerce and Industries personnel and the regional development authorities.

#### *Technical and Management Help*

Earlier references have been made to the need of many Nigerian enterprises for greater specialized help on problems of industrial technology and management. Under Nigerian conditions the problem of supplying many small industrial enterprises with technical and management advice requires a number of practical technicians who can spend a great part of their time in the field. A sizable number of men will be needed and there will admittedly be appreciable duplication among regions. While many of the problems will be common to more than one region, one man in each speciality cannot cover the ground. We recommend that this direct technical advice and assistance to industries be undertaken by the proposed regional development corporations. Their staffs will necessarily include practical technicians to advise on the projects of the corporations themselves and on loan applications, and to assist borrowers. The same men could undertake the task of advising on industrial production. Where a development corporation establishes an industrial estate such as we have described, it might prove convenient if one of these industrial production officers served as its local supervisor.

Another important field in which advice is needed is accountancy. Until more Nigerians have an opportunity to learn elementary accounting methods many of the enterprises will need help in setting up their books and records. In most cases the requirements are simple, but without them the small producer may not really know whether he is making or losing money, or why.

As stated above, a nucleus of technical specialists would remain in the Department of Commerce and Industries and, to the extent that their time permits, they should continue to be available to assist the regional organizations and the general public.

*Pilot Industrial Schemes*

Under Nigerian conditions the construction of a prototype or sample factory unit based on a proven industrial process can be a useful way for a development agency to introduce certain new industries, serving the same purpose in industrial promotion as a demonstration plot does in agriculture. It is assumed that Nigerian individuals, companies or co-operatives will become interested in the successful demonstration and will set up similar enterprises, coming back to the demonstration unit for further advice if necessary. As originally conceived, the Pioneer oil mill scheme was an example of this type of project. Such a prototype unit is, in a true sense, a pilot plant: its purpose is to lead the way.

Another type of pilot plant is one constructed during the technical development of a process, to translate laboratory results into a semi-commercial scale and discover what further changes or adaptations may be necessary. This is not a public demonstration but a research job. Although commercial viability of the process can be calculated from its performance, very often such a pilot plant is not itself an economically viable unit. Its component parts may be unbalanced, for sometimes one part must be tested in full scale while others can be studied in a smaller size. It may not even be a complete plant, but only that part of a process which is new. It is subject to constant alteration and in the final development stage may or may not be transformed into a completely viable small commercial unit to permit market tests of its products.

The distinction between these two types of pilot plants is one which needs to be carefully observed in Nigeria's development program. We believe that the proposed regional development corporations will find the "demonstration" pilot plant a valuable device in appropriate cases. Plants for research and development studies, however, fall into a separate category about which more will be said below.

*Technical Research*

In exploring the possibilities of new industries, operating pilot plants, improving local crafts and encouraging wider use of local materials, Nigerian authorities have been drawn increasingly into

applied technical research and experimental development. However, industrial research in Nigeria today is, with a few noteworthy exceptions, not a systematic development effort. Much of it is devoted to a search for solutions of technical difficulties which in some cases could have been forestalled before the projects were launched. Sometimes it may be carried on in conjunction with other, incompatible efforts, such as a pilot factory, a straightforward profit-making venture or a training school. Research personnel work singly or in small groups and have no regular contact with each other. Equipment cannot be shared from day to day. There is no adequate technical reference library.

To meet the country's most urgent needs in this field, the mission recommends the establishment of a completely staffed, well-equipped institute of applied technical research, to handle research projects requiring laboratory and experimental plant facilities. It need not be limited to industrial problems but should also be prepared to serve other fields. The institute might engage in studies of the commercial properties of local woods and the extraction of tannins, gums, resins, dyes and drugs; commercial processing of shea butter and various oil-seeds; by-products of groundnuts and oil palm; possible wheat flour extenders; mechanized production of gari; improved processing of local fibers; possible uses for coastal bituminous sands; commercial use of Nigerian brines; and beneficiation of local coal.

The institute should undertake, on a reimbursable basis, studies requested by any federal, regional or local government department or agency, autonomous public corporation, marketing or development organization, private commercial firm or individual. It should be empowered to initiate research, but should not have a monopoly on government research: government departments, regional authorities or other agencies should be free to conduct their own investigations if they prefer.

To give it the requisite freedom and flexibility for these functions, we recommend that the institute be organized as an autonomous non-profit-making corporation. During the first five years, its financial support should be an initial grant from the federal government plus amounts received from its research clients (government or otherwise) as reimbursement for specific work. The federal grant, which might

be paid over in a lump sum, should provide for building construction, a nucleus of basic laboratory and shop equipment, a library fund and for that portion of salaries and overhead in the early years which cannot be defrayed under specific research contracts.<sup>5</sup> Later, the grant can be discontinued, or at least reduced to a modest amount for library support, research fellowships and desirable special public services.

Current research projects of the federal and regional governments and their agencies could be transferred to the institute, together with special laboratory and pilot plant equipment already on hand for these projects. Items such as oil expellers, mills, filter presses, etc. acquired in this way would be installed more or less permanently by the institute as "unit operations" equipment and would be ready to serve a succession of future projects at considerable saving in cost.

Some projects can be dealt with more satisfactorily by research agencies outside Nigeria, especially studies calling for unusually expensive equipment already owned by another research institution and needed for only a limited time,<sup>6</sup> or unusual skills not otherwise obtainable. In such cases the institute might serve as a competent technical intermediary and subcontracting agent in dealing with these overseas institutions.

It has been proposed that Nigeria rely entirely on well-established outside institutions for all its research needs. Nigerian conditions will form an integral part of the research problem in many cases. In others, the work must be done close enough to the source of raw material to avoid serious deterioration in shipment. Only locally-based studies are of much use in discovering new local materials of potential value. In all these cases a foreign research organization would have to establish a staff in Nigeria—and this Nigeria can do itself. In any event, Nigerian industries need a competent research

<sup>5</sup> In a fully operating institution of this kind it is customary and proper to charge each client a pro rata share of the general overhead and administrative costs, in addition to the specific expenses and technicians' salaries incurred on his project. In the early years the overhead tends to be disproportionate, however, and some research workers have to be on hand even when there is no immediately reimbursable work for them.

<sup>6</sup> A case in point is paper-making from Nigerian materials, for which several Scandinavian and North American research institutions offer experience and pilot plant facilities which Nigeria could not hope to equal at this stage.

service close at hand for prompt solution of unexpected problems. Looking further ahead, the most important reason of all is that Nigeria cannot develop the necessary local interest in industrial research or overcome the shortage of research personnel by leaving the whole job to someone else.

The institute should determine its own internal operating procedures, set its own salary scales and select and hire its own staff on a term-contract basis. The director, preferably a man who has had technical and administrative experience in a similar institution elsewhere, should be able to select his staff. We suggest an initial target of a group of six senior research men, to be expanded as experience dictates to perhaps 15 in all by 1960, plus a number of junior research men. At present the majority of specialists will have to be found abroad, but every effort should be made to use Nigerians, in senior posts if fully qualified, otherwise in positions in which they can gain research experience commensurate with their formal technical training. The mission hopes that the establishment of the institute will stimulate the interest of young Nigerians in technical education and will lead to a higher proportion of scholarship students selecting engineering and related subjects for study abroad.

The core of the staff should consist of professional research workers of some experience, trained broadly in engineering and the applied sciences. For industrial research a staff of this kind is more valuable than one composed chiefly of narrowly specialized experts.

A properly designed building of 15,000–20,000 sq. ft. floor area should meet the needs of the institute for at least the next five years. It should be of simple one-story design, with a high (20-foot) ceiling and a heavy load-bearing concrete floor underlain with a utility drain system, and should be capable of later expansion. Except for some office space, library and stores, and a few small laboratories needed at once, the interior should be left unpartitioned, permitting space to be held open for pilot plant and machine shop work. Such a building, with utilities and certain other requisite features which need not be detailed here, will probably cost from £ 37,500 to £ 50,000 erected in Nigeria.

Other investment costs including equipment, library and staff housing, should aggregate around £ 25,000, spread over the early years.

Recurrent costs (salaries, overhead and depreciation, less the rental income on housing) are estimated to start at £ 35,000 in the first year and to reach a level of about £ 75,000 after five years; the percentage of these covered by the billing on specific research contracts will increase each year.

The total outlay of public funds proposed for the first five years is £ 580,000, including an estimated £ 100,000 to be paid by public agencies for contracted studies and an initial grant of about £ 480,000. Should receipts for work performed prove to be lower than we anticipate, the government should be prepared to make a supplemental grant for the difference.

Beyond the five-year period, the institute should look forward to expanding its work, for greater development activity will bring still more problems to be solved. Ultimately a larger share of this cost will be borne by private industry, as elsewhere, but the transfer is bound to occur slowly.

#### *Hotel Accommodations*

In many ways, trade and investment are impeded by a shortage, especially in Lagos, of desirable accommodations for visitors, whether buyers or businessmen, potential investors, tourists or technicians. Lagos needs a first-class hotel,<sup>7</sup> reasonably close to the main business section. Rates for such accommodations would have to be high, but long-distance travelers want comfort and generally are able to pay for it. Provision should be made for semi-permanent guests at monthly rates. Rental of space for offices, travel agencies, souvenir stores, hair-dressers and similar facilities, and of public rooms for conferences and community social events, will provide additional revenue.

#### v SPECIFIC LINES OF DEVELOPMENT

The mission inspected as many industrial undertakings as time

<sup>7</sup> A similar recommendation was made for the Gold Coast by W. A. Lewis (*op. cit.*). The mission is informed that the Gold Coast government has supplied a site and part of the capital for a new hotel in Accra to be operated by a foreign private investor. Several other countries have erected modern hotels in recent years through their public development corporations or similar bodies, with arrangements for experienced outside management through contract or share capital.

would allow, and considered numerous new possibilities suggested by current research or available materials, enterprise and markets. Comments on some are offered in the following pages, by way of suggesting the general lines which further industrial development might take and to indicate the mission's views on recent major industrial proposals. We have not attempted to catalogue all existing or potential industries, nor have we made complete engineering or economic analyses of projected industries or measured precisely the investment required for each. We have tried to call attention to a variety of useful industries, most of them capable of being established or expanded through private effort, and to propose bases for governmental encouragement or assistance. In a few cases we recommend the establishment of an industry wholly by government initiative.

#### A VEGETABLE OIL INDUSTRIES

Commercially, experimentally or incidentally Nigeria produces more than a dozen known types of oilseeds as well as large quantities of palm oil. Products of greatest tonnage are groundnuts, palm kernels and palm oil, but the quantities of benniseed (sesame), coconut (as copra or whole nuts) and cottonseed are also large. Appreciable amounts of egusi seed and shea nuts are produced. Available in smaller quantities are the seeds of kapok, rubber, neem (margosa) and sunflower, as well as castor and soya beans and conophor nuts. Several others are known; research into the chemical properties of various native oils will probably disclose a number of commercial value. Palm oil is extracted locally, but among oilseeds, except for a limited quantity of palm kernels crushed by the leading soap factory for its own use, only groundnuts are processed locally on a commercial scale.

##### *Groundnut Processing*

In recent years, increasing amounts of groundnuts have been processed for oil and groundnut cake. Experiments are being carried on for the milling of groundnut flour. This industry, now the largest in the North with the exception of cotton ginning, has been developed since 1942 entirely by foreign private capital and initiative. The four commercial expelling plants in Kano are all expanding and upon com-

pletion of currently planned installations their combined capacity may reach 120,000 tons per year, between one-third and one-fourth of Nigeria's groundnut crop.

Most of the oil expressed locally, as well as the cake, is exported through the Groundnut Marketing Board. The millers sell some oil in tins to the domestic grocery trade and some in drums to small soap manufacturers. By choice, however, the bulk of the oil consumed locally as food is produced in the home by the traditional cooking and skimming method, since the residual oily paste also forms a part of the family diet. A few commercial pig farms and others use groundnut cake as a protein feed for livestock but this desirable practice has hardly begun in Nigeria as a whole.

While oilseed crushing in other producing countries has been developed in recent years as a matter of national policy, the groundnut crushing industry in Kano has grown with little or no encouragement from government or the Groundnut Marketing Board. On the contrary, it has faced a series of hurdles which have included restrictions on the purchase of raw material, denial of permits for factory land and immigration of technical staff, and failure to adjust an anomaly in the calculation of export duty which has the effect of favoring unprocessed nuts. More recently restriction of plant processing capacity has been proposed.

*The Gardiner Report*<sup>8</sup> In 1952 the government and the Groundnut Marketing Board sponsored an independent study (the "Gardiner Report") to determine "... the economics of the local mechanical expression of oilseeds in Nigeria with particular reference to the question whether there is a prima facie case for the Government of Nigeria and/or the Nigeria Marketing Boards to establish a plant for the large-scale expression of oilseeds in Nigeria."<sup>9</sup>

The report expresses the view that large-scale processing of groundnuts into oil and cake for export would be justified commercially only if undertaken by an affiliate of an organization in the principal consuming countries which could itself absorb the greater part of the

<sup>8</sup> J. C. Gardiner, *Oilseed Processing in Nigeria*, Nov. 29, 1952; publisher not identified.

<sup>9</sup> While the report discusses oilseed processing in general, most of the contents relates to groundnuts.

output, while processing by others, whether public or private, should be geared chiefly to local consumption. Mr. Gardiner sees no reason for the entry into the processing industry of government or the Marketing Boards and recommends that responsibility for development of that industry be left to private enterprise. The mission understands that a conference on the Gardiner Report was held in Lagos in April 1954, attended by representatives of the central and regional governments and the Marketing Boards. Its recommendations had not been published by the time of completion of the mission's report.

*Development of the Industry* We think there is room for difference of opinion regarding the commercial viability of processing for export, although there is no doubt that development of a domestic market would strengthen the industry. The Kano groundnut millers, who have recently spent large sums to expand their processing capacity, are apparently confident of the future of the industry. As its growth could only benefit, not hurt, the Nigerian economy, we see no reason why it should be discouraged. Nor need the government enter the crushing business, in view of the availability of private capital and management.

The mission recommends a constructive approach by the Nigerian government and the future Northern regional marketing board to encourage development of the crushing industry in the interest of the country. More specifically, the mission offers the following recommendations:<sup>10</sup>

1. Everything practicable should be done to free the industry from unnecessary controls. The mills, now in effect processing agents on commission for the Marketing Board, should operate instead as independent industrial enterprises.

2. The price paid by local millers for groundnuts to be processed should be related to the world market price paid by competing millers overseas; that is, it should be the board's regular sales price, less adjustment for direct Kano delivery and for the lower actual overhead costs incurred by the board under these circumstances.

3. There should be no restriction on the quantity of nuts which may be purchased from the board for processing.

<sup>10</sup> While the mission's recommendations do not fully coincide with Mr. Gardiner's, the differences do not involve basic principles.

4. Local millers should be at liberty to make their own sales arrangements in the best markets available, subject only to international agreements or national policy concerning countries of destination. Conversely, after a short transitional period, the Marketing Board should no longer undertake to buy groundnut oil or cake or to pay fixed prices if it does buy them. It might offer to assist local millers in overseas sales, however, by acting as agent on commission, or it might buy from them as a principal. These relationships should be voluntary on both sides.

5. Additional measures to improve the present competitive position of the industry and to encourage its growth should be considered, including its eligibility for the benefit of the Aid to Pioneer Industries Ordinance; this Ordinance should be amended if necessary. Subsidization of the industry as such is not recommended but a temporary subsidy of the selling price of oil cake for internal consumption might be justified in support of a program for improvement of animal feeding.

It may not be possible to put these recommendations fully into effect until termination of the present bulk purchase agreements of the Groundnut Marketing Board.

*Small-Scale Processing* At one time the Department of Commerce and Industries undertook to introduce a type of small groundnut expression unit which, like the Pioneer oil mills (see below), would lend itself to independent African operation throughout the groundnut area. However, the development was undertaken hastily, without competent technical advice, and resulted in a costly failure. Moreover, the findings were inconclusive, for they failed to establish whether the basic scheme itself or merely the particular method was unsound.

Six units of machinery were purchased before the idea was tested and they were found later to be unsuitable. Most of the equipment is still in storage at Funtua, where the Northern Regional Department of Local Industries has been operating one of the units experimentally on cottonseed and shea nuts.

### *Palm Oil*

Palm oil is still produced mainly by traditional methods. Despite

25 years of technical development and mechanization of the industry, at least three-fourths of the palm fruit harvested in 1952 was extracted by crude boiling, mashing and skimming, with recovery of only about 50% of the oil content.

*Improved Methods* In the early 1930's the government sponsored the use of a small hand-operated cage press for squeezing the boiled and macerated fruit; this recovers up to 65% of the oil. It is estimated that 5,000–6,000 of these hand presses are in use, representing a £ 200,000 investment and producing 60,000 tons of oil annually.

A completely mechanized large-scale palm oil mill suitable for use on plantations was introduced by a United Africa Company (UAC) affiliate in 1935, and two other similar mills were built in 1946 and 1948. These units are dependent upon large quantities of fruit harvested in the bunch; each unit handles 20,000 tons of bunch fruit per year. By steam-sterilizing within a few hours after picking, following this immediately with efficient processing, these plants recover over 94% of the oil at only 1–1.5% free fatty acid.<sup>11</sup>

*Pioneer Oil Mills* Most of the oil palms are not grown on plantations. In 1945 the Nigeria Local Development Board began studying the possibility of establishing small, privately-owned mechanized palm oil mills widely distributed throughout the growing area. Experienced UAC engineers were asked to attempt a suitable design. The objective was an industrial unit small enough to be purchased by African businessmen and simple enough to permit operation without advanced technical training.

The engineers did not try to duplicate the process of the big mills, but selected or developed each component with a view to low capital cost and most effective small-scale operation. The successful result was the standardized Pioneer oil mill costing (currently) about £ 10,000 erected, running on its own fuel wastes, and capable of handling 100 tons of fruit monthly on a single shift. It is generally considered that one such mill can serve a radius of 7–15 miles. Under

<sup>11</sup> Tests show that F.F.A. content is practically zero at the moment of picking. Thereafter it rises rapidly, especially where the stem is removed or the fruit damaged in any way. Thus, retaining the fruit on the bunch retards F.F.A. development, and in the first three or four hours it reaches only 1%. During two weeks' storage or transport of the fruit, the F.F.A. will rise to 19% or more.

careful operation as much as 85% of the oil can be recovered, although in practice the rate is seldom over 80% and sometimes falls below that of the old hand-presses.

A program of promoting and installing Pioneer mills was started in 1946 by the Department of Commerce and Industries. Later the responsibility for the mills in each of the regions<sup>12</sup> was turned over to the respective Regional Production Development Boards. At completion of this transfer the capital investment was £ 2.25 million with 78 mills erected, eight under construction, and another 78 ordered. The East had the largest number, with over 50 in operation and as many more ordered. While some of the mills still have to overcome a certain resistance to the change-over from the old hand-press system, it is the mission's impression that on the whole enough fruit will be offered to them to permit most of them to show reasonable profits.

Of all the Pioneer oil mills which were in operation by 1953, less than a half dozen were privately owned. The rest were owned and operated directly by the boards.<sup>13</sup> The Eastern board has built up a rather large organization for this purpose, with central headquarters and shops at Aba. Although the board's stated policy is the encouragement of private African ownership, especially by co-operatives, it appears to the mission that too little is in fact being done in this direction. The mission received the impression that there has been a reluctance to part with successful undertakings. Moreover, judging by its replies to loans board requests for comment on proposals for new mills, the POM organization appears to evaluate the latter in the light of the potential effect on its "own operations," although the principal purpose of establishing the mills was the promotion of private African enterprise. The mission feels that there is a real danger that this objective will be forgotten and that what started as a program of assistance will become one of operation for its own sake.

We therefore recommend that the POM organization make positive efforts to transfer existing or new units to individual or co-operative ownership and that it provide adequate technical assistance in their operation.

<sup>12</sup> In the North, where there are few oil palms, only three mills were erected. A few other sites have been considered.

<sup>13</sup> In the West, where the mills have been rather unsuccessful commercially, the private demand for them is slight.

*Palm Kernel Processing*

Only a small tonnage of palm kernel oil is produced within Nigeria, at the soap factory at Apapa, and this is not offered for general sale. Since the best soap from local materials requires a certain amount of the oil, none of which is available to the smaller Nigerian soap factories, the mission believes that at least one small expeller plant would find a market. An interested local investor might well be assisted in such an enterprise by one of the proposed regional development corporations.

*Cottonseed Processing*

Ten cotton ginneries of various sizes are operating, mostly in the Northern Region. All belong to the British Cotton Growing Association, which gins the cotton on a fee basis for the Cotton Marketing Board. The combined output of the 10 plants in the 1952-53 season was 97,000 bales (of 400 lbs.), and in the preceding season 113,000 bales.

The cottonseed is not crushed locally for oil or even delinted. That which is not redistributed for planting or exported is either burned as fuel or wasted. The Department of Commerce and Industries has developed a proposal for a £ 1.4 million processing plant which would produce edible oil, cattle meal, soap, semi-drying paint oils and glycerine. Raw material consumption would be from 52 to 110 tons of seed daily—presumably cottonseed but to be supplemented with groundnuts or benniseed if desired. This project does not at present appear to be of such an urgent nature as to warrant its being undertaken by the government, nor is the mission convinced that its technical or commercial aspects have been sufficiently investigated.

Another cottonseed oil project, on a more modest scale, has been contemplated by the Cotton Marketing Board but has not progressed beyond the preliminary planning stage. If further investigation discloses that this project is commercially viable—as it should be, since the cottonseed and lint now are partly wasted—the Northern development corporation may want to undertake it, preferably with the participation of private capital. In the meantime, if satisfactory pro-

vision can be made for delinting, as an experiment some cottonseed might be offered to the Kano groundnut mills for crushing.

### *Soap*

Soap for local consumption has been manufactured for at least 30 years. About 16,000 tons, perhaps two-thirds of the present output, come from a modern plant in Apapa belonging to the Unilever group. Medium-sized factories in Aba, Kano and Yaba account for most of the remainder and elsewhere there are small commercial soapmakers using cruder methods. Although the product varies in hardness and quality, all soap is made to resemble the familiar long bars of yellow and "carbolic" (red) types sold by the Apapa factory.

For raw material, the latter uses mainly bleached palm oil mixed with a smaller percentage of palm kernel oil. The other factories, using palm and groundnut oils almost exclusively, produce a softer and cheaper soap. One plant is actually in part a palm oil refinery; it buys oil of 8% to 20% F.F.A., separates soap stock and resells the residue oil with less than 1% F.F.A.

The local market is rapidly expanding. It is difficult to fill the demand, because of underproduction and domestic transport problems. Apparently the loans boards have not been fully aware of these facts, for several applications for soap-making loans have been rejected on the ground, among others, that the market was oversupplied.

This industry lends itself to almost any scale of operation. Nigerian consumers will buy both high-grade and cheaper types of soap and local investors are interested in making them. We think that existing and prospective private plants should be encouraged through loans.

## **B FOOD, DRINK AND TOBACCO**

### *Cocoa Products*

Foreign manufacturers of cocoa products have been considering making cocoa butter in Nigeria for export. The whole cocoa crop, about 100,000 tons annually, is now exported as beans.

A typical unit project might convert about 10% of the crop per year. Butter extraction would probably be carried to completion,<sup>14</sup> yielding 3,000–3,500 tons of cocoa butter and a residue from which commercial theobromine would be obtained. Using upwards of 120 workers and 350 kW of electric power, such an operation might invest in Nigeria some £ 600,000 of new private capital and would add appreciably to the value of exports. Potential investors should be encouraged.

### *Bakery Goods*

*Bread* Fairly good bread and rolls are baked commercially in many small villages as well as in the principal cities. None of the bakeries is large, but power-driven dough mixers and other mechanized units are not uncommon. Some of these machines and most of the baking tins are ingeniously made by the bakers themselves from scrap materials. Stationary ovens are the rule, those in the villages being of mud but often of quite advanced design.

Bread is made chiefly from imported wheat flour. While it is still a luxury, of minor significance in the national diet, a steady growth in popularity is indicated by the continued increase in flour imports. From 12,168 tons in 1950, by 1952 imports had risen to 16,736 tons and had passed the £ 1 million mark in value. The trend, supported as it is by experience elsewhere following the introduction of wheat bread, suggests an ever-widening opportunity for expansion of the local baking industry. For fresh bread, of course, this can best be realized through numerous small independent bakeries scattered throughout the country.

*Flour Extenders* Nigeria's opportunities for research in the use of flour extenders are many, and include the various domestic grains, cassava, yams, bananas and oilseed residues. To date, nothing has been done in this field except by one of the private groundnut millers, who has installed a pilot plant to make a dry flour from extracted groundnut cake. Public acceptance of such extenders may require

<sup>14</sup> For the manufacture of certain other products, such as breakfast cocoa, the extraction is only partial.

an educational period as they tend to yield a denser bread than that to which the Nigerian market is accustomed.

*Biscuits* A Lagos trading firm has been considering building a £ 100,000 modern bakery to produce cabin biscuit, of which well over two million lbs. were imported in 1952. This is an established item in the local diet, and the project is a good one. It has been delayed for want of Lands Office approval of a site for factory buildings and staff housing.

### *Beverages*

*Beer* Nigerian annual beer consumption is approaching six million gallons. In 1952, 3.662 million gallons were imported and local output probably reached 55–65% of this figure, produced from imported raw materials by a single Apapa brewery. The brewery is owned jointly by several trading firms and an overseas brewery, and employs about 500 people. With the market expanding, these investors are considering a second brewery in the Eastern Region.

*Carbonated Soft Drinks* With at least three large bottlers in the Lagos area and numerous smaller ones throughout the country, the demand for carbonated beverages is steadily increasing. Recent introduction of two cola-type drinks is reported to have made no observable inroad into sales of competing flavors but merely to have enlarged total consumption. Moreover, the advertising and promotion common to this trade elsewhere have hardly begun in Nigeria.

Transport costs favor sales in their vicinity by small independent bottlers in outlying areas. One of their chief problems is the high price of imported carbon dioxide. Local production of compressed CO<sub>2</sub> for these smaller users may become economical in the future, although at the moment the market is still limited.

*Fruit Juice and Squashes* Several African-owned factories produce noncarbonated beverages and concentrates for domestic use. The two principal ones are near Abeokuta and Lagos. In addition, a small UAC plant in Umuahia exports barrelled citrus juice to the United Kingdom. Production of citrus concentrates has been planned at the new Ibadan cannery.

Some of the local squash bottlers have applied for development loans for modernization and expansion. But loans board action has been deferred while the Western Regional Production Development Board has considered the erection of a squash factory; it has suggested that present private producers accept shares in the new enterprise as compensation for giving up their own.<sup>15</sup> We mention this instance because we think it is typical of an unfortunate attitude toward private endeavor which public bodies sometimes adopt.

### *Canning*

Small-scale canning and preserving has been carried on for many years at some of the religious missions. At the beginning of 1949 the Department of Commerce and Industries became interested in the possibilities of expanded local canning, for export and to facilitate domestic distribution of seasonal food surpluses. When farmers in the Ibadan region, who had planted grapefruit on the advice of the government, found that there was no market for them, the Western Regional Production Development Board financed a £ 14,000 pilot cannery for operation by Commerce and Industries. Packing of grapefruit segments and juice began in October 1951; pineapple and other items were added. The experiment was successful and the plant was turned over to the board's complete control in 1952. In 1953 it was closed down because of the plan to transfer production to the new plant discussed below.

*New Citrus Cannery* During 1952 the board approved a scheme for construction of a £ 300,000 citrus and pineapple cannery at Ibadan, to be built and operated initially by a British firm which was also to be its sole selling agent on commission for 10 years. This cannery is designed to produce 1,000 tons of concentrated orange juice, 285 tons of concentrated lemon juice and 200,000 cases of canned pineapple each season, so to permit capacity operation, additional plantings of 3,000 acres of citrus and at least 600 acres of pineapple were called for.

On the advice of the contractors that equipment would be hard to obtain if not ordered immediately, the board arranged for the simultaneous beginning of necessary plantings and factory construction. But

<sup>15</sup> For the origin of this scheme see Canning, below.

since the trees take years to mature, added to which the plantings have fallen behind schedule, the cannery probably will not be able to operate at full capacity on citrus until 1963 and not even on a reduced commercial scale before 1957-58; full capacity on pineapple is not likely to be reached much sooner.

There would have been many advantages in operating the first small cannery for several years. It operated with fair economy on the crops actually available, could take the local grapefruit during the transition years, and for experimenting on a wide variety of packs was better equipped than the new factory. Besides, the reasons advanced for immediate construction and equipment of the larger plant appear inadequate in view of the extent of deterioration and obsolescence before it could start operations.

The problem now is to make the best use of the plant. A large percentage of the investment is in highly specialized equipment: for concentrating juice, preparing wastes for cattle feed,<sup>16</sup> and coring, sizing and slicing pineapple. Until the proper crops are ready it will be difficult to find other profitable uses for these units. On the other hand some of the equipment can be used to pack many kinds of food. Since there is unused space in the plant, a few temporary rearrangements and a further investment of perhaps £ 10,000 to £ 20,000 should make it possible for the cannery to handle a more varied line of products for the next several years.

Some additional products will in any case be desirable even when full quotas of citrus and pineapple finally become available, for these alone will occupy the plant only half the year. Therefore, we suggest that an effort should be made to find products which may be packed from April to September.

*Canned Meat and Specialties* The canning of meat and meat products has been considered as a means of improving the North-South trade as well as the southern meat supply. The tsetse fly, lack of refrigeration, and other problems discussed in Technical Report No. 8, make it difficult to move meat southward from the producing centers without great losses.

<sup>16</sup> As a disposal measure this equipment may have been justified, but prospects for local sale of citrus wastes for cattle feed are certainly no better than they are for the oilseed cake already produced.

Some canning experiments were begun in Kano in 1952, concerned primarily with such dishes as soups and stews containing rice, groundnuts, beef and fowl. There is a good local market for these lines and they are well worth expanding even though they do not provide a complete answer to the meat problem.

Two well-known European meat processing firms have indicated interest in developing large-scale meat canning in the North, supplying most of the capital but with participation by the Northern Regional Production Development Board. The mission understands that a £ 30,000 pilot cannery will soon be set up, managed by one of these firms and financed jointly by it and the board. We believe that this field may prove attractive to private capital.

### *Dairy Products*

Nigeria has no dairy industry in the usual sense. With the South so inhospitable to cattle and most of the northern Fulani stock constantly on the move, virtually the only fixed dairy operations are some small government experiments, ordinarily more concerned with breeding than with milk production.

A survivor of wartime emergency measures is the Plateau Dairy at Vom—actually not a dairy but a creamery—now operated by the Northern Department of Local Industries. At 30–35 collection points—some over 100 miles from Vom—milk is purchased from the migrant Fulani and separated. The skim milk is returned to him, while the cream is salted and shipped to Vom where it is made into butter or clarified butter fat (ghee). Three of the outlying stations do not separate cream, but make cheese from whole milk on the spot.

Annual production is about 250,000 lbs. of butter, 50,000–60,000 lbs. of cheese and 40,000–80,000 lbs. of ghee. The butter and cheese, as well as a portion of the ghee, are sold locally through trade channels. Because of variations in manufacture and difficulties of distribution at the point of sale, Vom butter is not always favored by consumers, even at a shilling per lb. under the price of imported butter.

In the near future a modern creamery at Vom will replace the original unit and may lead to an improved product. A better system of refrigerated distribution would also help, although where good facilities are already available they still do not completely overcome

the difficulties. The basic problem lies in the unorthodox and unregulated handling of the milk at the source. Nigeria cannot expect wholly satisfactory dairy products until organized dairy farms produce milk under controlled and sanitary conditions.

### *Margarine*

Raw materials for margarine can be provided quite readily. Domestic manufacture of margarine has recently begun at a new 1,200-ton plant in Apapa, to be operated as part of the Unilever group. A small amount of hardened palm oil will be imported (Nigeria has no hydrogenation plant) but the principal materials will be locally extracted palm oil and palm kernel oil produced at the soap factory.

Margarine retails at slightly more than half the price of butter and is quite popular. Imports have not exceeded 200 tons per year. The large supply to be available from Apapa may be expected to lower still further the demand for Vom butter.

### *Tobacco Products*

Both cigars and cigarettes are made locally. The former are hand-rolled in a variety of shapes and enjoy a steady sale at their low prices. The combined output of the several African-owned factories is still extremely small. The market is also small: Nigerian smokers show a strong preference for cigarettes, either machine-made or the coarse, hand-rolled "bookies" sold in the village market at 10 for a penny.

Nigeria's single cigarette factory at Ibadan is one of the country's most modern and progressive industries. Highly mechanized, it employs 630 workers and 50 trainees and supplies over 95% of the machine-made cigarettes consumed locally. Its present capacity is roughly 2,500 million cigarettes per year.

The company is a Nigerian subsidiary of a leading British tobacco manufacturing firm. With its own training centers and a staff of about 100 African agricultural extension agents, it has been largely responsible for development of Nigerian tobacco cultivation. The local tobacco, grown by independent farmers with the company's help and advice, already provides some 40% of the factory's raw material.

One of its brands is made entirely from Nigerian leaf; the others are blended with imported tobacco.

Transportation is a major problem for this industry. Not only is access to potential tobacco-producing areas difficult but distribution costs are affected. As the market expands, decentralized production will offer a partial answer. Construction of a second factory at Port Harcourt is about to begin and a third is planned for the Northern Region.

## C TEXTILE AND APPAREL INDUSTRIES

### *Fiber Products*

In addition to cotton, more than a score of recognized commercial vegetable fibers grow in Nigeria. The better-known ones include jute, kenaf (rama), roselle (likewise called rama), Sunn hemp, sisal, abaca, sansiviera, Mauritius hemp, kapok, ramie and coir. It is said that nowhere else in tropical Africa are there so many, yet except for cotton none has achieved importance in either local or export trade.

The Department of Commerce and Industries has had a small technical staff assigned to the problem since 1947. Its experiments have covered agricultural and economic possibilities and processing. A pilot plant using a new mechanical method to separate coir from 1,000 coconut husks per hour has been purchased from the United Kingdom.

We think that the fiber investigation program is too broad for its small staff and budget and that it lacks a well-defined objective. Many findings, while of general interest, are not closely related to Nigeria's development problems. Moreover, the program being spread so thinly over the whole field of fiber technology, no one aspect receives sufficient attention. Some of the processing experiments are needlessly primitive and are being conducted without reference to previous similar investigation elsewhere. The fiber program needs closer contact with the world outside and a clearer notion of how to select the few most promising local fibers in the light of recent technical progress. We recommend that a competent technical representative be sent on a tour of Western Hemisphere fiber research centers.

*Sack Manufacture*

Each year 8–20 million jute sacks are imported for packing export produce. Their value in 1952 was £ 3.73 million. Local sack manufacture has therefore been under consideration for some years.

Probably the first tangible project was that of the Colonial Development Corporation at Onitsha (see Cotton Textiles), dropped after an expenditure of almost £ 300,000 of a planned total of £ 990,000. Considering what was known about the Nigerian kenaf crop, the scheme was not only too large but premature. A factory predicated on a local raw material should have positive assurance that enough of the material can be found. No market mechanism existed in 1950 for collecting 6,000 tons of kenaf—or for the collecting of any at all. It would have been wiser to start with a plan for a more modest factory and before building it to try buying good local fiber for it.

Since fiber good enough for sacks has a regular world market as baled fiber, it is feasible to build up a regular flow by purchasing for export, diverting it into a local sack factory only when an adequate supply is assured. Thinking along these lines, the Nigerian government a year ago began buying up local kenaf. The first season netted only 400 tons of saleable fiber at high prices and of variable quality. In the second season better results were obtained: at a price of only 4d. per lb. (£ 37 per ton) of retted fiber, private buyers in 1953 could obtain a product which sold at £ 75 per ton c.i.f. Dundee. Over 800 tons had been collected by mid-December, indicating a probable 1,000 tons for the season, enough to supply a factory of minimum economic size which could produce one million sacks annually. Such a factory might cost about £ 130,000 if built to permit early expansion to a more economical 2,000-ton capacity.

Ultimately, we believe, it may be feasible to have sack factories in each region, each using a different local fiber. Today the only fiber about which enough is known to justify a factory project is kenaf, whose main collection center is Kano. Coincidentally, Kano's heavy groundnut trade makes it one of the country's largest sack-consuming centers. Accordingly it is here that we recommend building the first sack factory. We suggest that the proposed Northern development corporation invite inquiries from private investors and that it

attempt to arrange a jointly financed venture under competent management.

### *Other Fiber Products*

Although copra is exported regularly, there has been no effort heretofore to market coir. Probably 30–50 million coconut husks are available each year at Bonny and Badagri, the two principal producing centers. Plans have been made to develop the sale of coir mattress fiber for local furniture stuffing.

Hessian (for wrapping cotton bales, etc.) is a possible additional product for a sack factory. With this in mind the first sack-making equipment should probably include flat, rather than circular, looms.

Next to sacks, the largest fiber import item is cordage, for which nearly £ 2 million was spent in 1952. The market would support a small twine and cordage factory of the type common in Yucatan (Mexico) and similar fiber producing areas.

### *Cotton Textiles*

Cotton exported through the Cotton Marketing Board in 1952 amounted to 43.2 million lbs., probably representing only 60% of the total crop. The remainder did not pass through the ginneries but was hand-cleaned at point of origin. While it appears that a considerable amount found its way unofficially into adjacent French territory, most was spun and woven by hand in the villages and farms and may have yielded as much as 30–50 million sq. yds. of cloth.

The market also absorbed an estimated 240 million yds. of imported cloth: about 60 million yds. of rayon textiles and 180 million yds. of cotton piece goods.<sup>17</sup> About one-third of the latter were prints. The remainder, composed of unbleached, bleached, piece-dyed and colored woven goods, was almost precisely equivalent in cotton to the amount of cotton lint exported.

There is a lively interest in the possibility of increased local cotton spinning and weaving. Various arguments have been advanced against it, including some related to the suitability of Nigerian cotton and

<sup>17</sup> Actual imports were 205 million yds. of cotton goods and 67 million of rayon, but this included an excess which left the market overstocked at the end of the year.

to climatic conditions. But trials and studies have shown that commercial spinning and weaving is feasible.

There are, however, only a few Nigerian concerns which turn out textiles on powered looms and in general they have not yet met with success. In the Lagos area one concern with 1,620 spindles and 60 looms produces grey baft from Nigerian cotton; it is also the only spinning mill in the country. In Kano a 50-loom mill, using imported yarn, makes baft and dyed materials for uniforms. Both enterprises were established with private Nigerian capital and have received substantial assistance from the Colony and Northern loans boards, respectively. Government textile officers have given them extensive technical advice.

A small but successful business in the Lagos area with only eight looms concentrates on high-priced pattern goods, using imported yarn.

*Proposals for New Textile Plants* In the past few years there have been numerous proposals for larger-scale textile operations, both by foreign firms and public bodies.

In 1950 the Colonial Development Corporation planned a factory at Onitsha to make two million lbs. of cotton yarn and six million jute sacks annually. This scheme was abandoned in 1953, as had been recommended by an independent technical report made two years earlier, but not before a most extensive site had been acquired and substantial expenditures made.

In 1952 a British textile firm proposed a financial partnership with Nigerian development authorities to establish a mill of 15,000 spindles and 300-350 looms in any suitable location. The government would have put in about £ 500,000, while the company's principal capital contribution would have been the machinery, valued at around £ 400,000. The company would also have undertaken planning, contracting, supervision, factory management and training of African labor either in Nigeria or at its European works. In the same year an Italian investor proposed a considerably smaller mill at Aba, offering to put up the entire £ 150,000 plant investment, and asking that Eastern public bodies assist in site preparation and that they lend up to £ 60,000 working capital if necessary. In 1953 a proposal was made for a larger mill at Ibadan for which additional private finance

was available. Both firms are prepared to invest substantial sums, which not only reduces the amount of public money required but also indicates their belief in the profitability of the ventures. In the mission's view, proposals of this type warrant active consideration by the authorities concerned rather than the cool and overcautious reception which they appear to have received.

A number of other overseas firms have offered to furnish technical advice and management service, but no capital, on wholly government-financed textile schemes involving substantial expenditures. In the North, such a proposal by a British group was under active consideration at the end of 1953; the initial government investment would be approximately £ 1.5 million.

One proposal of government textile officers relates to the Nigerian-owned enterprises at Lagos and Kano. In neither of these can the owners undertake management, nor can they afford outside management. It has been proposed that the mills be purchased by a new company whose shareholders would include the present mill owners, other interested private investors and public development bodies. An expansion of the two existing mills would be undertaken toward an ultimate 10,000 spindles and 400 looms in each location, initially concentrating spinning in Lagos and weaving in Kano. New capital requirements would be about £ 1 million. The merit of this scheme is that it would build upon an existing nucleus of trained and semi-trained textile workers and, under proper management, would serve to revitalize two local industrial enterprises in need of help. The mission believes that the interests of developing Nigerian private endeavor would be best served if a way could be found to assure that the majority holdings in the new company are in private hands.

One large-scale textile project in no way precludes others. Nigeria has room for a variety of independent textile enterprises in all regions, if competent operators can be found. Keeping in mind the technical skills which accompany foreign investment capital, we suggest that the proposed regional development corporations be especially receptive to textile manufacturing schemes that appear sound enough to interest overseas investors.

*Garments*

A number of shops, mainly in Lagos, turn out singlets, assorted types of knitted underwear, shirts, pajamas, suits, uniforms, etc. In Aba, Lagos and several other localities, small shops using hand-operated circular knitting machines make socks, caps and similar articles. All garment factories are African-owned.

Singlets and knitted underwear made from imported tricot knitted tubing are the leading items of manufacture. Local operations consist mainly of cutting and flatlock sewing. One Lagos concern with two factories reports a peak output of 1,200 dozen per day, while several smaller ones make 200-500 each. In addition, imports of singlets alone amount to 2½ million pieces annually. Machinery is now being installed in a new factory in Port Harcourt to produce 1,000 dozen singlets per week.

Year by year there will be increasing opportunities in these lines. Small knitting and tailoring shops should be helped as well as the larger enterprises.

**D LEATHER INDUSTRIES**

Annual exports of hides and skins include about one million cattle hides, five million goat skins and 700,000 sheepskins, as well as smaller quantities of reptile and other skins, representing almost 3% of the total value of export products. Most are shipped dried and untanned. An outstanding type is the Sokoto red goatskin, the basis of "Morocco" leather.

*Tanning*

One foreign-owned tannery in Kano processes up to 5,000 goat and sheep skins a week. This tanning is only partial, designed mainly to help preserve the skins until their arrival in the United Kingdom where they are leached and retanned. Partial tanning is also performed by a number of small African enterprises in the Kano region, adding perhaps another 500 skins to the total weekly output.

True tanning is done locally on a very small scale only, principally as a village industry in the North. Souvenir handbags, ornamental

hassocks and similar articles are made from the leather, which is frequently dyed in various colors. In the Eastern Region at least one very small enterprise tans fresh cattle hides, using more modern and better controlled methods than in the Northern villages, but producing only a few hides per month. The tanner himself makes the leather into well-constructed handbags, footballs and shoes.

From 1948 onward this industry has been studied by a number of groups, including the Nigerian Livestock Mission appointed by the U.K. Secretary of State and a U.K. Tanners Mission sponsored by the Colonial Office. Almost all their suggestions, though valuable, have related to the export aspect and although local tanning has been declared sound and capable of expansion, no development beyond the village industry level has been recommended.

We feel that there is a wider scope for development of local tanning. The village industry is appropriately aimed at production of articles for the tourist and export market. There is, however, a growing local trade in articles of common use, now either imported or made wholly from imported leather, including leather for shoe repairing. The mission believes a few small commercial tanneries for certain grades of leather can be supported. These might be started as African enterprises with the help of the proposed regional development corporations.

### *Shoes*

Leather shoes are custom-made in numerous cities and towns. The small shops doing this and general shoe repair work should be encouraged, both as businesses capable of expansion and as builders of skills. The local market is not yet large enough, however, for any attempt at factory mass-production of leather footwear.

For rubber-and-canvas shoes this is not necessarily true. The 1.7 million pairs of this type imported in 1952 represented 75% of all shoes imported and indicate a market large enough to justify local manufacture. In 1947 a well-known foreign shoe firm considered the prospect and later withdrew, but it now appears that its decision involved factors other than the economics of local production. The mission feels that prospective manufacturers should be invited and encouraged to examine the possibilities again at this time.

## E RUBBER INDUSTRIES

*Smoked Sheet and Crepe*

Most of Nigeria's rubber production (about 45 million pounds annually) is of low quality. There are a few carefully tended plantations whose factories each turn out as much as 5,000 lbs. of No. 1 smoked sheet per day, of a quality as high as that of the Malayan product. The greater portion, however, is produced in the villages, from trees that have practically reverted to jungle; production methods are crude. Because of poor tapping, unclean cups, bad coagulation techniques and irregular collection, a large part of the village rubber enters the market as waste lump to be made into off-grade crepe.

The Western Regional Production Board is attempting to improve the village output. At the time of the mission's visit, a processing factory with a daily capacity of 7,000 lbs. was being erected at Ikpobo to absorb the latex from a 15-mile radius.<sup>18</sup> Both smoked sheet and crepe will be produced, mostly the latter. Latex will be purchased outright from the tappers and the board will sell the processed rubber on its own account. Originally it was contemplated that the tappers would bring their latex to the factory. This proved to be impracticable before the plant was completed. Accordingly, 250-gallon tanks are now being placed in 30-40 outlying locations, each with a latex buying agent on commission; tank wagons will circulate to pick up the material. It remains to be seen whether, in the absence of plantation production, there will be a sufficient supply of latex at reasonable prices to make the enterprise commercially successful.

*Rubber Manufactures*

Markets for manufactured rubber products are in most cases still too small to warrant local production. Reference has already been made to rubber-and-canvas shoes, however, and there may be room at this stage for a few small enterprises in moulded rubber articles.

Two successful tire retreading factories are operating. One, at Ibadan, is an African-owned enterprise, assisted by loans from the West-

<sup>18</sup> A similar factory is planned for Usonigbe but here the board is establishing a large plantation.

ern loans board. The owner is contemplating the establishment of additional plants elsewhere.

At the time of the mission's visit, a £ 500,000 project for a tire factory was being considered in the West. We see no economic justification for such a project in the immediate future. The market for individual automobile tires is too small to permit economical operation. Bicycle tire sizes are numerically in greater demand, yet attempts to manufacture these on a small scale in other countries have seldom been as successful as anticipated, and some have had to be abandoned.

## F PULP AND WOODWORKING INDUSTRIES

### *Paper and Pulp*

Like most countries, Nigeria experienced a wartime and postwar shortage of paper supplies. Various proposals for local manufacture have been advanced, but now that world supply and demand of pulp and paper have come into better balance the business interest in these proposals has subsided.

Present paper consumption is small. Total 1953 imports were valued at £ 1.5 million, of which £ 63,000 represented newsprint and the rest a wide assortment of types. The fact that pulps undergo quite different processes, depending on the kind of paper to be made, is often overlooked. Even with pulp supplied, moreover, economical operation requires that paper-making machinery produce without interruption for extended periods; frequent shutdowns to readjust for another type of paper cannot be afforded. There is considerable doubt, therefore, whether the Nigerian market can yet support local paper manufacture.

The situation will change, for consumption is increasing steadily. It may not be long before the demand for certain types will make production feasible. One of the first operations may be the use of imported Kraft pulp for cement bags and wrapping paper. With the addition of a small corrugator, boxboard could then be produced. Another possible field is the production of writing and book paper.

*Pulp Prospects* It has been proposed that pulp be made from various grasses, cultivated bamboo, the wastes from hardwood timber

felling and maize stalks. Elsewhere success has been achieved with the first two but the choice of species is critical and it is essential to test carefully the rates of growth and harvesting costs under local conditions before planning factories to use them. Production of pulp from tropical hardwood is being investigated; its commercial soundness is not yet established. The use of maize stalks is unsound: extensive tests indicate that the cost of collection from a wide area would be prohibitive.

Small laboratory tests of the suitability of a new source of pulp are indicative but not conclusive. Before a costly factory is built the material should be put through the entire paper-making process, on a scale large enough to disclose its behavior in commercial machinery. Experimental facilities for this are available on a service basis in Scandinavian and other principal pulp-producing countries.

*Local Research* Both the Forestry Department and the Department of Commerce and Industries have been considering establishing special Nigerian research facilities. In 1952 the latter department proposed a major paper research institution, complete with its own semi-commercial experimental factory.<sup>19</sup> This proposal called for laboratories costing £ 450,000, a £ 350,000 pilot mill with two paper-making machines and 1,500 tons annual capacity, a railway siding, a site of 20-30 acres, and possibly as much as 300 acres more for staff housing. Total five-year costs for construction and operating expenses were estimated at £ 1.2 million. The mission considers this proposal far too ambitious. A continuing program of research on possible local paper-making materials at the proposed institute of applied technical research, supplemented by pilot plant tests at well-equipped institutions abroad, would be adequate for Nigeria's needs. The cost of such a program would probably not exceed interest charges for the Commerce and Industries proposal.

The manufacture of Kraft or other types of paper from standard imported pulp would follow an established process, requiring no experimentation.

<sup>19</sup> The mission understands that since its departure much more modest proposals have been formulated in the Forestry Department.

### *Sawmills*

In addition to the export trade in logs and squared timbers (see Technical Report No. 11), there is a growing volume of wood processing and manufacture. Several large sawmills together exported nearly a million cu. ft. of sawn timber in 1951 and again in 1952. Meanwhile an ever-increasing number of small or medium-sized African-owned sawmills are supplying lumber to the domestic market. These are useful enterprises, well worth encouraging.

### *Plywood*

The modern, highly mechanized UAC plywood mill at Sapele is by far the largest single industrial plant in Nigeria. In combination with its sawmill this establishment employs 2,900 persons and processes five million cu. ft. of logs annually. Its river location allows loading directly into ocean-going vessels.

Plywood capacity is 20,000 cu. meters of finished sheets per year. Current production, for both export and local use, is about 17,000 cu. meters, mostly either true mahogany or "Sapele mahogany" (*Entandrophragma cylindricum*) with a lighter core, resin-bonded and of good quality.

Africans promoted to supervisory posts are performing well and labor productivity compares favorably with that of European labor in similar plants.

### *Furniture*

Furniture is made in all main centers. The larger plants are those of leading building contractors and the Public Works Department; the latter began to engage in furniture manufacture to meet the needs of government housing, offices and public buildings.

We think the government should encourage this local industrial development. Furniture-making is particularly suitable for private enterprise and ought in time to serve not only the private market, but the government market as well. We suggest that the government begin to place orders with private manufacturers, looking to termination of furniture production by the PWD.

*Boatbuilding*

The need for improved small-boat transport on the inland waterways, especially throughout the intricate delta system and during low-water seasons on the upper reaches of the main rivers, has long been recognized. It has been suggested, and the mission agrees, that this might be accomplished by providing more efficient substitutes for the poled dugout canoes in which so much commerce now moves. Commercial hauling in small powered craft would offer an opportunity for African business enterprise as wide as that which has already been realized in trucking.

Under government auspices, experimental boatyards were started about 1950 at Makurdi in the North and Opobo in the East, and later at Epe in the West. There is now a unit for each region, those in the North and East being under regional management, plus the original one at Opobo which henceforth will make results of experimentation available to the other three. None of these projects is designed for more than about 30 boats per year. In general their aim is to develop and produce simple powered craft of 12-15 ton capacity which can be sold to African operators at not more than £ 1,000-£ 2,000.

But while the objective is excellent, progress has been slow, even allowing for the time required to train carpenters in boat-building technique and for the fact that experimental prototypes take longer to build than corresponding units in standardized production. All together, hardly more than six small boats have been turned out. There has been little systematic research toward the most suitable craft, and no exchange of ideas or recent comparison of results among yards; none is fully aware of what the others have been doing, although experiments have proceeded on similar lines in all regions. Some of the problems being investigated, such as effect of tropical conditions on wooden boats or resistance of metal hulls to corrosion, must surely have been answered by previous experiences on the waterways. At this stage, emphasis should be upon construction of specially designed craft not otherwise readily procurable. Imported samples would save time in testing the more standardized types and the question of construction from local materials might well be deferred until it is known whether the boats themselves are suitable.

A second point of criticism is that the few boats which have been

turned out are all being used by governmental or semi-governmental bodies even though the stated purpose of these projects is the improvement of African water transport. This is not because customers are unwilling to buy them; numerous orders have been placed. We received the impression that the boatyards hesitate to sell for fear that the boats will not be properly operated and because they are uncertain of the suitability of present design. Problems in operation are probably unavoidable but surely the best way of determining suitability of the craft is to permit Africans to operate them. While various public entities can undoubtedly put the boats to good use, we recommend sale of at least part of the output to African buyers.

Licensing and maintenance also present problems. It is unnecessary to apply to the handling of barges on wilderness creeks and deserted upper reaches of the rivers the general licensing regulations applicable to large ships or to operation in congested ports. These require that the crew of a powered boat<sup>20</sup> include a licensed marine engineer holding a Board of Trade certificate, issued after five years' apprenticeship. Less exacting standards, comparable to those imposed for a lorry driver's permit, would be more appropriate if this type of transport is to be developed. We understand that this matter is under study.

Service facilities on imported motors, machinery and vehicles are deficient. Boat operators are likely to have difficulty finding spares or repair services for their engines. It is therefore advisable that each boatyard provide itself with at least one competent engine service man, a full line of spares for its engines, necessary shop facilities and a service launch.

#### *Other Wood Products*

Panelled doors, door frames, windows, partitions and other mill-work articles are made in local shops. The output of these could be increased if at least one sawmill in each main center were to make and sell standard mouldings.

<sup>20</sup> Applicable to inboard motors, and to outboard motors of over 10 h.p.; on the type of craft considered here a 10 h.p. motor is useless against typical river currents of two to five knots.

Boxes for soap, bottled beverages, etc. are made completely assembled in several small factories and also as shooks at the large Sa-pele mill. The possibilities of small bandsawed articles, veneered work and lathe-turned wooden bowls or similar items have not yet been fully realized.

## G NONMETALLIC MINERALS INDUSTRIES

### *Cement*

Nigeria's annual consumption of cement is 250,000-300,000 tons, all imported. Imports have hitherto been somewhat restricted by the inability of the ports to handle larger quantities. Consumption will increase appreciably as a result of the development program; private house construction, too, is using more cement. While poured walls are still rare, the better types of dwellings now almost invariably use concrete blocks. In the small villages there is a growing practice of coating mud walls with cement plaster, and "earthcrete" (12:1 ratio) blocks are being promoted by community development centers.

Cement landed in Lagos, duty paid,<sup>21</sup> cost Nigerian contractors up to 13/- per 112 lb. bag at the time of the mission's visit; dockside at Port Harcourt it was 13/6d. plus local hauling. It cost 2/- more in Ibadan than in Lagos and the mission was told of prices of 16/- in Onitsha, 18/6d. in Enugu and 25/- or more at more remote points. Clearly private consumption would increase rapidly with any lowering of cost, especially from 100 miles inland northward.

*Local Cement Production* Local manufacture has been actively discussed since 1950. There are large limestone deposits of suitable quality at Nkalagu, in the Eastern Region, and at Igumale in the Northern Region (see Technical Report No. 14); both are close to the Enugu coal mines and the railways, and have water available.

A number of foreign cement companies has studied these possibilities during the last several years. The mission understands that discussions which took place early in 1954 may lead to the early establishment of a cement factory constructed and managed by overseas companies but financed largely with Nigerian funds.

<sup>21</sup> Duty was 1/3d. per cwt. at the end of 1953.

Unless pending studies disclose some insurmountable quarrying problem, the mission believes that cement manufacture at either location would be sound. The product should have no difficulty competing with imported cement throughout the entire North and for a considerable distance southward. The plant's capacity should be about 400 tons daily, or 120,000 tons per year; and it may cost £ 2.5-3 million. Annual coal consumption may be estimated at 40,000 tons. Operated by an experienced firm, preferably one willing to take a substantial investment interest, such a plant would have an excellent chance of success. In due course expanded operations or establishment of a second plant, perhaps at a different location, should be possible.

The mission's projections (Table I, page 405) do not include government financing for a cement company. £ 1.2 million was voted for this purpose in 1954-55 and, if not spent in that year, could doubtless be reappropriated.

*Cement Clinker* Local investors have shown interest in establishing a plant at Apapa to grind imported cement clinker. This offers good possibilities for early cement production, especially if arrangements can be made to receive clinker shipped in ballast. It would be competing with imported cement in the Lagos area, where consumption is high, and would not affect the market for Nkalagu or Igumale production which, because of freight charges, is unlikely to sell in Lagos.

Grinding and bagging machinery might be installed at Apapa almost at once; this equipment could later be moved and used as part of a complete factory elsewhere.

*Cement Products* Cement floor and wall tiles, produced locally in attractive designs and colors, are growing in popularity. Using small hand-operated hydraulic presses, a Port Harcourt enterprise makes about 400 daily. There is room for expansion of this industry in various centers.

Nigerian concrete building blocks are made at the construction site, partly because of transport difficulties. Possibly to compensate for their improper curing, the blocks are unnecessarily thick-walled, heavy to handle and wasteful of materials. In the main urban areas, where only local transport is involved, there are opportunities for centralized

commercial manufacture and curing of hollow concrete blocks which could be given the requisite strength with a much thinner wall, as is done elsewhere. The same factories could produce concrete pipe, pre-cast slabs, and sills and lintels for windows and doors.

### *Ceramic Industries*

Satisfactory plastic clays are found in various parts of the country, especially on the Plateau where they are often made accessible by the tin mining operations. Kaolin, quartz, feldspar and silica sand are available also.

*Pottery* Although pottery-making is a traditional local art (see Handicrafts and Cottage Industries), the first major attempt at factory production did not begin until 1953.

A mechanized African-owned plant at Ikorodu makes tableware, using a tunnel kiln capable of two tons daily output, fired with producer gas made from wood. It was located at Ikorodu on the assumption that the firewood supply would be ample but supply difficulties are already becoming apparent. However, it appears that the kiln can be fired directly with oil for all types of products but the most delicate porcelainware. This fuel change will have to be made in the near future.<sup>22</sup>

The plant is not yet running at full capacity and the financial results have been disappointing. It is planned to hand-decorate a portion of the tableware, and also to produce floor tile; these steps should improve the plant's finances. One problem is that both biscuit and glaze must be fired at 1250°C. in the single tunnel kiln. Some of the high-value types of structural clay products and ceramic specialties may eventually prove more profitable for this plant than its present line.

*Enamelware* Enamelware deserves investigation; private capital has shown some interest. Imports of enameled basins, bowls, etc. amount to about £ 750,000 and an increasing number of these articles is seen in the rural markets.

<sup>22</sup> The mission is informed that this conversion has since been made.

*Glass* Good glass sand is available, and commercial glass manufacture will become economical in time. For the moment, however, it is not.

Most demand is for beverage bottles, filled mechanically, usually under pressure. Breakage hazards are high except with the uniform product of automatic bottle-making machinery, with which the minimum economical factory output would be 5-10 million bottles per year. Annual replacements of the local bottling industry are approaching this number but the supply of reclaimed imported beer bottles is still more than sufficient.

A careful cost study may show a small hand-blown glassware factory to be feasible. Products such as tumblers, lamp chimneys and small medicine or cosmetic bottles might be made competitively.

*Bricks* In spite of the early introduction of good brickmaking by the Public Works Department, the present standard is low. Well-made brick is relatively expensive but the use of poor-grade brick is false economy. Mud brick houses often take several years to build and part of each year's work is washed away by heavy rains even before the job is done. The mission therefore welcomes the inclusion of brickmaking in the government training programs in the pottery centers.

*Other Clay Products* Local production of structural wall tile, decorative flat wall and floor tile, drain tile, sewer pipe and similar articles should be feasible. Roof tile would be suitable for a separate factory; this is finding a growing market in the Gold Coast and undoubtedly would do the same in Nigeria despite the necessity of heavy timbering to carry such a roof.

Excellent low-tension insulators for telegraph and rediffusion can be made from Nigerian kaolin (50%), feldspar (25%) and plastic clay. Local materials will also make sanitary ware; the clays are not vitrifiable by themselves but with feldspar readily available this is not serious.

## H METAL-WORKING INDUSTRIES

### *Machine Shops and Metal Manufactures*

Establishment of both small and large commercial shops for weld-

ing, casting, forging, machining and mechanical work, together with automobile and bicycle repair shops (see Technical Report No. 17) should be encouraged. Facilities of this kind in all main cities and towns, especially in those far removed from the few available shops in Lagos, are needed.

Job machine shops can often carry on a limited line of metal manufacturing in addition to repairs and special orders. In some countries such enterprises have grown into major industries. In Nigeria a beginning can be made with wire products (nails, staples, clips, handles, etc.), sheet metal articles and small nonferrous castings. Already one small factory in Lagos has had considerable success with cast nameplates, street signs and highway markers and should be able to expand this production.

#### *Metal Containers*

A European-owned factory at Apapa has been making steel drums since 1939, adding a plant for reconditioning old drums in 1952. Most of the output is used for petroleum products. Operations are highly mechanized, even to the continuous overhead monorail delivery to the petroleum storage plant nearby.

Drums have been the standard 44-gallon type; at the time of the mission's visit, it was planned shortly to begin production of small, round, four-gallon kerosene containers. Current production is 1,200 new drums per day plus about an equal number of reconditioned ones, all in one shift. More can be delivered in a single shift and multiple shifts could produce up to 4,000 new and 3,000 reconditioned drums, so capacity is adequate for several years' normal increase in demand. The mission was informed that the output per man-hour compares favorably with that of similar plants operated by the same company elsewhere.

The factory produces its own compressed oxygen from liquid air for its oxy-acetylene welding, selling the excess for commercial welding and for medical use.

#### I HANDICRAFTS AND COTTAGE INDUSTRIES

Nigeria's traditional crafts and rural industries make an imposing list when taken together. Among those seen by the mission and noted

especially in earlier government studies are pottery, cotton spinning, handloom weaving, dyeing, needlework, embroidery, beadwork, leatherwork, blacksmithing, tinsmithing, brass and silver work, wood-carving, calabash carving, joinery, basketry, and the making of mats, hats, cordage, nets, glass beads and ornaments. Together they account for 1.4% of the gross domestic output, or £ 9.5 million.

The products of these activities are mainly used at home or sold in the village markets. Local traders collect a small percentage for sale in the main cities and airports as souvenirs. Attempts to interest overseas wholesale markets have met with only limited success. Experience elsewhere bears out the difficulties of large-scale marketing of cottage products. The characteristic of this production is that it contributes useful goods produced in spare working time by simple methods. It should not be confused with industrialization, which is based on the introduction of factory techniques.

We would caution against trying to move true cottage handicraft production methods into central shops or factories and expecting them to pay.

#### *Development Efforts*

Both central and regional government agencies have been interested in extending or improving handicrafts. Instruction has been limited to textiles and pottery but some of the other crafts have been helped in various other ways.

Since 1947 seven textile training centers are reported to have trained a total of 1,200 hand weavers in broadloom technique. Improved looms and appurtenances have been made and sold by these centers.<sup>23</sup> Some of the graduates have taken up weaving as a business, particularly in the East. For the moment the training program has been slowed down and attention has shifted to helping some existing co-operative weaving societies while the results of training efforts to date are evaluated. In the North the training program has been converted into a subsidized government project; one unit employs 75 workers on piece rates and two more such units are to be added.

<sup>23</sup> A loom sells for £ 10 or less; £ 27 will set a weaver up in business.

Pottery training has been conducted since 1950. A center has been established and staffed in each region. The chief aims of the center are (1) to introduce the potters' wheel, slip casting and press moulding, (2) to teach kiln firing at higher temperatures and (3) to develop the use of glaze. These represent major changes, for most Nigerian pottery is still made by coiling and is open-fired at only about 550°C. But whether (2) and (3) are really improvements under local circumstances is seriously doubted. Cooking is usually done over an open fire, subjecting the pots to considerable thermal shock, and users are reported to find that the traditional unglazed pottery withstands this treatment better than the "improved" variety.

### *Future Programs*

In an agricultural economy such as Nigeria's the handicrafts and cottage industries will continue to play their traditional role for a long time; every effort should be made to assist them. Assistance can take the form of training programs, demonstration or encouragement of the use of simple tools or introduction of a new article suitable for production under cottage craft conditions.

Proposals have been made for an expanded program in this field, with a series of craft centers and a central advisory service for rural industries. The mission agrees that the program is worth expanding but believes that it should be undertaken on a regional basis. Apart from the fact that many of the crafts themselves have a distinctive regional character, the key to this type of work is the close personal contact made possible by decentralization. We suggest that responsibility for handicraft and cottage industry development programs rest with regional departments of local industries. Critical studies of the results of existing programs should be completed before deciding the extent and direction of future expansion.

### J OTHER INDUSTRIES

An excellent project for a manufacturing pharmaceutical laboratory has been proposed by the government. It would prepare certain sterile solutions, fill multiple-dose injection phials and make up tinctures and ointments for the medical services. We think that the project should

be operated directly by the government pharmacists at this stage. Calling for an initial investment of less than £ 10,000, it should pay for itself within a few years.

There are opportunities for private investment in the local manufacture of candy, prepared foods, matches, injection-moulded plastic articles, cosmetics, straw wrappers for beverage bottles, lime (one plant now makes it from periwinkles) and improved smoked meats. Large-scale fertilizer manufacture is probably premature but additional small plants for blood and bone meal ought to be successful.

A network of cold storage plants is greatly needed and could be undertaken on a commercial service basis. Present facilities are inadequate even in the Lagos area, although here we understand that an idle Colonial Development Corporation plant at Apapa is about to be put to use.

The mission does not recommend expenditure at this time for such plans as distillation or chemical conversion of lignite, or local manufacture of iron and steel. Sugar milling should not be undertaken until both economic and agricultural indications are better than they are now. And certainly Nigeria is not, in general, ready to support or to staff a chemical industry at present.

## VI GOVERNMENT EXPENDITURES ON INDUSTRY, 1955-60

Table 1 shows the mission's projection of federal and regional government recurrent and capital expenditures during 1955-60, together with the approved Estimates for 1953-54 and 1954-55. In its projection the mission has assumed that the industrial activities of the Department of Commerce and Industries will be able to function with about half the funds currently expended, say £ 80,000 per year. On the other hand, we have assumed that the Northern Regional Department of Local Industries will continue expenditure at roughly the present level, with an allowance for normal growth. We have recommended that it divest itself of pilot projects; the funds so released can be usefully employed in expanding technical assistance activities to small industries. The embryo Department of Local Industries in the East is assumed to grow modestly. In the expectation that a similar

TABLE 1 Projection of Government Expenditure on Industry

(Thousand £)

	Approved Estimates				Projections of Mission												
	1953-54		1954-55 <sup>1</sup>		1955-56		1956-57		1957-58		1958-59		1959-60		Total 1955-60		
	R	C	R	C	R	C	R	C	R	C	R	C	R	C	R	C	
<i>Federal</i>																	
Dept. of Commerce & Industries																	
( $\frac{2}{3}$ of total dept.)	127	—	132	—	}	80	—	82	—	84	—	86	—	88	—	420	—
Textiles development (C.D.&W.)	18	—	19	—		80	—	82	—	84	—	86	—	88	—	420	—
Institute of Applied Technical																	
Research—initial grant	—	—	—	—	—	480	—	—	—	—	—	—	—	—	—	—	480
Participation in Lagos hotel <sup>2</sup>	—	—	—	—	—	—	—	125	—	125	—	—	—	—	—	—	250
Cement Company	—	—	—	1,200	—	—	—	—	—	—	—	—	—	—	—	—	
Total	145	—	151	1,200	80	480	82	125	84	125	86	—	88	—	420	730	
<i>Northern Region</i>																	
Dept. of Local Industries <sup>3</sup>	28	—	29	—	}	40	—	41	—	42	—	43	—	44	—	210	—
Textiles development	13	—	12	—		40	—	41	—	42	—	43	—	44	—	210	—
Industrial production officers	—	—	—	—	20	—	40	—	50	—	50	—	50	—	210	—	
Total	41	—	41	—	60	—	81	—	92	—	93	—	94	—	420	—	
<i>Western Region</i>																	
Textiles development	10	—	10	—	}	30	—	31	—	32	—	33	—	34	—	160	—
Launch services (boat building)	13	24	10 <sup>4</sup>	10 <sup>4</sup>		30	—	31	—	32	—	33	—	34	—	160	—
Industrial production officers	—	—	—	—	20	—	40	—	50	—	50	—	50	—	210	—	
Total	23	24	20	10	50	—	71	—	82	—	83	—	84	—	370	—	
<i>Eastern Region</i>																	
Dept. of Local Industries	3	—	3	—	8	—	8	—	9	—	9	—	10	—	44	—	
Industrial production officers	—	—	—	—	20	—	40	—	50	—	50	—	50	—	210	—	
Total	3	—	3	—	28	—	48	—	59	—	59	—	60	—	254	—	

<sup>1</sup> Regional figures are Preliminary Estimates.<sup>2</sup> This expenditure will not be necessary if private enterprise provides the entire capital.<sup>3</sup> Not including estimated expenditure on fisheries.<sup>4</sup> The breakdown of 1954-55 figures as between recurrent and capital expenditure is a rough estimate.

NOTE: This Table shows government expenditure only. Expenditure by development corporations not included.

R = Recurrent; C = Capital.

department will be established in the West, some £ 30,000 per year has been projected. Finally, we have included in the projected expenditures of each regional government an amount growing to £ 50,000 per year to cover the region's contribution to the cost of the industrial production officers whom we have recommended be added to the staffs of the regional development corporations.

## TECHNICAL REPORT 14 MINING

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### I GEOLOGY

The study of the geology of Nigeria has grown out of the work of the Mineral Survey organized by the Imperial Institute of London in the early 1900's. The Geological Survey of Nigeria, founded some 35 years ago, was faced with the difficult task of mapping the country as a whole and at the same time of investigating the mineral occurrences discovered by the original survey. While extensive areas have now been mapped a vast amount of work remains to be done.

Much has been and is being written on the geology of Nigeria.<sup>1</sup> About two-thirds of the country is composed of igneous rocks of great age (known as rocks of the Basement Complex of the Pre-Cambrian age). Most of the mineral occurrences of any present or potential economic importance are associated with sedimentary rocks which wrap around these older rocks to the north, east and south. The alluvial tin deposits of the Plateau are associated with granites and are found in formations consisting of clays and sands which are, in some extensive areas, hidden by a hard capping of volcanic rock (basalt).

The sedimentary formations in the southern part of the country, many thousands of feet in depth, are thought to be potential sources of mineral oils and are now being actively explored.

### II THE MINING INDUSTRY

#### A TOTAL MINERAL PRODUCTION

Nigeria's mining output in 1952-53 accounted for about 1.5% of its gross national product; minerals contributed on the average about 9% of the country's export receipts between 1949 and 1953.

<sup>1</sup> A summarized version is: F. Dixey, *Bul. Imp. Inst.*, Vol. XLIII, No. 4, 1945.

At present only three products are mined on an economically significant scale: tin and columbite, produced for export, and coal, for domestic use.

Table 1 shows the quantity and value of Nigerian mineral production in 1951-52 and 1952-53.

TABLE 1 MINERAL PRODUCTION

Mineral	1951-52		1952-53	
	Tons (Concentrates)	Value <sup>1</sup> (£)	Tons (Concentrates)	Value <sup>1</sup> (£)
Tin Concentrates .....	11,164	8,462,651	11,942	8,552,788
Columbite Concentrates .....	1,075	911,384	1,367	1,782,093
Total .....		9,374,035		10,334,881
Wolfram .....	20	34,191	49	35,567
Lead .....	94	11,929	152	13,991
Zinc .....	154	5,625	68	1,184
Tantalite .....	1.7	1,886	1.09	3,910
Gold .....	1,840 <sup>2</sup>	22,079	1,174 <sup>2</sup>	14,085
Total Metallic Minerals..		9,449,745		10,403,618
Coal .....	562,271	808,998	614,239	921,358

<sup>1</sup> Value of gross output; it differs from the value as shown in Table 1, p. 13 which refers to "value added."

<sup>2</sup> Ounces.

SOURCE: Chief Inspector of Mines: Annual Report, 1952-53.

## B TIN AND COLUMBITE

Tin and columbite together accounted in 1952-53 for over 90% of the value of Nigeria's mineral output including coal (see Table 1).

Tin occurs as the oxide cassiterite ( $\text{SnO}_2$ ) and columbite as the pentoxide of columbium.<sup>2</sup> The chief source of both minerals, which usually occur in close association, are the extensive alluvial deposits on the Jos Plateau, large areas of which are hidden beneath basalt flows. Investigations by the Geological Survey have located minable primary deposits of columbite (i.e. deposits occurring in decomposed sections of granite rock), which have recently come into production.

Tin was produced on a small scale in Nigeria in ancient times, but active exploitation of the Plateau deposits dates back only to the early

<sup>2</sup> Usually columbite also contains varying quantities of tantalite.

part of this century. With an annual output of some 11,000 tons of concentrates (about 8,000 tons of metallic tin), which is slightly less than 5% of the world supply, Nigeria rates sixth in the scale of world producers. The entire output of concentrates is exported to the United Kingdom. During World War II, after supplies from Malaya were cut off, Nigeria's output was stepped up to about 17,000 tons of concentrates a year. This rate of production was maintained for several years by selective mining of the richer sections of the reserves, thereby lowering the average grade of those remaining.

In the early days of tin mining, columbite was discarded as waste material in the process of tin concentration. The first recorded production of columbite was in 1933, when three tons of concentrates were obtained. Output rose gradually to 800 tons in 1943; after a peak of over 2,000 tons in 1944, production declined to 1,100 tons in 1948. Since then there has been a steady rise to some 1,400 tons in 1952-53. Columbite is used in the manufacture of stainless steels, and latterly in alloys of a high degree of heat resistance, used, for example, in jet engines. Nigeria accounts for some 85% of world output of columbite concentrate, and is virtually the only source of high-grade concentrate.

The Government of the United States, the largest consumer of columbite, embarked in 1952 on an incentive purchase program, offering producers a 100% bonus on all purchases. This is expected to increase production substantially. It is, however, understood that the maximum United States requirements under this scheme will be 7,500 short tons up to 1956.

#### *Mining and Treatment Methods*

The overburden which covers tin and columbite deposits varies considerably in thickness and must first be removed; this is done either by mechanical means or by hand methods. Occasionally, where practicable, this work is done by ground-slucing with water. When the layer of mineral-bearing gravel has been exposed, one or a combination of the following methods is used for its extraction and treatment:

- (a) by hand, transportation to sluice-boxes being by head-pan;
- (b) excavation by monitors, high-pressure jets of water which

wash the gravel into sumps whence it is pumped to sluice boxes by means of gravel pumps;

- (c) excavation by mechanical excavators such as diesel- or steam-driven shovels, electrically-driven draglines or bull-dozers, and transportation to sluice-boxes by lorries or diesel-driven loaders.

Table 2 indicates production costs for various methods now in use.

TABLE 2 Output of Tin and Columbite Ores  
by Type of Production Method

Method	Cu. Yds. Handled	Percentage of Yardage	Cost, Pence per Cu. Yd.
Draglines .....	4,609,567	12.43	12.06
Dredges .....	2,068,400	5.58	7.55
Gravel pumps .....	8,397,680	22.65	21.98
Mechanical shovels .....	468,490	1.26	7.39
Hydraulicking .....	3,646,310	9.83	16.06
Loaders and Dumpers .....	1,340,500	3.62	12.57
Opencast Hand Labor .....	10,873,973	29.33	21.61
Underground Hand Labor .....	110,268	0.30	—
Tributing Hand Labor .....	5,563,205	15.00	19.71
Total .....	37,078,393	100.00	—

SOURCE: Chief Inspector of Mines: Annual Report, 1952-53.

Ore is first concentrated in sluice boxes located close to the excavations; the crude mineral-bearing concentrate thus produced is further processed in central ore-dressing plants. Larger mining enterprises operate modern plants capable of producing high-grade concentrates of tin and columbite; in the case of the smaller operators, dressing plants are often crude and hand panning is still used in some instances.

Mineral dredges provide the cheapest and most efficient method of extracting and concentrating ores from alluvial deposits. Unfortunately, the terrain and the shortage of water in the Plateau area make this method unsuitable for most of the workings. However, the largest of the tin mining companies in the field has installed a dredge on one of its leases, and the cost per cubic yard treated was among the lowest of any of the methods used (see Table 2).

The general economic efficiency of the mines varies greatly with the different operators. Even recognizing the fact that the general

efficiency of labor in mines has declined in recent years, increased mechanization has not always brought about improved over-all efficiency. There are a number of instances where direct-labor methods of mining compare favorably with largely mechanized systems in cost per ton of metal produced.

One of the main problems with which the producers are beset has to do with beneficiation. For some time it has been recognized that appreciable—and probably irrecoverable—losses occur during the process of concentration in the sluice boxes. Amounts of both tin and columbite—chiefly contained in “fines” (material composed of very small particles)—pass all the way through the boxes without being trapped and are lost in the tailings.

This wastage has become a serious problem; both the mining companies and government have engaged ore-dressing specialists to study the conditions and recommend solutions.

### *Prospecting and Reserves*

Prospecting and exploration have not been sufficiently systematic to permit an estimate of total tin reserves. Estimates by the operators<sup>3</sup> of reserves of 140,000 long tons of tin and 11,000 long tons of columbite are based on exploration of only a small part of the whole field; none of the reserves hidden beneath the basalt cap is included. There seems to be every indication that large areas of high-grade tin alluvials exist under the extensive basalt formation but insufficient information is available for a reliable assessment of their value. From what is known of these reserves it appears that in most areas the cost of exploitation is likely to be prohibitive even if it were possible to overcome the very considerable technical difficulties. At one point, however, where conditions are more favorable, exploratory aditing (tunnelling) has been undertaken by one of the operators; indications are that limited production will be possible. Extensive drilling is obviously the first stage of a general program of exploration, in which government, through the proposed expanded Geological Survey drilling section (see p. 425) might participate.

<sup>3</sup> Chamber of Mines Annual Report 1952-53.

Northern Region. The full extent of reserves is still largely unknown; estimates by the Geological Survey of 114 million tons<sup>4</sup> may be on the conservative side.

The coal is of a sub-bituminous, non-coking variety. Mining is confined to three collieries, Iva to the north, Obwetti in the center and Hayes (the newest) to the south. Although five seams of coal are known to exist, only one of them is being worked; the others are thought to be uneconomical.

Over the years mining conditions have deteriorated in the two older mines and it was largely for this reason that Hayes mine was opened up in 1952; present indications are that its production costs will be appreciably lower than those of the others. Output from the three mines in the third quarter of 1953 averaged over 60,000 tons per month, of which Hayes contributed less than one-sixth; it is understood, however, that its production will be stepped up and that of the other mines reduced.

### *Problems Facing the Industry*

Two main and related problems face the industry: high production costs and declining demand.

In 1952-53 pithead cost per ton of coal produced was £ 1.17.5. This is extremely high and it is not surprising that it has become difficult to find markets for Nigerian coal. Costs must be reduced if the industry is to prosper.

We strongly advocate as a first and essential step that a detailed time-cost study of all phases of the operations in each of the mines be undertaken as soon as possible. In our opinion an outside firm specializing in studies of mine efficiency should be engaged for this work.

The rise in labor cost, from 2/5d. per ton in 1929 to 22/1d. in 1953, is chiefly responsible for high costs in the Nigerian coal industry. The increased labor cost reflects both the rise in wages which occurred over this period and a decline in productivity (see Figure 1). To some extent such a decline is inevitable in older workings where conditions have deteriorated and hauls have become longer as the coal face has receded from the entrances. The extent to which these

<sup>4</sup> Geological Survey of Nigeria Rep. 5074.

*Conference on Tin*

An international conference was held in Geneva late in 1953 under the auspices of the United Nations, its purpose being the stabilization of tin prices. Twenty-nine producing and consuming countries were represented, including Malaya and the United States, respectively the largest producer and the largest consumer. Nigeria participated in the conference. An agreement was reached, fixing, for a limited period, a floor price for tin of £ 640 per long ton and a ceiling price of £ 880. During the operation of the agreement a buffer stock will be established and, if necessary, exports will be restricted. The agreement has been signed by producing and consuming countries having the required number of votes and will be brought into operation when ratifications have been deposited. The Nigerian government has already decided to adhere to it. The country's contribution to the buffer stock will have to be partly financed by the government.

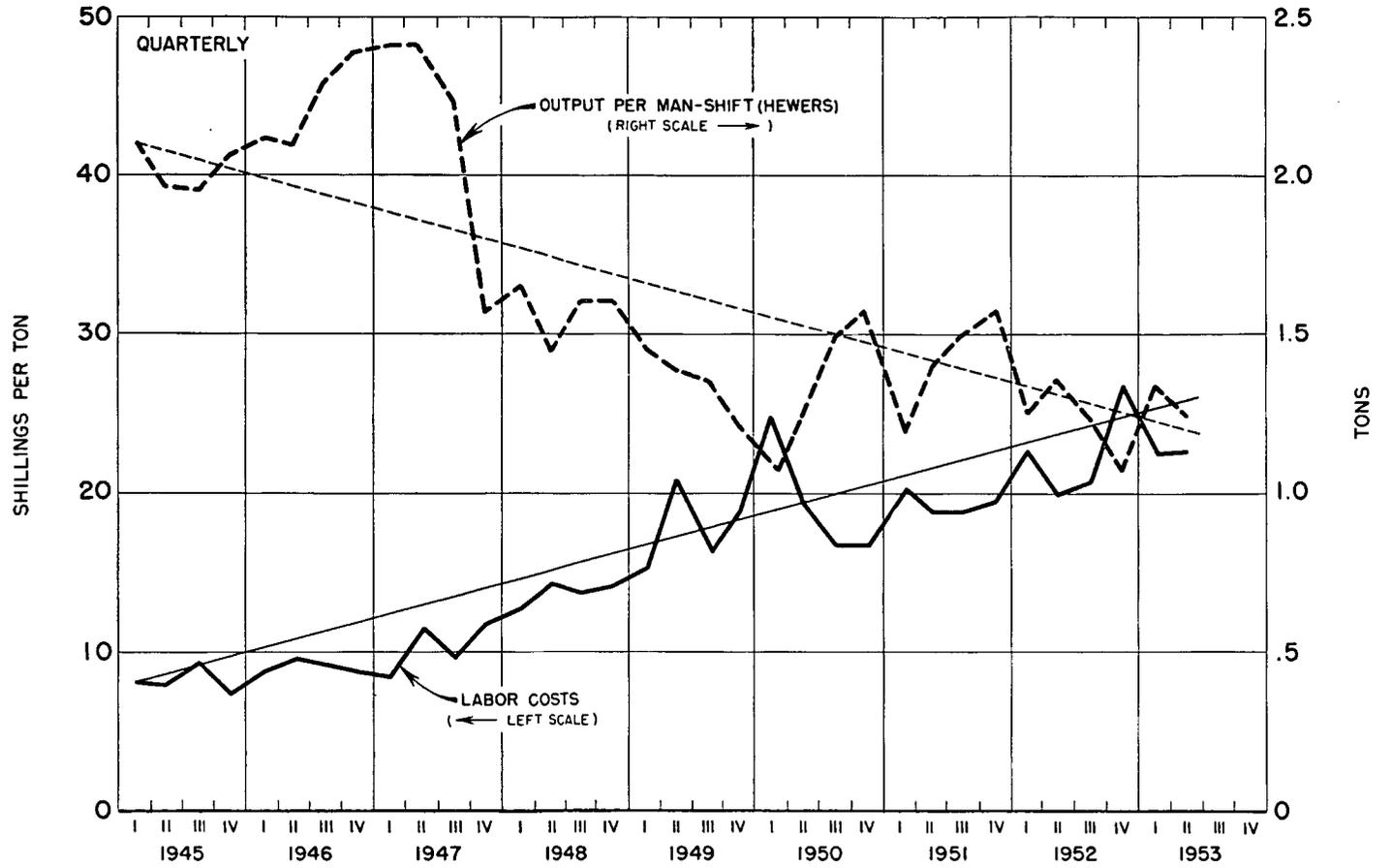
## C COAL

The presence of coal in the Enugu area of the Eastern Region was discovered in 1909. The strategic importance of this discovery stimulated the development of coal mining during World War I. The first colliery was opened in 1915, after which Port Harcourt and the railway connecting the port with Enugu were built. The mines were at first administered by the railway but later became the responsibility of a separate government department. The Nigerian Coal Corporation, a statutory corporation, was formed in 1950 to take over all the assets and liabilities of the previous operating department. The corporation is authorized to engage in coal mining, development and distribution, both for local consumption and export, and in related activities.

The major part of the output is absorbed by the railway (over 50% in 1952-53). Coal was exported in the past to other parts of West Africa, in particular the Gold Coast, and occasionally to places outside Africa, but export demand has fallen off, largely because of high production and transport costs and irregular deliveries due to strikes.

The present operating coal field in the Enugu area is only some four miles wide. Exploration carried out by the Geological Survey has, however, located other outcrops to the north extending into the

# NIGERIAN COAL CORPORATION



NOTE: No adjustment for wage increases paid in arrears.

SOURCE: Mines Department, Enugu. E/C. 16.

Coal mines operated by

1. Colliery Department to October 31, 1949
2. Nigerian Coal Board to December 31, 1950
3. Nigerian Coal Corporation from January 1, 1951

factors affect productivity and costs in the different mines would be revealed by the recommended time-cost study; its findings should permit management to organize production more efficiently. However, output per man-shift of face workers declined from 3.7 tons in 1929 to 1.24 tons in 1953, which is more than can be accounted for by deteriorating conditions. There appears to be a connection between decline in output per man-shift and the successive wage awards, which have tended to raise basic wages much more than production bonuses, with consequent loss of incentives for higher output. These awards were chiefly the responsibility of the government; it is understood that the mines management did not always favor them.

An increase in incentive pay coupled with a reduction or stabilization of basic wages would undoubtedly have a beneficial effect on productivity. It may prove politically difficult to introduce such a measure, but it should nonetheless be attempted. We believe it would result in better efforts and subsequent increase in pay for labor. This would have to be demonstrated in practice, perhaps on a small scale by volunteers in an isolated section of one of the mines or on a larger scale in an active mine; it is understood that an effort of this sort is being made in Hayes mine. Representatives of mine labor should bear in mind that with the development of other fuels the coal industry can survive only by improving efficiency and lowering production costs.

Reduction in production costs should be combined with efforts to improve the quality of the coal sold. More needs to be done to discard waste material by hand-sorting before the coal is sent to the surface; the possibility of washing and grading before shipment should also be carefully considered.

During the first years of its existence the Corporation apparently failed to formulate long-term plans for improving efficiency and lowering costs. The mission hopes that the new chairman, a man with considerable coal mining experience who was appointed late in 1953, will give high priority to the formulation of such plans.

### *Markets*

As mentioned earlier, export demand for Nigerian coal has been falling rapidly in recent years and has now virtually disappeared. It

will be difficult to recapture these markets until costs are reduced. Efforts should nonetheless be intensified to find new markets abroad and to recapture especially the market in the Gold Coast.

There is scope for expansion of coal consumption in Nigeria itself. Thermo-electric power generation will increase; if the price of domestic coal is competitive with other fuels, an important market will develop. The proposed cement plant near Enugu might be another consumer of up to 40,000 tons a year. There are iron ore deposits within reasonable distance of the Enugu coal fields which may be capable of development; although Nigerian coal is not suitable for coking, it might eventually be used for smelting in one of a number of processes recently developed in Europe. The proposed dieselization of the railway would not greatly affect its coal consumption for the next 15 or 20 years, as explained in Technical Report No. 16.

#### *Finances of the Coal Corporation*

The accounts of the Coal Corporation for the first two full years of its operation, 1951-52 and 1952-53, show losses of £ 84,000 and £ 90,000 respectively. The mission was informed that in the first months of 1953-54, the books showed a small profit. At the present level of costs and prices, it appears that the Corporation can break even with an annual output of 670,000 tons. The 1951-52 and 1952-53 figures include interest payments to the government of £ 13,000 and £ 21,000, respectively, (which at the time of the mission's visit had in fact not yet been made). To date the losses have been covered by drawing on working capital provided by the government against the issue of debentures.

At the time the Corporation was formed, it issued to the government £ 375,000 of debentures representing the net value of the assets taken over. Up to March 31, 1953, a further £ 430,000 of debentures had been issued in respect of funds made available by the government for working capital and for new facilities and another issue was scheduled for 1953-54. Interest on these debentures ranges from 3% to 4%. The mission believes that the greater part of the Coal Corporation's capital should be in the form of an equity and recommends that the possibility of reorganizing the Corporation's capital structure be studied (see Chapter 4, p. 96).

The government's 1954-55 budget makes provision for another £ 135,000 of capital for the Coal Corporation, to be used for the development of Hayes mine. The Corporation is planning capital expenditure of £ 384,500 over the period 1955-60, which will again have to be financed by the federal government. The mission has made allowance for this in its projections of federal expenditure in Table 5. We believe, however, that the figure should be regarded as tentative; no final decision should be taken on capital projects beyond those now in hand until the new chairman has reviewed the Corporation's position and the results of the recommended time-cost study have been evaluated.

#### D GOLD

The winning of gold from alluvial deposits dates back to ancient times; it is, however, only in the last 25 years that appreciable amounts have been produced. Production rose to peaks of about 39,000 ounces in 1935 and 44,000 ounces in 1954; present output is little more than 1,000 ounces per year. Ilesha, in the Western Region, is now the only active producing area.

### III MINERALS OF POTENTIAL ECONOMIC SIGNIFICANCE<sup>5</sup>

#### A LIGNITES

Of the known lignite deposits of Nigeria, those of Asaba Division in Benin Province in the Western Region are by far the most important. They were discovered between 1903 and 1910 by the original Mineral Survey but apart from some exploration by drilling little attention was paid to them until 1947-48. In 1948 the Powell Duffryn Technical Services Ltd. and the Geological Survey of Nigeria carried out a program of pitting and of some aditing. The Geological Survey has estimated that there are over 62 million tons of lignites available for mining in seams varying from 15 to 23 feet in thickness.

<sup>5</sup> A mineral survey carried out over the major portion of both the Northern and Southern Cameroons by a team of geologists and prospectors in 1949-50 failed to disclose any promising mineral occurrences.

The deposits are within 10 miles of the Niger River at Asaba and the lignite could be transported by barge from there to Lagos. In view of the fact that its calorific value is not much less than that of the Enugu coal, the lignite might one day prove to be a cheaper fuel than coal for large electricity plants.

However, there are a number of factors requiring further investigation, including the suitability of lignite as a fuel in view of its tendency to disintegrate on exposure to the air, the mining potential, production and transportation costs and the potential market. We recommend that limited underground exploration be carried out by the Coal Corporation, which controls the deposits, to determine their minability. It is understood that steps have already been taken in this direction.

The Powell Duffryn Technical Services Ltd., which carried out investigations in 1948, recommended chemical utilization of the lignites. We believe, however, that the very high capital cost of £ 12 million for the necessary plant, combined with the possible development of mineral oil resources, precludes such a project for the time being.

## B LEAD-ZINC

As far as is now known, the only lead-zinc deposits in Nigeria of potential economic importance are the so-called Abakaliki deposits. They occur in a mineralized belt extending from a point southwest of the town of Abakaliki in the Eastern Region, northeast across the Benue River to the vicinity of Zurak in Plateau Province of the Northern Region, a distance of almost 300 miles. The remains of ancient opencast mine workings are to be found scattered along this zone.

The most promising results so far produced by exploration are those obtained in the vicinity of Abakaliki, towards the southwestern extremity of the mineralized belt, where opencast workings may be traced for considerable distances. European companies have taken an active interest in this area and at least two of them—Gold and Base Metals, Ltd. and the old Russo-Asiatic Company—carried out some exploration in the 'twenties. This led to the formation, in 1947, of the Mines Development Syndicate (W.A.) Ltd., an associated company of Gold and Base Metals Ltd. This company and, later, an American mining group, the American Smelting & Refining Co.

(Asarco), spent considerable sums on exploration. Although the existence of good grade ore was established fairly conclusively in several prospects, the outlook was not considered sufficiently attractive for the scale of operations envisaged by the American interests. Asarco decided to discontinue the work at the end of 1952 and since then the properties have remained on a care and maintenance basis.

In our opinion, further exploration is definitely warranted, especially in the area investigated by Asarco. In view of the paucity of knowledge of underground conditions future operations should concentrate on underground exploration to establish the existence of the ore which was indicated by the drilling. Pumping plant and other facilities will be required to deal with the substantial quantities of water that were encountered by the Asarco exploration teams. The estimated cost of this underground work would be in the neighborhood of £ 150,000 and it would take from 2 to 2½ years to complete. The cost of extra plant and equipment (power and pumps), including standbys for all units, would be about £ 100,000.

We recommend, if private capital willing to finance the entire cost of further exploration cannot be found, that the government offer financial assistance on suitable terms. The federal government made provision in its 1954-55 Estimates for an amount of £ 350,000 for lead-zinc development. This amount will be more than ample to cover reasonable expenditure on further exploration. On the assumption that it will be possible to carry forward any amount not spent in 1954-55 the mission has not, in Table 5, made provision for additional outlays under this head for the period 1955-60. If the further exploratory activities we recommend should prove successful, it is likely that private capital will be interested in exploiting the lead-zinc deposits. If, nevertheless, private capital should still be reluctant to enter, the mission believes it would be advisable for the government itself to finance operations on a commercial scale. In that case sums additional to those projected would have to be appropriated. If the government were to undertake the project it should obtain experienced outside management.

#### C IRON ORES

It was not possible within the time at the mission's disposal to visit

all the known mineral occurrences, and much of the following information was obtained from the Geological Survey and other sources. The mission did, however, visit the two major iron ore deposits.

No deposits of high-grade iron ore have so far been discovered in Nigeria. As in many other countries, there are many deposits of oxidized ores; these are comparatively shallow and of medium to low grade. Selected portions of these have at various times been mined for small-scale production of iron; although workable under existing local conditions it is extremely doubtful that larger-scale exploitation with modern processes would be economical. Nigerian coal is of a non-coking variety which makes it unusable in blast furnaces.

However, processes for producing pig iron from low-grade iron and coal—without the use of coke—have been developed in Germany and elsewhere. One such is known as the Krupp-Renn process. Production of pig iron in Nigeria by a process of this kind may some day prove possible; at this time it is not likely to be economic.

There are two deposits which are worthy of consideration, both of which have been or are being investigated by the Geological Survey:

1. Agbaja deposit, in the Kabba Province of the Northern Region: this occurs on the top of the Agbaja Plateau, a steep-sided, flat-topped tableland of some 40 square miles. It is accessible by road (about 28 miles) from the town of Lokoja and the Niger flows past it within about  $\frac{1}{2}$  mile—and some 700 feet below it in elevation—at the nearest point.

In 1952-53 the Geological Survey carried out a program of diamond drilling over selected portions of the deposit, from which it was concluded that reserves in the three areas examined were of the order of 206 million tons averaging 45% iron.<sup>9</sup>

We believe that mining of the deposit by opencast methods would be possible, and costs should not prove high. The ideal transport, either for export or to the nearest source of fuel, would be via the Niger, open to navigation at this point for eight months of the year. The most suitable means of transporting the ore to the river would be by aerial ropeway—a distance of about  $\frac{1}{2}$  mile; the cost of such an installation would be in the neighborhood of £ 10,000. Total transport costs to U.K. ports, however, would probably be high. This,

<sup>9</sup> J. W. DuPreez and H. A. Jones, Geological Survey of Nigeria, Rep. No. 1076.

combined with the low average grade of the ore as mined makes economic export doubtful. However, it is suggested that the view of the British Iron and Steel Federation about imports of this ore into the United Kingdom be obtained.

Another possibility would be to smelt the ore in Nigeria, utilizing the Enugu coal or even perhaps the Asaba lignites.

2. Lateritic iron ore near Nsude village: the Geological Survey is carrying out an investigation of iron ore deposits occurring on a plateau about six miles to the west of Enugu in the Eastern Region. The ore is lateritic in character and contains a high percentage of sand; the investigation indicates that it will average some 33% Fe<sup>7</sup> but that the sand could be screened off to raise this to about 40% Fe. Reserves located amount to 49 million tons. The exploration is being continued, as it is thought that the deposit may be considerably more extensive than has so far been proved.

#### D MINERAL OILS

Bituminous sands and seepages of bitumen occur in the coastal area to the east of Lagos; in the early 1900's attempts were made to exploit the bitumen and some exploratory boreholes were drilled, but without success. Exploration for mineral oils is being carried out by the Shell-d'Arcy Petroleum Development Company of Nigeria, Ltd.<sup>8</sup> Work was begun in 1937 by a reconnaissance survey over the major portion of the sedimentary areas of the country. Exploration and prospecting licenses covering large areas of sediments in southern Nigeria were subsequently taken out. The war interrupted the work. Prospecting and intensive exploration were resumed in 1946. By the end of 1953, the presence of natural gas and oil was established by several test bores but the extent of reserves is still unknown. While the results of exploration are thus not conclusive, they appear to be highly encouraging.

<sup>7</sup> J. R. T. Hazell, Geological Survey of Nigeria, Rep. No. 5075.

<sup>8</sup> The control of this company lies half with the Royal Dutch Shell group and half with the Anglo-Iranian group.

## E OTHER MINERALS

*Structural and Building Materials*

Limestone deposits are to be found in most of the Nigerian provinces but cheap fuel with which to convert it into lime or cement is generally lacking.

Generally speaking, Nigerian limestones occur in comparatively thin beds unsuitable for quarrying. Suitable deposits have, however, been found near the village of Nkalagu in the Eastern Region—some 24 miles by road to the east of Enugu—and Igumale, situated in the Northern Region some 26 miles to the north of Nkalagu.

Investigation by the Geological Survey of the deposits near Nkalagu disclosed a series of limestone beds suitable for quarrying, alternating with shales, mudstones and subordinate sandstones; the available tonnage is estimated to exceed 10 million. The Igumale deposits are said to be equally suitable.

At the time of the mission's visit, plans for the establishment of a cement factory were being made. They are discussed in Technical Report No. 13.

Granite gneiss, a good building stone used in the construction of harbor works and wharfs, is quarried by the Public Works Department near Abeokuta. Other quarries in the same area, which belong to the government, are operated by a firm of contractors; they produce about 16,000 tons of stone a month, mostly for use in the Apapa Wharf construction project at Lagos. Crushed stone from these quarries is also used in road making, and as ballast by the railway.

*Salt*

Salt is a major deficiency of Nigeria; 86,000 tons had to be imported in 1953. It is occasionally produced from brine springs occurring particularly in the cretaceous rocks of the Benue valley. Expansion of production might be possible providing manufacturing costs can be kept low enough. It has been suggested that drilling for brine could be carried out with some promise of success in Benue Province of the Northern Region. This suggestion deserves consideration by the Geological Survey.

*Miscellaneous Minerals*

*Minerals for the Manufacture of Fertilizer* As far as is known, Nigeria is deficient in minerals for the manufacture of fertilizer. Potassium minerals are rare; occurrences of glauconite and potash so far discovered are of little economic significance. Phosphate rock, found in the Western Region, is being further investigated; results to date are not promising.

*Refractories* The only occurrence of possible economic significance is that of sillimanite, a mineral used in the making of high-grade porcelain such as that utilized by the electrical industry; this is to be found in schists in several parts of the Western Region, one occurrence of which, near Ibadan, is now being investigated by the Geological Survey.

*Ceramic Materials* Earthenware is manufactured throughout Nigeria from local clays. White clays are found in Abeokuta Province in the Western Region and at Lokoja and Jos in the Northern Region; they are too remote from cheap sources of fuel to permit commercial utilization.

Feldspar, used in pottery, enamelware, etc., is abundant in the Nigerian granites, but concentrations of economic size are rare.

*Radioactive Minerals* Albite-Riebeckite granites occurring on and near the Jos Plateau are known to contain radioactive elements (principally uranium oxide). They have been investigated by the Geological Survey; as far as is now known, they are of very low grade.

It is too early to say whether economic exploitation will be possible and the results of investigations now in progress will have to be awaited.

## IV GOVERNMENT AND THE MINING INDUSTRY

## A GOVERNMENT DEPARTMENTS

Three government departments are closely associated with development of the mineral resources of the country: the Survey Depart-

ment, the Geological Survey and the Mines Department. The Geological Survey is largely dependent on the Survey Department for accurate maps on which to record its data and it also works closely with the Mines Department.

#### *Survey Department*

The activities of this department are of fundamental importance to the country as a whole. An accurate knowledge of its natural resources is essential to the successful development of a country and accurate maps are required to record the extent and location of these resources.

A great deal of work has already been done in mapping Nigeria, but more is required and the tempo of the work will have to be stepped up; the lack of accurate maps is a great handicap and seriously impairs the work of other departments and of the minerals industry.

The present Inspector-General of Surveys is fully aware of this problem and has put forward proposals for expansion of the department, which are endorsed by the mission. Surveying is a subject over which the federal and regional governments have concurrent jurisdiction. When the Inspector-General's new program becomes effective (assumed to be in 1956-57), total annual recurrent expenditure by the federal and regional governments will be in the neighborhood of about £ 500,000 (including the cost of aerial surveys) while capital expenditure to put the program into effect will amount to £ 100,000.

Expansion will depend to a large extent on the number of trained surveyors available; trained personnel is in short supply and considerable difficulty may be encountered in recruiting the necessary staff.

The quickest method of mapping large areas with a reasonable degree of accuracy is by aerial photography. In Nigeria, significant steps have already been taken in this direction; somewhat more than half of the country has been photographed (about 220,000 square miles out of a total of 374,000 square miles), mostly by the Royal Air Force. The Survey Department is continuing the work, using a chartered plane, but persistent cloud cover over the South hampers progress. It is now planned to step up aerial surveys until the entire country has been photographed. Such surveys, however, are not complete in themselves and need to be followed up by a very considerable amount of ground survey work.

Table 3 shows present and proposed expenditure on surveys.

TABLE 3 Proposed Expenditure on Surveys

(Thousand £)

	Approved Estimates 1953-54		Pre- liminary Estimates 1954-55		Projections of Mission <sup>1</sup>										Total 1955-60	
	R	C	R	C	1955-56		1956-57		1957-58		1958-59		1959-60		R	C
					R	C	R	C	R	C	R	C	R	C		
Federal Government .....	94	<sup>2</sup>	110 <sup>3</sup>	3 <sup>3</sup>	140	15	170	15	175	—	180	—	185	—	850	30
Northern Region .....	104	—	111	1	130	10	160	10	164	—	168	—	172	—	794	20
Western Region .....	48	—	49	19	70	10	90	10	93	—	96	—	99	—	448	20
Eastern Region .....	34	—	37	—	47	10	57	10	59	—	61	—	63	—	287	20
Southern Cameroons .....	—	—	—	—	15	5	15	5	16	—	16	—	17	—	79	10
Total .....	280	<sup>2</sup>	307	23	402	50	492	50	507	—	521	—	536	—	2,458	100

<sup>1</sup> Estimates have been made by adding to 1953-54 figures the cost of the expansion in services recommended in a memorandum by the Inspector-General of Surveys given to the mission. It is assumed that the new services will not be in full operation until 1956-57. Thereafter 3% normal growth is allowed for. A small amount has been included for the establishment of a survey department in the Southern Cameroons not included in the Inspector-General's recommendations.

<sup>2</sup> Less than £ 500.

<sup>3</sup> Approved Estimates.

NOTE: R = Recurrent; C = Capital.

*Geological Survey*

The Geological Survey was formed after World War I when it succeeded the earlier Mineral Survey which had its headquarters in London. The Geological Survey has its headquarters in Kaduna in the Northern Region but it is and will remain a federal department. It has grown considerably since its inception and has well-equipped laboratories, a library and museum; new office buildings are being built to relieve the somewhat cramped facilities.

There are 30 senior technical positions, seven of which were vacant at the time of the mission's visit. It is extremely difficult to recruit geologists for work in Nigeria and the profession does not seem to hold much attraction for the African. One African is taking a degree in geology in London; when he qualifies he will fill one of the vacancies in the department. Five African geological assistants are receiving training in survey traversing.

Some of the main problems confronting the Geological Survey may be briefly outlined as follows:

- (a) Lack of large-scale topographical maps greatly retards the work; field geologists frequently have to make their own topographical surveys before they can proceed to the geological work.
- (b) Shortage of geologists causes essential routine geological mapping to be relegated to second place in favor of necessary investigations of specific mineral areas.
- (c) Senior geologists have to spend too much of their time in routine office work; additional clerical staff would free them for more field work.

The study of groundwater resources is a function of the Geological Survey. In view of the importance of the the subject, not only for mineral exploration but also for the provision of rural water supplies and the development of mixed farming in the North, work should be intensified; a proposal to expand the groundwater section is now under consideration in Nigeria, and we fully endorse it.

To enhance the usefulness of the Geological Survey we further recommend formation of a geophysical section and expansion of the existing drilling section. The former should be equipped to under-

take gravity and electrical resistivity surveys in connection with mineral exploration and groundwater work; specially trained staff, including one geophysicist, would have to be obtained either by recruitment or by sending present personnel overseas for training. The drilling section would be greatly strengthened by the purchase of at least two more drill rigs, one capable of drilling to, say, 750 feet and the other to 1,200 feet; at least two more drillers would be required.

The estimated cost of these proposals, over and above the present level of expenditure, is shown in Table 4. These amounts have been taken into account in projecting the expenditures of the Geological Survey (Table 5).

TABLE 4 Cost of Proposed Expansion of Geological Survey, 1955-60

*(Thousand £)*

	Recurrent Annual Cost	Capital Cost
<b>Groundwater Section</b>		
Personnel .....	4	6
Investigations .....	3	—
Total .....	7	6
<b>Geophysical Section</b>		
Personnel .....	10	16
Equipment .....	—	5
Investigations .....	5	—
Total .....	15	21
<b>Drilling Section</b>		
Personnel .....	4	6
Equipment .....	—	50
Investigations .....	5	—
Total .....	9	56

#### *Mines Department*

The Mines Department has its headquarters at Jos in the Northern Region but is and will remain a federal department; it maintains offices at the three regional capitals, each headed by either a principal or senior inspector. There are several substations in the Northern Region and one in the Western Region, adequately covering all areas of mining activity.

The senior staff consisted of 15 men at the time of the mission's visit, including the Chief Inspector of Mines. If all vacancies were filled, total strength would be 24. In addition there is a junior technical staff of 79.

Most of the senior men of the department are qualified mining engineers, yet much of their time must be devoted to office work connected with applications for licenses, etc., for which technical qualifications are not necessary. It is recommended, therefore, that two wardens of mines be recruited for senior office work so that mining men can be released for technical work.

It would then be possible to form an active mining section, under a senior inspector of mines. This section should carry out exploratory mining operations. Mining equipment, including a portable air compressor, rock-drills, etc., would have to be purchased. Such work by the government would be justified in the case of mineral deposits about which insufficient information is available to evaluate their economic attractiveness. Exploration should have the aim not only of establishing the character and extent of deposits, but also the technical problems involved in their exploitation.

It is our opinion, however, that normally responsibility for the exploration and opening up of a mining field should rest with the mining industry itself.

The estimated annual cost of the proposed mines department expansion, over and above present expenditures, would be some £ 4,500 for personnel and £ 5,000 for investigations; capital expenditure would be £ 19,000.

## B MINING ROYALTIES AND TAXATION

All mineral rights in Nigeria are vested in the Crown. Mineral royalties, as provided in the revised constitution, will be collected by the federal government and allocated to the region from which the mineral was extracted. The Northern Region, where all the tin and columbite is produced, will receive much the largest share. Government revenue from mining royalties and other fees in 1952-53 amounted to nearly £ 1.5 million.

Mining profits are subject to income tax, which for companies amounts to 9/- in the £.

## C NIGERIAN CHAMBER OF MINES

The Nigerian Chamber of Mines was set up to provide representation for the mining industry; its membership includes all the mining companies and the majority of the smaller operators. African operators have their own association, the Association of African Mining Proprietors and Managers of Nigeria and The Southern Cameroons, which usually voices its opinions through the Chamber.

We think that the Chamber has a very useful function to fulfill but suggest that more frequent contacts with interested government officials would be beneficial. Solution of the many and varied problems of the mining industry would undoubtedly be made easier by such opportunities for frank discussion. For this reason, as well as for considerations of administrative efficiency, the mission thinks the transfer of the office of the Chief Inspector of Mines to Lagos, which has from time to time been suggested, would be inadvisable.

Among matters now under consideration by the representatives of the mining industry are the following:

(a) Establishment of training facilities in the mining area: As an alternative to opening a mining school, which has been recommended by the Chamber of Mines and the Association of African Mining Proprietors, the Mines Department has suggested an extension of the facilities of its own training school to provide courses for trainees from outside the Department; some companies have signified their willingness to offer scholarships for trainees. This arrangement would go some way toward filling the need for a mining school in the area. We believe that the government should give sympathetic consideration to the need for mining education.

(b) The establishment by the government of an ore dressing plant, especially for the use of the smaller producers: Such a plant is needed to convert rough concentrates from sluice boxes to shipping grades. The equipment required is too costly for small operators to purchase. The proposal is worthy of careful consideration by the government.

(c) A change in the system of compensation to farmers occupying land leased for mining operations: The present system of paying a comparatively large single compensation is in some ways unsatis-

TABLE 5 Proposed Federal Expenditure on Minerals and Mining

(Thousand £)

	Approved Estimates				Projections of Mission <sup>1</sup>								Total			
	1953-54		1954-55		1955-56		1956-57		1957-58		1958-59		1959-60		1955-60	
	R	C	R	C	R	C	R	C	R	C	R	C	R	C	R	C
Mines Department .....	80	—	77	10	85	10	91	9	94	—	96	—	99	—	465	19
Geological Survey .....	75	—	77	—	105	45	120	40	122	—	125	—	130	—	602	85
Capital for Coal Corp. ....	—	160	—	135	—	77	—	77	—	77	—	77	—	77	—	385
Lead-zinc exploration .....	—	—	—	350	—	—	—	—	—	—	—	—	—	—	—	—
Coal and lignite survey .....	—	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Proving of coal reserves .....	—	101	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Miscellaneous .....	13	—	15	—	15	—	16	—	16	—	17	—	17	—	81	—
Total .....	168	266	169	495	205	132	227	126	232	77	238	77	246	77	1,148	489

<sup>1</sup> Projections have been made by adding to 1953-54 Estimates the cost of the recommended expansion in services. It is assumed that the new services will not be in full operation until 1956-57. Thereafter 3% normal growth is allowed for.

NOTE: R = Recurrent; C = Capital.

factory. Occupants of the land frequently spend their compensation in a short time and become dissatisfied in subsequent years when they derive no benefit from their land. Compensation spread over a period of years might be preferable to the present system.

(d) Problems relating to mines land reclamation:<sup>9</sup> After cessation of mining operations the lessee is obliged to fill in part of the excavation; the government completes the work and restores the land to a condition which permits resumption of farming. Slow progress in this work is causing complaints.

The approximate cost to the federal government of the proposals made in this report (excluding expenditure on the Survey) is indicated in Table 5. The major part of proposed capital expenditure of around £ 500,000 would be required for the Nigerian Coal Corporation. Recurrent expenditure, rising from some £ 200,000 in 1955-56 to £ 250,000 in 1959-60, allows for the proposed expansion of the Geological Survey and the Mines Department.

<sup>9</sup> See Technical Report No. 10 for projected expenditure on mines land reclamation.

1 INTRODUCTION

Generation of electric power for distribution dates from 1898 when the Lagos Undertaking was commissioned by government. It was operated by the Public Works Department, which continued to operate this and other government installations until 1946, when a separate department, the Nigerian Government Electricity Undertakings, was established.

In 1951 the installations were transferred to the Electricity Corporation of Nigeria (ECN), a statutory corporation. By 1952 ECN had taken over the running of four undertakings formerly operated by native authorities, pending settlement of purchase terms.

Private capital is represented by the Nigerian Electricity Supply Corporation, Ltd. (Nesco), a British company which supplies power to the mining enterprises in the Plateau area. Nesco also sells power in bulk to ECN for distribution in that area.

Finally, there are a number of industrial concerns which generate power for their own needs. The largest of these, the African Timber and Plywood Company, also sells power in bulk to ECN for distribution in Sapele. The hydroelectric generating facilities of the Cameroons Development Corporation, a statutory corporation which until recently sold bulk power to ECN for distribution in the Cameroons, have been leased to ECN.

Table 1 shows the amount of power generated by ECN, Nesco and industrial undertakings, and the exchanges among them for the year ended March 31, 1953.

Although generation of power has doubled since 1948 and quadrupled since 1941, it is at a very low level even for a country in an early stage of development. Per capita generation of five kWh com-

TABLE 1 Power Generated and Exchanged During 1952-53

*(Million kWh)*

	Generated	Purchased (+) or Sold (-)	Total Available
ECN .....	89.1	+6	95.1
Nesco .....	66.6	-5.2	61.4
Industrial Undertakings .....	9.5	-0.8 <sup>1</sup>	8.7
Total .....	165.2	—	165.2

<sup>1</sup> Sapele and Cameroons.

SOURCE: Digest of Statistics (Lagos) and ECN.

pares with 16 in India, 29 in Syria and 57 in Brazil.<sup>1</sup> It is to be noted also that 40% of all power is generated in the Plateau area where nearly all of it is used in mining operations.

## II ELECTRICITY CORPORATION OF NIGERIA

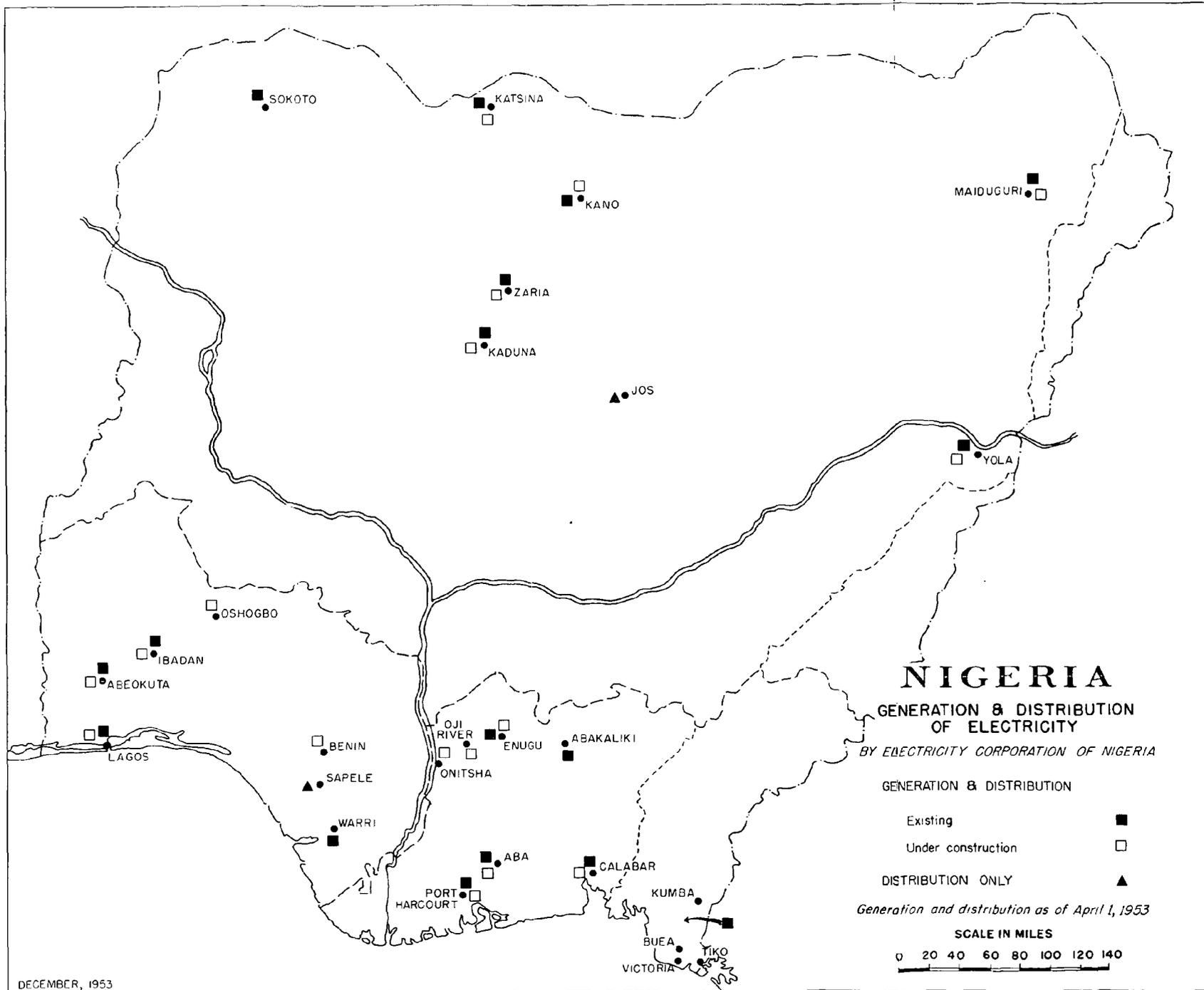
### *Establishment and Functions*

The Ordinance creating ECN gave it the following functions: <sup>2</sup>

- “(a) To manage and work the electricity undertakings transferred to the Corporation by virtue of the provisions of this Ordinance and such other electricity undertakings as may be acquired by the Corporation under the provisions of this Ordinance;
- (b) To establish, manage and work such electricity undertakings as the Corporation may deem it expedient to establish in the public interest;
- (c) To secure the supply of electricity at reasonable prices;
- (d) To advise the Governor on all matters relating to the generation, transmission, distribution and use of electricity.”

The power program of Nigeria is thus to be carried out by ECN, and ECN will advise on the formulation of that program.

<sup>1</sup> United Nations: Statistical Yearbook, 1953. Figures relate to 1952.<sup>2</sup> Electricity Corporation of Nigeria Ordinance, No. 15 of 1950.





There are 10 members of the Corporation, six of whom, including the Chairman, are appointed by the Governor in Council, and four by the Electricity Advisory Council. The Electricity Advisory Council, the majority of whose members are appointed by the regional legislatures, represents consumers of electricity and the general public, and advises ECN, among other things, on the extension of ECN's services and its charges.

The Corporation has recently been much criticized by consumers who complain of poor service, by potential consumers who have not yet been supplied, and by persons who deplore its large and continuing operating deficits. For this and other reasons the Corporation, in the spring of 1954, decided to request a review of its affairs by an outside expert, to cover the following:

1. the broad policy adopted by the Corporation;
2. the provision of capital, particularly the method and timing of its raising;
3. the relationship between costs and tariffs and the machinery whereby the Corporation is able to make changes in its tariffs;
4. the establishment and disposition thereof; and
5. the making of recommendations on these and any other relevant matters.

The mission believes that such a review will be useful. Our own recommendations, particularly those which relate to ECN's operating problems, are based on observations which in the time available could not be detailed; the suggestions are in no way intended to prejudice the findings of the review about to take place.

### *Operations*

ECN took over 16 government undertakings on April 1, 1951. Eleven of these were completed generating and distributing installations, three (Aba, Abakaliki and Sokoto) were generating stations and distribution networks under construction (since completed), while two, at Sapele and on the Plateau, consisted of distribution facilities only. A year later, ECN took over undertakings at Abeokuta, Ibadan, Kano and Katsina, previously owned by native authorities. Map 9

TABLE 2 Power Generation and Distribution  
by ECN Installations for 1952-53

Installation	Installed Capacity (kW)	Peak Load (kW)	Units Generated or Purchased (kWh)	Units Sold (kWh)	Number of Consumers
<i>Lagos</i> .....	15,414	9,900	52,083,800	42,190,823	17,810
<i>Western Region</i>					
Ibadan .....	4,515	1,260	6,258,564	5,041,053	3,435
Abeokuta .....	600	365	2,158,790	1,708,149	2,324
Warri .....	330	198	700,502	612,898	564
Sapele .....	—	175	673,881 <sup>1</sup>	590,560	498
<i>Eastern Region</i>					
Enugu .....	3,000	1,980	10,536,210	9,611,303	4,057
Port Harcourt..	1,084	650	3,108,215	2,753,481	2,288
Calabar .....	570	220	1,072,231	862,870	920
Aba .....	230	135	111,518	88,370	305
Abakaliki .....	50	16	8,965	8,443	46
<i>Northern Region</i>					
Kano .....	3,510	1,660	7,358,325	4,720,593	3,888
Kaduna .....	753	567	2,967,983	2,326,953	1,594
Zaria .....	1,438	400	1,708,428	1,420,933	1,211
Katsina .....	100	58	105,890	97,835	305
Maiduguri .....	210	85	171,423	143,617	343
Sokoto .....	150	75	129,175	98,711	172
Yola .....	75	41	204,131	137,648	199
Plateau (Jos)..	—	1,007	5,182,568 <sup>1</sup>	3,988,486	3,381
<i>Southern Cameroons</i>					
Victoria .....	1,470	380	{ 169,198 <sup>1</sup> 432,630 <sup>2</sup>	563,874	319
Total ...	33,499	19,172	95,142,427	76,966,600	43,659

<sup>1</sup> Purchased by ECN.<sup>2</sup> Generated by ECN.

SOURCE: ECN Annual Report, 1952-53.

shows the location of ECN's installations in operation and under construction, and indicates their wide dispersion.

Table 2 gives the chief characteristics and operating statistics of each of ECN's installations. As of March 31, 1953 total installed capacity was 33,499 kW, of which 15,414 were at Lagos; the second largest plant was at Ibadan (4,515 kW); next came Kano (3,510 kW),

Enugu (3,000 kW), Victoria (1,470 kW), Zaria (1,438 kW), and Port Harcourt (1,084 kW).<sup>3</sup> Other installations ranged in size from 753 kW down to 50 kW. Not even the plant at Lagos, which accounts for almost half of total generating capacity and more than half of sales, can be termed large by standards of developed countries. Table 2 also shows peak load (maximum demand for electricity at any moment), generation (production of electricity), sales and number of consumers.

Power losses (i.e. the difference between units generated and units sold) for ECN operations as a whole amounted in 1952-53 to about 19% of total power generated and purchased.<sup>4</sup> In part, high losses are the result of the low density of load (demand) per unit of area prevailing in Nigeria as compared with density of load in more developed countries. They are also the result of the overloading of low voltage distribution systems and of illegal "tapping" of distribution lines. To some extent, however, they are also likely to be due to the flat rate tariff. This was discontinued effective April 1, 1953. It is to be expected that the practice of metering every consumer will lead to a reduction in apparent distribution losses.

The small capacity of most of the installations and the generally great distances between them have made it uneconomical to interconnect them, and each is therefore being run independently. This means that each plant must have its own stand-by equipment, to avoid power cuts in case of breakdowns and during the periodic overhaul of generating equipment. The situation in this respect is made even more difficult by the fact that demand does not vary appreciably during the year. To provide stand-by capacity as economically as possible it is necessary to install several sets of generating equipment of such capacity as will assure maintenance of supply if the largest set should be out of operation. This policy has been followed in the installations taken over by ECN and the present situation is in general satisfactory, as shown by the figures in Table 3.

A favorable element in ECN's operations is the generally high load factor (i.e. the ratio between the average demand over a given period

<sup>3</sup> These capacities exceed the gross available capacity, taking all factors into consideration, e.g., the gross available capacity at Enugu is only 2,500 kW, owing to boiler limitations.

<sup>4</sup> Preliminary figures for 1953-54 show no improvement.

TABLE 3 Maximum Capacity Available with Largest Set Out of Operation

<i>(kW)</i>				
Installation	Installed Capacity	Largest Set	Remaining Capacity	Peak Load
Lagos .....	15,414	5,000	10,414	9,900
Ibadan .....	4,515	1,500	3,015	1,260
Kano .....	3,510	1,500	2,010	1,660
Enugu .....	3,000	1,000	2,000	1,980
Victoria .....	1,470	750	720	380
Zaria .....	1,438	500	938	400
Port Harcourt .....	1,084	500	584	650

Data supplied by ECN, as of March 31, 1953.

and the maximum demand during that period). The average load factor for ECN as a whole is about 60%.

ECN's sales of electricity by class of consumer are shown in Table 4.

The 1951-52 figures in Table 4 do not include consumption of power generated by the four native authority undertakings acquired by ECN

TABLE 4 Electricity Consumption by Class of Consumer

<i>(Million kWh)</i>						
Class	1951-52		1952-53		1953-54 <sup>1</sup>	
		%		%		%
Domestic and Residential (incl. flat rate) .....	23.1	42.9	34.2	44.4	48.4	50.3
Commercial .....	6.8	12.6	9.9	12.9	12.2	12.7
Power and Bulk Supplies .....	21.5	39.9	29.7	38.6	31.8	33.1
Public Lighting .....	.8	1.5	1.2	1.6	1.7	1.7
Other .....	1.7	3.1	2.0	2.5	2.1	2.2
Total .....	53.9	100.0	77.0	100.0	96.2	100.0

<sup>1</sup> Preliminary estimates.

SOURCE: ECN.

on April 1, 1952. This consumption may be roughly estimated at between 8 million and 10 million kWh.

The sharp rise in domestic and residential use indicates the large

unsatisfied demand. The increase in commercial consumption has kept pace with the over-all increase in consumption, whereas it appears that industrial consumption (power and bulk supplies), although increasing in absolute terms, now accounts for a smaller percentage of total consumption than formerly.

The generating stations at Lagos, Kano and Ibadan are equipped with coal-burning steam turbine sets, of fair efficiency in the light of local conditions, with small diesel sets for stand-by. The station at Enugu is equipped with three very old steam reciprocating plants, to be retained as a standby to one of the 5,000 kW stations now under construction at Oji River. A few of the other stations have one or two steam sets, some of them old and inefficient. The smallest stations work entirely on diesel sets. The only hydroelectric stations operated by ECN are in the Southern Cameroons.

The efficiency of some of the steam generating plants is very low. While in Lagos coal consumption is estimated at two lbs. per unit generated, at Enugu, for example, it is twice as high.<sup>5</sup> This is the result both of the age and the small size of some of the plants. In some cases high fuel consumption is also due to lack of proper combustion control.

High voltage distribution systems are being strengthened, but, as already stated, low voltage systems are often overloaded, as for example at Lagos. This results in heavy distribution losses and poor voltage regulation. In some places, 20% variation in voltage is not infrequent, which greatly inconveniences consumers.

### *Organization and Staff*

The Corporation maintains a substantial headquarters staff at Lagos and regional offices at Lagos, Enugu and Kaduna, in addition to the offices serving each installation. A small office in London is maintained for ordering equipment and recruiting overseas staff.

The relations between headquarters, regional and local offices are not rigidly defined. Considerable economies are effected by centralized planning, design, purchase and supervision of new construction

<sup>5</sup> Local coal has a heat value of 11,680 B.T.U. per lb. (*Handbook of Commerce and Industries in Nigeria*, Lagos, 1952). ECN states that the average heat value of the coal it receives is only 9,200 B.T.U. per lb.

by headquarters staff. On the operational side, however, the Corporation's policy is to devolve responsibility upon local managers and engineers. The mission believes this policy to be wise, if mutual understanding and co-operation are to be achieved in so highly subdivided an organization. The role of the regional offices is not clear, and the mission understands it is to be re-examined in the near future.

On April 1, 1953, out of 933 salaried staff (roughly half in administration and half in technical work), 186 were Europeans and the balance Nigerians; in addition, 3,027 Nigerians were on a daily-paid basis. The Corporation states that great difficulty is experienced in recruiting certain classes of professional staff, in particular electrical engineers. There has also been an extremely acute shortage of accountants and the accounting organization has not been satisfactory. In 1953, the Corporation had an effective strength of only 38% of its establishment of accountants and only 20% of its senior accountants.<sup>6</sup> So critical was the position that the Corporation's consulting firm of accountants counseled against preparing advance estimates for at least two years, to enable the staff to concentrate on putting current records in order.

Since only a very few Nigerians possess the skills ECN most urgently needs, every effort must be made to step up the recruitment of overseas personnel. We suggest that the Corporation have access to the facilities of the Nigerian recruitment office in London whose establishment we recommend in Chapter 4. ECN has begun a program of scholarships for engineering studies, and has arranged for special courses at Yaba Technical Institute for training junior supervisory staff. It operates its own cable jointers' school at Lagos, and a similar course for overhead linesmen will be started at Yaba Trade Centre. The mission believes these scholarships and training programs to be extremely valuable.

### *Financial Situation*

*Deficit* Table 5 summarizes the financial results of ECN's operations in 1951-52 and 1952-53, and gives revised estimates for 1953-54 and

<sup>6</sup> The mission has been informed that since its visit most of the vacancies have been filled.

preliminary estimates for 1954-55. In the first year of operations, the Corporation showed a loss of £ 84,488. In the following year the deficit rose to £ 262,810, half of which (£ 129,849) was attributable to the four native authority undertakings taken over at the beginning of the year. A higher schedule of rates was introduced at the beginning of 1953-54. While this had the effect of increasing revenues, expenditure increased almost as much, and the revised estimate of the deficit in 1953-54 is £ 254,000. According to preliminary estimates, ECN hopes to reduce it to £ 200,000 in 1954-55.

*Costs* ECN's average cost of generation, purchase and distribution (including local administration and depreciation of buildings and equipment used for generation and distribution) was 2.65d. per kWh sold in 1951-52 and 3.35d. in 1952-53; it is estimated at 3.21d. in 1953-54 and 3.14d. in 1954-55. This does not include expenditure of the regional, headquarters and London offices, interest on government loans or "other" expenditure. A part of these overheads is allocated to capital account during the construction period of new works. The part charged to current revenue amounted to 0.86d. per unit in 1951-52, 0.74d. in 1952-53 and 0.87d. (estimated) in 1953-54.

For the four largest installations, costs in pence per kWh sold were as follows:

	1951-52	1952-53
Lagos .....	2.38	2.50
Enugu .....	1.82	2.22
Kano .....	n.a.	5.20
Ibadan .....	n.a.	4.48

This illustrates the wide variation in costs among different towns. Costs at very small stations are even higher than at Kano and Ibadan. The variation is due mainly to differences in efficiency of the generating plants and to differences in the price of fuel in various parts of Nigeria.

A number of factors account for the high cost of Nigerian power:

1. Cost of fuel accounted in 1952-53 for £ 463,000 out of total generating expenses of £ 648,000. At the end of that year, coal cost 37/3d. per ton at Enugu, where coal is mined, 80/2d. in Kano,

TABLE 5 Financial Results of ECN

	Actual 1951-52	Actual 1952-53	Revised Estimates 1953-54	Estimate 1954-55
<i>Income</i>				
Operating and Miscellaneous .....	£ 704,131	£ 1,008,007	£ 1,292,250	£ 1,508,588
Units Sold .....	53,873,200 kWh	76,966,610 kWh	91,000,000 kWh	107,846,000 kWh
Operating Revenue per Unit Sold ....	2.76d.	2.80d.	3.14d.	3.22d.
<i>Expenditure</i>				
Expenditures at undertakings:				
Generation .....	£ 354,501	£ 648,344	n.a.	£ 879,200
Purchase .....	22,223	27,138	n.a.	39,500
Distribution .....	60,394	103,995	n.a.	133,795
Administration .....	64,269	122,868	n.a.	146,895
Sub-total .....	501,387	902,345	1,047,000	1,199,390
Transport and travelling .....	16,322	22,458	33,000	37,450
Depreciation .....	77,530	108,735	134,650	173,450
Total at Undertakings .....	£ 595,239	£ 1,033,538	£ 1,214,650	£ 1,410,290
Cost per Unit Sold .....	2.652d.	3.353d.	3.207d.	3.138d.
Headquarters, London Office, and Other:				
Regional Offices .....	12,535	38,771	388,000	75,062
HQ. and London Office .....	173,703	198,386		
Less allocation to capital .....	-88,500	-94,000	-135,000	-197,146
Depreciation at HQ. ....	97,738	143,157	252,500	226,426
Interest <sup>1</sup> .....	17,480	18,776	30,100	37,370
Interest <sup>1</sup> .....	27,000	57,493	27,000	27,000
Other .....	51,162	17,853	22,000	8,000
Total, Headquarters, London, etc..	193,380	237,279	331,600	298,796
Grand Total .....	£ 788,619	£ 1,270,817	£ 1,546,250	£ 1,709,086

<sup>1</sup> After deduction of interest capitalized. SOURCE: ECN Annual Reports and Estimates.

84/8d. in Lagos and 96/6d. in Ibadan. The cost of diesel oil per gallon varied from 1/6.5d. in Lagos to just over 2/5d. in Kano and higher in some of the remote areas of the North. While the price of fuel is beyond ECN's control,<sup>7</sup> we believe that economies in its consumption are possible. To some extent this will occur with the introduction of larger and more efficient generating units, such as those now being installed at Lagos, Oji River and Kano. We recommend that combustion control in steam stations be improved.

2. A main factor in high distribution costs is the low density of building, especially in residential areas. Power losses due to inadequate distribution systems have already been referred to. We recommend that distribution systems be strengthened wherever necessary to maintain voltage and reduce losses.

3. Personnel costs are high because of the necessity of employing a large number of European staff. We recommend the investigation of the use of automatic controls at larger plants in order to ascertain their suitability for use in the climatic conditions of Nigeria. Such systems reduce the number of supervisory staff required; though a higher degree of technical skill and specialization of supervisors would be necessary, total cost should be lower.

In view of its deficit, as well as its obligation to provide power as economically as possible, ECN must make every effort to reduce its costs. The survey of the Corporation's affairs about to be made should shed light on the opportunities for accomplishing this in addition to those mentioned above. Cost analyses will be handicapped, however, as long as the accounting staff is not able to spare the time from routine duties to prepare the required statistical breakdowns of expenditure.

*Rates* Income in 1952-53 was only 2.8d. per unit sold, which did not pay for expenditure at installations, much less for overheads. Even the increased rates introduced early in 1953 brought average income per unit sold up to only 3.14d., a figure still insufficient to balance generation and distribution expenses. Operations were conducted at a loss everywhere but at Lagos, and at Sapele and the Plateau where ECN does not have its own generating plant.

<sup>7</sup> In Technical Report No. 14 we urge the adoption of measures to arrive at a reduction in the price of Nigerian coal.

Nigerian power rates are not high, considering the stage of development the country has reached and the fact that the circumstances under which power is generated and distributed are inherently expensive. In Table 6 typical rates in Lagos are compared with rates in some other countries.

TABLE 6 Comparative Electric Power Rates

*(pence per kWh)*

	Residential		Industrial
	15 kWh/month	100 kWh/month	30 kW 6000 kWh/month
Lagos .....	5.60	4.10 <sup>1</sup>	2.3 <sup>2</sup> -3.7 <sup>3</sup>
San Juan, Puerto Rico .....	3.57	4.29	n.a.
Managua, Nicaragua .....	9.18	4.89	4.29 <sup>4</sup>
State of Bombay, India .....	9.60	4.59	2.47
Colombo, Ceylon .....	9.59	2.70	2.16
United States: average of cities over 50,000 .....	4.42 <sup>5</sup>	3.17	2.26

<sup>1</sup> For premises of an area of 1,500 sq. feet; for an area of 2,000 sq. feet the rate is 4.60d.

<sup>2</sup> Maximum demand off-peak hours.

<sup>3</sup> Maximum demand peak hours.

<sup>4</sup> Approximate.

<sup>5</sup> Rate for consumption of 25 kWh/month.

Lagos rates are low in comparison to those in many cities where operating conditions are similar. They are not much above those in countries like the United States, where conditions are very much more favorable to economic operation. In order that ECN's accounts may be balanced, and the present drain on the government budget halted,<sup>8</sup> we recommend that ECN again increase its rates. However, such an increase should in no way be construed as cancelling the responsibility of ECN's management to reduce costs.

*Financial Structure* At present all ECN's capital,<sup>9</sup> both that representing the value of its assets at the time of establishment and funds

<sup>8</sup> The government grant in respect of noneconomic operation, at present £ 30,000 per year, paid in respect of very small undertakings whose main customers are government officials, should be continued. It is not fair to ECN to make it absorb the losses of these undertakings.

<sup>9</sup> Except for the so-called capital reserve created at the time of ECN's establishment through undervaluation of the assets transferred to ECN.

subsequently provided for expansion, is represented by fixed-interest-bearing loans from the Nigerian government. We have referred in Chapter 4 to the disadvantages of this form of capital structure. In anticipation of the time when ECN will wish to borrow in the market, we recommend that the Corporation's capital structure be reorganized to give it a substantial permanent capital fund.

### III NIGERIAN ELECTRICITY SUPPLY CORPORATION, LTD.

The Nigerian Electricity Supply Corporation, Ltd. (Nesco) is a private power company supplying electricity to the mining area on the Plateau. Nesco serves the mines directly and, as stated above, also sells power in bulk to ECN for distribution to other users.

Power is generated in three hydroelectric stations, with a total installed capacity of 18,410 kVa, and is distributed in bulk at 3.3 kV or 2.2 kV over an area of about 600 square miles to the various mines and to ECN. Peak load is at present about 12,000 kW, and during the year ended February 28, 1953 sales amounted to 59,503,037 kWh with a load factor of about 60%. Income from power sales for that year was £ 274,782, an average of 1.1d. per kWh sold.

Due to the widely different conditions under which ECN and Nesco operate, the two institutions are not comparable. The availability of suitable hydroelectric sites not far from consumption centers is a most favorable condition for low generation and transmission costs, and the comparatively high concentration of load in the mining area and the delivery of power in bulk to a very small number of consumers have a great influence in keeping Nesco's distribution costs low. ECN operates under conditions which result in higher costs.

Nesco's operations are conducted with a remarkably small number of European supervisors, 14 in all for an establishment of about 500 Nigerians. The operational staff, including the superintendents in the power stations, are all Africans, trained by experience on Nesco installations. In part, the limited size of the supervisory staff is made possible by the concentration of activities in a small area.

The growth of demand in the area served by Nesco will depend mainly on the development of the mining industry. No serious techni-

cal problems are foreseen in connection with an increase in generating capacity, and the sound financial position of Nesco should enable it to raise the necessary capital without difficulty.

#### IV FUTURE ELECTRIC POWER SUPPLIES

##### *General Policy for Power Development*

Any discussion of Nigeria's future power needs must begin with the frank admission that for a long time to come it will be impossible to supply electricity to all those who desire it. Since 1936, power generation in Lagos, for example, has increased more than sevenfold, and in Kano more than sixfold, and still there is a backlog of demand in these cities. A similar situation exists in many other localities. In addition there are the many cities and villages which are not now supplied with electricity at all. Much of this demand would be for public and residential lighting but as industrial and general development progresses there will be added an increasing demand for power for commercial and industrial purposes. The availability of electric power, in turn, is a condition for the creation or expansion of small commercial and industrial establishments.

As stated earlier, per capita generation in Nigeria is among the lowest in the world. At present prices, existing generating and distribution facilities would cost about £ 7 million. To increase the level of per capita consumption to, say, the 1952 level of consumption of Brazil—a country still in an underdeveloped stage—would require an investment of at least £ 70 million.

These figures clearly demonstrate the need for a selective and carefully considered policy in the expansion of electric power in Nigeria. The mission believes that ECN should concentrate on supplying the power needs of small industrial and commercial consumers in areas already served. Larger industrial undertakings may at the present stage of ECN's development find it more advantageous to generate their own power. Building of plants in towns not now served should be postponed, for with ECN's financial and staffing problems it would be unwise to disperse efforts among new and financially uncertain ventures.

*Growth of Demand in Areas Now Served*

The general outlook for most ECN installations is for a substantial increase in load during the next five years. Lagos and Kano have a backlog of demand at present and will play leading parts in future economic development. Onitsha, an important and expanding commercial center, is only now being provided with electricity, while the demand of Ibadan, the capital of the Western Region and the largest city in Nigeria, with a population of half a million, is rapidly increasing.

The growth of power generation since 1936 in all plants now operated by ECN, and in Lagos and Kano separately, is shown in Figure 2. We anticipate that in the aggregate the demand for power in centers now served will increase at a rate of a little more than 15% per annum in the next five years. This indeed has been the trend over the last 15 years, and the mission believes it is a reasonable estimate for the future, given the extremely low level of present-day power production and the existence of a backlog of demand in some towns.

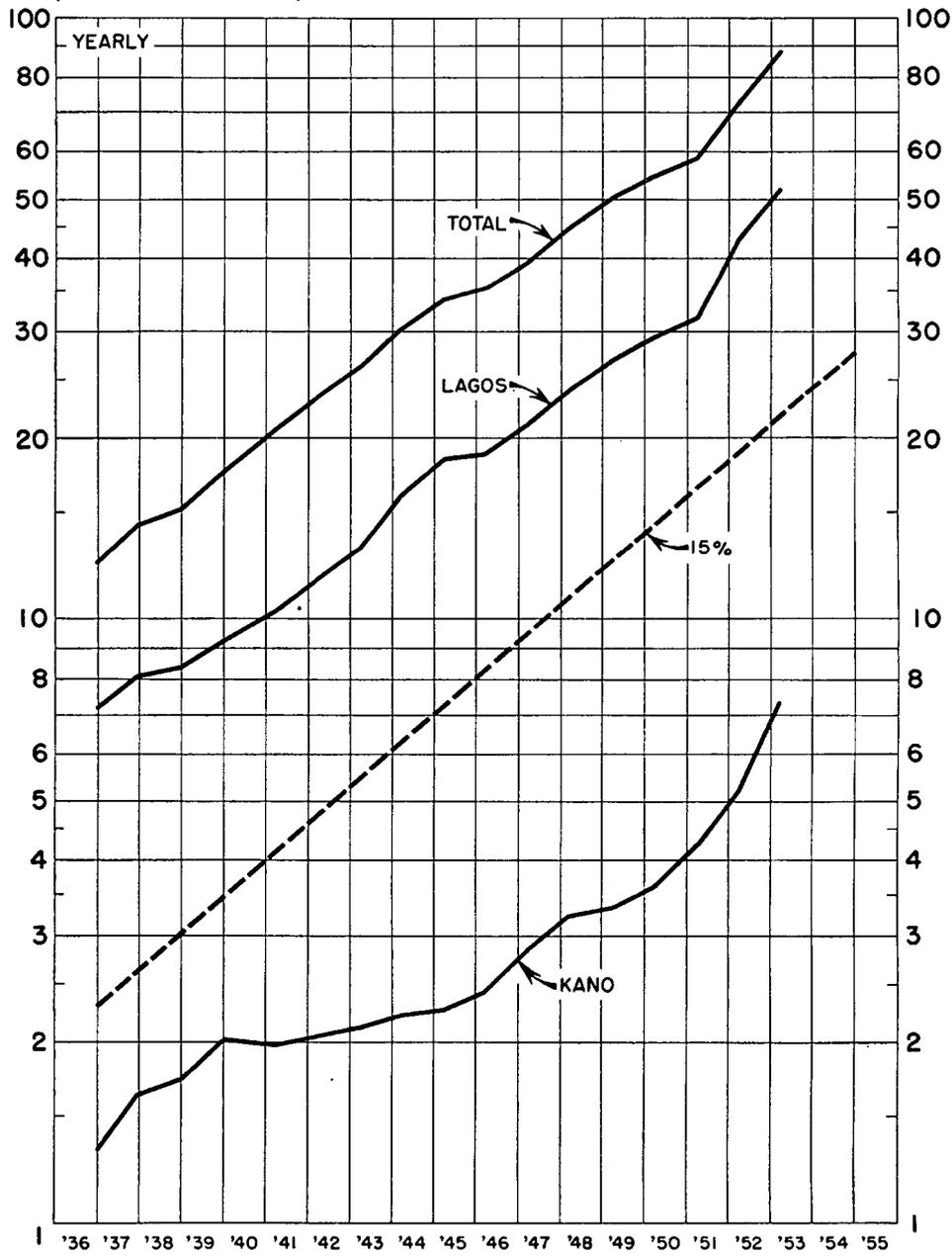
The mission has estimated the rate of growth of power demand at various installations, taking account of variations among particular towns in the backlog of demand and in other conditions. Table 7 shows our estimates of peak load in 1954, 1960 and 1964.

TABLE 7 Estimate of Peak Load Increases for ECN Undertakings

Undertaking	Peak Load 1000 kW			Average Increase per Annum	
	1954	1960	1964	1954-1960	1954-1964
Lagos .....	11.0	27.5	48.5	% 16.5	% 16
Kano .....	1.5	4.6	7.3	20	17
Ibadan .....	1.3	5.0	9.2	25	21.5
Enugu .....	2.0	3.5	5.2	10	10
Onitsha .....	0.3	1.1	2.1	24	21.5
Oshogbo .....	0.2	1.6	3.1	41	32
Aba .....	0.2	0.7	1.1	23	19
Maiduguri .....	0.1	0.6	1.1	35	27
Plateau .....	1.1	2.5	4.0	15	14
Other Undertakings .....	3.5	6.2	9.2	10	10
Total ECN .....	21.2	53.3	90.8	16.5	16

# NIGERIA: POWER GENERATION IN UNDERTAKINGS NOW OPERATED BY ECN

(MILLIONS OF KWH)



*Demand in Areas Not Now Served*

It is impossible to estimate the demand in areas not now served by ECN. Applications for supply have been made by Ijebu-Ode, Ondo, Ilorin, Lokoja, Keffi and Gusau but ECN has not been able to undertake it. It is to be expected that similar situations will arise in the future.

The mission agrees with the present policy of not supplying new areas for the time being. Even existing installations are suffering from a personnel shortage. Until present installations can be made to operate efficiently and economically, it would be unwise to scatter staff and capital among new plants, the financial soundness of which is at best uncertain. ECN has explored with some communities the possibility of joint electricity undertakings, ECN providing plant, equipment and technical staff and the community providing a power station, buildings, offices, stores, housing and construction labor. While such schemes would undoubtedly result in lower capital costs for ECN, they would still require technical and managerial staff. In this respect they are open to the same objections as are new installations wholly owned by ECN. The mission does not therefore favor these schemes at present.

*Power for Industry*

The growth of small and medium-sized industries and shops in Nigeria will be facilitated by a gradual expansion of ECN's generating plant in the principal towns. However, experience in other underdeveloped countries indicates that large, capital-intensive industry will develop, if at all, independently of the public supply of power. This is so because for such industries the cost of electric generating equipment will almost always represent only a small addition to total capital outlay. When, as in Nigeria, public supplies are subject to breakdown and variation in voltage, an industry relying on the public supply must frequently maintain stand-by generating equipment. The mission believes therefore that it would be inadvisable for ECN to plan an expansion of power supplies which takes into account the demands of large potential industrial consumers.

A change in the regulations governing private generating facilities

may be necessary. At present, private generation must be licensed by the Governor who may grant the license only after consulting ECN and after ECN has either expressed its inability to supply or, within a reasonable time, failed to satisfy the Governor of its ability to supply.<sup>10</sup> There should thus be no barrier in the way of private generation in areas not served by ECN. We believe, however, that even in towns now supplied by ECN, industries should be permitted to generate power for their own use. If necessary, we recommend an amendment to the ordinance to make this possible. We recognize that such a change might at first result in the installation of private generating plants even when cheaper power could be obtained from ECN. But it will not be long before consumers learn to rely on the cheapest and most dependable source of power. The disadvantage of possible temporary duplication of facilities would, in our opinion, be offset by the modification of the regulations which in their present form sometimes result in a delay discouraging to the launching of new enterprises.

#### *Expansion of Supply Now in Progress*

A very substantial expansion of ECN generating facilities is now in progress. On March 1, 1953 roughly 52,500 kW of generating capacity was in the process of installation or on order. Allowing for replacement of obsolete equipment, this was sufficient to raise generating capacity from 33,500 kW to about 80,000 kW by early 1956, when the last of the works in progress is expected to be completed. Capital expenditure on this plant, on the necessary accompanying distribution facilities and on miscellaneous works was expected to amount to almost £ 3 million in 1953-54, to £ 4.4 million in 1954-55 and to £ 1.4 million in 1955-56.

The largest project under construction is at Lagos, where the "Ijora B" station is being built and small stand-by diesel sets are being installed in the existing "Ijora A" station. "Ijora B" will contain initially two 12,500 kW steam turbine sets with provision for eventual doubling of this capacity. Completion of the first stage, now expected early in 1956, has been delayed by difficulties with the powerhouse foundations. The originally designed foundations were found to be

<sup>10</sup> Electricity Corporation of Nigeria Ordinance, No. 15 of 1950, Section 50.

unsuited to the subsoil; in consequence work was stopped and a buoyant concrete raft substituted for the mass concrete structures originally planned. When this project is completed, installed capacity at Lagos will amount to some 43,000 kW. Present plans for the extension of "Ijora B" call for the installation of a single 25,000 kW generating set. The mission believes that consideration should be given to substituting two 12,500 kW sets, which would have the advantage of making possible a higher ratio between peak load and installed capacity. Interconnection with other stations will not be practicable for many years. It is thus important that the largest set not be excessively large, to minimize the need for stand-by capacity when that set is out of operation for maintenance or repairs.

Another new steam power station is being built on the Oji River, between Enugu and Onitsha. This station, with two 5,000 kW steam turbine sets installed initially, was planned to supply power to new industries at Enugu. These industries have been slower in becoming established than was expected, so that Oji River's capacity when it begins to operate in 1956 will be considerably larger than needed during the first few years of operation, even taking account of the retirement of the obsolete equipment now at Enugu. ECN therefore plans to build a 33 kV line from Oji River to Onitsha (as well as a 66 kV line from Oji River to Enugu), to supply electric power to the important commercial center of Onitsha. To build up a load in Onitsha, three small diesel sets are being installed there, to serve pending Oji River's coming into service. In the absence of unexpected development, the Oji River station will make further expansion of power supplies in the Enugu-Onitsha area unnecessary for at least 10 years.

The only other large installation being built in 1953 was a new station at Kano, to be equipped at first with a 2,400 kW steam turbo-alternator, with provision for a second. This plant is urgently needed to meet the backlog of demand in Kano; the growing demands of small industries and commercial establishments in this Northern commercial center will call for installation of the second unit soon.

ECN in 1953 was also constructing two installations, one at Benin, and one at Oshogbo to supply that town (at which a new waterworks was being built) and the neighboring towns of Ede, Ife and Ilesha.

At the smaller existing installations of Aba, Abeokuta, Calabar, Kaduna, Katsina, Maiduguri, Port Harcourt, Yola and Zaria new generating capacity was being installed. At all stations, distribution systems were being extended.

*ECN Proposals for Additional Future Expansion*

*Steam Generation* Large fields of lignite are known to exist at Asaba, opposite Onitsha on the Niger River. ECN has, as a long-term project, considered the possibility of building there a large steam power station, to serve not only the immediate vicinity but also Lagos, Ibadan, and other cities of the West over a 220 kV transmission line. We do not believe that this project will be feasible, at least for many years to come. The commercial usefulness of Asaba lignites has not yet been ascertained (see Technical Report No. 14); the immediate area will be served for some time by the Oji River scheme now under construction and the transmission line to Lagos would be uneconomic for many years (see below).

*Hydroelectric Development* ECN has spent much time searching for suitable sites for hydroelectric development. The management has spoken of the possibility of developing the hydroelectric potential of the Southern Cameroons to feed an industrial expansion in the French Cameroons.<sup>11</sup> It has also launched an investigation into the possibility of harnessing the Niger near Jebba, has set up discharge measurement stations on a number of other streams and has investigated other sites. But no major hydroelectric scheme shows promise of feasibility in the near future.

The mission believes that many years of flow measurement and survey will be required before major hydroelectric schemes can be undertaken without undue risk. The unfortunate experience with the Njoke River hydroelectric plant in the Southern Cameroons, decided upon before the establishment of ECN, underlines the dangers of too hasty planning. Designed on the basis of insufficient hydrological data, the plant on the Njoke River is practically unutilizable during the period of maximum river flow (when one would expect output to be greatest) because water backs into the tail race when the Mungo River,

<sup>11</sup> Statement by the Chairman to ECN Second Annual Meeting.

of which the Njoke is a tributary, is in flood. Hydrological survey is properly the work of a government department, and the mission recommends that ECN flow measurement stations be handed over to the federal department of hydrology whose establishment we propose in Technical Report No. 12.

Another difficulty confronting hydroelectric development in Nigeria is that the sites which appear to be most promising for the long run are located far from centers of electricity consumption. Because the cost of transmitting small amounts of power over long distances is prohibitive, their economic use cannot be considered until demand is very much higher than it is at present.

### *Transmission*

It is on the subject of transmission lines that ECN's future planning appears to be most unrealistic. The 300-mile transmission line proposed between Asaba, Lagos and Ibadan would be prohibitively expensive at the present level of demand. Even in 10 years' time the peak power requirements of Lagos, Ibadan and the other cities of the Western Region are unlikely to exceed 60,000 kW. The capital cost of such a transmission line is so high that we calculate that it would not be economic to replace power generated at Lagos and Ibadan with power from Asaba until the load in the Western centers grows to at least 300,000 kW.

ECN has also proposed a 100-mile transmission line between Lagos and Ibadan, to meet the growing power requirements at Ibadan from expanded generating facilities at Lagos. This scheme we consider to be no more practicable in the next few years than the larger line mentioned previously. Although coal at Ibadan costs 96/6d. per ton, compared to 84/8d. at Lagos, the difference is not sufficient to offset the costs of transmission of the small quantities of power involved. Peak load at Ibadan is unlikely to grow to more than 10,000 kW during the next 10 years. Instead of this transmission line, we propose expanding generation facilities at Ibadan. This solution will postpone the time when extension of the "Ijora B" station at Lagos will be needed.

*A Development Program for ECN, 1955-60*

For the reasons discussed, ECN should confine its expansion in the five years 1955-60 to the building up of thermal generating capacity to meet demands in centers now being served. It should not spread its efforts by opening plants in towns not now supplied with its electricity, nor should it expand any plant abruptly merely to meet the demand of a single industrial consumer. We estimate that capital expenditure of about £ 7 million will be sufficient during the five-year period to carry out this program. This figure is additional to the £ 1.4 million which will remain to be spent after March 31, 1955 on works now in progress. It also does not include about £ 2 million to be spent after March 31, 1960 for the residual cost of works in progress at that date. Expenditure on new projects should, we suggest, be spread out roughly as follows: £ 340,000 in 1955-56; £ 650,000 in 1956-57; £ 1.335 million in 1957-58; £ 1.845 million in 1958-59 and £ 2.8 million in 1959-60. Distribution of this expenditure among the major installations is shown in Table 8.

The mission is aware that this is a lower rate of capital expenditure than that which ECN has been making for the last few years, and also that the figures are much lower than the proposals that ECN has put forward for the next five years.<sup>12</sup> The mission is convinced nevertheless that an investment of £ 7 million will be ample. The reason for this is precisely that the heavy investment program now in progress will build up power supplies in most centers to a point at which they can accommodate a considerable increase in demand. Projects now in hand will result in an increase in generating capacity of over 140% between 1953 and 1956. Except at a few stations, chiefly Ibadan and Kano, this new capacity will cover demand until 1960. Additional facilities will be required in Lagos by 1961; extension of the "Ijora B" station should therefore be put in hand before the end of the five-year period.

In computing the cost of power expansion we have used as a basis European costs duly increased to take account of the higher costs in Nigeria for transport, handling and installation. Steam power station

<sup>12</sup> In connection with the formulation of a new Colonial Development and Welfare program, ECN proposed capital expenditure of over £ 17 million from 1955 to 1960, but is understood now to have modified this figure.

TABLE 8 ECN: Recommended New Capital Expenditure

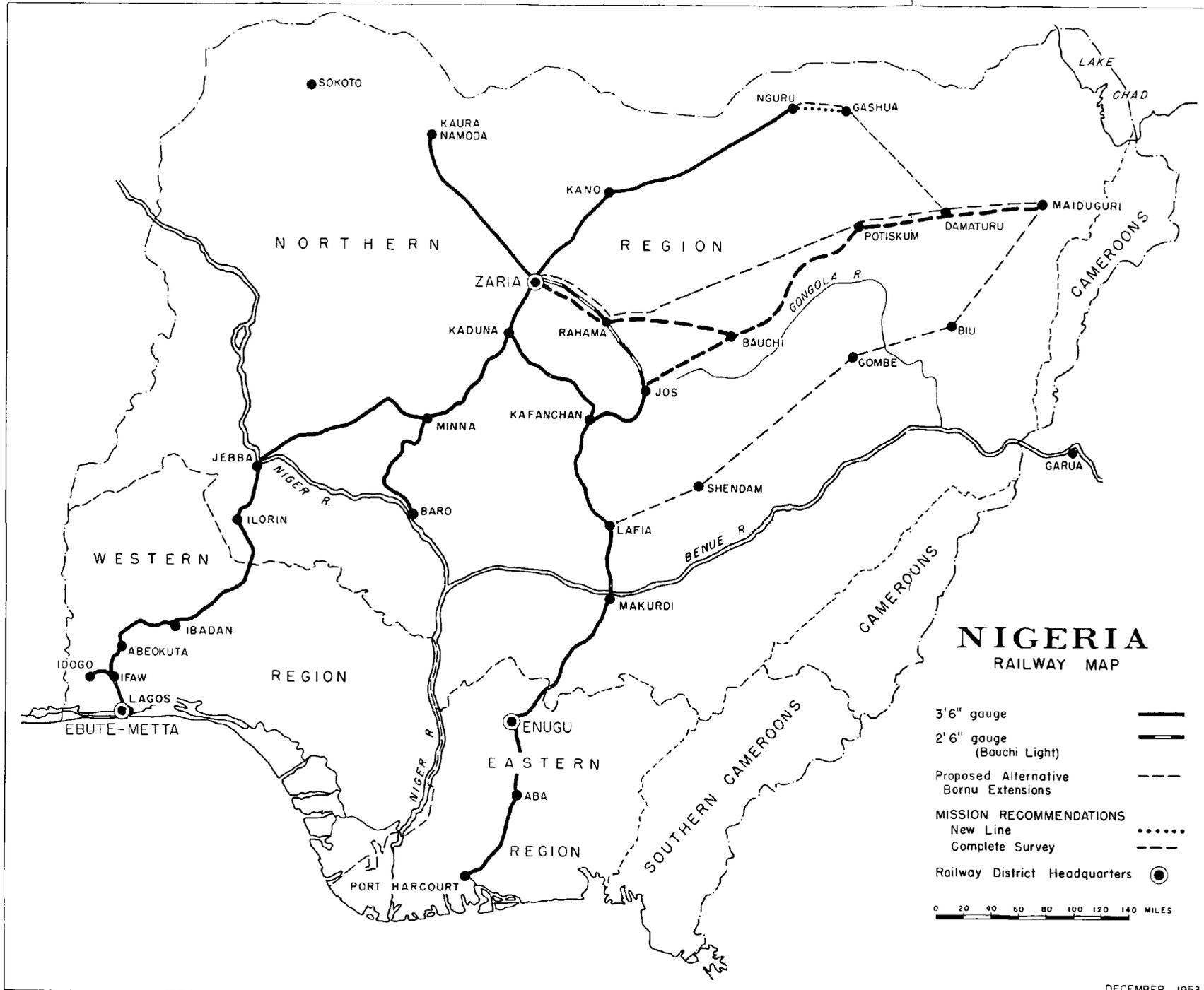
(Thousand £)

	1955-56	1956-57	1957-58	1958-59	1959-60	Total 1955-60	After 1960	Remarks
<i>Generation and Distribution</i>								
Lagos .....	—	—	500	1,000	2,000	3,500	1,500	Second group of two 12,500 kW sets to be in operation in 1961.
Kano .....	—	50	100	200	150	500	—	Second 2,400 kW set to be in operation in 1960.
Enugu-Onitsha .....	—	—	—	—	—	—	—	Plant now being built at Oji River will suffice.
Ibadan .....	—	90	225	135	90	540	360	Two 1,400 kW diesel sets to be in operation in 1959, and two additional in 1962.
Oshogbo .....	40	110	100	110	60	420	—	Two 660 kW diesel sets to be in operation in 1958 and two additional in 1960.
Aba .....	—	—	—	—	20	20	85	One 660 kW diesel set to be in operation in 1962.
Maiduguri .....	40	110	60	—	—	210	—	Two 660 kW diesel sets to be in operation in 1958.
Plateau .....	100	100	100	100	100	500	—	Distribution and transformer facilities only.
Others <sup>1</sup> .....	130	130	130	130	130	650	—	Rough estimate only, based on average increase in peak load of 10% per year.
Sub-total .....	310	590	1,215	1,675	2,550	6,340	1,945	
<i>Housing and Offices.</i>	30	60	120	170	250	630	—	10% of expenditure on generation and distribution facilities.
Total .....	340	650	1,335	1,845	2,800	6,970	1,945	

<sup>1</sup> Abakaliki, Abeokuta, Benin, Calabar, Kaduna, Katsina, Port Harcourt, Sokoto, Victoria, Warri, Yola, Zaria.

extensions are estimated at £ 120 per kW, while diesel power station costs are estimated at £ 80 per kW. We assume that diesel sets will be selected for the smaller power stations, especially in the North where water supply is a problem. Construction time for steam stations is taken to be four years; for diesel stations, three years. Extensions of distribution networks have been estimated at £ 80 per kW of new capacity, this figure being the cost of recent extensions to distribution systems in Nigeria. The ratio of installed capacity to peak load has been taken at 5 : 3. This should allow some increase in the size of generating sets without reaching a point at which it would be difficult to meet power demands during maintenance. Finally, a 10% allowance has been made for the cost of housing and office accommodation.

These are the general assumptions we have employed in estimating ECN's capital requirements. The resulting figures are necessarily rough and the precise amount will depend on a number of factors we have been unable to take into account: choice of equipment, varying building costs and exact scheduling of work, to mention but three. Despite this, the estimates provide an order of magnitude of the capital ECN is likely to require during the next five years. Since ECN will probably continue for some time to rely on loans from the Nigerian government, we have included the estimates in our projections of federal government expenditure (see Appendix C, Table 1).





I THE RAILWAY IN 1953-54

*Summary of Present Position*

The Nigerian Railway is emerging from a protracted period of crisis which has disturbed the Nigerian economy and raised doubts as to the railway's future. In most of the postwar years the railway was unable to move all traffic offered, evidenced most strongly by groundnut "pyramids" in Kano. The principal reason for this failure has been the shortage of motive power, due both to an insufficient stock and to poor maintenance of locomotives on hand. The railway has also been beset with labor troubles. One bright spot is the favorable financial situation.

The mission has confidence in the railway's future. Improvements are being made constantly in all departments. The recently appointed General Manager has approached his task with energy and competence. Relations between management and staff have improved and it now seems probable that the plaguing problem of groundnuts will be solved in two years by an increase in motive power and in the output of the workshops. The measures now in hand should enable the railway after 1955 to play its full part in the country's economic development.

*History*

The Nigerian Railway started out from Lagos in 1898, as the Lagos Government Railway, the first in Nigeria. Ibadan, the center of the cocoa-growing area, was reached in 1901 and the Niger, at Jebba, in 1909 (see Map 10). The Baro-Kano Railway was built to serve the northern part of Nigeria via the Niger; it was completed in 1911 and the two lines were connected by the Jebba bridge in 1915. In

1914 the tin deposits of Jos were connected to the system at Zaria by the narrow-gauge Bauchi Light Railway. A new line was built out of Port Harcourt, reaching the coal mines of Enugu in 1916. After the war this east line was extended to Kaduna which thus became the junction of the two main lines, 561 and 569 miles from the sea by the western and eastern lines, respectively. The east line was completed in 1932 when a bridge over the Benue, replacing a ferry, was opened at Makurdi. Branches had meantime been built: Kafanchan-Jos; Zaria-Kaura Namoda; Kano-Nguru; and Ifaw-Idogo. Since 1931 the system has been 1,903 miles long, giving Nigeria (excluding the Cameroons) a railway density of 5.65 miles per thousand. The system is wholly single-track and 3' 6" gauge, except for the Bauchi Light which is 2' 6" gauge.

The railway is at present a government department but legislation is being drafted to create an autonomous railway corporation.

#### *Permanent Way and Track*

Gradient and curvature characteristics are comparable to those of other railways in tropical Africa and, with a few exceptions noted below, present no obstacle to heavy traffic.

All main lines are laid with 60 lb./yd. track except the western line between Lagos and Jebba, which is laid with 80 lb./yd. track. Unfortunately, when the Jebba-Kano section was renewed it was decided to lay it with 60 lb./yd. rail, so that the western line does not have a uniform track although most of its traffic is carried all the way to Kano. The track is less than 30 years old and the ballast is stone of adequate quality, except between Port Harcourt and Enugu where the track is 38 years old and the laterite ballast must be renewed every five years.

The branches have either 45, 50 or 55 lb./yd. rail, except the Bauchi Light, which has only 30 lb./yd. rail. They are generally laid with used rail taken up when replacements are made on the main lines.

The maximum authorized axle-loads are 16½ tons for the 80 lb./yd. rail, 13 tons for the 60 lb./yd. rail and 9½ tons on the branches except for the Bauchi Light, where it is eight tons. These limits are low; many railways authorize a 15-ton axle-load for 60 lb./yd. rail,

for example. Loads on the Lagos-Jebba section do not come up to the limit because of the lack of heavy engines.

The clay foundation between Port Harcourt and Aba and the numerous curves of the eastern line between Makurdi and Kafanchan present some difficulties. On curves in the latter section, there is experimental lubrication of rails by hand; tests are also being conducted with mechanical lubricators.

Major improvements are being made to the facilities at various principal stations which cannot handle present traffic. Stations on the heavily traveled lines, with a few exceptions, are less than 10 miles apart; on other lines the distance may be 20 miles. Small stations have crossing loops permitting the crossing of 33-car trains.

The movement of trains between stations is controlled by the "Electric Train Staff," a simple and safe system used extensively on single-line railways. Most stations are equipped with signals and points mechanically interlocked.

### *Communications*

Communications equipment is old and inadequate. One telegraphic circuit links most of the small stations. Depot station circuits link the principal stations. A direct telegraph circuit connects Ebute Metta-Zaria-Kafanchan-Enugu-Port Harcourt. Telephone communications are made through the Posts and Telegraphs, except for the Kaduna-Zaria-Kano hookup. A radio hookup has recently been completed between Ebute Metta, Zaria and Enugu. Traffic-control telephone circuits are installed on the Ebute Metta-Ibadan and Port Harcourt-Enugu sections.

### *Capacity*

The mission agrees with the railway management that the capacity of the single-track system can be substantially increased, and that double-tracking is unnecessary. Many single-track lines in other African countries carry much heavier traffic.

Several things can be done to increase capacity. The time-table should be revised annually, taking account of traffic evolution and motive power improvements. The speed of train-running should be in-

creased. Trains should be better supervised through the telephone control circuits. More powerful engines should be used to enable freight loads to be increased. The average number of cars per freight train is less than half the 33 cars permitted by the length of crossing loops. More crossings should be added to sections.

### *Motive Power*

Table 1 shows the state of the stock as of March 31, 1953.

TABLE 1 Locomotive Stock

	Main Line	Shunting	Bauchi Light
Total stock on books .....	192	58	9
Number in service .....	117	41	5
Number under or awaiting repairs.....	64	13	3
Number awaiting write-off .....	11	4	1
Percentage over 10 years of age.....	39	50	100

The main line stock includes 77 modern coal-burning steam engines, known locally as "River Class," type 2.8.2., of 52 tons adhesive weight and capable of hauling 620 tons. They were introduced in 1948 and are now standard for 60 lb./yd. rail. Forty-two more such engines will be delivered by the end of 1954 and 10 750-h.p. diesel electric locomotives early in 1955. Only 25 locomotives for the lighter tracks are now in use; a few of these are articulated Garratt engines.

In 1952-53, the railway's coal consumption was 342,517 tons, carried an average distance of 325 miles, or a total of 111,318,025 ton-miles. Supplies for the running sheds between Lagos and Jebba are carried by rail from the mines at Enugu to Port Harcourt, then by sea to Lagos and by rail northward.

Scarcity of water creates serious difficulties in the North, especially at the end of the dry season. The railway maintains 80 watering stations and a fleet of water tank cars.

Routine maintenance of the locomotives is carried out in 13 running sheds; most have only rudimentary equipment, in the process of being improved. The mileage and general repairs are carried out in the Ebute Metta, Enugu and Zaria workshops. The first two are large

and adequately equipped. The small Zaria workshop, originally designed for the maintenance of the Bauchi Light stock, is being enlarged for maintenance of the diesel locomotives.

Available motive power rapidly decreased shortly after the end of the war, in the face of a sharp increase in traffic. This created a very critical situation which is, at the moment, being remedied.

The number of locomotives awaiting repair is high. Workshop capacity is sufficient for repair of 180 engines per year but between 1948-49 and 1952-53 an average of only 158 engines has been repaired annually; the range has been between 188 in 1948-49 and 141 in 1951-52. During that four-year period less than half the total engine stock was in use, on the average. The trouble seems to be due to long delays in obtaining spare parts; management-staff difficulties resulting in strikes and slow-downs; too rapid "Nigerianization" of supervisory staff in the workshops; and difficulties in recruiting expatriate staff. There has been some improvement since 1952. The mission cannot stress too strongly the importance of assuring prompt repair and regular maintenance of the new stock.

The persistent shortage of locomotives was also due to a failure to anticipate increased traffic needs and, for several years after the war, to delays in the delivery of locomotives on order.

Assuming adequate maintenance, engines now in stock and on order will take care of the railway traffic through 1955-56 but not beyond. By 1955, the net addition to motive power will amount to 34 "River Class," allowing for withdrawal of 8 engines, and 10 750 h.p. diesel electric engines, equivalent to 21 "River Class," or a total of 55 "River Class" equivalent. Annual capacity of a "River Class" traveling in the direction of heavier traffic (southbound) is 5.6 million net ton-miles, based on an annual mileage of 32,000 miles (16,000 each way) and an average net tonnage in the direction of heavier traffic of about 350 tons, resulting in aggregate additional southbound capacity of 308 million ton-miles as against an estimated additional southbound traffic in 1955-56 (see Table 7, p. 473) of 253 million ton-miles.

*Rolling Stock*

The rolling stock is of high standard; about one-third of the passenger cars and a high proportion of freight cars are of all-steel construction, equipped with A.B.C.-type central automatic coupling and vacuum brakes. The percentage of rolling stock under or awaiting repair, in contrast to locomotives, is less than 10%; workshops are large and adequately equipped.

*Passenger* In 1953 there were 224 passenger-carrying coaches of various kinds with an aggregate seating capacity of 16,165. The newer passenger cars, with first- and second-class sleepers and buffet facilities in third-class, are among the most comfortable now running in Africa. Passenger miles traveled rose from 198 million in 1938-39 to 351 million in 1952-53 although seating capacity diminished slightly. A current shortage of passenger cars will be met by delivery within two years of cars now on order, including rolling stock for additional "Limiteds."

*Freight* Freight stock consists of 4,645 cars, including covered, open, cattle and tank cars. There is an immediate shortage of cattle cars. In 1954 about 300 cars of various types will be added.

Utilization of the stock is low; daily mileage per car in service is only 43 miles, one consequence of the locomotive shortage. However, thanks to the present good traffic equilibrium and to the increase of the average per car capacity, net ton-mileage per day per car in service rose from 265 in 1938-39 to 556 in 1952-53.

*Staff*

Table 2 shows the staff as of the end of 1952-53, including wharves and motor services but exclusive of the force engaged in capital works.

"Nigerianization," i.e., staffing with Nigerians to the greatest possible extent, has been pushed more rapidly by the railway than by other agencies. In 1953 the senior service included 295 European employees and 103 Nigerians. In 1931 there had been no Nigerians. By 1939, there were three and the number rose steadily to 67 in 1950, 76 in 1951 and 93 in 1952. This rapid replacement of Euro-

TABLE 2 Staff Statistics, March 31, 1953

	Senior Service	Junior Service		Daily and Monthly Rated	Total
		Pension-able	Non-Pensionable		
Civil Engineering .....	111	699	583	10,385	11,778
Mechanical Engineering .....	88	2,529	923	1,548	5,088
Operating and Commercial....	123	3,549	2,182	4,470	10,324
Administrative .....	76	936	218	302	1,532
Total .....	398	7,713	3,906	16,705	28,722

SOURCE: Nigerian Railway.

pean staff with Nigerians has created a serious problem. Some of the promotions of Nigerians to the senior service, especially to positions in the workshops, may have been made a little too hastily and have resulted in lower efficiency. Moreover, in its anxiety to fill posts with Nigerian personnel, the management has on occasion left posts vacant rather than seek an expatriate recruit. This, together with the difficulty of recruitment of Europeans, explains the fact that in 1953, about 12% of the authorized positions in the senior service (exclusive of the wharves and road services) were vacant. This situation has contributed significantly to the railway's problems in recent years. It is slowly improving, but the effects of the hasty promotions will be evident for some time. In this connection, the mission concurs generally in the views expressed in the Pallant Report of 1949 approving the Nigerianization policy but pointing out that the railway's operating efficiency depends upon the competence of its officers and senior officials, and cautioning against undue haste in applying the policy.

### *Staff Training*

The railway trains its staff in its own schools and by sending selected employees to the United Kingdom. The local training and apprenticeship courses had more than 450 pupils in 1951-52. The higher training course for station staff had 18 trainees in 1952-53. It has been difficult to obtain qualified instructors for these courses.

Local training for both services is indispensable and the program should be accelerated. We recommend that a railway training school

for the senior service be set up by agreement among the Nigerian, Gold Coast and Sierra Leone railways, whose problems and methods are similar. The training afforded should prove particularly useful when diesel traction is begun in Nigeria, as recommended later in this report, and in the Gold Coast. Junior staff must be instructed in maintenance of diesel engines and electrical equipment; technicians for this purpose will probably be lent by the diesel manufacturer.

Continued recruitment of expatriate personnel to fill existing vacancies will still be essential for some years. The French Overseas Railway solved its recruitment problem by an agreement with the French National Railways under which volunteers for service overseas retained their pension and promotion rights with the National Railways. We strongly recommend that a similar agreement be discussed with the British Railways, the source of most of the expatriate personnel. It should not be difficult to work out, since relatively few of the metropolitan system's employees will be involved. Recruitment sources other than the British Railways should, however, not be neglected.

Exchange of technical information and staff should be arranged with the British, French, Belgian and Portuguese railways on the west coast of Africa, which have similar problems. Some of these can provide valuable information on experience with dieselization.

### *Railway Unions*

Seven railway trade unions are now registered, as well as two "railway branches" of more general trade unions. There have been numerous strikes and slow-downs in recent years. Although a three-step negotiation procedure has been set up for labor disputes, in many cases the unions approach the Commissioner of Labor directly. It is important to the smooth functioning of the railway that relations between management and personnel continue to improve and that the established negotiation procedures be scrupulously observed by both parties.

### *Passenger Traffic*

Table 3 shows the number of passengers carried, by classes.

TABLE 3 Passenger Traffic

Year	1st Class	2nd Class	3rd Class
1937-38.....	8,375	18,818	7,329,573
1949-50.....	11,052	41,404	5,499,324
1950-51.....	9,573	45,412	5,530,058
1951-52.....	8,185	48,661	5,488,748
1952-53.....	9,746	56,661	5,483,048

SOURCE: Nigerian Railway Annual Reports.

First-class traffic fell off in 1950-51 because of plane competition but rose slightly in 1952-53 when new long-distance trains were put on. The second-class traffic increase reflects a rise in the standard of living. Serious competition is offered by the roads, particularly in the West.

#### *Passenger Service*

"Limiteds" run four times weekly, providing long-distance service from Lagos and Port Harcourt to Kano and Jos. There is no railcar service. These trains are comfortable but slow, because of frequent watering stops. A "Limited" takes 41 hours to travel the 700 miles between Lagos and Kano, and the southbound trip from Kano to Port Harcourt, 708 miles, takes 51 hours. Suburban trains are even slower and consequently poorly patronized; the Lagos-Idogo trip of 54 miles takes four hours, compared to two by bus. Thus, although the "Limiteds" are overloaded in the North and East, the average number of seats occupied on all trains in 1952-53 was something less than 54% of the seats available. Daily locals and mixed trains are run on other sections. Rates are 4.3d. per mile first-class, 2.1d. per mile second-class and .75d. per mile third-class.

Unless service becomes faster and more comfortable, the railway will not be able to meet the road competition for short-distance travel even in the East. Long-distance traffic, particularly Lagos/Port Harcourt and Jos/Kano will have to face increasing plane competition. The possibilities of holding and developing intermediate traffic are good, especially in the North.

*Freight Traffic*

The volume of paying freight traffic reached a prewar peak in 1936-37 when 892,000 tons were carried. After declining for a few years it rose during and after the war to 1.5 million tons in 1952-53. Before the war groundnuts made up almost one-third of total tonnage; they have continued to increase in volume but other freight has grown faster, and groundnuts now account for only about one-fifth of total tonnage.<sup>1</sup> The most striking increases are in domestic foodstuffs, including kola nuts and livestock, in building materials, in petroleum products and in imported hardware. The only major traffic item to decline in tonnage was cocoa, now carried by road almost exclusively.

The average length of haul has increased. In 1937-38, it was 383 miles per paying ton; the average of the last four years is 435 miles. This tendency, similar to that revealed in passenger traffic, is due to the almost complete loss of local traffic in the West and to the reduction of transit traffic over the Baro line.

Road competition is very keen for both imports and exports via Apapa Wharf (Lagos) and for imports via Port Harcourt, despite the inadequacy of the road facilities at those ports. Almost non-existent before the war, the growth of this road traffic in recent years is striking: at Apapa Wharf 8% of import tonnage was cleared by road in 1948-49 and 25% in 1952-53. Corresponding figures for exports carried by road are 6% and 14%. At Port Harcourt Wharf 9% of import tonnage was cleared by road in 1948-49 and 27% in 1952-53.

Table 4 gives a comprehensive picture of present freight traffic, showing, among other things, that since 1949-50 the ton-mileage of imports has risen by 20%, the ton-mileage of exports has fallen 7%, the ton-mileage of internal traffic has risen by 40% and total railway ton-mileage has increased by 20%.

Twenty-six percent of total tonnage and 17% of total ton-miles in 1952-53 consisted of nonrevenue traffic, mostly coal, required for operation of the railway.

<sup>1</sup> The percentage of groundnuts in total ton-mileage is higher.

TABLE 4 Ton-Miles per Annum by Commodity

*(Million)*

Commodity	1949-50	1950-51	1951-52	1952-53
<i>Imports</i>				
Building Materials .....	37.2	35.5	54.3	46.0
Petroleum Products .....	39.6	39.6	45.9	57.6
Other General Imports .....	85.8	67.2	81.6	91.8
Total .....	162.6	142.3	181.8	195.4
<i>Exports</i>				
Groundnuts .....	270.2	177.1	133.7	236.6
Cocoa .....	—	0.3	0.2	0.2
Cotton and Cotton Seeds .....	8.7	16.7	21.4	23.3
Palm Oil and Kernels .....	7.0	6.1	4.5	6.2
Coal .....	—	—	7.8	—
Hides and Skins .....	7.6	10.1	9.0	5.9
Other Exports .....	9.0	17.5	11.5	11.0
Total .....	302.5	227.8	188.1	283.2
<i>Internal Traffic</i>				
Foodstuffs .....	126.8	164.9	158.7	175.6
Building Materials .....	7.4	7.1	10.1	13.4
Coal .....	110.6	128.6	123.4	158.2
Other Commodities .....	1.5	1.2	1.3	1.4
Total .....	246.3	301.8	293.5	348.6
Grand Total .....	711.4	671.9	663.4	827.2

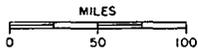
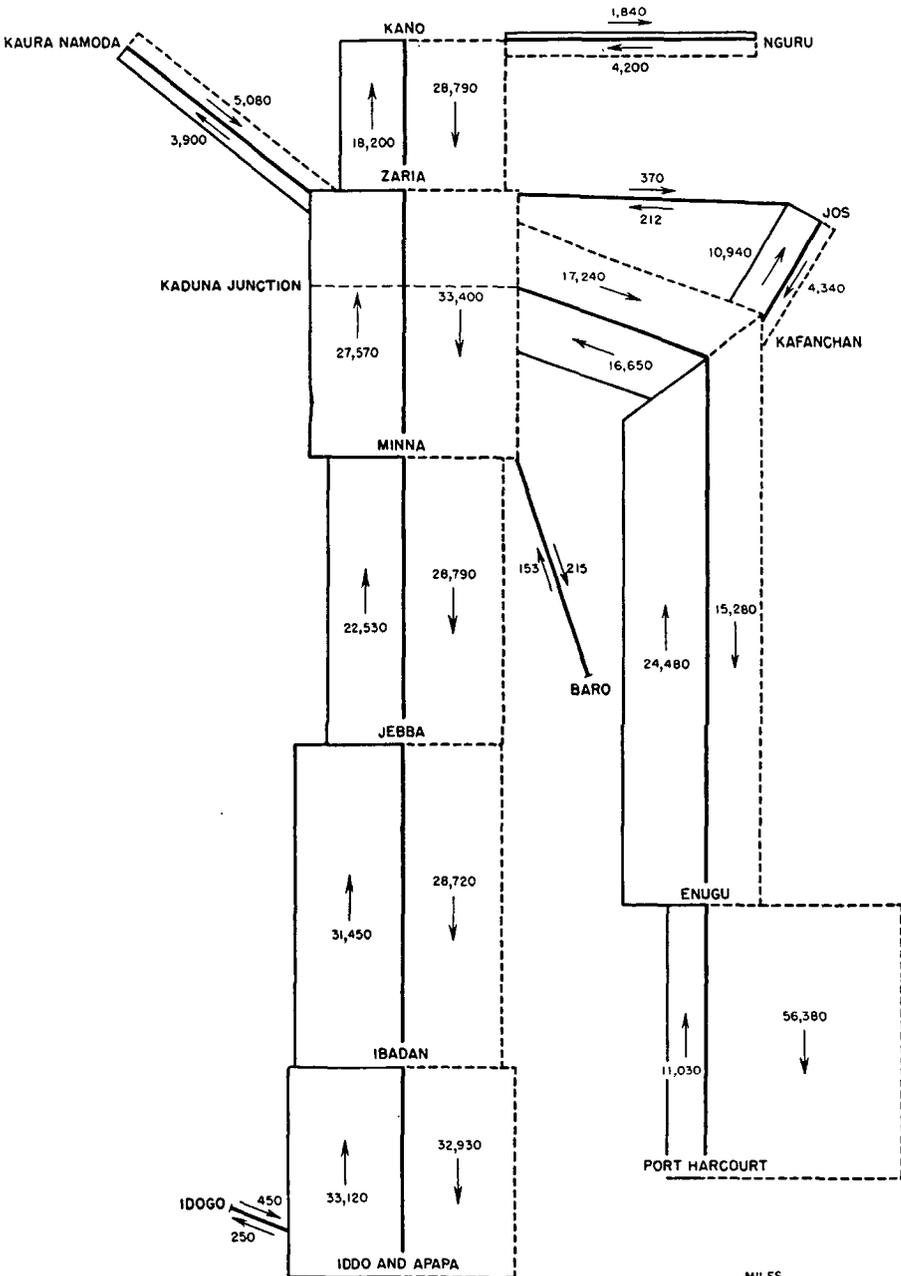
SOURCE: Chief Accountant, Nigerian Railway.

Figure 3 shows the traffic density by section of line and by direction over the whole system as of September 1953. It reveals a remarkable equilibrium over the whole west line. The relation between net ton-miles and gross trailing ton-miles<sup>2</sup> was 0.46 in 1950-51, 0.47 in 1951-52 and 0.50 in 1952-53. This fortunate situation, which permits good utilization of locomotives and rolling stock, is likely to change very soon: the great increase in groundnut shipments during the next two years, while accumulated groundnut stocks are being cleared, will result in an outbound movement considerably heavier than the inbound on the west line. Utilization of the east line has increased. Before the war it carried little traffic north of Enugu except coal to the

<sup>2</sup> Ton-miles of loaded train (not including locomotive).

FIG. 3

# NIGERIAN RAILWAY: TRAFFIC DENSITY, SEPTEMBER 1953 (NET TON-MILES PER ROUTE-MILE)



railway's running sheds in the North. Now it is extensively utilized for the carriage of imports and exports between Port Harcourt and Jos and Kano, the main transshipment points for road traffic to and from Maiduguri and the Lake Chad territory. The principal down-traffic is groundnuts, loaded into coal cars which would otherwise return empty.

#### *Freight Service*

Long-distance traffic between the North and the South is carried in through trains. Although time-table schedules call for a running time of about 55 hours between Lagos and Kano, for example, the rotation of a car from Kano to Lagos and back, loaded in both directions, takes about 12 days because of a shortage of locomotives in service.

Complete trains are used for carriage of livestock and coal. On each section there is also a mixed or pick-up train for local traffic.

#### *Movement of Groundnuts*

Moving groundnuts from the North is the railway's biggest traffic problem and deserves special comment. Before the war, the bulk of the crop was carried during the dry season (October to March) and the rest during the rains. There was no carry-over to a new crop season.

Since the war, demands of general traffic have made it necessary to spread groundnut transportation more evenly over the year. The crops are now much larger and this fact, together with the railway's motive power difficulties, has resulted in a carry-over of tonnage each year and a quota system restricting the tonnage of groundnuts in transit from French Niger (about 30,000 tons a year).

The backlog for 1948 and 1949 was moved out in 1950-51 because that year's crop was poor. Each of the succeeding crops has exceeded 400,000 tons but in 1951-52 and 1952-53 only 200,000 tons and 338,000 tons respectively were carried, including groundnut products and French groundnuts. At the beginning of the new seasons in November 1952 and 1953, the carry-overs were 120,000 and 185,000

tons respectively. So groundnuts again piled up in the Northern stations, principally at Kano.

During the mission's visit it was estimated that 490,000 tons will be hauled between November 1953-October 1954, thanks to additional motive power delivered early in 1954. Thus, even if the 1953-54 crop reaches the estimated 450,000 tons, the carry-over will be reduced to 145,000 tons. Additional deliveries of motive power in 1955 will permit 635,000 tons to be moved during that year. The entire backlog should therefore be disposed of by the end of 1955, even if the 1954-55 crop reaches 500,000 tons, a level never yet attained.

### *Freight Rates*

Goods are divided into seven classes for rate purposes. In each class, the longer the haul, the lower the rate. The ton-mile rate for class 1 items, which include local foodstuffs, is 2.2d. for a 150-mile haul, but only 1.24d. for a 700-mile haul and only 1.1d. for a 1,000-mile haul. At the other end of the scale, class 7 items, which include bicycles and kola nuts, pay ton-mile rates of 7.33d., 4.56d. and 4.02d. for comparable haulage.

Special rates, usually set by zones, apply to principal imports and exports and to certain local commodities. Table 5 is illustrative.

In general the rate policy seems to favor imports of cement and fertilizer traveling long distances, and local food products, and to assess exports more heavily, particularly those coming from areas where there is no competition from the roads, as for example palm oil. In an unsuccessful effort to meet road competition, the rate for cocoa was progressively reduced to its present level from 45/- per ton in 1948.

The average receipts per ton-mile for the total freight traffic have increased from 2.02d. in 1948-49 to 2.85d. in 1952-53. While freight rates thus increased an average of 41% during this period, the rate for groundnuts was more than doubled in order to finance the purchase of additional motive power required for their transport. In 1952-53, groundnuts provided 34% of total freight revenue.

TABLE 5 Freight Rates

Commodity	Distance	Rate per Ton	Rate per Ton-Mile (Pence)
Imported Cement . . . .	700 miles (Lagos-Kano)	91/6	1.57
Cocoa . . . . .	120 miles (Ibadan-Lagos)	32/6	3.25
Cotton, Ginned . . . . .	720 miles (Gusau-Lagos)	132/3	2.20
Fertilizers, Imported..	700 miles (Lagos-Kano)	72/6	1.24
Groundnuts . . . . .	700 miles (Zaria and north to the ports)	182/3	3.12
Groundnuts . . . . .	348 miles (Zaria and north to Baro)	142/9	4.92
Hides and Skins. . . . .	843 miles (Nguru-Lagos)	228/-	3.25
Kerosene, Petrol, Avia- tion and Motor spirit in owner's tank- wagon . . . . .	120 miles (Lagos-Ibadan) 700 miles (Lagos-Kano)	50/- 162/6	5.00 2.79
Kola Nuts . . . . .	673 miles (Ifaw-Kano)	305/-	5.43
Palm Oil . . . . .	38 miles (Aba-P. Harcourt)	20/-	6.32
Tin and Columbite. . . .	521 miles (Jos-P. Harcourt)	266/6	6.14
Yams . . . . .	100 miles	16/-	1.92
Yams . . . . .	500 miles	28/6	0.68

### Financial Situation

Separate railway accounts were set up in 1936. Since then, net income before payment of interest has aggregated roughly £ 20 million. Of this, £ 14 million has been paid to the government as interest on the sum invested in construction and equipment of the railway, averaging a little less than 4% per year; £ 1 million has been applied to creation of a Reserve Fund and £ 5 million to the purchase of capital equipment. Throughout these years, ample provision has been made for renewals and depreciation.

In 1952-53 the railway had operating receipts of £ 10.5 million<sup>3</sup> and operating expenditure of £ 6 million.<sup>4</sup> Expenditures have risen sharply during the past four years as a result of higher wage and material costs but the growing volume of traffic at increased rates has permitted the railway to show net surpluses over the past three years of £ 500,000, £ 2.2 million and £ 1.8 million<sup>5</sup> respectively.

<sup>3</sup> £ 2.6 million from transport of groundnuts, £ 5.7 million from transport of other freight, £ 1.2 million from passenger fares and £ 1.0 million miscellaneous.

<sup>4</sup> Excluding interest and renewals fund contribution.

<sup>5</sup> Estimate for 1953-54.

In the last few years, annual revenue from groundnuts represented, on the average, 25% of total annual receipts, illustrating the extent to which the railway's financial equilibrium is linked to groundnuts. A 100,000-ton variation in the crop represents a £ 900,000 variation in gross receipts at present rates.

## II THE RAILWAY IN 1955-60

### A FREIGHT FORECAST

The traffic figures shown in Table 6 represent the mission's estimate of maximum traffic during 1955-60. Our recommendations for capital expenditures on equipment are based on these maximum estimates. We are well aware that the traffic is essentially agricultural and subject to fluctuation for reasons wholly unrelated to the development program, such as bad weather and crop disease. But traffic in general is on the increase and the railway must be in a position to ensure movement of all goods offered. It is better to risk temporary surpluses of equipment in poor crop years than to risk a continuous short supply of equipment, as has been the case in the last few years. Estimates of future traffic are always difficult to make and the mission cautions that those which follow should be revised periodically in the light of the developing economic situation. To accomplish this, the railway should be more closely in touch with the various sectors of the Nigerian economy than it is now. We suggest that a "traffic requirements analysis section" be established within the Operating and Commercial Department for this purpose.

Table 6 is based on the following tonnage estimates:

#### *Exports*

a. *Groundnuts.* Beginning with 1956-57, a maximum of 550,000 tons has been assumed, including 50,000 tons from French Niger, although the largest Nigerian crop to date has been 420,000 tons. The ton-mileage takes into account the anticipated clearing-up of the groundnut backlog by 1955-56.

b. *Cotton.* Maximum tonnage is assumed to be 50,000 tons of

TABLE 6 Estimated Railway Traffic, 1955-60

*(Million ton-miles)*

	1955-56	1956-57	1957-58	1958-59	1959-60
<i>Exports</i>					
a. Groundnuts .....	400	385	385	385	385
b. Cotton .....	32	37	42	47	52
c. Other Agricultural Products .....	13	14	14	15	16
d. Other Exports .....	11	12	12	13	13
Total .....	456	448	453	460	466
<i>Imports</i>					
a. Petroleum Products .....	77	84	93	102	112
b. Other Imports .....	160	168	174	183	192
Total .....	237	252	267	285	304
<i>Internal Traffic</i>					
a. Foodstuffs .....	247	284	326	375	431
b. Building Materials .....	20	23	27	31	36
c. Coal .....	190	196	202	209	217
d. Other Commodities .....	2	2	2	2	2
Total .....	459	505	557	617	686
Grand Total .....	1,152	1,205	1,277	1,362	1,456
(Round Figures) .....	(1,150)	(1,200)	(1,280)	(1,360)	(1,460)

cotton seed and 30,000 tons of cotton lint; these tonnages should be reached with a constant annual increase.

c. *Other Agricultural Products.* It is assumed that cocoa traffic will not be recaptured and that palm oil and palm kernel traffic will continue to be negligible. A 5% annual increase has been assumed for other products, such as benniseed, soya beans, hides and skins.

d. *Nonagricultural Products.* An annual increase of 5% has been assumed; no coal exports have been projected.

#### *Imports*

a. *Petroleum Products.* An annual increase of 10% has been assumed, based on 1950-53 experience and taking into account development of road and air transport.

b. *Other Imports.* An annual increase of 5% based on recent trends has been assumed.

*Internal Traffic*

a. *Foodstuffs.* This traffic has recently been increasing at the rate of 12% annually. Since greater tonnages of kola nuts and livestock would have been carried were it not for equipment shortages, an annual increase of 15% has been assumed.

b. *Building Materials.* An annual increase of 15% has been assumed, based on current trends and in the light of the road program, general building and the likelihood of construction of a cement factory.

c. *Coal.* By 1955-56, the railway's coal needs should have stabilized at about 390,000 to 400,000 tons. Other users now take 200,000 tons annually; an annual increase of perhaps 10% may come from expansion of power plants at Lagos and Kano and construction of a cement factory.

d. *Other Commodities.* A 10% annual increase has been assumed.

If these estimates prove accurate, traffic will have doubled between 1949 and 1959, with an annual mean increase of 8%. Comparable increases have occurred in previous decades.

Table 7 shows the estimated distribution between northbound and southbound traffic during 1955-60 compared to the 1952-53 distribution. It shows that the near-equilibrium which existed in 1952-53 will be disturbed by a heavy preponderance of southbound traffic. The tonnage of groundnuts, cotton, foodstuffs and other products moving south is likely to increase by more than the increase in tonnage of products moving north, principally imported goods. This will require additional motive power and rolling stock.

The railway's chief concern must be to meet these increased traffic demands and reduce operating costs. Future policy should therefore be formulated in terms of economical motive power and maximum use of heavy trains.

**B MOTIVE POWER**

In the interests of efficient and economical operation, the mission recommends the gradual dieselization of the railway, with the possible exception of the Enugu-Port Harcourt section.

TABLE 7 Estimated Distribution of Railway Traffic, 1955-60

*(Million ton-miles)*

	Northbound	Southbound
1952-53.....	384	443
1955-56.....	454	696
1956-57.....	485	715
1957-58.....	522	758
1958-59.....	565	795
1959-60.....	615	845

The economic advantages of diesel over steam traction are generally recognized. Schedule 1 at the end of this report sets forth our estimate of the principal economies that would have been realized if the railway had been completely dieselized in 1952-53. These estimates are based on the experience of other African railways. They show over-all savings of nearly 50% in expenditures for fuel, water, and engine operation and maintenance. The mission's calculations fully support the arguments advanced by the railway at the time when the first diesels were ordered.

The introduction of diesel traction in Nigeria has been delayed for two reasons. The first is the general belief that local labor is not yet able to master the requisite techniques. The mission does not consider this an obstacle, for the experience of railways in nearby French territories has demonstrated that the problem can be solved in a few years with proper training. The second reason is the prevailing concern over the future of the coal mines. The introduction of diesel traction will undoubtedly affect the coal mines very seriously in the long run if export markets or greatly increased domestic consumption are not developed. However, since the stock of steam engines has just been substantially increased, a gradual dieselization will not affect the railway's coal demands for about 10 years. We estimate that consumption will reach about 390,000 tons by 1955-56, as against about 345,000 tons in 1952-53. It should remain at that level until about 1960. Thereafter, the older main line series and almost all shunting engines will be gradually withdrawn from service. Assuming replacement by diesels, coal consumption should drop to roughly 375,000 tons by 1965, 275,000 tons by 1975 and would be

zero in 1985. Even a somewhat accelerated dieselization program would therefore not cause a coal crisis in the near future.

The reduction of operating and maintenance staff would also occur only gradually and there should be no difficulty in finding employment for personnel released.

The economies of diesel traction can be fully realized only by dieselization of an entire section. This cannot be done with the 10 engines being delivered in 1955. The mission therefore recommends that engine needs for 1955-60 be met with diesels, so that the lines north of Kaduna, including branches and shunting, can be entirely dieselized. The benefits of dieselization will be most readily apparent in the North, where there must now be overcome problems such as water supply, long haulage of coal and heavy traffic on the 60 lb./yd. rail Kaduna-Kano section for both the western and eastern lines. Besides 13 additional 750 h.p. engines needed for the main lines, 10 engines of 300-400 h.p. will be required for branches and shunting. Five diesel railcars with a combined seating capacity of about 250 should be ordered for the Lagos suburban area to improve the present extremely slow service.

Within a few years it will be necessary to run six "Limited" services per week between Lagos and Kano. With diesel haulage and the elimination of watering stops, the speed of the "Limiteds" could be increased to a point permitting the running of these services with fewer sets of cars. Moreover, the faster schedules would be helpful in meeting competition from air transport. The mission recommends that the practical possibility of this be tested when the first delivery of diesel engines is made.

For the Enugu-Port Harcourt section the best long-term solution may well be neither steam nor diesel, but electric traction with a single phase current at industrial frequencies, following the technique recently introduced in Western Europe and in the Belgian Congo. Electrification of the railway would be part of a general electrification program in the area based on a coal-burning power plant at the mines. We recommend that a preliminary survey be made of the minimum traffic required for profitable operation with the three types of traction.

Unless coal exports are resumed, "River Class"-hailed trains should

be able to cope with 1955-60 traffic. The "River Class" was, however, an unfortunate choice for the Enugu-Port Harcourt section with its heavy traffic. When heavier trains are needed, we recommend the purchase of a few 16½-ton axle-load steam engines, capable of hauling 1,200-1,300 gross ton trains on 1% gradients.<sup>6</sup> This should be a good medium-term solution, for by 1958 the track will have been relaid with 80 lb./yd. rail and coal is cheaper on this section than anywhere else in the country.

### C TRACK

The railway's 1955-60 program calls for renewal of the Enugu-Port Harcourt section with 80 lb./yd. rail and replacement of the laterite ballast with stone. The mission recommends that this be done as promptly as possible. It should be completed by 1958, coincident with the Port Harcourt Wharf extension (see Technical Report No. 18) which will result in increased traffic on the eastern line. The improvements will cost an estimated £ 3.2 million, of which £ 2.4 million is to be met from the Renewals Fund. The Enugu-Makurdi-Kaduna section will be renewed next.

We recommend progressive renewal of all main lines with 80 lb./yd. rail, and of the branches with 60 lb./yd. rail. The Kafanchan-Jos branch will be relaid during 1954.

Since the future of the Baro line depends on surveys relating to the improvement of the Niger (see Technical Report No. 12), for the time being that line need only be maintained in its present condition.

Part of the great increase in track maintenance is due to staff expenses. There are 6.2 civil engineering staff employees per mile of track, a very high ratio. On similar railways of neighboring countries, the ratio is only 3 to 3.5 per mile. We recommend that a study of present maintenance methods be made and that the railway experiment with modern mechanized equipment; it has proved successful on comparable railways.

<sup>6</sup> They should be of a type used on nearby African railways so as to facilitate resale.

## D NEW LINES

*Cement Plant Branch*

There is a possibility that a short eastern branch will be needed to serve a projected cement plant at Nkalagu northeast of Enugu. The branch would be about 8 miles long and would cost approximately £ 150,000 (included in the railway's 1953-54 estimates).

*Bornu Extension*

The question of a line to serve Bornu Province and the Chad has long been under consideration and its establishment has been urged in the interest of the development of the northeast and of providing transit facilities for French Equatorial Africa.

Three possible routes have been considered. One is Lafia-Gombe-Biu-Maiduguri. This would require 400 miles of new line, estimated in 1949 to cost £ 6.8 million, and would present certain physical difficulties such as the crossing of the Gongola River. Its terminus at Maiduguri would be 1,179 miles from Lagos and 751 from Port Harcourt. Another route is Nguru-Damaturu-Maiduguri, involving 230 miles of new line, estimated in 1949 to cost £ 2 million, assuming the relaying of rails taken up from existing lines. The Maiduguri terminus would be about 1,075 miles from both Lagos and Port Harcourt. Plans to construct this extension were suspended in 1951 following ECA aid for the construction of the Kano-Maiduguri trunk road. The third possible route, for which no detailed survey has been made, is Zaria-Rahama-Potiskum-Maiduguri. It would require 330 miles of new line and was estimated in 1949 to cost £ 5.3 million, including the cost of laying 3'6" gauge track on the Zaria-Rahama section of the Bauchi Light. The Maiduguri terminus of this route would be slightly over 1,035 miles from Lagos and Port Harcourt.

Since the decision to abandon the Nguru-Maiduguri route, extensive improvements have been made or are being made to the Jos-Maiduguri and Kano-Potiskum-Maiduguri roads in order to adapt them to heavy traffic.

The choice between road or rail transport for this new area must be based on the total cost to the community, and on the possibility of

making the users of the facility share that cost. Construction of a railway will require more capital than building a road but on the other hand maintenance costs of a railway are lower and they may be recouped once traffic reaches a certain level. The decision must therefore take into account the traffic potential of the developing northeast.

Present traffic is light, less than 100,000 tons. Exports from the Maiduguri region amount roughly to 50,000 tons, mainly groundnuts and guinea corn, but there is a considerable cattle traffic, mostly from the Chad. Transit traffic with the Chad is mainly in imports and is less than 25,000 tons. Exports from the Chad are negligible.

Agricultural development of the region is a certainty and it is a safe estimate that long-distance traffic on the route could reach 200,000 tons within 20 years' time. In addition there will be local goods and passenger traffic. This traffic can be carried in heavy trailer-trucks with diesel engines on a two lane tarred road, or by rail with diesel traction on a branch of an existing network.

At present there is no firm basis for estimating the cost of either alternative. There is no two lane tarred road in the area and operating results of diesel traction in the North will not be available for some time. We suggest, therefore, that two things be done between 1955 and 1960: (1) that the tarring of the Jos-Maiduguri road as a single lane road be completed, as recommended in Technical Report No. 17, and that estimates be developed for the cost of widening the road to two tarred lanes and maintaining it, and for the cost of carriage by road; and (2) that estimates be developed for a railway extension, assuming (a) 60 lb./yd. rail, rather than light second-hand rail as contemplated in previous plans, and a ballasted track; (b) diesel traction with 750 h.p. locomotives, making allowance for water stations or new running sheds unnecessary; and (c) 200,000 tons of traffic per year, with a maximum of 150,000 tons in one direction, for which one daily freight train and one pickup train three times a week for local traffic would suffice.

Judging by experience in similar territories we think that the railway alternative is likely to prove more advantageous in the end. If the decision is in favor of rail transport, we recommend that the extension be connected with the eastern line. Improvements of that line and completion of the Port Harcourt Wharf extension will greatly

increase its capacity. Also, hauling distance between Bornu and the sea will be shorter via the eastern line. The western line, on the other hand, will have to cope with increased traffic from the developing Kano-Sokoto region and transit traffic from the French Niger.

In the mission's view the Nguru-Maiduguri extension plan should definitely be abandoned. This extension would be very long; it would not serve the Bauchi-Potiskum region; and it would require renewal of the 143-mile Kano-Nguru section with 60 lb./yd. rail, an expenditure which is not justified by the present or immediately foreseeable traffic. We do, however, recommend a 40-mile extension from Nguru to Gashua, at an estimated cost of £ 400,000, to give better service to the Bornu-and-north area. Gashua is an important market center, while Nguru is important only because it is a railway terminus. Moreover, there is no all-weather road in the area. Rail taken up for the Kafanchan-Jos renewal could be re-used on this branch. If the mission's recommendations are followed the Kano-Nguru branch will be dieselized; no additional motive power or rolling stock should be necessary for the extension.

A Lafia-Gombe-Biu-Maiduguri line would connect with the eastern line and would be the shortest distance to the sea. But it would cross a very difficult terrain, it would not serve the Bauchi-Potiskum area and in part it would parallel the Benue, on which it may be possible to improve navigation (see Technical Report No. 18).

The natural transport axis of this area is that of the Jos-Bauchi-Potiskum-Maiduguri road. Jos is gradually assuming the role of economic capital of the northeast. Its demand for food products is increasing and could be met via a Bornu Province extension. In our opinion the best route would follow more or less closely the Jos-Bauchi-Potiskum-Maiduguri road, a stretch of approximately 350 miles. It would bring Maiduguri within 870 miles of Port Harcourt, 170 miles closer than via Zaria-Rahama, which was one of the alternative routes considered. The only problem raised by this route would be in the difficult Kafanchan-Jos stretch where the gradient is 2%, and the similar though lesser difficulties along some 40 miles past Jos towards Bauchi. The resistance of a train hauling on a 2% gradient is approximately 1.7 times its resistance on a 1% gradient, which would be the maximum on the rest of this extension; to use

this particular 104 miles would be the equivalent of an additional 73 miles of line, as far as motive power costs are concerned. Because advantages can be cited for both a Jos-Bauchi and a Zaria-Rahama route, we recommend that both be surveyed and that £ 80,000 be provided for that purpose.

If the Zaria route is chosen, the Jos-Maiduguri road should be widened to two tarred lanes from Jos to its junction with the railway.

## E OTHER IMPROVEMENTS

### *Rolling Stock*

*Passenger Cars* Purchase of two additional sets for the western line "Limiteds" is planned. If the western line is dieselized, and turn-around time reduced, they can be used to run additional services on the eastern line.

*Freight Cars* Cattle cars and tank cars for groundnut oil are urgently needed. Total needs can be met by about 800 30-ton cars of various types. An axle-load of 14 tons should be fixed for new specialized cars such as tank and coal cars running on 60 lb./yd. track, to increase capacity to 35-38 tons. It is important that the railway not underestimate freight car requirements, for in a developing economy a shortage of carrying capacity is far more serious than temporary surpluses.

### *Stations*

The urgently needed general rehabilitation of principal passenger stations and goods yards will be completed during 1955-60. Cattle yards in some stations are particularly in need of improvement. Additional crossing stations are planned on the main lines. We approve the plan to open an office in the center of Lagos and to establish a bus connection from there to the main terminal.

### *Workshops*

A diesel workshop is being constructed at Zaria. Improvements of machinery, other plant and electrical equipment are planned. We

recommend that capital improvements to running sheds and water supplies in the North be kept to a minimum in anticipation of dieselization.

#### *Communications and Signalling*

An additional 1,060 miles of telephone circuits are to be installed for the control of traffic over the western and eastern lines including the Kafanchan-Jos branch. We recommend that this be done by contract and be started simultaneously on both lines. Extension of the radio and telephone network is also planned and extension of double-wire signalling will be continued.

#### *Staff Administration*

Additional staff quarters, offices and a central technical establishment for staff training are planned.

#### *Future of the Bauchi Light*

Since the locomotives and rolling stock of this narrow-gauge branch will require renewal before 1960, a decision on its future must be taken soon. Both passenger and freight traffic are extremely light and the line operates at a deficit. Moreover, it runs parallel to the main line at a distance of only 60 miles. There is only a slight possibility of new traffic.

Consideration has been given to dieselization and to relaying certain sections with standard-gauge track. This would be feasible on the 88 miles of the Zaria-Rahama section but the 45 miles of the Rahama-Jos section would present difficulties.

The mission recommends that no new narrow-gauge equipment be purchased and that the line be closed and replaced by a road transport service. If substantial new traffic develops or a Bornu extension starts out from Zaria, then the Zaria-Rahama section should be rebuilt as a standard-gauge line.

## F COST OF THE PROGRAM

The cost of the investment program recommended by the mission is shown in Table 8. Expenditures are exclusive of renewals and are shown in comparison with the railway's own program at the time of the mission's visit.

TABLE 8 Summary and Comparison of Railway and Mission Capital Expenditures Program, 1955-60

(Thousand £)

	Railway's Estimates	Mission's Recommendations
<i>New Lines</i>		
Bornu Extension Survey .....	—	80
Nguru-Gashua Extension .....	—	400
<i>Track Improvement</i>		
Relaying Kafanchan-Jos (2nd instalment) .....	77	77
Relaying Port Harcourt-Enugu .....	800	800
Relaying Bauchi Light .....	1,800	—
Regirdering of bridges .....	10	10
Mechanical equipment (maintenance) .....	—	25
<i>Station Improvements</i> .....	967	967
<i>Running Section Improvements</i>		
New Running Sheds .....	304	150
Water Supplies .....	89	89
<i>Workshops, Plant, Machinery</i> .....	1,052	1,052
<i>Signalling and Telecommunications</i> .....	389	389
<i>Buildings</i> .....	1,525	1,525
<i>Motive Power</i>		
Locomotives .....	279	624
Railcars .....	—	150
<i>Rolling Stock</i>		
Passenger .....	500	500
Freight .....	50	2,000
<i>Road Transport Improvement</i> .....	185	185
Total .....	8,027	9,023

## G THE RAILWAY CORPORATION

Legislation is being drafted to establish the railway as an autonomous corporation; it is anticipated that the corporation will come into existence on April 1, 1955. Its characteristics will be similar to those of the proposed Ports Authority, discussed in Technical Report No. 18. It will be a public corporation with a degree of self-administration in that the payers of dues will be represented on the board. It will be financially autonomous and will employ labor directly.

No problems of internal reorganization are raised by this change because the railway is largely independent already. By the time it is ready to function, the wharves at Apapa and Port Harcourt now operated by the railway will have been taken over by the Ports Authority.

The railway's capital account as of March 31, 1953 showed fixed assets and rolling stock valued at £ 26,914,751, which had been financed by loans from government totalling £ 22,457,188 and by plowed-back profits amounting to £ 4,457,563. On the government loans, the railway paid £ 771,498 interest in 1952-53.

We recommend that when the corporation is formed, a portion of the railway's capital be transferred to it free of interest, in order to reduce fixed charges. This step would increase the corporation's creditworthiness, and enable it at some stage to enter the market and borrow on its own credit. The legislation setting up the corporation should authorize it to do so.

## H FINANCIAL PROSPECTS

The railway's earning position over the next five years appears sufficiently bright for it to be able to finance a large part of its investment program out of its profits. The program we recommend will cost just over £ 9 million. The railway will also have to find about £ 2.6 million to meet the cost of that part of the current £ 7.5 million capital investment program for which commitments have already been made but which will not be completed by the end of 1954-55. An additional £ 9 million of expenditure on renewal of equipment and fixed assets will be financed from the renewals fund.

We estimate that under favorable circumstances the railway need borrow only some £ 3.6 million of the £ 11.6 million of new capital

expenditure in 1955-60. We have included government loans of this amount at the rate of £ 1.2 million a year for 1957-60 in our projections of federal government expenditure. The railway may, however, find it possible to borrow from the capital market abroad on its own credit. Our estimate of loan capital requirements of £ 3.6 million is based on the following assumptions:

1. that the railway will have surplus balances of £ 500,000 at the beginning of the period, which can be used for capital expenditure;
2. that operating receipts will continue to rise until 1955, when the groundnut backlog will have been cleared, that they will then fall temporarily, but that by 1959-60 they will have recovered to their 1954-55 level;
3. that there will be no sharp rise in operating costs, despite the greater disequilibrium of traffic that is expected;
4. that at the time the corporation is formed, annual fixed interest charges will be reduced to a level of £ 300,000;
5. that it will be possible to reduce the annual contribution to the renewals fund from £ 1.5 million—the level of the last few years—to £ 1.25 million. A final decision on this point must await the completion of a revaluation of the railway's assets, in progress at the time of the mission's visit. In the mission's opinion the contribution of the last few years has been higher than necessary. The renewals fund balance at the end of 1954-55 will probably be in the neighborhood of £ 3.5 million, which might be drawn down somewhat if renewals higher than expected are needed in the next five years;
6. that, as planned, the new corporation will pay income taxes estimated to amount to some £ 2.5 million over 1955-60. Up to now, the railway, as a government department, has not been liable to income tax; and
7. that, as a result of the considerations in (2) to (6) above, the railway's net profit after taxes will average some £ 1.5 million a year between 1955 and 1960.

The present favorable earning position should not blind management to the constant need to reduce operating costs. The surplus would be considerably reduced by a series of bad groundnut crops.

Competition from the roads will increase as the highway system develops; the railway must be able to meet this competition, reducing freight rates if necessary.

We recommend that a review of the railway's rates be conducted in the near future, in the light of increasing road competition and of the possibility of stimulating domestic production through lower rates. If a reduction should appear desirable, the railway could content itself with somewhat smaller annual surpluses, covering a greater part of its investment needs from borrowings.

## SCHEDULE 1 Comparison between Steam and Diesel Traction Cost

This analysis of comparative costs assumes that in 1952-53 the railway was either entirely steam- or entirely diesel-driven. Figures for steam traction are based on the railway's 1952-53 revised estimates while those for diesel traction are based on experience of comparable African railways. Only basic expenditures, such as those for motive power, have been considered; other savings (running sheds, staff quarters, etc.) cannot be computed with precision.

## CAPITAL EXPENDITURES

1. The steam stock is composed of engines of different series, but on the basis of annual mileage and hauling capacity the main line stock as a whole, exclusive of motive power employed in hauling coal for railway consumption, is roughly equivalent to 106 "River Class" engines. The suburban and branch engines are equivalent to 43 light engines and there are 54 shunting engines.

2. Rough calculations of diesel equivalents are as follows: one 750 h.p. diesel per 2.1 "River Class"; one 300-400 h.p. diesel per 1.8 light engines or 1.35 shunting engines. Diesel equivalents of present stock would therefore total about 115 engines: 50 750 h.p. engines representing 106 heavy steam engines, 18 300-400 h.p. engines and 7 railcar sets for the 43 light engines; and 40 300-400 h.p. engines for the 54 shunting engines.

3. The comparative costs are:

<i>Steam Engines</i>		<i>(Million £)</i>	
118 "River Class"	@ £ 33,300	=	£ 3.930
43 light main line	@ 25,000	=	1.075
54 shunting	@ 20,000	=	1.080
	Total		£ 6.085
 <i>Diesel Engines</i>			
50 750 h.p.	@ £ 48,000	=	£ 2.400
58 300-400 h.p.	@ 30,000	=	1.740
7 railcars	@ 30,000	=	.210
	Total		£ 4.350

The interest charges, at  $3\frac{1}{2}\%$ , would be £ 106,490 for steam and £ 76,125 for diesel.

The annual depreciation, calculated on a 30-year basis for steam engines and on a 15-year basis for diesel engines, would be £ 202,800 for steam and £ 290,000 for diesel.

#### OPERATING EXPENDITURES

##### *Fuel*

a. *Steam traction.* The cost of the 342,517 tons of coal consumed in 1952-53, including sea transport from Port Harcourt to Lagos, handling and storage, was £ 736,000. Expenditure for water was £ 90,000.

b. *Diesel traction.* Fuel consumption would be roughly 0.9 gallons per mile for the 750 h.p. engines, 0.5 gallons for the 300-400 h.p. main line engines and the railcars, and 0.6 gallons per mile for the shunting engines. The total consumption would therefore be:

750 h.p. engines	= 50 x 67,200 mi. = 3,360,000 mi. @ .9 gal. = 3.03 mil.gal.
300-400 h.p. main lines	= 18 x 67,200 mi. = 1,210,000 mi. @ .5 gal. = 0.61 mil.gal.
Railcars	= 7 x 50,000 mi. = 350,000 mi. @ .5 gal. = 0.18 mil.gal.
Shunters	= 40 x 32,500 mi. = 1,300,000 mi. @ .6 gal. = 0.78 mil.gal.
	Total      6,220,000 mi.      and      4.60 mil.gal.

This quantity of fuel is equal to about 18,000 tons. At the current Apapa price of £ 21.10 per ton, including import duty, fuel expenditure would be £ 387,000. The cost of water for workshops, etc. is estimated at a maximum of £ 5,000 annually.

##### *Operating Staff*

Operating staff now totals 1,510, or 6.5 men per engine. Expenditure for wages equals £ 256,000, an average of £ 169 per employee.

With diesel traction, no more than six men per engine would be required, in two-man teams or a total of 690 employees (6 x 115). Expenditures for wages would be £ 140,000 (690 x £ 203), 20% per employee higher than for steam because the average grades will be higher.

*Maintenance Staff*

There are now 13 running sheds, with a maintenance staff of 2,900, receiving a total of £ 316,000 in wages. With diesel traction, four running sheds, say at Lagos, Jebba, Zaria and Enugu, would be sufficient.

The staff of the three locomotive workshops totals 1,500 employees, receiving £ 300,000 in wages.

Thus 4,400 employees are engaged in maintenance and the payroll is £ 616,000, an average of £ 140 per man.

These figures would be considerably reduced with diesel traction. In French West Africa where dieselization is very far advanced, diesel operation and maintenance requires on a per mile basis only half the staff required for steam traction.

In Nigeria, 6.603 million miles were run in 1952-53. Assuming a total of 6.220 million miles per annum (eliminating mileage due to hauling coal for railway consumption) and applying the French West Africa ratio of one operating and maintenance employee per 3,000 miles, a total of 2,070 operating and maintenance employees would be required, of which 690 would be operating employees, leaving 1,380 for maintenance, in contrast to the present maintenance staff of 4,400. In view of the fact that new and complicated techniques will have to be learned, it may be more realistic to assume a ratio of only 2,500 miles per operating and maintenance employee. If the operating staff remains at 690, this would give a maintenance staff of 1,810. Assuming that the average wage per employee would be increased by 25% because more highly trained men would be required, the total maintenance payroll would be £ 317,000 (1,810 x £ 175), compared to the present payroll of £ 616,000.

*Miscellaneous*

The other principal expenditures which would be affected by dieselization are:

1. Maintenance of machinery, now £ 52,000 per annum, which would be cut approximately in half, to £ 30,000, by a reduction in the number of running sheds and shops.

2. Boiler inspection of locomotives in service, now £ 10,000 per annum, which would be discontinued.

3. Purchase of major spare parts, such as boilers for steam engines and motors for diesel engines; assuming two new boilers per engine during the 30-year life of a steam engine and one new motor per engine during the 15-year life of a diesel engine, annual expenditures would be approximately £ 80,000 for steam traction and £ 93,000 for diesel traction.

#### SUMMARY

The foregoing may be summarized as follows:

#### Comparison of Costs of Steam and Diesel Traction

	(£)	
	Steam	Diesel
<i>Capital Expenditure</i>		
Locomotive stock .....	6,085,000	4,350,000
<i>Recurrent Expenditure</i>		
<i>Depreciation and Interest</i>		
a. Depreciation .....	202,800	290,000
b. Interest on capital .....	106,490	76,125
Sub-total .....	309,290	366,125
<i>Operating Expenditures</i>		
a. Fuel .....	736,000	387,000
b. Water .....	90,000	5,000
c. Operating staff .....	256,000	140,000
d. Maintenance staff .....	616,000	317,000
e. Maintenance of machinery .....	52,000	30,000
f. Maintenance of locomotives in service ....	10,000	—
g. Major spare parts .....	80,000	93,000
Sub-total .....	1,840,000	972,000
Total Recurrent Expenditure .....	2,149,290	1,338,125

The importance of these savings is best demonstrated by the fact that operating expenditures in 1952-53 would have been reduced from £ 6 million to £ 5.2 million and that the net surplus would have risen from £ 2.2 million to nearly £ 3 million.

I THE ROAD SYSTEM

The roads of Nigeria traverse a territory of sharp contrasts in climate, soil and vegetation. In the swampy areas and dense forests of the South annual rainfall ranges from 80 to 200 inches but is as low as 10 inches in the desert areas of the North. The elevation is seldom more than 2,000 feet, except in the Plateau area around Jos in the Northern Region, and in the Southern Cameroons where there are large inhabited areas over 4,000 feet high.

The length of the road system in 1953 may be estimated at about 29,000 miles, or approximately 77 miles of road per thousand square miles, a high road density for Africa. As shown in Table 1, however, there are considerable variations in density among different parts of the country.

TABLE 1 Regional Distribution of the Road System

Region	Total Mileage	Miles of Road per Thousand Square Miles
Northern .....	17,359	16
Western .....	3,046	15
Eastern .....	7,629	4
Southern Cameroons .....	711	23

SOURCE: Regional Public Works Departments.

For administrative purposes, roads are classified as Trunk Roads A, Trunk Roads B and local roads. Trunk Roads A are constructed and maintained with federal funds. They are roads of interregional and international importance and they constitute the basic frame-work of the road system decided upon in 1946. When completed, the system will consist of three main south-north arteries, five main west-east

arteries and several links between those arteries. Trunk Roads B are financed jointly by the regions and local authorities; they are roads of regional or interprovincial importance, supplementing the Trunk Roads A system. Trunk Roads A and B are shown on Map 11. Roads of local interest are variously classified as native administration, provincial, district, and township roads. The main expense of their construction and maintenance is borne by the appropriate local administration, with grant assistance from the region.

Table 2 shows the regional distribution of the three classes of roads.

TABLE 2 Distribution of Roads by Categories and Regions

	<i>(miles)</i>				
	Northern Region	Western Region	Eastern Region	Southern Cameroons	Total
Trunk Roads A .....	3,496	672	710	329	5,207
Trunk Roads B .....	4,232	1,038	536	264	6,070
Local Roads .....	9,631	1,336	6,383	118	17,468
Total .....	17,359	3,046	7,629	711	28,745

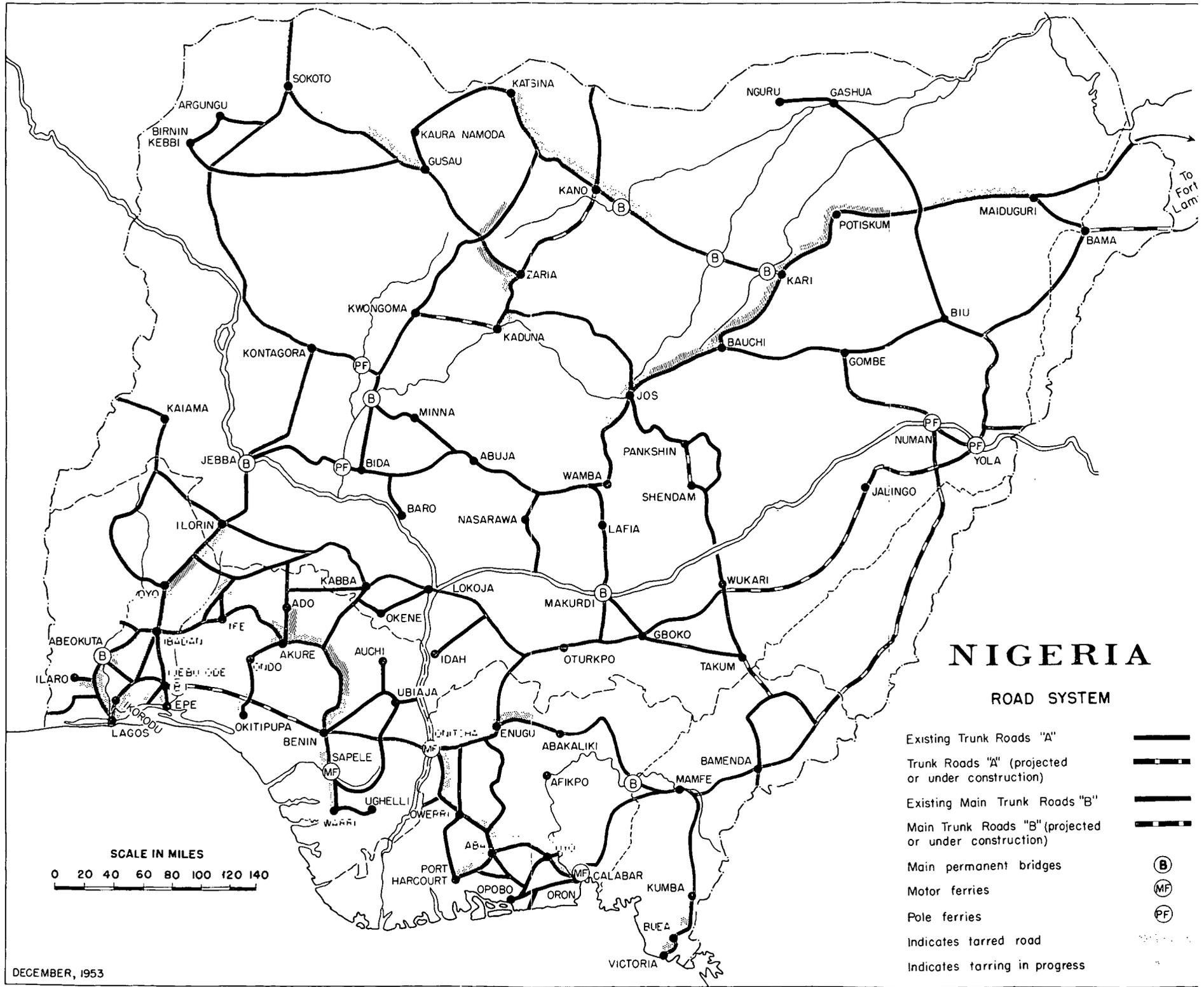
SOURCE: Regional Public Works Departments.

## II ROAD TRANSPORTATION

### *Traffic Development*

Table 2 in Chapter 3 indicates the rapid increase in the use of roads since the war. In 1938, only 1,465 vehicles (commercial, private cars including taxis, motorcycles, tractors and trailers) were newly registered, compared to an average of 7,265 new registrations annually for 1950, 1951 and 1952 and 4,337 for the first six months of 1953. The number of current licenses rose from 14,200 for commercial and private vehicles in the first quarter of 1950 to 22,900 in the first quarter of 1953, of which commercial vehicles represented just under one half.

In the last four years the number of commercial vehicles has increased an average of 15% annually, while the number of passenger cars has increased an average of 26%. The number of new registra-





tions of private cars will probably tend to decrease now that the post-war backlog of demand has been filled. The number of lorries, on the other hand, will probably continue to increase at the present rate, which appears normal for a developing country. It is estimated that by 1960 the total number of vehicles in operation will be approximately 60,000. Bicycle traffic is growing, especially in the East. The bicycles, which are used for the carriage of palm oil tins, take up considerable road space, and they make the narrow roads even more hazardous, causing many accidents. We suggest that bicycle paths be provided along the roads leading out of the larger cities and on all main roads in the East.

The Public Works Department's semiannual vehicle census for 1951-52 shows that traffic on Trunk Roads A is especially heavy on the roads radiating from the ports and other large towns in the East and the West and those connecting with the railway terminals in the North. Certain Trunk Roads B are heavily traveled, notably the Benin-Sapele and Port Harcourt-Owerri roads. As pointed out in Technical Report No. 16, road transport has captured substantial traffic from the railway in the West. In the North, lorries are used to feed the main export crops to the railheads and to distribute imported goods to towns in Nigeria and the French territories.

Traffic Motor Units serve as a highway police force but have very limited means and personnel. Since the likelihood of accidents increases with the growth of traffic, we recommend substantial expansion of these units.

### *Road Transport Companies*

There are only a few large road transport companies, in Lagos, Jos, Kano and Benin, most of which belong to non-Nigerians and carry only freight; they have modern garages and workshops and employ European supervisory personnel. The railway also operates road services in the Zaria-Sokoto area. Most of the road transport business is, however, performed by small local companies with only one or two lorries, or rather "stage-carriages," which carry both freight and passengers. The chassis is bought stripped and the body is built locally. Nigerians have taken to the automotive transport industry to an ex-

traordinary degree. Often an entire family joins to buy a lorry, generally on credit. Only minimum maintenance work is done. As a rule, no attention is paid to accounting or depreciation but generally the business appears to prosper nevertheless.

The large trading firms handle some of their own deliveries, especially in the cities. Elsewhere they generally deal with the larger transport companies.

The sale and maintenance of automobiles is handled by the trading companies; the large automobile manufacturers do not have their own sales offices.

#### *Automotive Equipment and Its Maintenance*

The state of the earth and gravel roads and the weight limitations dictated by the bridges have made a very sturdy type of lorry of three to five tons capacity the rule. At present, heavy trailer-trucks are permitted only on the Jos-Maiduguri-Fort Lamy road. The chief European and American makes are represented and are in general use. American-made lorries and pick-ups seem to be preferred in the bush country. In the North and elsewhere in the bush where the maintenance facilities are very limited, a lorry lasts only two years, or perhaps no more than one year, unless it belongs to one of the large firms which has its own workshops. In the South, where roads and garages are better, a lorry will last three to five years with normal maintenance.

Inadequacy of maintenance facilities and shortages of spare parts are among the chief obstacles to growth of road transport. In the larger cities, such as Lagos, Ibadan, Aba, Jos and Kano, the garage-repair shops of the manufacturers' representatives will repair cars of their respective makes and provide spare parts. But even a main center such as Maiduguri has no large repair shop and must send to Jos for spare parts. It will take a week to receive them if Jos has them in stock; if not, it may take more than a month. The large firms are reluctant to spread spare parts stocks among a number of cities and it appears that many of them are overly conservative in their estimates of spare parts requirements. There are many small local garages with fairly rudimentary equipment; they often have difficulty obtaining

width of 22 feet, permitting two lanes of traffic; the remainder are only 12 feet wide.

Nearly all bituminous roads lack sub-base. The base course, generally six inches of gravelly laterite, an excellent road material, is placed directly on the earth. In the coastal regions the base course is sometimes a clayey sand with rather poor characteristics: the liquid limit is 36.4% and the plasticity index is 17.9%. This makes for fragility and lack of resistance. The road from the outskirts of Lagos to Ikorodu, built two years ago with this clayey sand, has already suffered considerable damage in the marshy zones where there has been a noticeable shifting of the pavement and wear on the surface coat. Where such soil must be used, it should be stabilized with asphalt or cement; the so-called "Benin Sand" can be stabilized only with cement because of its high plasticity index, but in the North there are sands which can be stabilized with asphalt. For heavily traveled roads the best base course would be crushed rock, laid on a sub-base of gravelly soil or, if necessary, a clayey sand. In many parts of the country there are granite quarries that could be drawn on for macadam paving in their vicinity.

The surface coat is in two layers, a primer and a sealer. The present hydrocarbon bond is pure bitumen, cut-back or emulsion of bitumen, although tar was tried at first. The gravel may be laterite, quartz, or crushed granite when the road is near a quarry. The primer is generally covered with coarse sand or  $\frac{1}{4}$  inch gravel, the sealer with  $\frac{1}{2}$  inch or  $\frac{3}{4}$  inch gravel. We do not think the primer coat can serve satisfactorily as both an impregnating layer and a first surface coating; the sanding or gravelling of this first layer absorbs most of the bond and prevents it from penetrating to the base course as it should. We also question the advisability of uniform mixtures throughout the country, irrespective of traffic volume, humidity and rainfall. The surface coat of a 12-foot wide northern road carrying light traffic need not be as thick and water-tight as that on a heavily traveled road in a humid climate. On roads out of the larger cities where traffic reaches 1,000 vehicles daily, thick coats of premix or asphaltic concrete should be laid. The engineers should experiment until the most practical and economical coating is found for each locality.

spare parts and suffer from a lack of trained mechanics. Despite their limitations they make an important contribution to the maintenance of the motor pool and it is regrettable that local capital is not showing a greater interest in financing garages. The mission recommends that full support for the establishment of garages be given by such agencies as the loans departments of the proposed regional development corporations.<sup>1</sup> A better distribution system for spare parts would greatly assist the small African transporters. We suggest that this subject be studied and discussed with the trading firms by the newly established Nigerian affiliate of the International Road Federation.

### *Freight Rates*

Freight rates are not regulated. For most of the country they range from 5d. to 7d. per ton-mile; at some points in the North they range from 6d. to 12d. and around Lagos, Ibadan and Aba they may be as low as 4d. per ton-mile. The Marketing Boards have established a schedule of transportation rates for use in their calculations of producer prices: they are now 6½d. per ton-mile for tarred roads; 6d. to 7½d. per ton-mile for laterite roads; and 9d. to 10½d. per ton-mile for dry season roads. Actually, lower rates are often charged, especially in the West and the northeast. Competition for freight is very lively in the South and around Kano and the small carriers complain that they cannot compete with the large companies. However, the small carriers derive additional substantial income, about 1d. per passenger mile, from their passenger traffic. On the whole, and notwithstanding the difficulties discussed above, the road transport industry seems reasonably prosperous.

## III TECHNICAL FEATURES

### *Bituminous Roads*

There are about 1,900 miles of bituminous road in Nigeria, half the mileage being in the West. An extensive tarring program is now in progress. Only the few most heavily travelled roads are tarred to a

<sup>1</sup> See Chapter 4.

The surface coats are spread by hand and are very uneven. The mission strongly recommends that spraying and gravelling be done mechanically. About 300 miles are tarred annually as part of general maintenance; another 100 miles of new surfacing may also be performed each year. Equipment requirements can be kept to a minimum if the new federal road department (see p. 501), in co-operation with the regions, draws up each year a co-ordinated tarring program.

Present policy calls for the tarring of an earth road when the cost of its maintenance exceeds the cost of maintaining a single lane tarred road; this point is considered to be reached when traffic is about 100 vehicles per day. The mission believes that in fact tarring becomes economic at a much lower traffic density, perhaps 50 vehicles per day. From a broad economic point of view, there should be taken into account not only the cost of keeping a road in good condition, but also the cost of wear and tear on vehicles. Tests made in the United States indicate that it costs about 30% more to operate over an earth road than over a tarred surface.

The mission also considers that bituminous roads should be widened from one to two lanes much sooner than is now done. Present policy requires a daily traffic in excess of 300 vehicles before a tarred road is widened to two lanes. However, when daily traffic on a 12-foot tarred road reaches 150 vehicles, maintenance becomes difficult and costly. Since tarring generates traffic, maintenance problems must be considered in determining specifications or else the road may become inadequate for its traffic almost immediately. Vehicles crossing and passing on a 12-foot road run with two wheels on the shoulder, which prevents the grass from growing properly even with constant maintenance care. Rapid deterioration of the shoulders results; within a few months their level falls measurably below that of the road, creating a traffic hazard. Moreover, in running onto the shoulder the vehicles cause progressive destruction of the pavement edges.

In deciding upon the tarring or widening of individual sectors of road, account should be taken of differences in climate, terrain and vegetation and no uniform rules can be laid down. In humid areas where corrugation can be combated and where the type of soil permits an earth road to be kept in good condition, tarring may be postponed until traffic reaches 150–200 vehicles daily; then the road

should be converted at once into a two lane bituminous road. In dry areas, we recommend that earth roads be tarred for 12 feet even if the traffic does not exceed 50–100 vehicles daily, for there an earth road, no matter how well maintained, is subject to rapid formation of corrugation which causes especially great wear and tear on vehicles.

The mission suggests that where traffic is light, below 500 vehicles per day, double lane hard-surfaced roads should not be built more than 20 feet wide, particularly if Nigeria adopts the recommendation for the mechanical spraying and gravelling of surface coats. A 20-foot road can be treated in two operations whereas a 22-foot one might require three. A width of 22 feet is justified for daily traffic in the 500–1,500 vehicle range, and traffic in excess of that requires a three lane 34-foot wide road.

Present specifications call for single lane roads to be 12 feet wide. From the point of view of greatest efficiency of mechanical maintenance, a case could be made for reducing the width of single lane roads to 11 feet, that being the maximum width handled by a machine in one operation. However, 12 feet is generally recognized as the optimum width for a single lane road and it may be preferable to retain this width even though two machine operations are required.

### *Earth Roads*

Most of Nigeria's roads are earth and gravel. A substantial part of these cannot be travelled during the rainy season; others are closed for varying periods after each heavy rain. These dry-season roads are found primarily in the North, where they comprise nearly half the total mileage.

The maintenance of earth roads is at present very unsatisfactory. For the most part it is done by hand. It includes remetalling every three years with a 1½ inch layer of laterite, extracted and put into place by hand; sweeping to combat corrugation; cleaning of ditches; maintenance of grass shoulders; and maintenance of the roadway proper by filling holes and periodic reprofiling. In general, the output of work is poor, due in part to insufficient supervision; the quality is also unsatisfactory, particularly of the profiling.

The mission recommends that, as a matter of high priority, steps

be taken to improve the quality of earth road maintenance. In the short run, every effort must be made to achieve better supervision of road gangs. This can be done both by more active recruitment for vacancies at the level of inspectors of works and by the selection of responsible persons for the posts of gang foremen. Pay scales at the latter level should be revised upward to secure the best possible candidates.

The mission believes that great advantages might accrue if the mechanical maintenance of earth roads were found to be practicable. The use of motor graders would greatly improve the quality of roads, and in the South at least would permit postponing the tarring of some roads for several years. Mechanized maintenance might also make possible more effective use and supervision of the labor force, which would be grouped in travelling crews. The mission does not under-rate, however, the difficulties which would be encountered in introducing mechanized maintenance. One of these is the difficulty of instructing and supervising crews, since personnel would have to be trained to a higher level of skills than is now possessed by the labor force performing hand maintenance. Another is the difficulty of providing adequate repair facilities, particularly in the North where workshops necessarily are far apart.

In order that the advantages and disadvantages of mechanical maintenance may be weighed under Nigerian conditions, we suggest that one mechanical maintenance unit be set up on an experimental basis. Such a unit might cover 300 miles of road. Necessary personnel would include one engineer, one inspector of works or overseer for each 75-mile sector, three or four head men and 20-40 laborers per sector. Equipment would include a team of motor graders, one heavy and one light, for each two sectors, and a bulldozer for each 300 miles. The motor graders, as a team, would remake ditches, resurface and reprofile; the light machine would be used alone in humid areas during the rainy season when the heavy one would be useless and possibly destructive. At the beginning of the dry season the team would go slowly over the stretch covering perhaps three miles per day; the light reprofiling thereafter could be done at a rate of 10 miles per day. The bulldozers would work over the gravelly soil needed for resurfacing and would make minor improvements such as clearings at turns and

terracing. Necessary vehicles would include a car for each sector overseer and, for each 300 miles, a fleet of lorries large enough to permit assignment of two to each sector. A roller with tires drawn by a light tractor with tires would be useful in general resurfacing. Since the motor grader does not prevent the formation of corrugation, sweeping would still be necessary; this could be done by the light tractor in preference to manual sweeping.

However, some maintenance work would still have to be done manually. Holes in the roadway must be filled between runs of the motor grader. The ditches and adjoining areas must be cleared by hand before grading work is done, to reduce the amount of vegetation thrown up on the road by the motor grader; this is especially important just before ditches are remade at the end of the rainy season. During the rainy season, too, the ditches must be cleaned by hand; the heavy machine used for cleaning would bog down, especially in the humid areas. Moreover, the wet soil thrown on the road by the grader, if soaked by heavy rains before being compacted by traffic, would make the road impassable. Travelling crews of laborers could perform this hand work.

One result of maintenance of earth roads by this system would be the possibility of eliminating the grass shoulders between the travelled surfaces of the road and the ditches. An earth road carrying about 100 vehicles a day loses at least an inch in thickness every year under traffic, wind and rain. But the shoulders do not wear down and soon the road is boxed in. It can be drained only by cutting transverse drains through the shoulders at frequent intervals, which practically doubles the length of the ditch network and the volume of maintenance work. Extension of the road surface to the main drainage ditch would greatly simplify the provision of adequate drainage. It would also facilitate traffic and reduce the tendency toward W-shaped cross-profiling caused by the channeling of traffic on a narrow road. The mission does not share the view expressed by some engineers that elimination of the shoulders would involve a risk of transversal erosion during rains. The laterite surface which would be extended over the entire width between the ditches is fully erosion-resistant if its slope is less than 4%.

The cost of mechanical road maintenance might be somewhat higher

than the cost of hand maintenance. However, improvement of the present system, by introducing more adequate supervision, would also raise costs above the present level. In any case, the superior quality of mechanized work would justify some additional expenditure.

Although we believe that a final decision on general introduction of mechanized maintenance of earth roads can not be made until a pilot unit of the type suggested above is in operation, we are confident that experience will point to its extension. In the meantime, we repeat that every effort should be made to improve maintenance standards by present methods.

### *Bridges*

In 1949 (the last year for which the mission could obtain figures), the trunk roads system included more than 2,200 bridges from 20 to 1,200 feet long, with an aggregate length of more than 85,000 feet; only 10% exceeded 100 feet in length. Road traffic also uses the railway bridges over the Niger at Jebba and over the Benue at Makurdi. Prewar bridges can carry a maximum of eight tons total load; they were built when the authorized weight limit on the roads was only five tons. The considerable increase in the weight of vehicles during the past few years has made these bridges inadequate. An extensive program of bridge reconstruction and reinforcement has become essential and is now under way. Bridges are now designed for a loading of 12 units B.S. which permits passage of 25-ton lorries. Most bridges, whatever their length, are single lane. For spans up to 50 feet, the bridge superstructure may be wholly reinforced concrete; larger spans have steel girders. Pre-stressed concrete would be suitable for medium-span bridges, and in some instances this has been employed.

Single lane bridges present no problem on local roads where traffic is light. But on heavily travelled roads, particularly on those 20 feet wide, the occurrence of bridges at short intervals slows down traffic and increases the danger of accidents. The mission therefore recommends the widening to two lane width of the numerous short bridges on two lane roads. Longer bridges, in excess of 30 feet, do not occur frequently and their widening is in general not necessary.

*Ferries*

Except for the two crossings via the railway bridges, the large rivers must be crossed by ferry. There are motor ferries at only three points: on the Niger between Asaba and Onitsha (two ferry services), on the Ethiope River at Sapele, and between Oron and Calabar. Since ferry crossings will be a necessity for many years to come, the ferries should have the same specifications as the bridges so that lorries need not be unloaded. Motor ferries should replace pole ferries, except on local routes.

## IV ADMINISTRATION AND PERSONNEL

*Administrative Organization*

The construction and maintenance of the trunk roads system is at present the responsibility of the Public Works Department headed by the Inspector-General's Office at Lagos. The Public Works Department also has numerous other responsibilities, including construction and maintenance of government buildings and airfield runways, and manufacturing furniture for the government.

The headquarters organization at Lagos assumes direct responsibility for drawing up the Trunk Roads A program, buying equipment and reviewing the letting of contracts. Three regional offices, headed by regional directors, perform similar functions for Trunk Roads B. The regional directors have jurisdiction over provincial organizations consisting, in general, of a provincial engineer assisted by one or more executive engineers. The road mileage of a province is theoretically divided into sections of 200–300 miles, each section under an inspector of works; subordinate to the inspector are overseers, each in charge of about 100 miles, and beneath the overseers are head men, who supervise gangs of 5–10 men covering 5–10 miles. It is actually at the provincial level that maintenance and construction of Trunk Roads A and B is carried on. In fact, very few inspectors of works have been employed and there is no immediate supervisory staff between the overseers and the executive engineer (in some provinces the provincial engineer himself).

Under the new constitution there will be a federal Public Works Department and separate regional Public Works Departments. With respect to roads, federal jurisdiction will be limited to Trunk Roads A. The mission recommends that the road section of the federal Public Works Department be strengthened, to enable it better to prepare specifications of new road and bridge projects to be contracted out and to conduct more extensive road research as discussed below. Its needs should be given the highest priority in the assignment of available engineering staff. We suggest that consideration be given to transforming the road section into a separate department, under the Ministry of Transport. This would have the advantage of permitting the Minister to co-ordinate road programs with programs for other means of transport. It would also prevent road activities from being subordinated to other activities of the Public Works Department. The mission does not think it necessary that the federal organization should itself carry out work on Trunk Roads A; it recommends continuation of the present practice under which all maintenance and in some cases construction is performed by the regional organizations.

In reviewing the regional organizations the mission has noted considerable differences in road mileage per province. The average provincial mileage in the North, 640 miles, is more than double that of the Western or Eastern Regions. Plateau Province has more than 1,200 miles of trunk roads while Delta Province has only 100.

In the Western and Eastern Regions the trunk roads system is practically complete. If the mission's recommendations are followed, the whole network will soon be tarred, simplifying the maintenance task. Provinces are fairly small, making liaison with provincial headquarters easy, and the limited mileage can be handled by the provincial engineers provided they have sufficient staff. The mission therefore does not recommend any change in the present administrative organization of the Public Works Department in these two regions.

In the North the situation is different. Considerable mileage remains to be built. The trunk roads system will soon reach 10,000 miles; much of this mileage will not be tarred and manual maintenance will continue for a number of years. In addition, the provinces are very large and the nonroad activities of the Public Works Department are

particularly extensive in this region. The mission therefore recommends the setting up of a separate road department in the Northern Region.

We recommend further a division of the region into road districts of about 2,000 miles, centered at Kano, Jos, Maiduguri, Sokoto and Minna, subdivided into sections of 200–300 miles, the boundaries of both districts and sections to be set on the basis of mileage and nature of roads without regard to administrative divisions. Districts would be headed by district engineers; sections would be headed by inspectors of works. This would result in a staff of five district engineers, each of whom would supervise about four to six inspectors of works. There would also be about five road engineers at headquarters of the road department. The proposed organization would better distribute supervisory responsibilities, would provide for a corps of road specialists and would give the technicians greater independence of the local governmental authorities. We suggest that as soon as possible a pilot district should be organized along these lines. There is now a provincial workshop in each of the five proposed district centers.

The limited mileage of the Southern Cameroons should be divided into three sections, centered on Victoria, Mamfe and Bamenda, each under an inspector of works, with a single road engineer over all.

### *Personnel*

The road organization suffers from the same shortage of trained personnel at all levels that plagues other Nigerian technical services and, like them, must now depend and will continue to depend for some time on non-Nigerian personnel. There is a serious shortage of engineers, which not only slows down and sometimes even halts operations, but also affects the training and supervision of overseers. In the North, the Public Works Department has less than three engineers available per province for all PWD activities. In the East, 27% of the positions in the permanent senior staff and 46% in the temporary senior staff were vacant as of March 31, 1952. For the carrying out of the mission's program some 20 additional road engineers would be needed within two or three years at the latest, including at least five with special experience. At the same time training of Nigerians for these positions should be encouraged. It is regrettable that out of the

large number of scholarships offered so few Nigerians have selected the study of engineering, which is a particularly promising and necessary profession in Nigeria.

Some 50 additional inspectors of works would be needed for the proposed program. Expatriate personnel is still necessary, but should be easier to recruit than engineers. Some countries, for example Italy, are known to have highly skilled technicians in this field. It should be possible within a period of 10 years to train enough Nigerians to fill these posts. This training can be provided in local technical schools with one or two years training in the service itself.

Training programs for overseers and gangmen within the service should be expanded. The introduction of mechanical equipment will make it necessary to train drivers but experience in Nigeria proves that this does not raise serious problems.

### *Research*

Research is carried on at the PWD laboratory at Lagos. It is reasonably well equipped and has done valuable work, but both its personnel and facilities should be expanded to enable them to meet all demands. Since the Trunk Roads A extend over the entire country, the results of research on those roads at this laboratory will have equal application to Trunk Roads B and local roads. The fullest possible use should be made of any guidance and facilities offered by the Road Research Laboratory in Harmondsworth, England. The mission concurs in the recommendation made by the director of that laboratory, after a visit to Nigeria in 1953, that 2% of funds to be spent on roads should be devoted to research and control (testing of materials and processes); control is virtually nonexistent in Nigeria, yet the economies resulting from the use of practical and tested materials cannot be realized without it.

Technical information should be exchanged with nearby countries. We hope that the regular contacts already established between British and French engineers will increase.

### *Contract Work*

Before the war, new road construction and improvement of the network were done by the PWD directly. Since the war, some of this

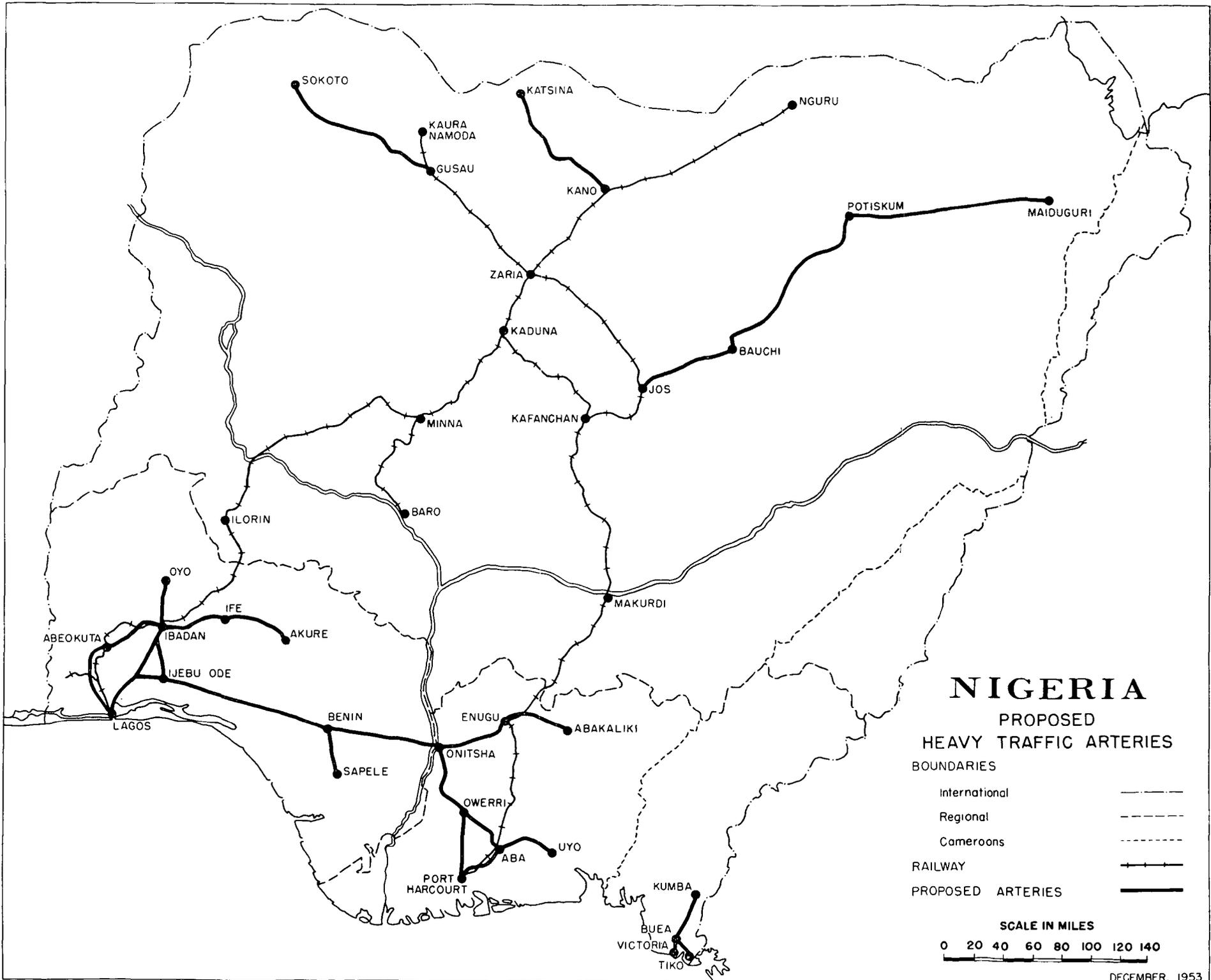
work has been done under contract. We think much more of the road work lends itself to contracting out: road building and widening, new tarring, major maintenance tarring, and reinforcement of bridges. There has been some criticism of contracted projects on the ground that they cost the government more than projects executed by the PWD. The mission cannot say whether this is true, particularly as the accounting methods of the PWD make it difficult to estimate their cost, but we can suggest certain procedures which would help in obtaining lower contract prices. First, contracts should be let in sufficiently large parcels to warrant contractors' necessarily heavy investments in housing, transportation of personnel, materials, etc., and wherever possible the term of contract should be long enough to permit substantial amortization of equipment over that term. Second, plans and specifications should be carefully and completely spelled out. Third, equipment should be provided by contractors rather than the PWD or road department and contractors should receive advances to reduce their financing costs, which would otherwise be reflected in the contract price. Finally, there should be wide recourse to international bidding. If these procedures are followed, we believe that contractors will be more willing than in the past to bid on the basis of unit prices. At present contractors are reluctant to bid on other than a cost-plus basis and this does not offer an incentive to reduce costs.

The foregoing applies particularly to the larger works. Smaller projects, however, could also appropriately be contracted out and might interest the growing number of Nigerian contractors as well as some of the foreign firms already established in Nigeria.

In our calculations of the additional staff needed to carry out the road program, we have assumed a more extensive use of contract work than prevails at present.

#### v NEW ROAD PROGRAM

If roads are to do their part in raising the level of Nigeria's economy, they must form an integrated network over the entire country. The type of road will vary with the needs of each area; in the bush country, for example, all-weather local roads are not necessary



SOKOTO

KATSINA

NGURU

KAURA  
NAMODA

GUSAU

KANO

POTISKUM

MAIDUGURI

ZARIA

KADUNA

BAUCHI

JOS

MINNA

KAFANCHAN

ILORIN

BARO

OYO

IFE

AKURE

ABEOKUTA

IBADAN

IJEBU ODE

LAGOS

BENIN

ENUGU

ABAKALIKI

SAPELE

ONITSHA

OWERRI

UYO

PORT  
HARCOURT

ABA

KUMBA

BUEA  
VICTORIA

TIKO



since the rainy season is also the growing season and the villages' transport requirements diminish at that time. Trunk Roads A and B should eventually extend to provincial and division capitals, the most important cities and markets, the ports and the principal railway stations. Roads to be integrated into the Trunk Roads B system, for carriage of year-round light lorry and passenger traffic, should be chosen for their contribution to the economic growth of a region without regard to provincial or division boundaries.

Nigeria's road policy over the years has produced, by and large, an integrated system, now relatively well developed in the South. The decision to build and tar an extensive mileage 12 feet wide rather than to expend the same sum on fewer miles of 22-foot wide roads was wise. However, certain areas, notably the northeast and the Cameroons, are still badly served especially during the rainy season, and while the network as a whole is suitable for light traffic, certain improvements must be made to adapt it to increased traffic by heavy vehicles. This should receive primary emphasis in 1955-60.

#### *Heavy Traffic Arteries*

The program shown on Map 12 is designed to satisfy anticipated heavy-weight traffic needs. The arteries, when completed, should consist of roads at least 20 feet wide, double lane, improved as to visibility and gradient and with adequate sub-base; bridges designed for a loading of 12 units B.S., two lane if the bridge is less than 30 feet long; and motor ferries capable of carrying vehicles of 25 tons. Adequate resistance of the base course and sub-base to heavy traffic should be assured. The uniform characteristics of these arteries will permit heavy trailer-truck long-distance traffic. We have designated as heavy traffic arteries only those roads serving the hinterland of the ports, an east-west connection, and the routes feeding the railway lines in the North. The railway should continue to provide the major long-distance north-south link and we think that construction of a 20-foot wide tarred Lagos-Kano road, often talked of, should not be given a high priority. The road from Ijebu-Ode to Benin, of which about 95 miles remain to be built over very difficult terrain, is now planned as a 12-foot wide road; since it is to take care of all east-west traffic we recommend that it be tarred over two lanes. The heavy traffic

arteries will total 1,700 miles, of which 610 will be in the North, 670 in the West, 360 in the East and 60 in the Southern Cameroons. This program is well on its way to completion in all parts of the country. Nearly all the roads called for have been or are being tarred over at least one lane; realignments and reinforcing of bridges remain to be done. We recommend that all roads in the program be tarred over two lanes, with the exception of the Jos-Maiduguri road discussed in connection with the possible Bornu extension of the railway (see Technical Report No. 16).

#### *Other Trunk Roads A*

The network planned in 1946 is now taking shape. The Lagos-Kano road is being completed between Zaria and Kano and between Kwongoma and Kaduna. The 1955-60 program will include completion of approximately 170 miles of the Enugu-Yola road as a 12-foot earth road, to provide a permanent link between the upper Benue area and the sea. The balance of the Jos-Maiduguri-Fort Lamy road between Bama and the frontier, and about 200 miles of the Bamenda-Yola road, remain to be built. The former cannot be completed until agreement is reached with respect to the work to be done in French territory. Although the direct Bamenda-Yola connection will be useful, we suggest deferring it in view of the anticipated completion of the somewhat longer Bamenda-Takum-Yola road.

#### *Other Roads*

The most important stretch of Trunk Roads B under construction is the road between Bamenda and Takum. The regions and local authorities must draw up their programs for new secondary roads, which will in most instances be built over an existing trail or poor road. There seems to be little need for completely new roads except in the Middle Belt, the northeast and the Cameroons. It is important that uniform specifications be maintained to avoid changes in characteristics at provincial borders.

#### *Lagos*

Both the old and the new quarters of Lagos are becoming increasingly congested with automobiles, bicycles and pedestrian traffic. In

an effort to improve conditions the Town Council has restricted the number of buses and many streets have been made one-way. But the bus traffic, which has already doubled since 1949-50, will necessarily increase as the city's population grows; the development of new districts, such as Apapa, will lead to shifts in relative importance of urban traffic currents. A network of streets must be developed to carry traffic among various quarters of the city. Moreover, a new traffic current will flow through Lagos following completion of the Apapa Wharf extension, the development of heavy road traffic and the opening of the direct Lagos-Benin road. There is already a need for better access to the airport at Ikeja, about 11 miles from Lagos Island.

A plan has recently been proposed calling for expenditure of £ 1.4 million for three projects: a two lane road between Carter Bridge and Apapa to cost £ 800,000; construction of a 30-foot road (Western Avenue), at a cost of £ 400,000; and construction of a two lane road between Clifford Street and Yaba Roundabout, to cost £ 200,000. We think the first should certainly be built, but the others would not provide a satisfactory solution to the problem of access to the port and the airport. This problem cannot be met by improvements of urban streets but only by altering the Trunk Roads A route out of the city. Our recommendation for a long-term solution to the problem is the construction of a four lane road connecting Apapa with Ikeja to the west of the city, serving the airport and connecting at Ikeja with the two main roads from Abeokuta and Ikorodu. It would connect near Igenmu with the Carter Bridge-Apapa road. This solution has the advantage of completely freeing city streets of all traffic between Lagos and the airport and between Apapa Wharf and the interior. It would permit postponing the widening of certain city streets. Traffic development will make this project essential sooner or later and we recommend that it be begun before the city streets become completely clogged.

#### VI COST OF 1955-60 PROGRAM

The mission believes that Nigeria should devote capital expenditures of at least £ 25 million to the improvement of its road network during 1955-60, and that annual appropriations for road maintenance

should rise from about £ 2.2 million—the level estimated in 1953-54<sup>2</sup>—to some £ 3.4 million in 1959-60. These estimates are rough, for information on unit costs is inadequate and a great variety of projects is involved. However, Table 3 will serve to indicate an order of magnitude for a minimum program.

In the mission's projection, federal capital expenditures over the five-year period amount to £ 15 million, and include £ 1 million for purchase of material, development of workshops, additional staff quarters, research and supervision; £ 2.5 million for reinforcement and replacement of bridges and access; £ 2 million for new roads; £ 8 million for widening, straightening and tarring; and £ 1.5 million for major improvements to the Lagos road network. Annual expenditures for maintenance would rise to £ 1.1 million in 1960, assuming that by that year there will be 6,000 miles of Trunk Roads A. The total of £ 1.1 million has been calculated as follows (unit prices include 20% for overhead): 2,500 miles of earth roads @ £ 100 per mile (£ 250,000); 1,900 miles tarred for 12 feet @ £ 200 per mile (£ 380,000); and 1,600 miles tarred for 20-22 feet @ £ 280 per mile (£ 448,000).

In the Northern Region emphasis should be on construction of new Trunk Roads B and improvement of maintenance. Table 3 assumes 5,000 miles of Trunk Roads B by 1960, of which 1,000 will be tarred. The local authorities' road building efforts should be directed toward the building of new local roads, generally only dry-season, and better maintenance of existing roads.

In the Western Region certain local roads should be incorporated into the network of Trunk Roads B, which should be entirely tarred. The Benin-Sapele road should be widened to 20 feet. Reinforcement of bridges should be carried out in connection with the Trunk Roads A program.

The Eastern Region's general program should be similar to that of the Western Region. The Port Harcourt-Owerri road should be widened to 20 feet.

In the Southern Cameroons the network, which consists mainly of Trunk Roads A, should be supplemented by a few Trunk Roads B. There are very few local roads.

<sup>2</sup> Published Estimates indicate expenditure of £ 1.8 million in 1953-54, not including overhead. To allow roughly for overhead, the figure has been increased by 20%.

The mission wishes to make two comments about the method of financing road construction. In the past, the Regional Production Development Boards have expended considerable sums on road work, usually by reimbursing the regional governments but occasionally carrying out construction themselves. We think that this is not an appropriate activity for the boards, and moreover that it would be advantageous to unify the system of road finance. We therefore propose that the regional governments take over the road expenditures now made by the Production Development Boards. The projections in Table 3 are based on the assumption that this will be done.

Second, the mission believes that regional governments should not assume an excessive share of the cost of purely local roads. In the Western and Eastern Regions, the regional governments assist native treasuries and local governments with road grants but these grants make up only a small proportion of the local authorities' total expenditures on roads. In the North, on the other hand, road grants by the regional government to native treasuries cover almost one half the latter's expenditures on roads. Undoubtedly, moderate-sized grants are useful, both to encourage native authorities to engage in active road programs and to provide special assistance to treasuries which could not otherwise afford needed road work. As a group, however, the Northern native treasuries are not experiencing financial stringency and the mission feels they could well afford to increase substantially their expenditure on roads from their own funds. The mission's projections provide, therefore, for reducing Northern road grants from an estimated £ 160,000 in 1953-54 to £ 80,000 per year in 1955-60. Such a reduction, incidentally, would provide some relief for the Northern regional government which will be faced with the necessity of heavy expenditures on its own account.

TABLE 3 Projection of Expenditure on Roads<sup>1</sup>

(Thousand £)

	Approved Estimates		Preliminary Estimates		Projections of Mission											
	1953-54		1954-55		1955-56		1956-57		1957-58		1958-59		1959-60		Total 1955-60	
	R	C	R	C	R	C	R	C	R	C	R	C	R	C	R	C
<i>Federal</i>																
(Trunk roads A) .....	651	1,878	713	1,604	900	2,000	950	2,500	1,000	3,000	1,050	3,500	1,100	4,000	5,000	15,000
<i>North</i>																
Regional government .....	72	300	78	220	140	500	180	700	225	900	300	1,100	375	1,100	1,220	4,300
NRPDB <sup>2</sup> .....	(30)	(70)	(30)	(70)												
Grants to local authorities .....	(160)	—	(175)	—	(80)	—	(80)	—	(80)	—	(80)	—	(80)	—	(400)	—
Expenditures by local authorities	344	187	350	200	450	250	475	250	500	250	525	250	550	250	2,500	1,250
<i>West</i>																
Regional government <sup>3</sup> .....	174	324	187	288	240	400	260	400	280	400	300	400	320	400	1,400	2,000
Grants to local authorities .....	(24)	—	(25)	—	(25)	—	(25)	—	(25)	—	(25)	—	(25)	—	(125)	—
Expenditures by local authorities	240	100	250	110	325	150	350	150	375	150	400	150	425	150	1,875	750
<i>East</i>																
Regional government <sup>4</sup> .....	93	106	94	70	110	175	120	225	140	225	160	225	180	225	710	1,075
ERPDB .....	—	(71)	—	<sup>5</sup>												
Grants to local authorities <sup>4</sup> .....	(27)	—	(22)	—	(25)	—	(25)	—	(25)	—	(25)	—	(25)	—	(125)	—
Expenditures by local authorities	252	10	260	20	320	30	340	40	360	50	380	50	400	50	1,800	220
<i>Southern Cameroons<sup>6</sup></i>																
Regional government .....					10	50	15	75	20	75	25	75	30	75	100	350
Grants to local authorities <sup>6</sup> .....					(5)	—	(5)	—	(5)	—	(5)	—	(5)	—	(25)	—
Expenditures by local authorities	16	1	18	1	24	10	26	10	28	10	30	10	32	10	140	50
Total (excluding grants) ..	1,842	2,906	1,950	2,513	2,519	3,565	2,716	4,350	2,928	5,060	3,170	5,760	3,412	6,260	14,745	24,995

<sup>1</sup> Federal and regional government expenditures on roads in 1953-54 and 1954-55 do not include "overhead" expenditure by the Public Works Departments which should be allocated to roads. Figures for subsequent years include an allowance for this overhead, which accounts for part of the sharp rise in the projections between 1954-55 and 1955-56. Grants to local authorities are shown in parentheses and excluded from totals to avoid double counting.

<sup>2</sup> Northern Regional Production Development Board. An unknown part of this expenditure is disbursed as grants to native treasuries. The breakdown between recurrent and capital expenditure is a rough estimate. The mission believes that this expenditure should be taken over by the regional government; projections for 1955-56 and subsequent years so provide. Figures for 1953-54 and 1954-55 are shown in parentheses and excluded from totals because they do not represent expenditures of government.

<sup>3</sup> Including expenditure reimbursed by the Western Regional Production Development Board. It is proposed that beginning in 1955-56 the government take over the financing of this program.

<sup>4</sup> Including Southern Cameroons in 1953-54 and 1954-55.

<sup>5</sup> Not available.

<sup>6</sup> Included in Eastern Region in 1953-54 and 1954-55.

NOTE: R = Recurrent; C = Capital.

## I THE PORTS

### A HISTORY

The first ports of Nigeria were Akassa and Forcados (transit ports for Niger traffic), Calabar and Victoria. Port activities began at Lagos following the opening of the sand bar at the entrance to the harbor in 1913, and the port started operations simultaneously with the completion of the railway line to the North. About that time, Port Harcourt was constructed as a port terminal for the eastern branch of the railway. At the present time nine ports are open to ocean-going vessels. They fall into three categories:

1. National ports, serving the whole country (Lagos and Port Harcourt).
2. Regional ports, serving a limited hinterland (Sapele, Degema (Abonema), Calabar, Victoria (Bota) and Tiko).
3. Ocean-Niger transit ports (Warri and Burutu).

All ports except Calabar and Bota are entered through channels and over sand bars which limit the draught and make frequent and extensive maintenance necessary. The ports are shown on Map 13.

### B TRAFFIC

The volume of foreign and coastwise traffic at the different ports is shown by Tables 1 and 2.

Since 1938 export traffic has increased by approximately 70%, while import traffic has trebled, as shown by Table 3, which also shows the increased importance of the national ports.





TABLE 1 Cargo Loaded and Unloaded at Nigerian Ports, Foreign Trade

(Thousand long tons)

Year	Lagos		Port Harcourt		Burutu		Warri		Sapele		Calabar		Victoria		Tiko		Others		All Ports		Total
	L.	U. <sup>1</sup>	L.	U.	L.	U.	L.	U.	L.	U.	L.	U.	L.	U.	L.	U.	L.	U.	L.	U.	
	1948 .....	620	547	270	109	51	31	15	21	109	16	103	24	1	5	53	2	43	1	1,265	
1949 .....	734	711	310	112	48	34	23	23	134	19	109	28	2	6	68	7	60	2	1,488	942	2,430
1950 .....	724	810	251	148	33	29	23	22	182	19	95	22	5	9	63	9	74	1	1,450	1,069	2,519
1951 .....	747	955	301	187	48	46	31	36	211	31	95	41	5	11	73	11	110	1	1,621	1,319	2,940
1952 .....	749	978	293	214	63	40	25	28	140	22	112	37	7	13	77	18	74	—	1,540	1,350	2,890
1953 .....	715	1,047	402	282	66	44	28	35	209	40	117	54	—	—	99 <sup>2</sup>	26 <sup>2</sup>	81	2	1,717	1,530	3,247

<sup>1</sup> L. = Loaded. U. = Unloaded.<sup>2</sup> Includes Victoria traffic.

SOURCE: Digest of Statistics, Lagos.

TABLE 2 Cargo Loaded and Unloaded at Nigerian Ports, Coastwise Trade

(Thousand long tons)

Year	Lagos		Port Harcourt		Burutu		Warri		Sapele		Calabar		Victoria		Tiko		Others		All Ports		Total
	L.	U.	L.	U.	L.	U.	L.	U.	L.	U.	L.	U.	L.	U.	L.	U.	L.	U.	L.	U.	
	1948 .....	73	139	46	52	46	24	26	9	32	12	4	18	1	5	1	1	40	10	269	
1949 .....	83	184	73	45	62	25	29	16	35	12	2	20	—	6	—	—	35	10	321	318	639
1950 .....	97	200	93	26	72	24	32	16	31	18	3	17	—	8	—	1	1	6	329	316	645
1951 .....	98	179	93	17	57	24	28	12	22	18	3	15	1	8	—	1	1	5	303	279	582
1952 .....	108	218	130	24	50	28	26	12	23	19	5	18	3	10	—	1	—	5	344	335	679
1953 .....	54	146	79	24	32	24	29	10	29	16	2	15	—	—	2 <sup>1</sup>	10 <sup>1</sup>	—	4	228	249	477

<sup>1</sup> Includes Victoria traffic.

SOURCE: Digest of Statistics, Lagos.

TABLE 3 Prewar and Present Traffic in Foreign Trade

	Imports		Exports	
	1938	1953	1938	1953
Tonnage <sup>1</sup> .....	474	1,530	1,015	1,717
Percentage share of:				
National Ports .....	67	87	55	65
Regional Ports .....	16	8	31	29.5
Ocean-Niger Ports .....	17	5	14	5.5

<sup>1</sup> Thousand long tons.

SOURCE: Digest of Statistics, Lagos.

### Shipping

There is a fortnightly mail service between Liverpool and Lagos, operated by Elder Dempster Lines, Ltd., and regular service to France. There is also regular cargo service between Nigeria and the principal U.K., Western European and North American ports. Most of the lines belong to either the West African, French or American West African Conferences, but a number of non-Conference lines also call at Nigeria with varying frequency. A few companies carry only bananas, palm oil and petroleum products.

### Rates

Some of the principal West African Lines Conference rates at the end of 1953 are given below; charges are quoted in shillings per ton:

<i>Imports from Northern Europe and U.K.</i>		<i>Exports to U.K. and Northern Europe</i>	
Cement .....	63/-	Hardwood, logs, sawn timber ....	127/6
Salt .....	60/-	Skins .....	225/-
Iron and		Hides .....	182/6
steelwork ..	79/- to 121/6	Palm kernels, groundnuts .....	100/-
Sugar .....	103/6 to 121/6	Cocoa .....	117/6
Cotton goods .	164/6	Palm oil in bulk .....	105/-

} less 5% rebate

## C NATIONAL PORTS

### Lagos

*Facilities and Equipment* Lagos is Nigeria's chief port. The channel depth of 27 feet is successfully maintained by constant dredging, some

of the material dredged being used in reclamation of swamps near Lagos. Erosion of Victoria Beach behind the mole is a constant problem.

There are six mooring berths in the channel at the center of the port and two additional berths for coastal vessels at Iddo Island, at the far end of the harbor from the sea. There are 11 berths at the wharves.

Customs Wharf is located on Lagos Island in the heart of the commercial district. The oldest of the wharves, it is in a rundown condition. It has only 125,000 square feet of transit shed space and lorries have difficulty maneuvering.

Apapa Wharf, on the mainland, has large two-story transit sheds available for storage of imports and exports. It has electric traveling-gantry cranes, mobile cranes and good rail connections. Lorry access is difficult here, too. But in 1952 a wharf extension was begun which will provide improved road access, five additional 500-foot berths with mechanical handling equipment, two of which should be ready by 1955, and four more transit sheds. The extension is approximately 2,810 feet long, and will be approximately 1,020 feet wide at its extremity. In connection with this improvement, commercial firms have been expanding their warehouse facilities.

Ijora Wharf handles only coal traffic. The United Africa Company Wharf and the government oil wharf are "T" shaped and handle bulk traffic. There is also a 50-ton floating crane, and a floating government dockyard which can repair ships up to 3,600 tons. Finally, there are numerous lighterage wharves or jetties belonging to shipping or trading companies.

TABLE 4 Lagos Wharves

Wharf	No. of Berths	Draught (feet)	Length (feet)	Traffic
Customs Wharf .....	3	21½ - 23½	1,500	Lagos imports
Apapa Wharf .....	4	26	1,950	General cargo
Government dockyard .....	1	19	400	Dockyard
Ijora Wharf .....	1	18	450	Coal
United Africa Company .....	1	26	450	Private. Handles palm oil in bulk
Government Oil Wharf .....	1	25	500	Tankers

*Traffic* More than half of Nigeria's total port traffic passes through Lagos, consisting of imports destined for Lagos, the West and most of the North, and exports from the North (mostly groundnuts and cotton) and the West (mostly cocoa). Goods are transshipped there for the creeks and regional ports, including some transit to French Dahomey (oil products, wholesale merchandise) by way of the Porto Novo creek. Transshipment traffic has increased from 269,000 tons in 1948 to 344,000 in 1952.

Much of the traffic between ships anchored in the channel and the jetties of the trading firms is handled by the firms' own lighters. Separate wharf traffic statistics are published for the railway-operated Apapa Wharf only (239,000 tons of imports and 295,000 tons of exports in 1952-53, compared with 53,000 tons and 321,000 tons respectively in 1937-38) but it is generally agreed that in recent years Customs Wharf has handled more imports than Apapa Wharf. The latter's prewar capacity was estimated at 250 tons per lineal foot annually; actually, capacity handled during the season of groundnut exports was at the rate of over 500 tons per lineal foot annually. Since the war the wharf has been congested, largely because of the railway's difficulties. The growth of road traffic at Apapa Wharf is discussed in Technical Report No. 16.

*Future of Traffic* A continuous increase in traffic can be anticipated, chiefly in imports of petroleum products, fertilizers, building materials and road equipment. The direct Lagos-Benin road will extend the port's hinterland.

With groundnut traffic distributed over the whole year and road access improved, Apapa should be able to handle 300 tons per lineal foot (nearly reached in 1952-53) which will give the wharf, when erected, a capacity of almost 1.3 million tons annually, exclusive of the bulk traffic (petroleum products, groundnut oil, coal) handled at specialized wharves. This capacity will be sufficient for Lagos' immediate future needs.

#### *Port Harcourt*

*Facilities and Equipment* Access to this port, located 41 miles from the sea, is through the Bonny River. The depth of the bar varies

between 21½ and 23 feet. This appears to be adequate, in view of the normal routing of vessels.

The principal wharf, the railway wharf, is 1,855 feet long but it is not built in a straight line and this reduces its usable length. The very limited space between the wharf and the hill behind restricts storage facilities and impedes traffic. The total covered storage space does not exceed 126,000 square feet. Part of the roadbed is not surfaced and lorry traffic bogs down during the rainy season. There are no cranes for general cargo and no mechanical handling equipment. Manual labor is supplied by a contractor.

There is a coal berth serviced by an electric conveyor belt and a privately owned tanker berth. There is no lighterage wharf.

*Traffic* Port Harcourt handles traffic from the East and the north-eastern portion of the North as well as transit to and from French Chad. During the last few years, groundnuts have been added to the port's customary exports of coal, tin, palm oil and palm kernels.

Prewar traffic at the railway wharf, except during 1937-38, did not reach 100,000 tons annually, but between 1949-50 and 1952-53 the annual average was from two to three times this amount.

At present the port is congested not only because of the increase in import traffic but because of the enormous postwar rise in groundnut exports. In 1952, 120,000 tons of groundnuts were exported and an equal amount was exported in the first nine months of 1953. The open cars which carry coal to the North bring back groundnuts; considerable damage occurs during the rainy season because of bad loading and the poor condition of the tarpaulins covering the bags. Sorting and rebagging is done in the shed area. Slowness of manual handling and lack of open space have further limited the annual tonnage handled per lineal foot; in 1952-53 only 208 tons were handled compared to Apapa Wharf's 296. Lack of a lighterage wharf causes delays in transshipments.

We recommend resurfacing the quays and raising demurrage rates. Imports destined for Port Harcourt are responsible for much of the congestion in the sheds. Higher demurrage rates might induce the importers to increase their own storage capacity instead of relying on that at the wharf. Additional sheds to be built in 1954 will be of some help.

The bar at Opobo (40 miles east of Port Harcourt) has not been dredged since the war and Port Harcourt has absorbed Opobo's traffic, which amounts to some 10,000 tons of exports (palm products) and 8,000 tons of imports annually. Discovery of oil in exploitable quantities near Opobo would justify a study of the cost of reopening that port.

*Future of Traffic* In view of the growing importance of Port Harcourt and the eastern railway line as outlets for northeastern Nigeria and the rise in transit traffic to French territories, it may be expected that the volume of imports and exports will increase very substantially during the next few years.

Probably no more than 200 tons per lineal foot can be handled at the wharf under present conditions, which limits annual capacity to 360,000 tons. Tonnage offered for handling will soon exceed that figure, so additional berths and lighterage facilities are urgently needed.

#### D REGIONAL PORTS

##### *Sapele*

Sapele, on the Ethiope River approximately 58 miles from the Escravos River entrance, has five mooring berths with a 20-foot draught. There is also a timber wharf belonging to the sawmill and plywood plant. All cargo is handled on the southern bank; consequently, traffic from the North must be ferried across the river.

Benin Province, which exports mostly timber and rubber, is Sapele's hinterland. The plywood plant is chiefly responsible for the recent traffic increases; declining timber prices explain the reduction in 1952 exports shown in Table 1.

##### *Degema (Abonema)*

This port, situated on the Sombreiro River but reached via the Bonny River, handles only palm kernels and palm oil exports from the eastern part of the Niger delta. Ships anchor in the river. The volume of imports is insignificant.

*Calabar*

Calabar lies in the estuary of the Calabar River. Ships of 20-foot draught can enter at high tide. The port offers a total of nine berths in the river, at buoys and at wharves, and sheds have a storage capacity of 40,000 tons. The hinterland of the port is the Cross River area and the Calabar-Mamfe road. Traffic consists of palm oil and kernels, timber, rubber and general imports and has not varied to any extent since the war.

*Victoria*

Four ships can anchor in Ambas Bay and in Victoria (Bota) there is a breakwater, equipped with electrically operated cranes, which can be used by lighters and launches.

The port has sheds and oil storage facilities. Victoria handles almost all the Southern Cameroons' traffic except bananas. Because of the capital investment of the Cameroons Development Corporation, imports have rapidly increased since the war, although they declined in 1953. Exports, which consist chiefly of palm oil and palm kernels, rubber and cocoa, are at the prewar level.

*Tiko*

Tiko, on the Bimbia River some 20 miles from the sea, is a banana port. More than 5.7 million bunches were shipped from the Cameroons in 1951 and 1952. A 400-foot wooden wharf is connected with the mainland by a  $1\frac{3}{4}$  mile causeway across swamps, used by a narrow gauge railway owned by the Cameroons Development Corporation and serving the plantations. The wharf, which lacks road access, is being replaced by a concrete wharf extended by a 400-foot lighterage wharf, equipped with cranes and sheds. Bananas will be loaded by four elevators which can handle 7,500 bunches per hour; at that rate, a banana boat, which holds about 100,000 bunches, can be loaded in 14 hours.

Bananas grown in the plain are carried to the wharf by the railway. Bananas from the hill plantations are collected by lorry and trans-loaded to railway cars at the entrance to the causeway. Bananas from

the Mungo River plantations are carried to Tiko by barge, except during the dry season when some plantations send their bananas by French Cameroons railway to Bonaberi (French Cameroons), whence they are carried by lighter to Tiko. Coastwise lighters bring bananas from the Meme River area to Tiko in about 24 hours.

Traffic at the wharf, limited by the narrowness of the river which permits maneuvering of only one ship at a time, amounts to about 15 boats per month.

During the slack season for the banana traffic, March-August, Tiko could be used for other exports and for the importation of heavy material if there were access by road.

#### *Future of Traffic*

A regular increase of traffic may be expected for the regional ports, but it will be less significant than the increases at Lagos and Port Harcourt. The latter are increasingly becoming the focal points of the country's internal transportation system.

### E OCEAN-NIGER PORTS

#### *Warri*

Warri, on the Warri River, 25 miles from the Forcados entrance, has some short wharves, connected by pontoons, allowing for simultaneous mooring of three ships. Most of the wharves belong to the John Holt Line, Ltd., which also owns a dockyard and sheds.

#### *Burutu*

Situated on an island five miles from the Forcados entrance, Burutu is the southern terminus of the United Africa Company's river transport. It is a private port with four wharf berths and large storage facilities. Mechanized handling (fork-lifts, trolleys and trailers and pallets) for the most part is of recent installation. The UAC operates a good-sized dockyard for the maintenance of its river fleet.

#### *Future of Traffic*

Postwar tonnage has decreased because of the problems of the

Niger entrances, discussed later. Ships cannot load more than 2,000 tons and so substantial tonnage has been shipped to Lagos via the creeks. No appreciable increase in tonnage can be expected until the problem of the entrances is solved.

## II THE INLAND WATERWAYS

### A GENERAL

Nigerians have used the waterways as a means of transport since time immemorial. Europeans first penetrated Nigeria through the rivers, which have long been of considerable economic importance.

Nigeria's inland waterways system is extensive, approximately 4,000 miles being in regular use. The Niger and its principal Nigerian tributary, the Benue, enter the country some 900 miles from the delta of the Niger, which contains numerous channels. The Cross River in the east and the Mungo River on the French Cameroons border are also navigable, although for part of the year only by canoe. One can travel by launch from Dahomey to Opobo along the extensive creek system parallel to the coast.

The Nigeria Marine is responsible for maintenance, buoying and dredging of the waterways. Maintenance consists chiefly of clearing the channels by removing trees during the dry season and cutting and removing the sudd, a floating vegetable matter, during the rainy season. The Marine cleared 1,567 miles in 1950-51 and 2,077 miles in 1951-52. Because of staff shortages it has not been possible to make improvements, but conditions have not grown worse.

### B THE NIGER AND THE BENUE

#### *Physical Characteristics*

There are extreme variations in the water levels of the Niger and the Benue between the rainy and dry seasons. Taking a 3½ to 4-foot draught as the minimum for navigability, year-round navigation on the Niger is possible only as far as Onitsha, a distance of 200 miles. Baro, a railway terminus, can be reached during eight months of the

year. The Benue is navigable up to Yola for four months of the year but up to Garua in the French Cameroons for only 10 weeks.

There are lengthy stretches of the Niger with a considerable draught, even at low water, but these stretches are separated by sand flats, some 15 between the delta and Baro. The worst passages are between Onitsha and Lokoja.

The Niger delta poses some difficult problems. The first entrance, via the Nun River, was abandoned in 1910 because an island was forming. The Forcados River, the next entrance, provides direct access to Burutu and Warri but silts up rapidly. The prewar draught was 19 feet; now it is only 10 feet. Silting also occurs in the other adjoining entrances, Escravos and Benin. It appears that the Niger clears channels to the sea further and further to the northwest and deposits alluvia progressively in the southern and central channels of its delta.

#### *Improvements*

Because of the Niger's importance as a link with the North, dredging was begun as early as 1909 with the object of assuring year-round navigability. This project was interrupted by the war in 1914. Most of the postwar traffic was carried by rail and no further improvements were undertaken on the river. Indeed, the river was left in the hands of private enterprise, for the government was not interested in improving a means of transportation that competed with the railway. But since 1945, interest in the navigability of the Niger has revived because of a deterioration in conditions in the delta, the development of production in the hinterland of the Benue and the difficulties encountered by the railway in moving groundnuts from the North.

In 1953, the government engaged Nedeco, a Dutch organization, to survey the delta and to report on the possibility of finding an entrance with the prewar draught and maintaining it; this report will not be made before 1955.

### C TRANSPORTATION ON THE NIGER AND THE BENUE

#### *The Fleet*

Most of the Niger fleet is owned by two commercial companies, the

United Africa Company and the John Holt Line, Ltd. A few vessels are owned by the Compagnie Française de l'Afrique Occidentale.

The present tonnage of the fleet as a whole is approximately 50,000 tons. In addition to some stern-wheelers the fleet consists of 300–400 h.p. steam and diesel tugs and 150–350-ton barges. The “push-towing” system is in general use at present. Convoys usually consist of a tug and three barges providing 1,000 net tons. New units are under construction, notably a 600 h.p. twin-screw tug able to push-tow six 600-ton barges, each equipped with a diesel crane. Convoy crews are entirely Nigerian.

The 985-mile journey between Burutu and Garua takes 18–25 days upstream and 10–12 days downstream.

#### *Organization of Convoys*

Convoys are planned for maximum utilization of the fleet during the high water period. Since the Benue is navigable for a shorter period than the Niger, the fleet begins on the Benue. In June, ships start up the Benue headed for Yola and Garua, unloading imports and reloading goods for export along the way. To save time, they often make transshipment at Onitsha, Lokoja and Makurdi. When navigation on the Benue is suspended, the fleet shifts to the Niger, generally traveling as far as Baro and sometimes, though rarely, to Jebba. During the dry season, part of the fleet is utilized between Lagos and the delta ports; maintenance work is also done during this period.

This system, which gives the transportation companies the best possible return with the present fleet, does not make fullest use of the Niger, which is navigable while the fleet is operating only on the Benue; Baro is served for four months only although the river is navigable that far for eight months.

#### *Traffic*

No comprehensive traffic statistics have been compiled. Table 5 gives an estimate of the total traffic, based on various sources:

TABLE 5 Niger-Benue Traffic Estimates

Year	Tonnage Carried (thousand)	Ton-Miles (million)	Average Length (miles)
1948-49 .....	190	65	342
1949-50 .....	184	67	364
1950-51 .....	190	83	437
1951-52 .....	193	81	420
1952-53 .....	217	95	438

Railway records showing the tonnage of imports transloaded to the railway at Baro and the tonnage of exports railed to Baro for loading on to river convoys indicate that traffic on the Niger is declining. Baro traffic in 1952-53 consisted of only 2,465 tons of imports and 17,516 tons of exports, compared to 4,807 tons and 22,351 tons respectively in 1949-50 and 23,261 tons and 35,172 tons respectively in 1935-36.

Exports consist mainly of groundnuts. Since in the long run it is to the railway's advantage that they be carried all the way to Lagos, it has done little to improve the original track and installations at Baro and has established high rates for shipment of groundnuts via Baro.

Traffic in imports through Baro has become insignificant because of the time required. Transportation by river takes several weeks and is possible for part of the year only; transportation by rail is much faster and can be done at any season. This advantage compensates for the higher cost by rail.

In contrast, traffic on the Benue is increasing rapidly and is responsible for the increase in length of the average haul as shown in Table 5. Table 6 shows the fluctuation of this traffic for one river transportation company:

TABLE 6 Benue Traffic

Year	<i>(Tons)</i>					
	Up Traffic			Down Traffic		
	Nigeria	French Cameroons	Total	Nigeria	French Cameroons	Total
1950 .....	3,422	10,274	13,696	11,334	13,754	25,088
1951 .....	7,148	13,418	20,566	13,874	13,819	27,693
1952 .....	13,356	13,787	27,143	18,161	14,652	32,813

Transit traffic with the Cameroons is well balanced. The river transport companies, which are also trading firms, make provision for their own goods first, whether destined for Nigeria or the French Cameroons, and only accept outside freight if they can. Consequently, not all the cargo of the Yola and the North Cameroons areas is carried by water; what cannot be handled is either stored until the next season or carried to Jos or the French Cameroons by road at much higher rates.

### *Rates*

The United Africa Company and the John Holt Line, Ltd. have adopted identical rates. On the Benue, exports, as they are bulk products, pay lower rates than imports. Rates to and from the French Cameroons are 5.4d. per ton-mile for cotton goods and 1.6d. for groundnuts. Rates on the Niger are much lower because of rail competition. Rates between the delta and Baro vary from 4d. per ton-mile for cotton goods to 1.4d. for groundnuts.

### *Future of Transport*

Production in the Benue area is increasing rapidly and so is demand for transport from the French Cameroons. The present fleet cannot satisfy even existing demands. On the Niger, on the other hand, the only traffic which originates in the area comes from the lower stretches of the river. Unless production in the Middle Belt increases substantially, the Baro route will mainly serve as an outlet for Northern produce coming down by rail, a traffic which until now has not been encouraged.

This poses a difficult problem for the river companies, which hesitate to increase their fleet capacity for only four months' navigation on the Benue if they are not guaranteed navigation as far as Baro when they start work on the Niger. In 1948, the companies proposed that the government contribute toward expansion of their fleets and that river transportation be made a public service under private, governmental or mixed ownership. The government examined the finances of the river operations and found them to be losing money. Rates were thereupon increased and the companies expanded their fleet but the

proposal that a public transport service be organized was not acted upon.

We believe that further consideration of the river transport problem must await the outcome of the planned general survey of the rivers.<sup>1</sup> Decisions regarding such improvements, if any, as may be found practicable will then have to be made on the basis of a careful study of future economic development in Nigeria and the French Cameroons. Improvements in the road network also have a bearing on the river problem. A road paralleling the left bank of the Benue will soon connect Yola with the railway and with the road system of the Eastern Region, bringing it within a few days of Port Harcourt; it is probable that some of the upstream traffic will prefer to use the road and a decline in that traffic may be expected comparable to that which has occurred on the Niger. Nevertheless, the Benue is of vital importance to both Nigeria and the French Cameroons and even a slight increase in the period of navigability should help the development of the economy considerably.

#### D THE CROSS RIVER AND THE MUNGO RIVER

##### *Cross River*

The Cross River springs from the highlands of the Southern Cameroons and after flowing west into the Eastern Region it turns south, reaching the sea in the neighborhood of Calabar. It is navigable year-round only for 30 miles. Upstream, the period of navigability decreases until at Mamfe it is only four months. The importance of the upper reaches of the river has been limited by the opening of the direct Calabar-Mamfe road, 115 miles long compared to almost 300 miles by river. The first 30 miles remain important, however.

The Cross River has never been surveyed; its channel changes every year and the private transport companies arrange for soundings at the beginning of each season.

Elder Dempster Lines, Ltd. and the United Africa Company operate a fleet of tugs and barges, most of which are 150-ton vessels. There are also a few tank barges for palm oil. Traffic reaches some 150,000 tons; representing 15 million ton-miles; Mamfe traffic is only 5,000

<sup>1</sup> See Technical Report No. 12.

tons. The volume of imports is only about one-third that of exports and consists of general merchandise; exports are palm oil and palm kernels, rubber and timber. Rates average about 2–3d. per ton-mile.

Local traffic in the creeks adjoining Calabar is developing very rapidly. The companies charge less for this service, approximately 1d. per ton-mile.

### *Mungo River*

This border river springs from the Manengouba massif and flows into the Cameroons River estuary; it is connected by creeks with the Bimbia River (Tiko). It is navigable from May to November and is used by the plantations as a link to Tiko. Traffic consists of bananas, cocoa, rubber and foodstuffs.

## E THE CREEKS

The creeks provide transportation parallel to the sea between Dahomey and Opobo. They are formed by a large number of channels with changing courses and at places they are 40 feet deep, although cut by flats. These channels are continually encumbered by the mangroves, fallen trees and sudd. The Marine Department seeks to keep one channel continually open between the principal river ports: Lagos, Sapele, Forcados, Warri, Burutu, Patani, Akassa, Brass, Degema, Port Harcourt and Opobo. The shallowest draught during the year is 4½ feet.

### *Organization of Transport*

With the exception of the regular launch services provided by the Nigeria Marine between Lagos and Forcados, Port Harcourt and Opobo, Port Harcourt and Akassa, chiefly for government use, all transportation on the navigable routes is provided by private enterprise.

A few Nigerian companies offer passenger service between Lagos and Epe, Warri and Burutu, and Warri and Patani. As a rule, each company operates only one or two launches with some 50 seats; maintenance is performed at private dockyards at Warri and Burutu.

Traffic now approximates 150,000 tons, representing about 10 million ton-miles. The 47-mile Lagos-Epe section has the heaviest traffic, amounting to approximately 80,000 tons.

### III PROBLEMS OF ORGANIZATION

#### A THE NIGERIA MARINE

##### *Functions*

The Nigeria Marine, a government department, is the harbor authority for all ports and waterways. Its functions are many and varied. It operates and maintains navigation aids such as lighthouses and buoys, administers safety regulations including licensing of vessels and examination of personnel, and undertakes various types of investigation. It performs general harbor functions and maintains government-owned port structures, wharves and dockyards, and the inland waterways. It operates public transport services (Lagos-Port Harcourt (coal, general cargo, passengers); Lagos-Warri-Forcados, Port Harcourt-Akassa and Port Harcourt-Opobo (mail, passengers and cargo); Sapele Ferry (Ethiopo River); Onitsha-Asaba Ferry (Niger River)) and provides services for other government agencies, including operating administration launches and clearing and shipping government cargo for some government departments and all provincial and native administrations. It also performs services for Lagos Township, including the operation of the Lagos-Apapa Ferry and the maintenance of Carter Bridge and of seawalls on Lagos Island.

But while the Marine is the sole harbor authority and many of its functions relate to water transport, it is wharf authority only for the government oil wharf in Lagos. The other publicly-owned wharves are operated by the Nigerian Railway (Apapa and Ijora wharves in Lagos and the Port Harcourt Wharf), the Customs Department (Customs Wharf, Lagos) and the Cameroons Development Corporation (Bota and Tiko wharves). In addition, in many ports there are privately operated wharves.

*Fleet*

The Marine operates a fleet of about 100 vessels (dredgers, coal carriers, tugs, launches, etc.) and a number of barges, lighters, tenders, dinghies and canoes. Thirty-six launches are maintained solely for the use of government departments, mainly in the creeks and the delta. It also operates a floating dock at Lagos with a lifting capacity of 3,600 tons. Dockyards are located at Lagos, Forcados, Port Harcourt, Calabar and Lokoja.

*Staff*

The authorized establishment in 1952-53 was 155 in senior service and 2,607 (including nonpensionable staff) in junior service, making a total of 2,762. However, there are vacancies in the senior staff, particularly in the marine officer and engineer positions.

The Marine maintains a training school at Apapa for ordinary seamen; it plans to expand it to train petty officers for the local certificate of competency and cadets for the U.K. Ministry of Transport certificate. The Marine also trains apprentices for Ministry of Transport standard certificates.

**B PROPOSED NIGERIAN PORTS AUTHORITY**

The existence of a multiplicity of organizations responsible for port operations and maintenance in the national ports has for a long time been recognized to be a limiting factor in their efficient operation and development. Attempts made in the late 1930's to unify port operations in Lagos and Port Harcourt were terminated by the outbreak of World War II. After the war, the subject was again considered and by August 1952 the government had decided to establish an autonomous Ports Authority which would operate all Nigerian ports. A general manager was appointed to plan the Authority's organization and to assist in the drafting of necessary legislation.

*Statement of Policy*

In 1953 the government issued a Statement of Policy,<sup>2</sup> on which

<sup>2</sup> Statement of the policy proposed by the government for the establishment of a Nigerian Ports Authority, 1953.

the following description of the principal features of the proposed Ports Authority is based:

1. The Authority would be an autonomous public corporation, under the general direction of the government, to ensure ultimate governmental control of ports policy in the national interest. An element of self-administration would be provided by having payers of dues nominate their own representatives on the Board of the Authority.

2. The Authority would immediately assume the harbor, light-house and pilotage functions of the Marine throughout Nigeria.

3. Wharf operations would at first be limited to Lagos and Port Harcourt. Wharf operations in other ports would be taken over from time to time. The Port Harcourt coal jetty, the Ijora coal wharf and privately owned wharves and jetties would not come under the Authority's jurisdiction.

4. The Authority would be expected to be financially self-sufficient.

5. The legislation creating the Authority would incorporate staff regulations. Staff would be transferred from the Marine, the railway and the Public Works Department and some additional employees would be required. Instead of continuing the present much-criticized system by which labor is supplied under contract or by the users of the wharves, the Authority would employ its own shore labor, providing increased opportunities for permanent employment. Ships' labor would, as heretofore, be provided by the shipping companies.

6. The Marine would be transferred to the Authority. Such of its activities as might be outside the usual scope of a Ports Authority would be carried out for the government by a "Marine Department" of the Authority on a reimbursable basis and would be administered separately.

7. The Authority would further promote the "ultimate creation" within its "Marine Department" of an inland waterways section, which might one day become a separate department of government.

#### *Mission's Comments*

We fully agree that immediate establishment of a Ports Authority

is desirable. We believe, however, that the proposals outlined above tend to place too heavy an initial burden on the Authority, thereby threatening efficiency of operation. At the same time, we think they tend to underemphasize the importance of certain activities admittedly not within the purview of a Ports Authority, particularly that of inland waterways transport.

Accordingly, we intended to recommend a number of changes in the proposals. However, on March 24, 1954 the House of Representatives approved the Statement of Policy with some minor changes and invited the government, pending the enactment of necessary legislation, to take all practicable administrative action to make the proposals effective. In the circumstances, no useful purpose would be served by detailing the mission's views but brief mention is made of them here for such use as they may have in the preparation of the legislation and in the internal administration of the Authority.

In our view, the jurisdiction of the Authority should be limited to matters customarily handled by such an institution and its operations should not extend beyond Lagos and Port Harcourt, the only ports where unified operations and an integrated ports policy are urgently needed. Although the Authority will take over the ports functions of the Marine in these ports, together with some of its staff and equipment, we think the Marine should continue, as a separate government department, to carry out its many other functions, including those relating to inland waterways, for which we would have recommended the immediate creation within the Marine of an inland waterways section.

While we think our proposals would have led to a simpler and more effective organization, we do not suggest a reconsideration of the plan as approved, because of the undesirable delay which this would involve. We hope, however, that the administrative and managerial problems inherent in combining unconnected activities in a single organization will be limited and simplified as much as possible. We also hope that the creation of an inland waterways section will be undertaken more speedily than is foreshadowed by the Statement of Policy. It would be most unfortunate if interest in the waterways should be diverted or diminished now, just after their potential sig-

nificance has been recognized by the authorization of the first comprehensive study of the Niger basin.

We suggest that the inland waterways section, under the supervision of a chief engineer, engage in studies and maintenance work. It would be useful to consider increasing the number of stations at which draught is recorded and centralizing information in co-operation with river companies and the proposed department of hydrology. Liaison can be undertaken with Nedeco (the Netherlands organization under contract to the government) in the delta survey and in the river survey planned for later, and also with the recommended Niger basin permanent advisory committee.<sup>3</sup> A system of centralized traffic statistics might be worked out and studies made of economic problems and river rates. At present there is insufficient information about the economics of transportation on the inland waterways. Maintenance work should be extended to all navigable waterways coming within the jurisdiction of the section, including entrances to the delta. The new section would require very few new employees: a chief engineer, a hydraulic survey engineer and an officer in charge of economic studies. The other positions can be filled with present Marine personnel; the waterways maintenance staff should be progressively increased. It should be noted that Nedeco is training Nigerians in hydraulic techniques. These persons should later be transferred to the Marine to continue recording data relating to the river.

### *Finances*

In view of the steadily increasing traffic and the planned improvements of facilities, including mechanical handling, there appears to be no reason why the Ports Authority should not become self-supporting. Under the existing system of divided control by government departments which do not keep commercial accounts, it has not been possible to assess the financial position of port operations. A firm of consulting accountants is now analyzing operating costs and evaluating the capital assets to be transferred to the Authority. It may be expected that the report will show a need to increase port charges. We think higher charges to port users will be partially offset by savings they will realize through more efficient port operations.

<sup>3</sup> See Technical Report No. 12.

As in the case of other statutory corporations<sup>4</sup> the mission recommends that the Authority be so capitalized as to enable it in due course to handle its future financing without recourse to the government. It is therefore suggested that an appropriate portion of the assets to be transferred to the Authority be contributed as equity capital rather than loan capital. Such a permanent capital fund would increase the Authority's creditworthiness by enabling it to reduce its fixed charges and cushion the shock of possible reverses. It is further recommended that, to the extent that the Authority issues debenture stock to the government against the transfer of assets, the rate of interest and other terms correspond as closely as possible to normal market conditions. To subsidize the Authority by means of low interest loans would merely hide the real cost of operations and thereby tend to prevent it from becoming truly self-supporting.

#### *Southern Cameroons Ports*

Under a 20-year agreement with the Governor of Nigeria the Cameroons Development Corporation has a monopoly of wharf operations, and fixes and levies wharf charges. Most of the traffic at Bota and Tiko has consisted of CDC cargo and bananas from privately owned plantations. However, since development is expected throughout the area, Tiko and Bota, the only Southern Cameroons ports, must be made to serve the needs of the whole area.

The mission therefore recommends that the agreement with the CDC be revised to give the government control over ports policy, while leaving actual operations in the hands of the CDC.

### IV WATER TRANSPORT IN 1955-60

#### A PORT OF LAGOS

We estimate total capital expenditure on the port of Lagos, including completion of the Apapa Wharf extension, to amount to about £ 1.5 million during 1955-60. A brief discussion of the principal items of expenditure follows.

<sup>4</sup> See Chapter 4, p. 95.

*Study and Maintenance of the Port*

A model of the entrance has already been built and studied and negotiations are under way for the construction by the Delft Laboratory of a model of the port to be used in connection with plans for channel maintenance. We recommend that the model be built as soon as possible.

*Future of Customs Wharf*

Concurrently with the extension of Apapa Wharf, a new industrial and commercial zone is being built up in Apapa. Lagos Island is already overpopulated and overbuilt. Commercial firms are setting themselves up at Apapa, where the principal industries are already concentrated. It seems likely, therefore, that Customs Wharf traffic will greatly diminish despite the wharf's advantageous position with respect to the present center of town. Customs Wharf needs major repairs. The mission recommends the following:

1. An engineers' study on the probable life of the present installation and the estimated cost of necessary repairs.
2. A rehabilitation plan for the present wharf, depots and entrances to the customs enclosure, including the problem of road traffic, to be prepared by the Ports Authority in co-operation with the Lagos Town Council.
3. A study by the Authority of the cost of wharf operations. No charge is now made for use of the wharf and users supply their own labor. The cost of maintaining the channel, wharf and warehouses is borne by the Marine and the Public Works Department. It is likely that the study will show that charges higher than those at Apapa should be made.
4. A decision whether to maintain Customs Wharf indefinitely or to concentrate all traffic at Apapa, to be made after the Apapa extension has been in operation for two or three years, and the port has been operated by a single authority and traffic developments are known. Until then no major improvements should be made.

5. Completion of the survey in connection with a possible further extension of Apapa Wharf. Approximately 1,000 feet more can be added to the present extension.

#### *Facilities for Storing Groundnut Oil*

There are no storage facilities although production may soon reach 50,000 tons per annum. Storage for 20,000 tons, with a connecting pipeline to the government oil wharf, should be built either by the Ports Authority or by private interests.

#### *Railway Installations*

The increased traffic will demand a new marshalling yard to be built by the railway or the Ports Authority at an estimated cost, including subsidiary installations (signalling, etc.), of £ 150,000.

Steam shunting engines belonging to the railway are now used on the wharf. The Ports Authority expects to have its own motive power. Since diesel engines are much more economical for this kind of operation, we recommend purchase of five 300-400 h.p. diesel locomotives which should cost about £ 150,000.

### B PORT HARCOURT

#### *Wharf Extension*

To keep pace with long-range traffic developments, the mission recommends construction of two pier-berths downstream, each approximately 500 feet long, and a 500-foot lighterage berth. These should be serviced by large warehouses and by the railway and should have good road access. Alternatively, three new pier-berths might be built downstream with the farthest upstream berth used for lighterage. The requisite survey should be carried out promptly so that the extension itself may be begun early in 1955 for completion by 1958.

No cost data are available. A very rough estimate obtained by the

mission during its visit indicates an order of magnitude of £ 2 million, which includes warehouses, track and roads.<sup>5</sup>

#### *Improvement of Facilities*

Mechanized equipment, including fork lifts, trolleys, trailers and motor cranes, should be installed. We recommend purchase of four diesel locomotives at a cost of £ 120,000. For these and other improvements we have allocated £ 500,000.

#### C SAPELE-KOKO

There is much talk in the Western Region about construction of a port at Koko, some 30 miles west of Sapele, on the Benin River. A new port is said to be necessary because of the inconvenience and difficulties encountered by Sapele traffic in crossing the Ethiope River by ferry. It is contemplated that all except timber traffic would be diverted from Sapele to Koko. The draught at Koko would be adequate but it appears that the building area would be limited. There is already a gravel road for light traffic connecting Koko with the Benin-Sapele road.

The mission recommends very careful consideration of the economic and technical aspects of this proposal before anything further is done. We are not convinced of its economic justification.

In the first place, we do not think that the Sapele ferry crossing constitutes as serious a problem as is claimed. Most of the postwar increase in export traffic has been in timber and timber products which do not use the ferry. Also, ferry capacity for nontimber traffic will be doubled in 1954 by the addition of a second ferry.

Moreover, we think that there is at least a strong probability that the new Benin-Lagos road will divert to Lagos much of the potential Koko traffic. Considerable cocoa and rubber tonnage already travels to Lagos by road; lorries carry back to communities in the interior miscellaneous consumer items which can readily be bought at Lagos at relatively low prices.

<sup>5</sup> After completion of its report, the mission was informed of a higher estimate. Its recommendation remains unchanged, since the project is of high priority and funds are available.

We question the assumption that it will be feasible to close Sapele to all except timber traffic, since many commercial firms are by now well established there, and even if some traffic were diverted to Koko, it seems likely that Sapele would have to continue as a general port. If so, expenditures at Koko for customs, police, water and electricity would to a considerable extent duplicate those at Sapele.

So far, there has been no analysis of the potentialities and probable cost of construction, or of the extent of capital investment in housing and roads. The mission recommends that a complete cost report be prepared by consulting engineers, to include the cost of building and maintaining a new town, i.e. water and electricity supply, road system and housing, and of improving the road to a two lane tarred road. We also recommend a similar survey of the alternative of building a wharf and warehouse on the river opposite Sapele, to eliminate the ferry crossing. This project would require considerable reclamation but no other new facilities. Above all, it would not entail additional annual operating expenses for customs, police, etc., and it is possible that this would be the least costly way of meeting the problem.

These two surveys, for which we have allocated £ 25,000, would take approximately two years. We think no decision should be reached until the effect on traffic orientation of the Benin-Lagos road and the road facilities of the Apapa Wharf extension can be observed, and cost of transportation by the various routes can be compared.

#### D OTHER PORTS

Except for Tiko, no other Nigerian ports will need capital improvements in the next few years. At Tiko the mission recommends enlargement of the causeway to give road access to the new wharf. The wharf will be big enough to permit the use of lorries and it should be used for imported bulk merchandise, the limited tonnage of which will not interfere with the banana trade, especially between March and October. The railway provides the best transportation system for the banana plantations which it reaches directly. For the other plantations, however, direct access by trailer-truck to the wharf elevators would avoid reloading of a fragile product traveling a very short distance. In view of the relatively limited quantities shipped

by these plantations, it should be possible to handle this traffic on the wharf between train loads without much difficulty. The estimated cost of enlarging the causeway to 20 feet, including necessary wharf surfacing, is £ 25,000.

#### E THE NIGER AND THE BENUE

No improvement in the basins of rivers as extensive as the Niger and the Benue can be achieved without detailed knowledge of the rivers along their entire courses. In the case of the Niger and Benue, this can be acquired only by international collaboration. We have therefore recommended in Technical Report No. 12 that the planned survey of the rivers by Nedeco be undertaken as soon as possible, and that studies be co-ordinated with those made in French territories.

It now seems likely that the survey of the river entrances, about to be completed, will recommend dredging. Our projections include £ 300,000 for this work during 1955-60.

The survey of the Niger and the Benue by Nedeco will take several years and will be the first comprehensive surveys of these difficult rivers. Results must be awaited before the feasibility of improvements and their probable cost can be known. If it appears likely that some improvements can be made, more detailed local studies will be needed, probably necessitating the construction of models. The mission estimates expenditures on studies and preliminary work during 1955-60 at £ 400,000. The histories of the Mississippi, the Rhine and the Danube, long used as means of communication, show that today's results are the fruits of a long series of surveys and partial improvements.

Meantime, certain minor improvements can be made.

In some rivers, local improvement has been achieved by anchoring boats in the flats; the stronger currents thus created wash away some of the sand. We recommend using barges in this fashion in both rivers.

The rotation of convoys can be improved. Each time a convoy reaches its terminus, the tug lies idle for several days while barges are unloaded and reloaded. If the river companies were to purchase additional barges, these could be loaded and be waiting at the terminus so that the tugs could immediately return with a loaded convoy.

In view of the limited period of navigability even small savings of time are important.

#### F SMALL TRANSPORTS

There are no boats of intermediate size between the river companies' barges (150 to 350 tons, soon to reach 600 tons) and African-owned canoes carved out of tree trunks, generally of two- to three-ton capacity. These canoes with their shallow draught (two to three feet) not only carry foodstuffs between the small villages and the markets, but also extend the services of the river companies to bush stations. They are, however, very slow, probably averaging not more than two knots.

After the war, a project was started to introduce shallow-draught motor barges of small capacity at a sufficiently low price to enable the local population to buy them. Boatyards were built at Epe in the West, Opobo in the East and Makurdi in the North. If successful, this project would result in greatly improved creek transport and in an extension of the period of navigability of the seasonal rivers. It would also help towards the promotion of African-operated river transports. To date, however, progress has been very slow. The mission's evaluation of the project and recommendations appear in Technical Report No. 13, p. 394.

#### G RECOMMENDED CAPITAL EXPENDITURE ON PORTS AND INLAND WATERWAYS

We estimate that our proposed program will call for capital expenditure (exclusive of expenditures from the renewals fund) by the government or government agencies of some £ 6.6 million during 1955-60, for the purposes shown in Table 7.

Table 8 gives the mission's projections of total government expenditures, recurrent and capital, on ports and waterways. We propose that recurrent expenditures rise from about £ 1 million in 1953-54 to some £ 1.4 million in 1959-60, exclusive of the contribution to the renewals fund. Recommended expenditure of perhaps £ 335,000 per year from the latter has been included in capital expenditure.

TABLE 7 Recommended Capital Expenditure for  
Ports and Waterways, 1955-60

*(Thousand £)*

Lagos:	
Completion of Apapa wharf extension .....	600
Customs wharf .....	200
Harbor moles—control of erosion .....	50
Railway sidings, mechanization and miscellaneous improvements .....	700
Total Lagos .....	1,550
Port Harcourt .....	2,500
Survey of Koko .....	25
Other ports .....	25
Dredging and survey—delta bars .....	300
Niger-Benue survey and improvements .....	400
Other inland waterways improvements .....	100
Lighthouses, etc. ....	100
Dockyards and workshops .....	500
Dredgers and other fleet .....	600
Offices and staff quarters .....	500
Total .....	6,600

Many recurrent and capital expenditures now made by the Marine and Public Works Departments will in future be made by the Ports Authority. Since it is not yet known exactly how much this will be, the mission's projections treat these expenditures as though continuing to be made by the federal government. The projections of federal receipts (see Chapter 5) include revenue from Marine Department services, which likewise will be transferred to the Ports Authority. At present the Nigerian Railway spends about £ 500,000 per year on the port facilities which it operates, and receives a like amount in charges. Most of these recurrent expenditures will hereafter be made by the Ports Authority. They have not been included in our projections of the government accounts.

TABLE 8 Projection of Federal Expenditure on Ports and Inland Waterways

(Thousand £)

	Actual		Approved Estimates		Projections of Mission					Total 1955-60	
	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60		
<i>Recurrent Expenditure</i>											
Marine Department Operations <sup>1</sup> ...	776	919	976	1,082	}	1,150	1,250	1,300	1,350	1,400	6,450
Marine Department Development ..	28	29	43	42							
Investigation into Establishment of Ports Authority .....	—	2	5	25							
Total <sup>2</sup> .....	804	949	1,024	1,149	1,150	1,250	1,300	1,350	1,400	6,450	
<i>Capital Expenditure</i>											
Marine Department .....	460 <sup>3</sup>	149 <sup>3</sup>	525 <sup>3</sup>	465 <sup>3</sup>	}	1,200	1,500	1,500	1,200	1,200	6,600
Public Works Department .....	23	59	137	159							
Marine Department—Renewals ....	182	342	150 <sup>4</sup>	569							
Apapa Wharf Extension .....	285	692	650 <sup>4</sup>	1,650	—	—	—	—	—	—	—
Capital for Ports Authority .....	—	—	—	500	—	—	—	—	—	—	—
Total <sup>2</sup> .....	951	1,242	1,462	3,343	1,535	1,835	1,835	1,535	1,535	8,275	

<sup>1</sup> Not including contribution to Renewals Fund.

<sup>2</sup> Totals may not equal sum of components because of rounding.

<sup>3</sup> Including expenditure from development loan funds.

<sup>4</sup> Revised Estimates.

*General*

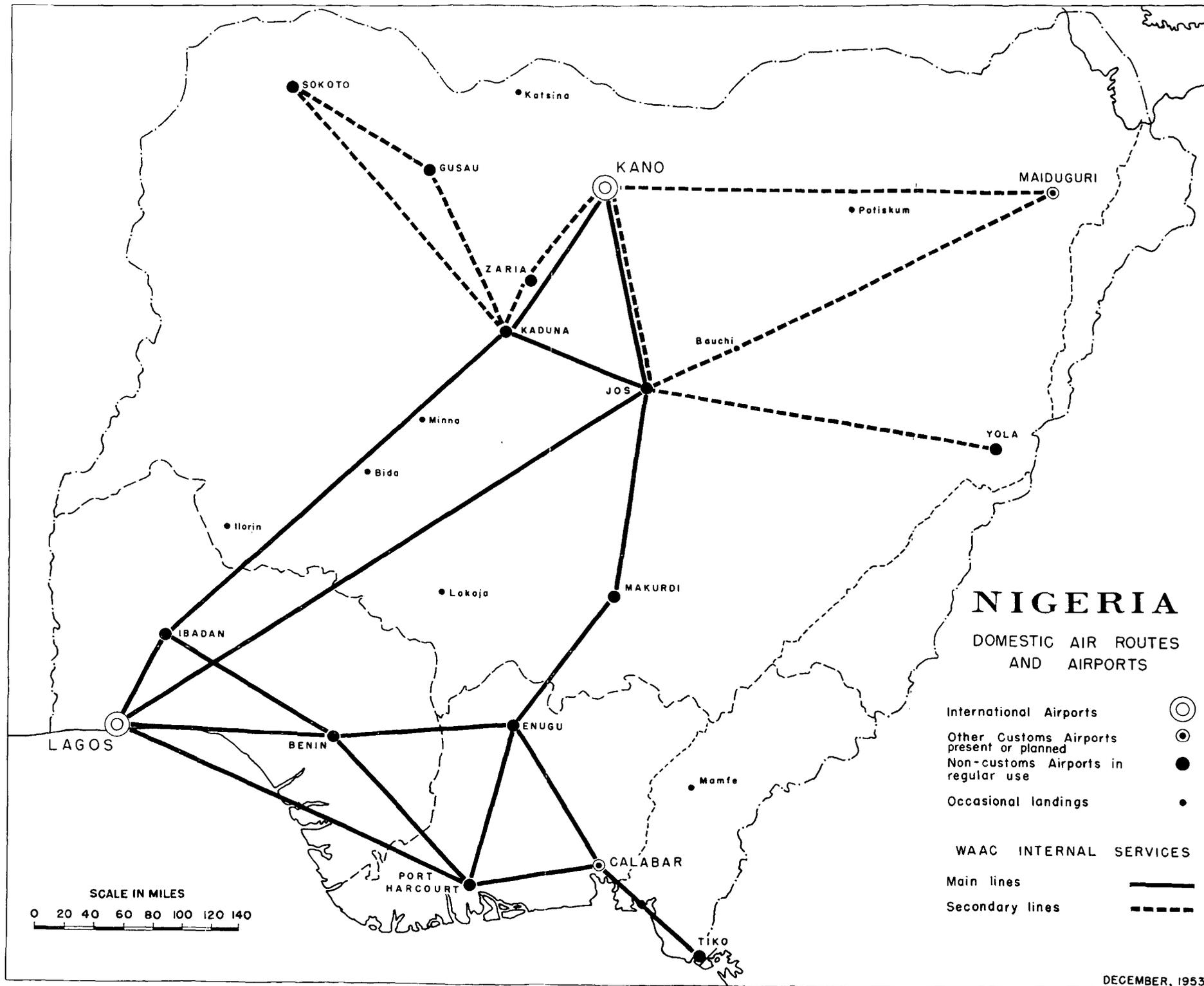
The development of commercial air transportation in Nigeria dates from 1946, when the West African Airways Corporation (WAAC), a statutory corporation, was established to provide air transport services in and between Nigeria, the Gold Coast, Sierra Leone and the Gambia. Nigeria's area, the size of its population and the slowness of rail and road transportation, particularly between east and west, all favored rapid growth of a domestic air network (see Map 14). The unduplicated air route mileage is roughly 4,800 miles. Because of its geographic location, Nigeria has become an international traffic center as well. Kano is one of the most important African airports, serving as a transit point for international services between Europe and Central and South Africa, while flights connecting the French, Spanish and Portuguese territories stop at Kano and Lagos.

Civil aviation is almost entirely in the hands of government agencies, although there are a few privately owned planes.

The Department of Civil Aviation is responsible for the management of airfields and ground installations and for the enforcement of aeronautical regulations. It is also responsible for air telecommunications, in conjunction with the Posts and Telegraphs Department, and for construction and maintenance of airfields and buildings, in conjunction with the Public Works Department. In 1953 its staff numbered 418. Increases in technical staff, particularly in radio communications, will be necessary.

*Traffic*

Air traffic has been growing steadily. In 1949-50 there were only 16,000 take-offs and landings at all Nigerian airfields; by 1951-52 the figure had risen to 26,444. In 1951-52 passenger movement to-





taled 168,108, including 55,246 in transit at Kano, and 2,348 tons of freight were shipped or landed.

### *Airports*

The airports in Nigeria are classified according to use. Kano and Lagos are in Grade I (international airports). Maiduguri is the only airport in Grade II (other customs airports). It serves as a useful alternate to Kano. Grade III airports are those used regularly by national traffic; Calabar, now in this group, is about to become a customs port. Airports used only occasionally and emergency landing grounds are classified as Grade IV.

Kano and Lagos airports have tarmac main runways, 8,610 by 200 feet and 6,600 by 150 feet respectively, which are suitable for use by the heaviest aircraft now in service to Nigeria or contemplated in the near future. Runways at other fields range from 2,400 to 6,600 feet in length, with laterite or tarmac surfacing.

Nigeria is adequately served by the present network of airfields, with the exception of the Niger delta where the terrain does not permit economical construction of an airfield. In the future, use of helicopters may provide economical transportation for the area. The average distance between fields is now only 170 miles. Construction of additional fields is neither contemplated by the government nor recommended by the mission; they would increase operating costs and the additional landings and take-offs would reduce flight speed.

### *Recommended Capital Expenditures*

Runways should be improved, to enable the Bristol planes of the WAAC fleet to use all commercial airfields; emergency landing grounds are also in need of some improvement. Capital expenditures for runways totaled £ 108,961 in 1951-52, £ 57,061 in 1952-53; £ 64,520 was estimated for 1953-54. The mission proposes £ 175,000 for the five year program, £ 35,000 annually.<sup>1</sup>

Runway lighting has been installed only at Kano and Lagos. The mission recommends that it be extended at least to Maiduguri, Calabar, Ibadan, Benin, Kaduna and Jos. These airfields are used late in

<sup>1</sup> See Table 3, p. 549, for the mission's projection of federal expenditures on aviation.

the evening, all but the first two being the last stops before the domestic line terminals at Kano and Lagos. Adequate lighting would eliminate the present necessity for overnight stops en route and this in turn would increase the reliability of schedules and reduce operating costs. The mission recommends expenditure of £ 100,000 on runway lighting.

Improvement and extension of the aircraft-ground telecommunications system and of communications between ground stations is essential and should be given high priority. Kano is the center of the Kano Flight Information Region which provides service north to the 22nd parallel, beyond Nigeria's boundary. Control zones are centered at Kano and Lagos. Operational information zones have been established around other airports (Maiduguri, Benin, Enugu, Jos, Ibadan, Kaduna, Port Harcourt, Calabar and Tiko), to provide traffic and weather information. We recommend that this service be gradually extended to other airports. Capital expenditures for navigational aids and telecommunications have been rising steadily, from £ 36,400 in 1952-53 to an estimated £ 87,200 in 1953-54. The estimate for 1954-55 is £ 90,500. The mission recommends a total of £ 300,000 for 1955-60, largely for the purchase of radio equipment.

In 1952-53, the exceptional sum of £ 24,400 was spent on crash, fire and rescue equipment. The expenditure for the preceding year was £ 5,100 and £ 5,500 was estimated for 1953-54. The mission considers an annual expenditure of £ 5,000 for the five-year development period sufficient.

In general, terminal buildings are adequate. Kano, however, is now wholly inadequate to handle the tremendous increase in international transit traffic. At the end of 1954, work will begin on a new terminal, estimated to cost £ 386,000. It is designed to care for 400 passengers at a time, a reasonable figure in the light of the transit traffic and the use of larger planes on domestic flights. On other terminals we think expenditure of £ 100,000 should be sufficient for further improvements between 1955 and 1960.

Finally, an estimated £ 100,000 will be required for new staff quarters for the Department of Civil Aviation, largely for radio operators.

*The West African Airways Corporation*

The general policy of the corporation is determined by the West African Air Transport Authority, which consists of representatives of the governments of Nigeria, the Gold Coast, Sierra Leone and the Gambia. WAAC operates internal services in Nigeria and the Gold Coast, and a so-called intercolonial service from Lagos to Dakar. In 1952-53 intra-Nigerian services accounted for more than 60% of the mileage flown in scheduled services.

At the end of 1953 the first-class service on the main lines provided from three to six weekly connections between Lagos and Kano and Jos, Port Harcourt, Enugu and Tiko, and eight between Kano and Jos. There was less frequent service between Kano and northern cities on the secondary lines. Finally, there was a second-class "Flyer" service from Lagos to Port Harcourt and from Lagos to Kano twice weekly, and from Lagos to Tiko once a week. There was first-class service to the Gold Coast four times a week and second-class service five times. Rates averaged 1/- per passenger-mile first-class and 4 1/2d. per passenger-mile second-class. Charter service was also available.

TABLE 1 WAAC Traffic

	1949-50	1950-51	1951-52	1952-53
Passengers				
1st Class .....	14,588	24,872	30,346	33,234
2nd Class .....	561	6,268	12,423	23,955
Total .....	15,149	31,140	42,769	57,189
Freight (Net Ton-Miles) .....	582,059	1,105,296	1,217,271	1,499,255

SOURCE: West African Airways Corporation Annual Reports.

First-class passenger traffic has tended to stabilize; it probably did not exceed 35,000 for 1953-54. The introduction of second-class flights, however, met with great success and that traffic probably reached 40,000 in 1953-54. The level of freight traffic is still rising.

Despite the increase in traffic, WAAC operations have shown large deficits, as shown by Table 2. The deficit for 1953-54 will be even higher than the 1952-53 deficit, and may reach £ 500,000.

TABLE 2 WAAC Financial Results

(£)

Year	Revenue	Expenditure	Deficit
1949-50 .....	316,233	546,312	230,079
1950-51 .....	541,852	692,016	150,164
1951-52 .....	674,167	823,419	149,252
1952-53 .....	806,314	1,076,044	269,730

SOURCE: West African Airways Corporation Annual Reports.

These figures include WAAC revenue and expenditures for the entire network. Nigerian operations are not accounted for separately. Income from commissions on bookings on other airlines and from handling traffic for other operators is also included. During the past five years, an average of 35% of annual revenue has come from commissions.

In considering these large deficits, account must be taken of the fact that operating conditions in Nigeria are difficult: short flight stages, generally about one hour, carried out during daylight hours only, limit aircraft utilization to a maximum of 1200 hours per plane annually. In order to operate at a profit under these conditions, suitable planes are essential. However, WAAC's fleet until recently was highly uneconomical. It consisted initially of eight-passenger twin-engine de Havilland "Doves," which even at a load factor of 69% (1952-53) showed a heavy loss. Delivery of 18-passenger four-engine Handley-Page "Marathons" planned in 1946-47 was delayed until 1952. This plane was unsuitable for Nigerian traffic by the time it could be placed in service and, in addition, required frequent and costly modifications and replacements. The success achieved with second-class services, introduced in 1949-50 with two-engined Bristol 170's, has convinced the Corporation that the future of commercial aviation in West Africa lies in a service with a low fare structure, operated by large aircraft. Faced by mounting deficits, WAAC in April 1954 took the Marathons out of service and is now using 45-seater Bristols at a reduced frequency on all its scheduled services in Nigeria, except in the North. The services on northern branch lines will still be operated by Doves, which will also be used for charter and survey flights. There is now only single-class service.

at a fare of 6d. a mile. The mission has been informed that, after disposing of its six Marathons and after purchasing two additional Bristols at an approximate cost of £ 60,000, WAAC will have a ton-mile capacity 20% greater than in 1953-54.

The change to a small number of large aircraft and the elimination of the Marathon class will undoubtedly bring down operating and maintenance costs and the main lines should become financially self-supporting in the relatively near future. The continuous increase in traffic should also enable WAAC to increase the low schedule frequencies prevailing since April 1954. We suggest that WAAC look into the practicability of providing a small number of first-class seats on its planes to augment revenue. We have in mind that the new single-class fare is only 50% of the former first-class fare at which more than 30,000 passengers annually were carried during the last few years.

The northern branch lines cannot be expected to pay for themselves for a long time to come.

In its projections of federal capital expenditure, shown in Table 3, the mission has included £ 750,000 as Nigeria's contribution to the subsidy of WAAC over 1955-60. A token figure of £ 200,000 has been inserted for additions to the fleet. Actual figures will depend not only on the development of traffic but also on the type of aircraft selected. A decision as to the latter will be possible only after an opportunity to evaluate the suitability and performance of the Bristols in this type of service.

The WAAC staff rose from 713 in 1950 to 1,092 in 1953. Although originally most of the senior staff was supplied by the British Overseas Airways Corporation, WAAC now recruits directly. It has instituted a training program for the junior staff, and five African members of that staff were promoted to the senior staff in 1952-53. A pilot training program has also been begun by the Nigerian government, the training taking place in England. Maintenance of the planes is carried on at Lagos in large, well-equipped workshops.

WAAC has a good safety record, having had only one accident in which lives were lost. The regularity of its service leaves much to be desired, due largely to the fact that it cannot afford enough reserve planes, but also to the lack of night-landing facilities, which

TABLE 3 Projection of Federal Expenditure on Aviation

(Thousand £)

	Approved Estimates				Projections of Mission											
	1953-54		1954-55		1955-56		1956-57		1957-58		1958-59		1959-60		Total 1955-60	
	R	C	R	C	R	C	R	C	R	C	R	C	R	C	R	C
Deficit of WAAC.....	300 <sup>1</sup>	—	280	—	200	—	175	—	150	—	125	—	100	—	750	—
Capital for WAAC.....	—	176	—	2	—	—	—	—	—	200	—	—	—	—	—	200
Department of Aviation <sup>3</sup> ..	118	—	133	—	145	—	160	—	176	—	194	—	213	—	888	—
Maintenance of Airports <sup>3</sup> (Public Works Department) .....	90 <sup>4</sup>	—	99	—	109	—	120	—	132	—	145	—	160	—	666	—
Training of Nigerians as Pilots .....	—	—	20	—	20	—	20	—	20	—	20	—	20	—	100	—
New Buildings, Runways, Telecommunications, etc.	—	426 <sup>5</sup>	—	428	—	368	—	368	—	170	—	140	—	140	—	1,186
Total Aviation <sup>6</sup> .....	508	602	532	428	474	368	475	368	478	370	484	140	493	140	2,404	1,386

<sup>1</sup> Now expected to be substantially greater.<sup>2</sup> Since the Estimates were approved, WAAC has decided to spend £ 60,000 for two additional used aircraft. Some part of this amount may have to be provided by the Nigerian government.<sup>3</sup> Assumed to increase by 10% per annum.<sup>4</sup> Labor and material only. Cost of supervision, stores, equipment, etc. is borne by the Public Works Department and cannot be allocated separately.<sup>5</sup> Probably overestimated.<sup>6</sup> Totals may not equal sum of components because of rounding.

NOTE: R = Recurrent; C = Capital.

often makes it impossible for a plane to complete its scheduled run in one day if it is delayed en route by weather or mechanical trouble. Installation of runway lighting at some airfields, as recommended by the mission, should improve this situation. A reliable passenger information service, now lacking, would at least eliminate some of the inconvenience to passengers caused by these operational difficulties. On the basis of its own experience, the mission recommends that the management of WAAC give prompt attention to providing such a service.

Deficits have been met by contributions from the four governments in proportion to the mileage flown in each territory, with Nigeria contributing 70-75%. The mission recommends that WAAC keep separate operating accounts for the intercolonial lines, the Nigerian main lines and the secondary lines in northern Nigeria. This will permit an equitable and realistic allocation of the deficit.

WAAC was set up without capital but it was given borrowing powers exercisable with the consent of the West African Transport Authority. As of March 31, 1953, the maximum approved borrowing was £ 2.094 million and the Corporation had outstanding £ 1,833,125 of 3% debentures, subscribed by the four territorial governments. During 1952-53, the debt outstanding was increased by £ 1,168,125, of which 68% was taken by Nigeria. In line with our recommendations for other statutory corporations (see Chapter 4), the mission suggests that consideration be given to a change in the capitalization of WAAC whereby a substantial portion of the debenture capital would be converted into a permanent capital fund.

Table 3 shows the mission's projection of federal expenditures on aviation for 1955-60, together with approved Estimates for 1953-54 and 1954-55.

Postal service is available throughout most of Nigeria. Internal telephone and telegraph networks do not yet provide complete coverage but key points are reached in virtually all sections of the country. From Lagos there is cable and radio telephone service to points outside Nigeria.

The postal system and the internal telephone and telegraph systems are operated by the Posts and Telegraphs Department which also operates the railway telegraph and signalling system, the civil aviation, marine and police radio and portions of the wired broadcast distribution (rediffusion) system. International telecommunications services are provided by Cable and Wireless, Ltd.

#### I POSTAL SYSTEM

Through about 150 full-fledged post offices and 500 lesser "postal agencies," close to 90 million pieces of mail are handled per year. The volume has grown at a fairly regular rate from 36 million pieces in 1947-48 but neither staff recruitment nor construction of new physical facilities has kept pace with requirements.

##### *Personnel*

In the Posts and Telegraphs Department as a whole, about 30% of staff positions is vacant. In the Postal Services Branch the shortage of staff is acute at all levels of the senior and junior service and it has even been difficult to attract enough candidates for the Postal Schools. The amount of sick leave among junior personnel has become alarming. Loss of experienced staff—half of it by resignation—increased more than 20% from 1951 to 1952 when 206 pensionable

officers left. Very few trained outsiders have shown interest in coming to Nigeria to take their places. This suggests that conditions of work in the department are unattractive to both Africans and expatriates.

### *Construction*

The Public Works Department has been unable to build all the new post offices for which funds have been appropriated. In recent years it has been able to build about five a year. At the beginning of 1954, of 49 post offices authorized and waiting to be built, only a few were under construction. Given the limited construction capacity of the Public Works Department, the postponement of the building of post offices in favor of more urgent requirements elsewhere was justified. Since there does not seem to be any prospect that the burden of the Public Works Department's work will lighten in the near future, or that its capacity will expand more than gradually, the mission is of the opinion that the department should consider a wide use of private contracting firms. Only by this means does it appear possible to approach the building rate which proper development of the postal and telecommunications system demands.

### *Postal Survey*

That there are serious shortcomings in the service is fully recognized by the Posts and Telegraphs Department. Arrangements were made for a survey by two British postal experts during the first half of 1954, one covering the entire Postal Services Branch and dealing with finances, postal savings, mail movement, counter services, detailed working methods, staff problems and training programs and the other covering the Engineering Services in like manner. Their report will recommend such financial, organizational and operating changes as may be necessary for efficient performance. The mission has therefore confined its examination and suggestions to certain general matters and over-all development expenditures.

## II TELECOMMUNICATIONS

## A INTERNAL SERVICES

Statistics for 1953 indicate 6,482 route miles of pole lines, 334 miles of cables and an aggregate wire mileage (because of multiple lines) of 42,065 miles; there were 12,779 telephones installed (nearly half of them used by public agencies) and 313 telegraph sets, in addition to railway control units and other special equipment.

*Telephone*

Telephone service leaves much to be desired. The public usually blames the operators but while it is true that many are not fully trained, the real trouble is that there are not enough operators. Skilled or not, the operator in Nigeria has to handle about 30% more subscribers than his counterpart in Europe. When the calling rate is high, his load of 80 to 110 circuits is too heavy for efficient service. In slack periods, some of the switchboards are manned by first-month trainees.

If adequate maintenance of the mechanism can be assured, the obvious solution to the operator problem is the automatic dial exchange. The first of these was installed in 1950 at Port Harcourt, where it was a success. At the end of 1953 the 20-year-old original manual switchboards for Lagos and vicinity were replaced by automatic equipment serving Lagos, Ikoyi, Ikeja, Ebute Metta, Yaba and Apapa.

Pending new installations there are still numerous trunk links, even between such cities as Kaduna and Kano, on which only one conversation can be carried at a time. Furthermore, it is not yet possible to call from Kano to Lagos on a through circuit. Reception on trunk calls is generally poor. On some links (e.g. Enugu-Port Harcourt), voice transmission is hardly audible. Lines are frequently out because of storm damage.

The department is far behind on telephone installations; new subscribers may wait a year or longer. The trouble is that there are too few service technicians. Here and there local shortages of equipment

arise, but on the whole supplies are adequate and the department now has enough instruments on hand.

### *Telegraph*

Whatever the shortcomings of the telephone service, it is at least more highly regarded than the local telegraph. On every side the mission heard complaints of delayed telegrams and of their costly business consequences. Messages between such major cities as Lagos and Ibadan commonly take one or two days and sometimes up to five. It is not surprising, therefore, that the use of telegraph has shown far less growth in recent years than either mail or long-distance telephone.

Sometimes the delays are due to line trouble, for a shortage of skilled linemen hinders maintenance. Congestion may occur on certain links, although on most routes the telegraph circuits are adequate for the volume of traffic. It is generally acknowledged that the principal cause of poor service is not technical, but low efficiency of labor, due, we suspect, to the liberal system of overtime payments which gives employees an incentive to stretch out their work. Cable and Wireless, Ltd., which also uses Nigerian operators, does not have this trouble. This suggests that the fault does not lie in the competence of African operators. It appears to the mission that the best solution to this difficulty is to make overtime less attractive by replacing it with a liberal system of incentive pay rewarding fast performance in regular hours.

### *Radiotelephone*

At government request, a technical survey of portions of the Nigerian telecommunications system, both telephone and telegraph, was made recently by the Marconi Wireless Telegraph Company of England. The survey confirmed the recommendation of Posts and Telegraphs engineers that the VHF (very high frequency) radiotelephone system, available heretofore only from Lagos to Ibadan, should be expanded.

There is little doubt that for trunk-line transmission VHF in most instances is the best answer for Nigeria. Initial construction cost of

a land telephone line (one pair of wires on steel poles) under local conditions is less than the installed cost of VHF equipment. But the land lines must often pass through heavily forested areas where falling trees damage them at points not easily reached, lightning storms are frequent and maintenance crews are scarce. The department has in many cases found it both difficult and costly to keep land lines open. Under these conditions, VHF offers better service with less maintenance, and on balance is cheaper.

Plans for a new multichannel VHF system based on the Marconi study were completed in October 1953 and its installation has already begun. Most of the work has been contracted to Marconi, although the department itself will handle small portions of it together with the improvement of some connecting land lines.

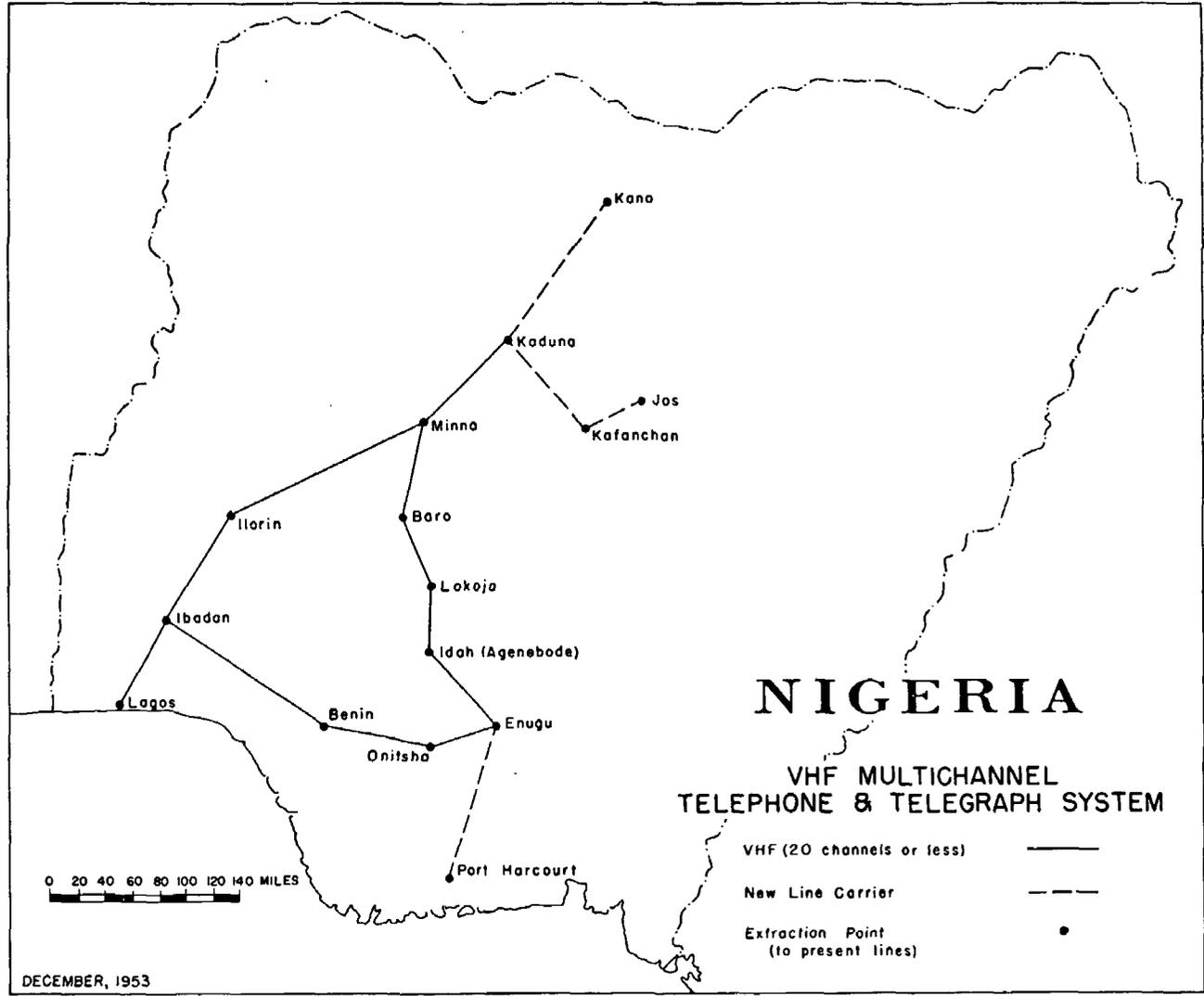
The basic plan is a large triangle of VHF links with appended lines (Map 15). Connection with the present wire system will be made at numerous extraction points, the VHF serving as the trunk route. From Lagos, where traffic is heaviest, there will be 20 VHF channels (18 telephone, 2 telegraph); as these are tapped off at various extraction points there will of course be fewer channels available on the more remote links. Where the capacity of connecting wire lines is insufficient, as on the Port Harcourt link, carrier frequency is being added to the land lines.

Still in doubt is the quality of VHF reception in some areas in the *harmattan* season. Where the trunk service is to be switched to VHF the land lines will be kept as standby. This and the fact that the channel allocations can be varied will make the whole system quite flexible. An expanded radio operators' school at Oshodi will train the necessary personnel. The program should make a great improvement in the service.

#### *Special Radio and Telegraph Systems*

Installation, maintenance and partial operation of special communications systems for other departments are important functions of the Posts and Telegraphs Department.

The aviation radio system includes 16 special stations. Its operations have been satisfactory but at times the system is forced to carry



a needless load of routine communications, such as airline passenger bookings, because of failure of the regular telegraph system to deliver them promptly.

It has sometimes been suggested (by P. & T. personnel, among others) that the railway might handle its own telegraph, signalling and traffic control systems. In most circumstances this would be the normal procedure and for Nigeria it should be considered an eventually desirable step. At present, however, to separate the railway system physically from the regular telegraph and telephone would be difficult, as they share the same poles along the railway route. A split responsibility would create confusion as well as a costly duplication of maintenance crews.

### *Official Communications*

Telephone, telegraph and postal services have up to now been furnished free of charge to all government departments and official bodies. For the year 1951-52 the estimated loss of revenue as a result of this free service was £ 458,225 (including £ 80,000 for civil aviation service). When the revised constitution comes into force, this exemption will be abolished, in accordance with the recommendations of the Fiscal Commissioner. The mission welcomes this decision. The new procedure will not increase accounting costs substantially, for the Posts and Telegraphs Department has in any event kept records of services rendered.

### B EXTERNAL SERVICES

Cable and Wireless, Ltd.—a commercial firm whose shares are now held by the U.K. government—operates both cable and radiotelephone service between Nigeria and other countries.

The company's cable connects Nigeria with the United Kingdom. Telegraph messages to other parts of the world (except for West African points) are therefore sent to the United Kingdom first and are distributed from there. Radiotelephone may go directly from Lagos to its destination; contact with ships at sea is direct also, within reasonable range.

Telephone and telegraph for overseas points are available during the daylight working hours; the service is good. Demand is not yet great enough to justify an all-night staff, either in Nigeria or at the relay stations northward, such as in Sierra Leone; a bell alarm system can summon night operators along the route in case of emergency.

Overseas cables are accepted for transmission at government telegraph offices; they are then sent over the domestic system to the Cable and Wireless, Ltd. office in Lagos for retransmission. Incoming messages for up-country points are relayed by Posts and Telegraphs, which adds from several hours to several days to the total transmission time. At present, international telephone calls can be made from Lagos only, but interior connections will be feasible when the new VHF system is completed.

### C BROADCASTING AND REDIFFUSION

Radio broadcasting is conducted by the Nigerian Broadcasting Service. Wired home reception of broadcasts from central receiving stations is available in a fair number of Nigerian cities. Until recently the rediffusion service was operated by the Posts and Telegraphs Department but since 1952 parts of it have been taken over and operated with an expanding number of subscribers by a private firm which operates similar services in other countries.

The mission has not felt that it was necessary to comment in detail on these services. Its financial projections include a sum of about £ 1.1 million, which is the government's present estimate of capital expenditure on broadcasting and rediffusion. It is hoped to make this expenditure within three years; the mission feels that it would be more realistic to spread it over five years and has done so in its projections. Recurrent expenditures are expected by the government to rise from £ 121,000 in 1953-54 (approved Estimates) to about £ 420,000 when the program is in full operation.

### III DEVELOPMENT PROGRAM

The mission believes that the plan of development now being followed by the government with respect to communications is in general

TABLE 1 Projection of Federal Expenditure on Posts and Telecommunications

(Thousand £)

	Approved Estimates								Projections of Mission <sup>1</sup>							
	1953-54		1954-55		1955-56		1956-57		1957-58		1958-59		1959-60		Total 1955-60	
	R	C	R	C	R	C	R	C	R	C	R	C	R	C	R	C
Posts & Telegraphs Dept.																
Operating Expenses ...	1,671		1,876		2,020		2,220		2,442		2,686		2,955		12,323	
Post Office Equipment...		15		26		23		30		31		30		30		144
Telecommunications																
Equipment .....		704		682		536		500		400		400		400		2,236 <sup>2</sup>
Public Works Dept.																
Buildings:																
Post Offices						168		170		133		150		150		771
Telecommunications		307		340 <sup>3</sup>		140		100		100		100		100		540
Broadcasting and Redif- fusion .....	121	78	201	51	220	100	250	150	290	250	320	300	420	300	1,500	1,100
Total <sup>4</sup> .....	1,792	1,105	2,077	1,098	2,240	967	2,470	950	2,732	914	3,006	980	3,375	980	13,823	4,791

<sup>1</sup> Derived from various estimates of Posts & Telegraphs Department.

<sup>2</sup> Derived as follows:

Posts & Telegraphs Department—5-year development program....	£ 2,564
Plus expenditure on current programs to be carried over.....	212
	£ 2,776
Less cost of buildings shown under Public Works Department....	540
	£ 2,236

<sup>3</sup> Probably overestimated.

<sup>4</sup> Totals may not equal sum of components because of rounding.

NOTE: R = Recurrent; C = Capital.

satisfactory. By reason of the extensive VHF system under construction, expenditures in telecommunications for the next several years are largely predetermined. Postal development must proceed at a faster pace than at present; for this, the mission's projections have assumed greater use of private contractors for post office construction. These and the other matters discussed have been taken into account in preparing the financial estimates shown in Table No. 1. Capital expenditures on the postal services, telecommunications and broadcasting from 1955-60 would total, largely on the basis of government estimates, about £ 4.8 million. Annual recurrent expenditure would increase gradually from about £ 1.8 million estimated in 1953-54 to some £ 3.4 million in 1959-60.

## 1 INTRODUCTION

The mission's visit to Nigeria occurred during a period of remarkable expansion of Nigeria's educational facilities. Both the Eastern and Western Regions have within the last two years formulated plans aiming at the early introduction of universal primary education,<sup>1</sup> a target which can only be described as spectacular when it is considered that in 1952 no more than 900,000 out of 2.35 million children were in school in these two regions. The political leaders in each region have pledged themselves vigorously to press forward this program and they appear to enjoy genuinely enthusiastic popular support. In the Northern Region, where at present only 120,000 out of 2.5 million children are in primary schools, a rapid expansion is also being proposed.

At the secondary level, the grammar schools are being improved and expanded and there are being realized the first results of an ambitious program of technical education, launched after the war with the aid of Colonial Development and Welfare funds. In the field of higher education, the Nigerian College of Arts, Science and Technology had virtually completed one of its branches at the time of the mission's visit, the second was under construction and already giving courses in temporary quarters, while plans for the third were being finished. In addition, the last buildings of the impressive campus of the University College at Ibadan were being completed.

Broadly based education can be a powerful stimulant to development by creating a better understanding among the people of the benefits to be derived, and education must provide the manpower of development. It is the consensus of recent studies of African educa-

<sup>1</sup> By primary education is meant the first eight years of school (now being reduced to six in some parts of Nigeria). By secondary education is meant education between the primary and university levels.

tional problems<sup>2</sup> that “none of the many schemes for social and economic development can be carried to success unless Africans with the right skill and training are available to work them”;<sup>3</sup> and that some of the present educational programs reflect the needs of missionaries, traders and government for certain kinds of employees such as clerks, rather than offering diversified vocational training. While these comments apply to Africa as a whole, the mission considers them fully valid for Nigeria.

## II GENERAL OBSERVATIONS

### *Educational Standards*

Most programs of education and educational requirements for employment in Nigeria are to a large extent based on standards developed in the United Kingdom. It is commendable that Nigerians and colonial personnel recognize the value of high standards and intend that performance in Nigeria, educational or otherwise, shall measure up to that found in other parts of the Commonwealth. But the arbitrary imposition of requirements developed elsewhere will not automatically fit Nigerian needs. Standards developed in England or other parts of the Commonwealth grew out of the particular background of conditions and experiences there, often after centuries of trial and error, and they may have limited value under different circumstances. Unfortunately, standards developed elsewhere are frequently enforced in such rigid detail as to exaggerate any weaknesses they may have and may be applied long after they have been modified or discarded in the place of their origin. The report on African education previously referred to describes this problem as follows: “The Cambridge School Certificate Examination<sup>4</sup> dominates the curriculum of the secondary

<sup>2</sup> We would mention especially *African Education* (Oxford University Press: London, 1953), the report of a conference representing a cross-section of leaders in African education at Cambridge, sponsored by the Nuffield Foundation and the Colonial Office. The conference drew heavily on the previous work of the Jeffery Commission in West Africa.

<sup>3</sup> *Ibid.*, p. 12, par. 59.

<sup>4</sup> An examination for students who have completed six years of grammar school, set by the Cambridge University Examinations Syndicate and correlated with English standards.

schools on the west coast far more completely than the various School Certificate Examinations ever dominated the English grammar schools.”<sup>5</sup>

In Nigeria the educational level is low and can be raised gradually only, over a long period. It may be that the only approach to meeting the educational need quantitatively can be through programs that would be considered “substandard” under the criteria heretofore applied. This does not mean that educational efforts will be stabilized at a low level. Higher standards can and will evolve as educational development proceeds but the process should not be hastened at the expense of programs seriously needed as a service to the country.

#### *Division of Functions Between Federal and Regional Governments*

The organization and supervision of primary and secondary education has been for some time a function of the regional governments. However, the regions have been reimbursed by the central government for a large share of their educational expenditure, and the central Department of Education has played an important role in establishing and maintaining uniform standards of instruction. Under the revised constitution, primary and secondary education, outside Lagos, will become subjects of regional jurisdiction exclusively.

The mission does not doubt the wisdom of placing principal responsibility for the administration of education on the regional and local governments. For one thing, the expansion of the educational system now in progress at all levels and the even greater expansion in prospect require tax measures unlikely to succeed unless authority for the administration of education is vested in those governments. For another, each region should have authority to vary curriculum content so that instructional materials will accord with local resources and needs. It seems unwise, however, to move so far in the direction of regional control as to sacrifice those functions, best administered centrally, which will assure to the youth of Nigeria basically sound education regardless of region. The importance of uniformity of educational standards throughout Nigeria leads the mission to suggest that the regions should request the federal government to continue its inspectorate functions for the time being. The quality of the teaching

<sup>5</sup> *Op. cit.*, p. 27, par. 142.

effort can best be judged by a central inspectorate, working in close co-operation with regional education officials. Deviations from accepted standards based on local differences should be kept to a minimum and overcome as soon as practicable.

A federal inspectorate would facilitate the task of regulating professional qualifications, a function over which the federal government will have jurisdiction to the extent determined by the Governor-General; it would also provide a single agency for contact with the educational systems, examining boards and rating agencies of other countries, thereby avoiding the confusion and difficulty which would occur through multiple contact on a regional basis.

The authority of a federal inspectorate of education would be strengthened if it were empowered to administer federal grants of educational funds. Although the present grant-in-aid system will be abolished and the regions will share in the general revenue of the federation, it might be useful if, from time to time, a region whose financial position is made insecure by the rapid expansion of education were able to call upon the federal government for special assistance. When the constitution is again reviewed in 1956, the suggestion made by the Fiscal Commissioner for a statutory federal grant to education might be reconsidered.<sup>6</sup>

It is of interest that the Nigeria Union of Teachers<sup>7</sup> has expressed itself as favoring uniform standards of competence and remuneration for the country as a whole and believes these can best be encouraged through a federal office of education. The Union favors a central inspectorate empowered to grant or withhold funds, as a part of the federal Department of Education.

On the assumption that some form of federal inspection of education will be preserved, the mission in its financial projections (Table 6, p. 602) has assumed the continuance of a moderate level of expenditure (about £ 60,000 per annum) by the federal Department of Education. It has not made provision for education grants to the regions although at some stage it might be desirable that they be reintroduced.

<sup>6</sup> *Report of the Fiscal Commissioner on Financial Effects of Proposed New Constitutional Arrangements* (Government Printer: Nigeria, 1953).

<sup>7</sup> A professional association covering the whole of Nigeria and claiming a membership of 30,000. The Union is represented on the Central Board of Education and is considered by education officials to be a constructive influence.

The new constitutional arrangements provide for continuing federal control of the University College, Ibadan; the Nigerian College of Arts, Science and Technology; the Forest School, Ibadan; the Veterinary School, Vom; and a few other institutions. The mission is in agreement with the greater part of these dispositions, although, as is proposed below, it believes that the Veterinary School should be incorporated in a new faculty of veterinary medicine at the University College. As regards the Nigerian College of Arts, Science and Technology, however, the mission considers that the educational needs of the regions would be better met if this institution were regionalized, administratively as well as physically. This proposal is discussed more fully on page 599.

The federal government will assume responsibility for Lagos schools. The mission was not able to determine the amounts which will be spent for this purpose. In the projections of education expenditures, Lagos schools are included in Western Region expenditures, which are thereby overstated. To allow for Lagos expenditures on education as well as on other sectors a lump sum deduction has been made from total Western Region expenditures and added to those of the federal government (see Appendix C, p. 617).

#### *Role of the Christian Missions in Education*

A large share of Nigerian education at the primary and secondary levels has been under the supervision of Christian Missions, which were at one time almost solely responsible for initiating, financing and managing all education available to Nigerian youth. The predominance of the Missions has been much more complete in the South, but even in the North they are responsible for a substantial portion of educational activity in the so-called "pagan" areas and in the "strangers' quarters" of the towns.

The role of government has been growing, however, and there are now signs that most of Nigeria's primary schools will soon pass under government control, if not outright ownership. Already a very large part of Mission expenditure for education is met by grants of public funds, with most of the remainder coming from pupils' fees. We regard this transition as inevitable and consider it fortunate that as primary education rapidly becomes a matter of public responsibility,

Mission and public education officials are co-operating to preserve the best features of the school system which the Missions built.

We would suggest that although the pioneering phase is completed the Missions can still serve an extremely useful purpose by offering in a few completely independent institutions instruction of a quality and with emphases and values not normally obtainable in public institutions.

### *Women's Education*

The education of women suffers seriously by comparison with the opportunities available to men and the encouragement given to their education. The North is the least advanced in opportunities for women, reflecting the traditional attitudes of a Moslem society. But attitudes are changing on this question, even in the North, and present plans in each region give recognition to the need for more emphasis on education for women.

As Nigeria develops its economy the education of women will prove an economic asset. Educational opportunities will need to be expanded and diversified to provide proper training for teaching posts and for a large variety of services in government, industry and commerce. In addition to the limited existing emphasis on domestic science and home-crafts, commercial instruction should be available at the grammar school level.

### III EDUCATIONAL PROGRAMS

The pace of educational advance depends on a number of factors. Of these the most important are the availability of trained teachers, popular interest in education, funds for capital and recurrent expenditure and the presence of organizational and managerial ability. The rate at which trained teachers can be supplied will affect the pace of educational expansion throughout Nigeria. The weight of the other factors varies from region to region. For example, in the East and West popular interest and support are much greater than they are in the North and the Southern Cameroons. On the other hand, only

the West has sufficient financial resources in hand or in prospect to be able to contemplate achieving universal primary education in the near future without undue stringency. This diversity makes generalization difficult and requires that each educational level be examined region by region.

In seeking to assess and project the cost of programs for education, the mission was handicapped by the inadequacy of data on present costs at various levels of education. In particular, there are no data on expenditure by the Missions out of their own funds and from fees, while expenditures by the regional governments on administration, teacher training and secondary education are not always adequately broken down. We have nevertheless considered it essential to make rough projections based on whatever data were available, to show the approximate cost of a growing educational system and to illustrate the impact of this growth on regional and local government budgets.

The existence of limiting factors makes it quite doubtful that some of the currently planned programs can be carried out as quickly as is desired. On the other hand, there are areas to which the programs are not giving adequate attention, in the mission's opinion. Our projections in some cases scale local programs down to a level which in our judgment gives promise of practicability, while in other cases they expand what has been proposed locally, again within the limits of what we judge to be feasible.

#### A PRIMARY EDUCATION

At the beginning of 1953, only an estimated 20–25% of Nigeria's five million children, aged 7 to 14, were attending primary school. Even this represented substantial progress over as short a period as the preceding three years. Some regions have progressed further than others. The East had two children out of five in school, the West one child in three, the Southern Cameroons one in four and the North only one in 20.

The enthusiasm for education in much of Nigeria amounts almost to a blind faith that schooling regardless of content or method is a passport to employment and affluence. The present scarcity of trained persons, in a market where even those poorly trained are in demand,

seems to lend validity to this belief. Thus the problem is to provide a proper balance between the urge for rapid expansion of educational facilities and the need to maintain adequate standards of instruction and curriculum. Together with efforts to provide more teachers and more physical facilities there can and should be careful attention to the content of educational courses at all levels and to methods of teaching.

It is particularly important that the educational experience be related to the environment and occupations that Nigerian young people will enter when they leave school. One of the most valuable features of the primary curriculum in Nigeria is the program of courses in rural science. The location of handicraft centers in or near primary schools can do much to fit Nigerian children for life in a more productive economy. Subjects such as arithmetic, grammar and hygiene can be made to include instruction useful to the many students, including girls, who will later be engaged in some form of commerce, trading or "making market."

#### *Training of Primary Teachers*

There are some 42,000 primary school teachers, two-thirds of whom have not themselves received an education beyond the first eight years or any specialized teacher training. The remainder, less than 14,000, hold certificates under a system of training which, with some regional variations, prevails throughout Nigeria.

Students who have achieved the first school-leaving certificate (at the end of six or eight years of primary school) and have completed a one- or two-year apprenticeship as teachers in a junior primary school, enroll in an elementary training center. Completion of the two-year course there entitles the graduate to a class III certificate and qualifies him to teach in junior primary schools. Holders of this certificate may after two years' further teaching experience enroll in a higher elementary training center for two years and qualify for a class II certificate, entitling them to teach in either junior or senior primary schools.

In 1953, the output of the elementary training centers was just over 1,800 and that of the higher elementary training centers just over 800. Since entrants to the higher elementary training centers are

normally selected from among the graduates of elementary training centers, the net number of new trained teachers available for the primary school system was only about 1,800. Net growth of the trained teaching staff has been even lower than this would indicate, however, since in the past there has been a high rate of "wastage," i.e., an abnormally large number has left the profession. The mission was informed that this wastage was somewhat reduced after the general revision of teachers' salaries in 1952 but it must still be taken into account.

The need to increase the output of trained teachers is obvious and urgent. Present plans call for increasing the annual number of graduates from elementary and higher elementary training centers in all regions to 3,100 and 1,600, respectively, by 1958. This increase will be of considerable benefit provided wastage remains within normal limits. Every effort should be made to increase the attractiveness of teaching as a career.

A problem will arise with regard to the best use of newly available teaching staff. On the one hand, there is a natural desire to increase as quickly as possible the number of pupils to whom primary education can be offered. Such an objective could easily absorb all available additions to the teaching staff. On the other hand, a good case can be made for improving the over-all quality of the existing staff by replacing untrained teachers with newly-trained ones.

There are limits to the rate at which it will be possible to expand teacher-training facilities. In the first place, it may prove difficult to find a sufficient number of candidates, especially women, to train as teachers, particularly in the North. A second problem is that of securing qualified staff for the teacher-training centers. The training departments for secondary teachers (who can staff teacher-training centers as well) at the branches of the Nigerian College of Arts and at the institute of education at the University College, Ibadan, proposed later in this chapter, should be developed promptly. Until qualified Nigerians become available in sufficient numbers, efforts to recruit expatriate staff for these positions must be increased. In some cases it may be necessary to decide whether teacher-training schools or the secondary schools have prior claim over the limited number of new teachers qualified for openings in both fields. At this stage of Ni-

geria's development it is the teacher-training center, we believe, that deserves first priority even though during the period of expansion this may slow the growth of other schools.

The North and East have decided to attack the problem of teacher preparation, particularly with a view to improving its quality, by creating special training centers to serve as pilot projects for their respective areas. These centers will conduct training programs for those who will staff other teacher-training centers, operate workshops for the preparation of instructional materials, provide experimentation in the development of handbooks and other instructional materials suited to the level of the primary grades and conduct research on the teaching of languages. They will give special attention to the problems of children in those areas where competence in three and even four languages must be acquired in the course of education.

The mission recommends that a similar center be developed in the West. Because of their significance for future development of education in Nigeria, these institutions should be established at the earliest possible date and should have the finances and conditions required to attract the best available staff.

#### *Rural Science Training Centers*

The preparation of teachers for courses in rural science studies is carried on in rural science training centers, which are among the most vital and best conducted educational efforts we observed in Nigeria. The expansion of this program should rank high on the list of educational priorities and should be permitted to keep pace with the increase of schools in the primary system. The modest plans now under consideration for three additional centers, two in the North and one in the East, should be put in motion.

#### *Regional Plans for Expansion of Primary Education*

*Northern Region* The most immediate limitation on primary school expansion in the North is the shortage of trained teachers. Plans for expanding the training facilities are in hand and it is hoped that in about four years' time the elementary training centers will be turning out 800 new teachers a year and the higher elementary centers 200,

i.e., twice the present output. The mission recommends that this effort be actively pursued. Indeed, the mission would favor plans being laid now for further expansion, to bring the total annual output of teachers to some 1,500.

These new facilities are not likely to turn out any teachers until 1957. Until then, the expansion in primary schools will be limited by the present output of teachers from elementary training centers minus those who go on to higher elementary centers and to other professions. Although the very low literacy rate in the North might justify an even greater effort looking toward facilities for training several thousand teachers a year, we regard an annual output of 1,500 as the maximum attainable in the near future. Moreover, the North already has the most favorable ratio of trained to untrained teachers in Nigeria, and will have too many other demands on its skilled human resources to afford to improve this ratio further for some years.

The second limitation is the popular indifference to educational opportunities. We were informed that some new schools had been unable to induce pupils to attend. As a whole, the people of the Northern Region, perhaps because of the enduring quality of their ancient and comparatively stable culture, have embraced Western institutions less quickly than have the people of other regions. The mission was greatly impressed, however, by the understanding of the advantages of more widespread education expressed by Northern leaders.

The third limitation on the growth of Northern primary schools is financial. Paradoxically, the North, with the lowest per capita income in Nigeria, has the highest school costs per pupil. It may be estimated roughly that the average annual cost of maintaining a child in a primary school is £ 7 in the North, compared to £ 5 in the West and £ 4 in the East. This results partly from the relatively high ratio of trained to untrained teachers which the North enjoys and partly from the practice, at least in senior primary schools, of providing boarding facilities for students. Capital costs (an estimated £ 12 per pupil) are also higher than elsewhere, both because boarding and dormitory facilities are often provided and because construction standards for school buildings tend to be higher than in other parts of the country. In view of the serious lag in educational facilities from which the

North suffers, consideration should be given to some lowering of physical standards so that the available funds can be spread further and progress in combatting illiteracy can be speeded up. We would also suggest that at least temporarily the ratio of students to trained teachers should be increased from 45 : 1 to 50-60 : 1. While financing the primary school system has not yet proved an excessive burden either to the regional government or to the native treasuries, at the present level of costs finance would begin to pose problems by the time the output of teachers reaches the level now planned.

For the reasons described, the mission does not envisage that primary school enrollment in the North can be expanded by more than 10% per annum, and in our financial projections (see p. 602), we have assumed this rate of increase. Even this rate will require concerted efforts on the part of the Northern government and people.

*Western Region*<sup>8</sup> The Minister for Education of the Western Region, in a policy declaration issued in July 1952,<sup>9</sup> announced that free universal primary education would be introduced in the region beginning on January 1, 1955, and that a reduction in the primary school course from eight to six years would gradually be introduced. Present plans call for an annual increase in enrollment of about 112,000 pupils, compared with a total enrollment of 390,000 in 1952. At the time this program was drawn up, it was anticipated that all eligible children would be in school by 1959.

Following the announcement of this policy, an immediate expansion of elementary training centers was undertaken. It is expected to raise the output of qualified junior primary teachers to 1,700 by 1955, a threefold increase over 1953, and the output of higher elementary centers to 500, compared to 350 in 1953. The new output of the two-year courses at these training centers will not immediately be reflected, however, in an equal gain in the teaching staff, for beginning in 1955-56 it is apparently intended to enter upon a further expansion of higher elementary training centers, preparing teachers who are already qualified as junior primary teachers to rise to senior pri-

<sup>8</sup> Lagos schools are included in the figures mentioned in this section. Under the new constitution they will be the responsibility of the federal government.

<sup>9</sup> Minister for Education, Western Region, *Proposals for an Education Policy for the Western Region*, Nigeria (Government Printer: Ibadan, July 1952).

mary schools. This program calls for building 30 new higher elementary training schools in 1955-56 at a cost of £ 900,000, which would presumably take in annually 1,500 teachers who already possess junior primary qualifications. This is almost as many as the entire planned output of the elementary training centers. It would not be possible, in the mission's opinion, to expand higher elementary training centers to this extent unless entrants to the new centers were selected from outside the ranks of teachers or unless the proportion of trained members in the teaching staff were seriously reduced.

The mission regards the West's program as extremely ambitious. There is no question of renouncing at this stage the firmly announced policy of universal primary education, but for a variety of reasons we feel that the regional government should postpone by three years, i.e. to 1962, the date at which all eligible children will be in school. This is approximately the time it would take to reach the goal assuming the very rapid rate of expansion of 15% per year. We are prompted to this conclusion by the following considerations:

1. Now that the results of the census of 1952 are known, it appears that there are more children to be provided for than was originally contemplated.

2. It does not seem possible to proceed at the pace originally planned without undue dilution of the teaching staff with untrained teachers. The mission believes that rather than increasing the ratio of untrained to trained teachers in the West, progressive improvement in that ratio should be aimed at.

3. It would be unfortunate if the program for creating new higher elementary centers were to be eliminated merely for the sake of a somewhat faster increase in the expansion of primary education. We feel that the program should continue, though perhaps with a reduced target of 15 new schools, training eventually 750 new senior primary teachers a year and involving a capital cost over the five-year period of some £ 450,000.

We would emphasize that even a program of this magnitude would not be easy of attainment. In particular, it assumes a very low rate of wastage in the primary teaching staff. It also assumes that qualified staff for new training institutions can be found.

*Eastern Region* In the East, as in the West, the regional government has declared its policy to be the provision of "universal primary education in the shortest possible time."<sup>10</sup> In 1953 over one-half million of the region's estimated 1¼ million children of primary school age were in school, the highest proportion of any region. In some respects the prospects for a fast growth are quite favorable. The popular enthusiasm for education probably runs higher in the East than anywhere else in Nigeria, so that with few exceptions no particular effort is required to induce children to come to school, once schools are provided. Organizational and building capacity for such an expansion should not present insurmountable difficulties. School buildings can be of simple construction and communities can often be enlisted to provide labor for school construction free of charge.

Despite these favorable factors, the rate of growth of Eastern schools is low and must remain so for several years because of the shortage of trained teachers. In 1953 about 700 were graduated from elementary training centers (exclusive of an estimated 100 graduated from centers in the Southern Cameroons) and 350 from higher elementary centers. On the basis of expansion plans which are now beginning to be carried into effect, these figures will rise by 1955 to about 950 and 560, respectively. The net number of new teachers added to the school system each year after 1955 should be about 750, allowing for a relatively low wastage rate of about 5%, and for the temporary absence from the schools of teachers who enter higher elementary centers.

The Eastern Region has the lowest average ratio of trained to untrained teachers, about one to four, and there is no doubt that this should be improved. At the moment the ratio of trained teachers to pupils is about 1 to 95. To allow for improvement, we believe that no more than 50 new pupils should enter school for each new trained teacher in the school system. The rate of teacher-training to be reached in 1955 would on this basis permit an increase in total enrollment of only about 38,000 pupils per year. At this rate, it would take 20 years before facilities could be provided for all school-age children in the region.

<sup>10</sup> Eastern Region of Nigeria, *Policy for Education*, Eastern House of Assembly, Sessional Paper No. 6 of 1953, par. 2.

The East is capable of moving toward its goal more swiftly than at present and we recommend that still further expansion of teacher-training facilities be undertaken immediately. The target might be to achieve a gross annual output of 2,500 teachers from both elementary and higher elementary centers by 1960. This should permit the primary school system to expand at a rate faster than the present one, which can hardly be more than 5-6% per annum.

*Southern Cameroons* In the Southern Cameroons only 30,000 children out of a potential 123,000 now attend primary school, relatively fewer than in the East or the West. There is, moreover, in parts of the Cameroons less popular enthusiasm for education than in the East and in many areas parents may be unwilling to let their children leave farm work to attend school. The mission hopes, however, that this reluctance will be gradually overcome and believes that in the longer run the chief limiting factor will be the supply of trained teachers.

At the moment, a number of elementary training centers turn out about 100 trained teachers annually. Allowing for wastage and for a rise in the number of teachers going on to higher centers, this should make possible a net annual increase in the trained teaching staff of perhaps 50. Like the East, the Southern Cameroons suffers from an unusually low ratio of trained to untrained teachers and, to improve this ratio, we have assumed that for each new teacher only 50 new pupils can enter school. The ratio is very much higher at present. The rate of expansion permitted by this inflow of teachers, provided the rate of wastage is not abnormally high, is only about 8% per annum. The mission recommends therefore that the Southern Cameroons seek to double the output of junior primary teachers in the next few years and that it provide facilities for turning out annually about 50 senior primary teachers, of whom there is an especially acute shortage.

#### *Cost and Financing of Primary Education*

Even if the provision of trained teachers were not the serious problem it is, universal primary education could still be approached only gradually because of the large recurrent cost involved in relation

to present levels of revenue. The mission believes strongly that a substantial part of the recurrent cost of primary schools should be borne by the local community. Requisite capital expenditure on primary schools, although high, is not likely to prove a limiting factor on expansion in the South; in the North, where the capital cost of universal primary education will be extremely high, there are other limiting factors operating at present. The cost of universal primary education in the different regions may be very roughly reckoned as follows:

TABLE 1 Recurrent and Capital Costs of Primary Education

(£)

	Recurrent Costs		Capital Costs		
	1953-54 Outlay of Government and Native Treasuries <sup>1</sup>	Cost per Pupil <sup>2</sup>	Cost of Universal Primary Education	Cost per Additional Pupil	Capital Cost of Universal Primary Education
North .....	460,000	7	17,200,000	12	28,000,000
West <sup>3</sup> .....	1,100,000	5	5,500,000	5	3,500,000
East .....	1,075,000	4	5,000,000	5	3,500,000
Southern					
Cameroons..	73,000	4	500,000	5	465,000

<sup>1</sup> Rough estimate.

<sup>2</sup> Including not only government and native treasury outlay, but also a rough estimate of the proceeds of fees and voluntary contributions and the contributions of voluntary agencies.

<sup>3</sup> Including Lagos. See Appendix C.

The problem of financing such an effort will vary from region to region in accordance with the revenue possibilities of the regional governments and native treasuries. One general remark applies to all regions: the greater the local responsibility that is assumed for the cost of education, the more genuine will be the local community's interest in its schools. This fact has already been recognized by the government of the Eastern Region, whose proposals for universal primary education are subject to the important qualification that the rate of progress should depend on the willingness of local governments to finance a significant part of the cost of expansion. The mission wholeheartedly supports this principle. It also approves of the system

of "rates" adopted by some Eastern local governments to finance this cost.

The mission's projections of government and native treasury expenditure have been based for each region on a different method of sharing the cost of the expansion in primary education which we feel is possible between 1955 and 1960. In the North, where the rate of expansion is assumed to be 10% a year, we believe that the regional government should continue to bear about 55% of the recurrent cost. We have therefore indicated a uniform (but admittedly arbitrary) increase of 10% per annum in both the regional government grants for primary education and the recurrent education expenditures of native treasuries. The capital cost, on the other hand, should be borne entirely by native treasuries, which as a group have accumulated large reserves. As an exception, the few treasuries which do not possess such reserves might be aided by special grants from the regional government. We have projected total capital expenditures on primary schools over the five-year period at £ 950,000, of which £ 50,000 might have to be provided as grants.

In the West, we can foresee a faster growth, 15% per annum, although the increase in government expenditure will be greater because of the decision to abolish fees. In 1953-54 a start was made at increasing the local contribution to education by imposing a special levy, in addition to existing direct taxes, of 10/- per taxpayer. Revenue from this levy is paid to the regional government and reapportioned out in grants. In addition, the regional government makes large grants of its own funds. We propose that total regional grants for primary education grow from £ 950,000 in 1953-54 to £ 3 million in 1959-60. We have projected a 15% per annum increase in local authorities' expenditures, which means that they must supplement increased grants with higher taxes (see also Chapter 5). Capital expenditure on new primary schools, though much of it will be made by local authorities, should be entirely reimbursed by grants from the regional government, in view of its favorable financial prospects. The projections include an amount of £ 2.3 million for this item.

In the East, a much lower rate of growth in primary schools, 6% per annum, is foreseen. The regional government here will face a much more difficult financial problem over the next few years than

the governments of the other regions. We suggest that the annual regional contribution be held to its present figure (£ 1.2 million) and that the entire additional recurrent cost be met through local "rates." This would mean that the annual education expenditure of local governments and native treasuries would gradually increase from £ 170,000 in 1953-54 to some £ 600,000 in 1959-60. Regional grant funds might henceforth be administered on a more selective basis than in the past, with assistance going only to those local authorities showing genuine financial need. The total capital cost of new schools may be expected to be only some £ 750,000 in the five-year period, at the rate of £ 4 per new pupil and we propose that the regional government contribute a part, say 50%, of this cost.

In the Southern Cameroons, where an average annual expansion of about 8% can be expected, there seems no reason to alter the existing method of financing the recurrent costs of primary education. The projections therefore assume a uniform growth of 8% per annum in both regional and local recurrent expenditure on primary education. The present level of grants to primary schools in the Southern Cameroons, made in the past by the Eastern regional government, is roughly estimated at £ 65,000. This would rise to £ 95,000 in 1959-60. The capital cost of these new schools, about £ 250,000, might be shared equally by the new territorial government and native treasuries.

It remains to assess the cost of the projected increases in training facilities for primary teachers. This cost, we believe, should be met entirely by regional governments. The necessary outlay is roughly estimated as shown in Table 2.

## B SECONDARY EDUCATION

In 1953 only 31,500 youths were receiving some kind of post-primary instruction as compared to 1.1 million in primary schools. Since secondary education is the basic preparation for most responsible jobs and is mandatory for entrance to any type of professional training, the seriousness of the shortage is at once evident.

The 31,500 in post-primary schools are distributed as follows:

General secondary schools .....	20,300 <sup>11</sup>
Technical institutes and trade centers .....	1,700
Teacher-training centers .....	8,500
Specialized government department schools .....	1,000
	31,500

TABLE 2 Recommended Expenditure for Training Primary Teachers

(Thousand £)

	Capital Cost 1955-60	Additional Annual Recurrent Cost
<i>North</i>		
Training Centers .....	500	80
Special Training Center .....	100	15
Rural Training Centers (2) .....	100	20
<i>West<sup>1</sup></i>		
Training Centers .....	450	75
Special Training Center .....	100	15
<i>East</i>		
Training Centers .....	600	100
Special Training Center .....	100	15
Rural Training Center .....	50	10
<i>Southern Cameroons</i>		
Training Centers .....	90	15
Total .....	2,090	345

<sup>1</sup> Including Lagos. See Appendix C.

Teacher-training facilities have already been discussed and technical education will be treated in the next section. It remains to examine the general secondary schools and to assess the possibility of their expansion.

As has been noted earlier, many of the secondary schools operate on the pattern of the English grammar school and prepare their students for the Cambridge School Certificate examination, the standard British university entrance examination for overseas students. The

<sup>11</sup> Not including those below secondary level in Northern middle schools.

objective of some of the headmasters in the southern part of Nigeria is to develop their schools into the equivalent of those to be found in England. In the North, on the other hand, only the Zaria secondary school carries the full six-year course for the Cambridge certificate and a one-year pre-university program. Some of the schools, known as secondary schools or colleges, give from three to five years of the normal secondary course, while others, known as "middle schools," combine the last two years of primary instruction with the first two years of secondary.

### *Curriculum*

In the North, much has already been accomplished in the direction of reorienting instruction to make it of greatest practical benefit to those who will work under specifically Nigerian conditions by offering such subjects as handicrafts and agricultural science. In the South, a number of headmasters regard their present curricula as too narrow and favor the inclusion of agriculture and handicrafts. But they have been unable to accomplish this for in most instances too little time can be spared from preparing students for Cambridge Certificate examinations. The mission was interested to learn that it is planned soon to build in Lagos a "modern school," catering to students who seek a more practical secondary education than the normal grammar school provides.

The mission favors a re-examination of the secondary school program for the purpose of defining courses of study alternative to the university preparatory course. As a general rule, we favor diversifying the curricula of secondary schools rather than building specialized institutions because administrative costs are likely to be lower and because specialized schools are likely to be too scattered to provide adequately for students from beyond their immediate vicinity.

The serious shortage of professionally trained people in all branches of the medical arts and allied fields of health and nutrition requires the wider inclusion of courses in chemistry, biology and physics in the secondary curriculum. A beginning has been made in a few schools but required courses in science should be offered in all, with electives beyond the basic work.

Secondary schools could also profitably add to their curricula com-

mercial and clerical courses to prepare students for office jobs in business and government. The subject most urgently required is bookkeeping; typing, shorthand and commercial law are also needed. Such a program in secondary or middle schools would provide an opportunity for the discovery of individual abilities and interests. The wider availability of these programs would encourage their selection by greater numbers of students, including young women, and by so doing would offer effective help in meeting the growing demand for persons with commercial training. Those taking the courses should be provided periods of on-the-job instruction in commercial firms, as is now done in many other countries.

The mission is inclined to the opinion that it would be preferable for those entering the government clerical service to receive their training in general secondary schools, rather than for the government to operate special clerical training schools such as that at Oshogbo or clerical training courses in government departments. We recommend that an over-all study be made of these government programs to determine their cost in money and manpower in relation to results. Apparently there is no uniformity between the courses offered in various departments and it appears that the wastage is high among those who change objectives and do not serve the departments which have trained them. The existing clerical schools might be turned over to the regional education authorities and transformed into full-fledged secondary schools.

#### *Role of Missions in Secondary Education*

The inevitably increasing responsibility that government must take for secondary education will also affect the relationship of Missions to secondary education. There is need at this level, as at the primary level, for well-operated institutions under private control. Instead of competing with each other and with government in the quantitative provision of educational opportunity, Missions should regain their former position of pioneer pace-setting in qualitative standards. This can best be accomplished by qualitative effort limited to the number of institutions which the Missions can adequately finance from their own resources. The service they may render the whole of Nigerian education in this regard is incalculable.

*Staffing Problems*

There is considerable reliance upon expatriate teachers for secondary instruction in Nigeria. As a result, Nigeria faces serious problems in the development of secondary education, for great difficulty can be expected in obtaining the expatriate personnel needed for expansion, especially as teacher-training centers and technical schools also require expatriate staff with the same qualifications. In the long run, the remedy is to train Nigerians to staff these schools. At the time of the mission's visit, however, no institutions existed for the preparation of secondary teachers other than at the Zaria branch of the Nigerian College of Arts, Science and Technology and limited instruction at University College, Ibadan. Nigerians teaching in secondary schools in noncraft subjects had for the most part been prepared as senior primary teachers and upgraded to secondary schools.

The mission recommends that the number of students accommodated at Zaria be expanded to the level planned at the outset, that the program planned at the Ibadan branch of the Nigerian College be carried out as quickly as possible and that a similar program be instituted at the Enugu branch. The mission also recommends the establishment of an institute of education at University College, Ibadan, with courses designed to train those who can eventually become secondary school supervisors.

*Possibilities for Expansion and Cost of Expansion*

Because of the difficulty and uncertainty of obtaining a qualified teaching staff, it is not easy to forecast the rate of expansion of Nigeria's secondary schools. Although a desirable target would be at least a doubling of the secondary school enrollment by 1960, we doubt whether this is feasible. We have therefore based our financial projections on a 10% annual average increase in each region except in the North where we believe the great dearth of secondary schools requires an extra effort, and have therefore projected an expansion of 15% per annum. These rates of expansion represent the maximum obtainable, in the mission's opinion, and will call for exceptional recruitment efforts.

The cost of this expansion is no less difficult to ascertain. Costs

may vary widely, depending on construction standards, on whether or not boarding facilities are provided, on the extent of laboratory or shop facilities needed and on whether extensive use is made of expatriate personnel.

The recurrent cost to the government is affected also by the extent to which expenditures are matched by students' fees. We have assumed that fees will continue at prevailing rates and our projections of recurrent government expenditure are based on a uniform increase of 10% per annum (15% in the North), matching the supposed increase in enrollment. Capital costs in the East and West are taken to average £ 250 per new student. They will be more in the case of boarding schools (which in the mission's opinion should be limited to as few as possible) but less in the case of day schools. In the North, because of the small number of schools, which draw students from a large area, it will be necessary that many of them be boarding schools; we have allowed £ 350 capital expenditure per new student in that region. On this basis the total capital cost of secondary schools should amount to £ 3.245 million, of which £ 420,000 would be in the North, £ 1.5 million in the West and Lagos, £ 1.3 million in the East and £ 45,000 in the Southern Cameroons.

### C TECHNICAL EDUCATION

Recognition of technical education as a subject of substantial government concern led to its being given a major place in the Ten-Year Plan for Development and Welfare. As early as 1945 plans were made for the establishment of institutions known as technical institutions, trade centers and handicraft centers. In 1947 the first technical institute and trade center were opened in Yaba, outside Lagos. To date seven trade centers have been formed, three in the North, two in the West, one in the East and one in the Southern Cameroons. Two additional technical institutes have been opened recently at Kaduna and Enugu, and 18 handicraft centers have been created.

#### *Technical Institutes*

The Technical Institute at Yaba, the most fully developed of its type, offers three full-time programs, two part-time programs and special

short courses. The full-time programs are designated as junior technical, senior technical and teacher training. The junior technical course is a program of secondary education "with a technical bias." In four years of resident instruction it offers woodworking, drafting, sub-professional engineering, commerce and printing to students who have completed eight years of primary education and have passed a special entrance examination. The senior technical course is a three-year course, with two years of residential instruction separated by a year of on-the-job training in industry. This course admits students who have completed a standard secondary or grammar school course and those who have completed the junior technical course. The senior technical program offers courses in electrical, mechanical and civil engineering, a course for architectural assistants and a course in economics. The teacher-training program is a two-year course for the preparation of teachers for handicraft centers and secondary school craft courses.

One of the part-time programs is designated as "day release." It consists of continuation courses offered in co-operation with industrial concerns, which permit an employee time away from the job, usually two days per week, to undertake training of direct value to his work. This program offers courses for engineers, printers, mechanics and carpenters. Evening continuation courses train adults who have had successful experience on the job. These courses are much longer and may include two years of preliminary training for those deficient in English, history or mathematics. Advanced students may prepare as engineering and architectural assistants.

The Institute has a combined total enrollment of 600 students, one-half of whom are enrolled as full-time students in residence. It maintains a close relationship with industry and co-operates in the development of programs to meet industry's special training needs. For instance, an agreement was reached in December 1953 for the Institute to conduct a residential course for broadcasting technicians. The course of instruction was developed in co-operation with the Nigerian Broadcasting Service and a British Broadcasting Corporation engineer will be seconded to the Institute to offer instruction. The mission commends this type of flexibility and believes that more of these arrangements should exist between industry and technical institutions in Nigeria.

The Technical Institute at Yaba operates its several instructional programs with a high degree of efficiency and effectiveness. It is to be hoped that the similar institutes now being developed at Enugu and Kaduna will reach their objectives rapidly and effectively.

### *Trade Centers*

The Trade Centre at Yaba enrolled its first students in 1947. Its objective is to produce a limited number of skilled craftsmen to set a high standard of skilled performance. Instruction is offered in 10 trades to 250 resident students. Courses range in length from two to five years. Requirements for entrance are successful completion of primary school, passing of the trade center entrance examination, birth in the province advertising the entrance examination and age of 15 to 17 years.

All students must reside on the campus. The government pays their full expenses and provides pocket money. A student must sign an apprenticeship agreement, countersigned by his parents, binding him for the term of his full course.

Students work largely on an apprenticeship basis after a brief preliminary period during which they familiarize themselves with the tools of their trade and perform simple tasks. Academic instruction averages one day per week. The students, under the supervision of their instructors, train on jobs contracted for by the trade center. Students who complete their trade usually go to the large cities. Those coming from small communities rarely return to them.

Under the present program, with limited exceptions, new students are not admitted to a course until a class graduates. This means an intake and output for certain courses only once in a five-year period. In the first five years of operation of the Yaba Centre, only 85 students completed their courses, while 18 were dismissed and 13 resigned. For an institution which cost £ 176,500 to build, and £ 150,000 to run over the five-year period, this is not an impressive record. Over the next five years, the center is expected to have recurrent costs of about £ 50,000 per year, with a total enrollment of 280. In relation to enrollment this cost appears to the mission to be much too high.

The program of the Yaba center, as the first of its type, has been

generally in advance of the other centers. The results at these other centers do not differ substantially, however, from those of Yaba. The difficulty in getting materials and talent have held back the development of the program; the centers at Enugu and Kaduna are the only other units with instruction in five or more trades. As a result the demand for trade center education exceeds by many times the number of students who can be admitted. It is not unusual for 10 persons to apply for each available place. The Enugu Trade Centre had 3,000 applicants for 25 places on one examination announcement.

The mission regards the trade center program in its present form as unsound. It believes that the objective of producing a highly skilled artisan of limited theoretical knowledge and without organizational skills is too limited to be of significant practical benefit in meeting Nigeria's problem of trained manpower for industry. The program of apprenticeship under trade center instructors consumes much time and fails to give students the vigorous and exacting experience they would get in on-the-job training in an industrial or commercial firm. The numbers trained are too few to make a significant contribution to the serious shortage of skilled artisans. The fact that students even after five years of training do not have the basic knowledge required eventually to become foremen, a pressing need of industry, constitutes a major weakness.

Despite the small numbers trained some graduates fail to accept jobs for which they were trained. This is probably based on dissatisfaction; although their training has not equipped them to hold a supervisory position, that is the kind of employment they would prefer. Machinists trained by industry in two years operate machines efficiently. Boys who train for five years expect to do more. The mission recommends, therefore, that the programs of the trade centers be modified to meet industry's need for people soundly trained in technical skills who can act as foremen and can discharge supervisory responsibilities.

The type of training required for these posts is not the scientific course of the technical institutes, concerned as they are with the training of technicians and subprofessional engineers and architects. The shop foreman should have full competence as a skilled mechanic, and this kind of training the trade centers now provide. At the same time, the broader responsibilities of supervision call for more general edu-

cation, mechanical or shop theory and knowledge of management techniques; it is these elements which we suggest be added to the centers' courses of instruction.

The mission suggests that all seven trade centers be reorganized, and suggests the following pattern for this reorganization:

1. All courses should be uniform in length, preferably five years. Present short courses should be strengthened with supporting subject matter and combined if necessary with related trades (masonry and plastering, plumbing and sheet metal work).

2. A new class should be admitted each year and the enrollment of the schools increased fivefold. A substantial increase in boarding and hostel accommodations will be required, although not as great as the proposed increase in enrollment would suggest, since about one-fifth of the students will be away at any given time on the on-the-job training programs suggested below.

3. When the program is fully developed, a class should be graduated each year. This would provide industry with a dependable source of talent on an annual basis.

4. A good general foundation should be provided by two years of basic instruction in English, mathematics and social sciences. The first two years of instruction given to all students in common will economize on instructional costs.

5. Specialization should begin in the third year. The program for this year should develop skill in handling tools and instruction in theoretical trade subjects.

6. A "sandwich" program of training, combining residential instruction and on-the-job training, should be developed. These phases should be offered in periods of six months each. The cooperation of industry must be sought, since the actual conditions of industry will provide a more suitable environment for instruction than that obtaining at the trade center.

The proposed program would supplement, rather than compete with, training programs by industry or the training of journeymen by unions, whereas the present program simply competes or would if a significant number of persons were trained. An invitation to industry to join in planning the content of the proposed program would en-

courage co-operation. Participation in the program would greatly assist industry's efforts to recruit permanent staff.

The capital cost of expanding one trade center would be less than £ 100,000, of which perhaps £ 65,000 would be devoted to new dormitories, £ 20,000 to new classroom buildings and £ 10,000 to new equipment. The recurrent costs should rise only moderately as much more efficient use would be made of existing staff.

#### *Other Trade Schools*

The Western Region plans the construction of six new technical colleges, each of which would concentrate on a limited number of skills. It is the intention, we understand, for this instruction to go up to subprofessional levels. The mission believes that this kind of education should be left to the technical institutes and to the Nigerian College and that it would be preferable to establish these new colleges more as polytechnic secondary schools, similar to the trade centers reorganized as suggested. When six of these schools are in operation, they will involve an estimated annual recurrent cost of some £ 150,000. Capital expenditure needed to build the schools will amount, it is estimated, to £ 860,000. The mission estimates that this program cannot be put into full operation until at least 1961 and has made its projections accordingly. Careful development of these institutions, with their programs reoriented as suggested so that they prepare students for existing employment opportunities, should make them strong assets in the Western Region's program of technical development.

#### *Expansion of Handicraft Centers*

The newness of the mechanical age in Nigeria presents a problem to technical and trade schools and to industrial management generally. Students entering technical schools after primary school often have no mechanical knowledge and do not know how to use tools and many, being deficient in comprehension of the English language as well, find both speech and tools foreign to them.

A substantial number of handicraft centers have been set up, offering manual training courses, which provide young people with an opportunity of developing a number of mechanical skills as a part of

the general program of education. Instructors in these centers are unanimously of the opinion that Nigerian boys acquire skills easily and exhibit a high degree of interest. In the East and the West, each handicraft center serves several primary schools in its community. In the North, handicraft centers are associated with middle schools. The work is not primarily intended to be vocational but it helps to prepare the students for later training and it should assist vocational guidance efforts by discovering mechanical aptitudes. The Northern centers also offer evening classes of a vocational nature to boys unable to enter middle school craft courses.

The mission considers these programs to be most beneficial and suggests their further expansion all over the country. They may be more effective to the extent that the opportunities they offer are made available at the primary school level rather than later. It is suggested that a useful and feasible program would be the establishment of two new centers per year from 1955 to 1960 in the East and in the West, one new center per year in the Southern Cameroons and five new centers per year in the North. The cost of establishing one of these centers is moderate, not more than £ 10,000, and each costs only about £ 4,000 per year to run.

#### *Domestic Science Centers*

Although several domestic science centers for women have been planned, only a few are in actual operation. They are seriously needed. The lagging position of women's education in general emphasizes the importance of making available, largely on a practical training basis, instruction in food preparation, sewing, cleaning, general sanitation and elementary skills in nursing. This training should include the use of native materials that can be made into useful articles, including furniture and equipment such as pots and clay stoves.

These centers should serve the schools as do the handicraft centers. Like them, they should be available for instruction on a day-use basis. Other centers, such as a few already set up, should be established for adults on both a day-use and in-residence basis. The latter would cater to young unmarried women with little or no formal schooling who could attend for a three- or four-month period. Instruction in

reading and writing should be offered in addition to home crafts for those who require it. The residential domestic science center near Aba offers a splendid model for centers of this type.

Physical development costs for these units should be similar to outlays for handicraft centers. The savings to be expected because of the much simpler equipment needed for the home craft centers would be balanced by the cost of providing living quarters for students. The mission recommends the establishment of 10 of these centers in both the Eastern and Western Regions, 15 for the Northern Region and three for the Southern Cameroons. The construction costs should average £ 10,000 per center and operating costs should not exceed £ 4,000 per center per year.

#### *Training for Industrial and Mechanical Trades*

The training programs discussed up to this point will produce highly skilled specialists and potential supervisors. They cannot be expected to provide the regular flow of skilled and semi-skilled workers in the industrial and mechanical trades—masons, carpenters, painters, electricians, metal workers, welders, operators and maintenance men for various kinds of machinery and many others—that will be needed in increasing numbers as Nigeria's development proceeds.

The mission believes that training within industry—training on the job—is the most effective way of producing these workers. Several organizations already have active training programs, as for example the Nigerian Railway, the West African Airways Corporation, the United Africa Company and the tin mining companies. Other companies have immediate or long-range plans for training within industry for their special needs. The various governmental units, as the employers of many kinds of skilled and semi-skilled workers, are an important factor in on-the-job training.

Other workers will be produced by the training of journeymen by unions and by the practice of training helpers or apprentices in carpentry, masonry and other trades. Many contractors in Nigeria are taking unskilled laborers and training them on the job.

Every opportunity should be taken to encourage these efforts of government, private industry and organized labor and to relate them to employment needs. It would be useful to bring together periodic

estimates of the trend of employment requirements and to stimulate joint study and planning by interested groups of such relevant factors as recruitment of new workers, hours and conditions of work, compensation, opportunities for advancement and means by which trained workers can find employment. Although principal reliance must be placed on training on the job, other methods, such as adult classes in certain fields, might well be experimented with. Also, the many persons now without primary education should not be written off as untrainable but should receive such instruction as they can profit from to become part of the reservoir of semi-skilled workers.<sup>12</sup>

### *Cost of Expanded Technical Schools*

Table 3 summarizes the cost of the program of technical education proposed by the mission. It includes an allowance for the completion and normal growth of facilities already planned. We have assumed that this expenditure will be made by regional governments.

TABLE 3 Proposed Expenditure on Technical Education

*(Thousand £)*

	Recurrent		Capital,
	Estimates 1953-54	Projections 1959-60	Projections 1955-60
North .....	76	372	703
West <sup>1</sup> .....	141	424	1,290
East	}..... 78	213	306
Southern Cameroons		60	162
Total .....	295	1,069	2,461

<sup>1</sup> Including Lagos. See Appendix C.

## D HIGHER EDUCATION

### *University College, Ibadan*

University instruction has only recently become available in Nigeria. Before the war all higher education had to be obtained abroad

<sup>12</sup> Provision for this group is highly important in the North, where so few have completed the primary grades.

except for the diploma courses provided at the Yaba Higher College. The first move to end this dependence on overseas institutions was made in 1943 with the appointment by the Colonial Secretary of two commissions to study higher education in the colonies and in West Africa: the Commission on Higher Education in the Colonies known as the Asquith Commission and the Commission on Higher Education in West Africa known as the Elliot Commission. Following the publication of their reports in 1945,<sup>13</sup> plans were laid which led to the closing of the Yaba College and the opening of the University College in Ibadan at the beginning of 1948. Building was begun later that year and by the end of 1953 the impressive university buildings were largely completed.

At present the University College does not award degrees. Instead it prepares students for degrees awarded by the University of London under a "Scheme of Special Relationship." The Scheme provides for special local syllabuses to be approved by London, with the setting of papers and the assessment of candidates under the final control of London. This arrangement has been excellent for the early stages of the University; it has provided Nigerian students with the opportunity of obtaining a universally recognized degree in the period when the standards of the University were being established.

The University is completely residential. The standards of accommodation and facilities available to the students are high and the equal of or superior to those of many other universities in the British Commonwealth.

Instruction is in a limited range of subjects leading to the examinations listed below.<sup>14</sup> Courses in law, commerce, engineering and economics are not offered.

*Arts.* Intermediate Examination; B.A. General Examination; and B.A. Honors Examination in mathematics, classics, English, geography and history.

*Science.* Intermediate Examination; B. Sc. General Examination; and B. Sc. Special Examination in mathematics, botany, zoology, physics, chemistry and geography.

*Medicine.* First and Second Examinations for medical degrees.

<sup>13</sup> Command Papers 6647 and 6655, respectively.

<sup>14</sup> University College, Ibadan, Calendar 1953-54, p. 42.

*Agriculture and Veterinary Science.* B. Sc. Examination, agriculture, Parts I and II.

The University College has been planned to accommodate 600 students. Progress toward this goal has been slow, as the enrollment by faculties shown in Table 4 indicates.

TABLE 4 Student Enrollment, University College

	Total	Arts	Science	Medicine	Agri- culture
1950-51.....	322	113	158	50	1
1951-52.....	338	110	107	98	23
1952-53.....	367	123	126	90	28
1953-54.....	406	130	139	98	39

In addition to these activities the University maintains a Department of Extramural Studies, with classes organized in 77 centers distributed through the regions. Further, the staff of the University has engaged in extensive research which has already shown promising results.

The mission believes that the establishment of the University College in Nigeria was a very important step forward. We endorse fully the view expressed by the Elliot Commission that "the need for highly trained Africans is too great to be met in any other way than by training them in their own country." Moreover, it is evident that the authorities wish to create a university which measures up to the highest standards of university education.

But this achievement must be taken only as a starting point. Nigeria's needs call for many times the trained manpower the University can supply as presently planned. To make one comparison, India has one student at the college level to every 1,400 of population, while Nigeria has less than one to 70,000. Thus if Nigeria is to reach the level of India there will have to be over 20,000 students instead of the present 400. This is far out of reach for the present but the mission recommends that every effort be made to raise the numbers as fast as possible. During this expansion suitable students should not be rejected on the basis of arbitrary limitations on the number that may be drawn from any particular region.

One barrier to the expansion appears to be the present level of costs per student. The Estimates show the recurrent expenditure by the University College to be considerably in excess of £ 1,000 per student, an amount substantially greater than the cost of providing a student with a year's study in England. The cost appears extremely high compared to those elsewhere. Costs in India, for example, are less than one-tenth those in Nigeria,<sup>15</sup> although India's per capita income is roughly the same.

In part the problem of costs is more apparent than real. For one thing, much of the time of the University staff is devoted to research, and the cost of this activity, although it cannot be separately allocated, should not be considered as educational expenditure. Moreover, with an expansion in enrollment the cost per student would fall since certain costs would not increase proportionately. The teaching staff is adequate in most departments for several times the present number of students. Likewise, the cost of the library and of the general administration would not increase significantly with a considerable increase in the student body.

But there is also a real aspect to the problem of costs. The accommodation at the University College can be described as luxurious in many respects, with the result that fewer students can be educated with the available funds. Consideration should be given to placing two students in a room. If this is done, there need be no new expenditure on dormitories for some time to come. In the search for more economical operation it may be helpful to make inquiry of some of India's universities as to the methods by which they have kept costs low.

The University College, and equally the Nigerian College discussed in the next section, must make every effort to induce highly qualified educators and research men to join their staffs. Arrangements might be made with overseas educational institutions for them to develop a given department in one of the Nigerian institutions. The overseas institutions might make staff members available to Nigeria for limited periods and might agree to receive Nigerians for purposes of advanced study beyond that which is provided in Nigeria.

<sup>15</sup> The Report of the University Education Commission (Government of India Press: Simla, 1949), indicates that in 1947-48 expenditure of a selected group of residential universities averaged about £ 75 per student.

Recruitment from the ranks of recently retired professors of overseas colleges and universities might be practicable. A number of small private colleges in the United States have strengthened their faculties at modest cost by this means.

Besides expanding its enrollment the University College should undertake to broaden the courses offered as speedily as possible. The mission believes that the program of the University should be related rather more directly to the economic advancement of the Nigerian people than it has been thus far.

*Institute of Education* Well-qualified teachers would be near the top of the list in any schedule of priorities for Nigeria. To attain the highest professional standards, teachers must engage in graduate study in education. Consequently, the mission believes that there is a need for an institute of education at the University, open to graduates of the University College or of an equivalent institution, which would award postgraduate certificates in education.

The institute should become a center of research and experiment, providing leadership for the development of teaching methods and courses adapted to the special requirements of Nigeria. It should place particular emphasis on the training of supervisors selected from experienced teachers, since teaching methods can be improved quickly under the guidance of skilled supervisors. There should be close collaboration between the institute and the proposed central inspectorate.

An institute of education would involve, we estimate, capital expenditure of about £ 80,000, which we propose be made in 1955-56 and 1956-57, and recurrent charges, when fully established, of £ 20,000 per year.

*Faculties of Agriculture, Forestry, Veterinary Medicine* The mission proposes that the University College strengthen its faculty of agriculture and that it add a course in agricultural engineering. It should also establish faculties of forestry and veterinary medicine. The latter should take over the facilities of the Veterinary School at Vom and use them for its clinical and advanced program.<sup>16</sup> Proposals for the

<sup>16</sup> The Lagos constitutional conference expressed the view that in maintaining the school, the federal government should have special regard to the wishes and needs of the region in which the school is situated (the Northern Region), particularly in such matters as the standards of qualification for entry and the courses of instruction.

program of these faculties are made in Technical Reports Nos. 8 and 11. Capital expenditure for these purposes is estimated at £ 70,000 for the faculty of agriculture, £ 80,000 for the faculty of forestry and £ 250,000 for the faculty of veterinary medicine. Additional recurrent expenditure would amount by 1959-60 to £ 20,000, £ 20,000, and £ 65,000, respectively.

*Economic Courses* The mission recommends the addition of courses in applied economics to the others already available for the arts degree. Many of the graduates of the University are the future administrators of Nigeria. They will be better equipped to deal with the practical problems which will confront them if they have acquired some knowledge of economics and accounting during their university training. Most of the instruction for these courses could be provided by arrangement with the West African Institute of Social and Economic Research, also located at Ibadan. This would have the dual advantage of enabling the students to benefit from the latest research and providing the researchers with the stimulus of contact with students.

*Finance* The greater part of the initial capital cost of the University College has been provided by the Nigerian government and by Colonial Development and Welfare grants from the United Kingdom. These sources have together contributed almost £ 2 million for the capital plant of the institution. The Nigerian government has also provided £ 750,000 for a permanent endowment and a £ 1.5 million expendable endowment. A number of smaller gifts has been received. The Cocoa Marketing Board has given a £ 950,000 endowment for the faculty of agriculture, £ 50,000 for buildings for the faculty and £ 225,000 to endow scholarships. A £ 61,000 building grant was received from the United Africa Company.

The central government makes an annual grant toward recurrent costs of the University College, which amounted to £ 220,000 in both 1953-54 and 1954-55. The balance of recurrent costs is met from interest on endowment, from fees which average slightly over £ 100 per annum per student, and by drawing on the expendable endowment from the Nigerian government.

The Financial Secretary announced in his budget speech to the central House of Representatives early in 1954 that consideration was

being given to an additional grant of £ 800,000 to the University College on capital account. The proposals for expansion put forward above would involve an aggregate capital cost of about £ 480,000. If the additional grant is made it should be sufficient to meet the cost of the proposed expansion as well as to provide additional facilities which may be deemed essential. The additional annual cost of our proposals, which we estimate to rise gradually to the level of £ 125,000, can be met by drawing more rapidly than originally contemplated on the £ 1.5 million expendable endowment. This endowment was originally planned to last until 1967. Together with a continuing annual appropriation of £ 220,000, it should be sufficient to provide the University with funds to meet its running costs until after 1960. If it is considered preferable to draw on this endowment no faster than originally envisaged, annual appropriations for the University will necessarily be higher than the £ 220,000 we have projected.

#### *Nigerian College of Arts, Science and Technology*

The Nigerian College of Arts, Science and Technology was opened in 1952 to meet the need for higher education of a type not normally offered by a university. Its origins are in the minority report of the Elliot Commission,<sup>17</sup> which stressed the need for higher educational institutions offering studies short of the university level in each of the West African territories. The College is, and under the revised constitution is intended to remain, a federally sponsored institution. Branches are in operation or are planned at Zaria, Ibadan and Enugu. Administration is centralized under a principal, assisted by vice-principals at each regional unit.

In October 1953 the Ibadan branch had completed the major portion of its physical plant and was offering limited instruction. The Zaria branch, in temporary quarters, was offering instruction in secondary level education. Construction had recently begun on the permanent site at Samaru. Neither construction nor teaching had been initiated at Enugu. Total enrollment was about 200 compared to 750 called for by present plans.

When in full operation, the Nigerian College is expected to offer an extremely wide range of courses, as shown in Table 5. Proposals

<sup>17</sup> *Op. cit.*, p. 158.

now under consideration envisage expanding various parts of this program and adding a pharmacy department at Ibadan. These proposals call for increasing presently planned enrollment by more than 300.

The mission has three specific suggestions to make for reinforcing the courses of instruction offered or to be offered by the Nigerian College:

First, we believe that the schools of the regional departments of agriculture at Ibadan and Samaru should be amalgamated with the branches of the Nigerian College at those places. We would make the same proposal for the new agricultural school at Umuahia, but it is too far from the planned branch at Enugu for combination in this case to be practical. Chief among the benefits which these schools would derive from closer association with the College are the use of College facilities for teaching of basic science and mathematics and of the much more adequate library facilities, the possibility of achieving uniformity of regional standards and the opportunities for intellectual exchange among students in different fields of study. We propose that this amalgamation apply in particular to agricultural instruction of diploma standard, representing three years of post-secondary education. The regional departments of agriculture might retain their shorter programs, including those for the training of craftsmen. The transfer of the agricultural schools will pose fewer political problems if the suggestion made below for the regionalization of the Nigerian College is carried out.

Second, we suggest that the Nigerian College add pharmacy courses at each of its branches. A proposal has already been made for such a course at Ibadan. Presumably this would eliminate the need for continuing the pharmacy school at Yaba. Similarly, we believe that in the North the courses offered by the Zaria Pharmacy School would be considerably strengthened if they were given as part of the program of the Nigerian College. The reasons for these proposals are similar to those applying to the proposals respecting courses at the agricultural schools. In several other government departments there are other training schemes at the post-secondary level. Where these are engaged in developing purely manipulative skills, we see no reason why they should be moved away from the departments. Where these programs

TABLE 5 Nigerian College: Planned Courses and Enrollment

	Maximum number of students
<i>Zaria</i>	
Civil Engineering .....	100
Sub-Professional Engineers .....	60
United Kingdom Teacher Training College Certificate.....	75
Physical Education Specialists .....	20
Art Teachers .....	15
Architectural Assistants .....	30
Agriculture and Veterinary Assistants Course.....	30
Higher School Certificate for Northern Students.....	40
Secretarial Course for Northern Students.....	20
Local Government Course .....	30
	—
Total.....	420
<i>Ibadan</i>	
Matric. (Old Inter.) Arts or Higher School Certificate.....	40
Matric. (Old Inter.) Science or Higher School Certificate.....	40
Laboratory Technicians .....	20
Science for Agriculture and Forestry.....	30
United Kingdom Teacher Training College Certificate.....	75
Local Government .....	40
Bookkeeping and Accountancy .....	30
	—
Total.....	275
<i>Enugu</i>	
Matric. (Old Inter.) Arts or Higher School Certificate.....	40
Matric. (Old Inter.) Science or Higher School Certificate.....	40
Science for Agriculture .....	30
Local Government .....	40
Secretarial Work .....	30
Mining Engineering .....	30
Surveying .....	30
	—
Total.....	240

SOURCE: *Proposals for the Future Financing of the Nigerian College of Arts, Science and Technology*, Sessional Paper No. 10 (Government Printer: Lagos, 1953).

would benefit from the basic courses and larger facilities of the Nigerian College, consideration should be given to transferring them.

Third, the mission believes that the courses in bookkeeping and accounting at the Nigerian College should be substantially expanded and that courses should be given at each center. Present plans call for teaching this subject to a maximum of 30 students at Ibadan only. The government service and private business have an immediate need

for Nigerians with commercial training. The requirements are at present being partially met by government training programs and some private teaching of uncertain quality. The mission recommends that the government programs be terminated in favor of the expanded program of the Nigerian College. In addition, it recommends that the College immediately offer evening classes at a convenient location in Ibadan for students working in government or private offices. Evening classes are particularly suitable for commercial training, the students being enabled readily to relate the theoretical treatment directly to their work. The scope and content of the evening courses might appropriately be decided upon after consultation with local commercial and banking interests.

The mission is aware that the Nigerian College is a young institution and that its short life has already been subject to the vicissitudes of one reorganization. We believe, however, that further changes in organization are required before it can meet either the real educational needs of Nigeria or the requirements of sound administration. We doubt whether, as a federally operated institution, it is capable of adjusting its activities in each region to the diverse educational requirements of each. Moreover, we think that difficulties of transportation and communication between Ibadan, Enugu and Zaria make it impractical for a centralized administration to attempt to cope with the many day-to-day administrative and organizational problems. On the other hand, a regionalized college is more likely to attract the local interest needed to enable it to serve as the focal point for educational, technical and cultural growth in each region.

For these reasons, we suggest that the structure of the Nigerian College be again reviewed before the next constitutional revision and that consideration be given to separating the College into three distinct parts and placing the operating responsibility for each part with the respective regional governments. However, it would not be wise for the federal government to divest itself of all interests in the College, particularly as regards the maintenance of uniform standards. We therefore suggest that a portion, perhaps half or two-thirds, of the College's running expenses be met by the federal government. These funds should be administered by the federal inspectorate of education, which should also be empowered to require the maintenance of minimum standards.

In the meantime, the program of the College should not be held up pending decisions on its organization but should proceed as rapidly as possible on the basis of present plans and those suggested by the mission. We would hope that when the time came for the regions to take the College over, all three branches would have substantially completed their physical plant and would have begun instruction.

The total cost of the buildings and equipment of the Nigerian College as planned in 1953 was just under £ 2 million, to be provided by the Nigerian government and by the United Kingdom under the Colonial Development and Welfare Scheme. It is estimated that just over £ 500,000 had been spent by March 31, 1954. Funds to meet the remaining cost were either already in the hands of the College or were to be paid directly to it by the United Kingdom government. The mission's projections therefore do not make provision for further Nigerian government contributions to the cost of the originally planned capital plant.

The new proposals for the College call for further capital expenditure of £ 322,000 over the five years 1955-60. The mission's recommendations would add roughly another £ 100,000 for new facilities for the agricultural schools and for dormitories. We have therefore projected requirements for new capital funds over the five years at £ 425,000. Recurrent costs of the original program were expected to level off at around £ 275,000 in 1957. The College's new proposals involve a final annual recurrent cost of £ 125,000, and those of the mission an approximately equal figure. Total annual recurrent expenditure by 1959-60 for the three branches of the College would amount to about £ 525,000 with, we hope, a total enrollment approaching 1,500. Our projections show this as a federal governmental expenditure, though if our recommendations are followed, part of the recurrent (but none of the capital) cost should fall on the regional governments.

### *Scholarships*

The cost of higher education both in Nigeria and abroad, in relation to the income of the average Nigerian, has made it necessary that very large sums be awarded as scholarships by the Nigerian government, the regional and local government and public agencies. Private firms have also made generous contributions. While comprehensive infor-

mation on the total cost and distribution of these scholarships is lacking, federal and regional government expenditures in 1953-54 were estimated at £ 465,000, including liaison offices for students in the United Kingdom, the United States and Ireland. It is probable that these funds provided a large part of the support of the approximately 2,000 Nigerians studying in the United Kingdom and of the more than 300 studying in the United States, as well as of many students at University College, Ibadan.

As more and more youths receive secondary education the demand for higher education, and therefore for scholarships, will grow. We believe that present scholarship policies should be reviewed to ensure that the funds are being employed most effectively. As a general rule, we believe that except for very advanced and specialized study education received in Nigeria will be of more practical benefit to Nigerians than study overseas. The number of Nigerians studying overseas will necessarily remain large for some years to come but as Nigerian facilities develop, preference should be given to awards for study at these institutions. Selection policies should also be reviewed, to ensure that scholars going overseas have the educational prerequisites for their courses abroad.

The mission's projections, shown in Table 6, allow for a moderate expansion (5% per annum) in the funds of the federal and regional governments devoted to scholarships.

TABLE 6 Projection of Expenditure on Education

(Thousand £)

	Approved or Preliminary Estimates				Projections of Mission											
	1953-54		1954-55		1955-56		1956-57		1957-58		1958-59		1959-60		Total 1955-60	
	R	C	R	C	R	C	R	C	R	C	R	C	R	C	R	C
<i>Federal Government<sup>1</sup></i>																
General Administration ..	62	13	53	—	55	—	56	—	58	—	60	—	61	—	290	—
King's College .....	34	50	38	67	48	—	49	—	51	—	52	—	54	—	254	—
Clerical Training College, Oshogbo .....	16	—	18	—	—	2	—	—	—	—	—	—	—	—	—	—
Scholarship Program ....	316	—	348	—	365	—	383	—	376 <sup>3</sup>	—	395	—	435	—	1,954	—
Grant to University College, Ibadan .....	220	—	220	—	220	400	220	400	220	—	220	—	220	—	1,100	800
University College, Ibadan Teaching Hospital <sup>4</sup> ....	160	—	280	—	294	—	309	37	324	40	340	60	357	75	1,624	212
Nigerian College of Arts, Science and Technology	95	305	133	—	265	85	405	85	495	85	510	85	525	85	2,200	425
Total <sup>5</sup> .....	902	368	1,090	67	1,247	485	1,422	522	1,524	125	1,577	145	1,652	160	7,422	1,437
Lagos Town Council ....	4	—	4	—	4	—	4	—	5	—	5	—	5	—	23	—
<i>Northern Regional Government</i>																
Grants for primary schools .....	457	—	542	—	596	10	656	10	722	10	794	10	873	10	3,641	50
Secondary schools, teacher training and administration <sup>6</sup> .....	541	282	627	401	696	224	791	224	888	224	993	224	1,106	224	4,474	1,120
Special grants <sup>7</sup> .....	—	223	—	300	—	—	—	—	—	—	—	—	—	—	—	—
Technical education .....	76	102	110	63	138	183	189	180	240	180	291	80	372	80	1,230	703
Adult education .....	80	—	200	—	200	—	200	—	200	—	200	—	200	—	1,000	—
Scholarships <sup>8</sup> .....	—	—	7	—	7	—	7	—	32	—	32	—	32	—	110	—
Total <sup>5</sup> .....	1,154	608	1,487	763	1,637	417	1,843	414	2,082	414	2,310	314	2,583	314	10,455	1,873
of which grants to Native Treasuries	220	153	280 <sup>9</sup>	200 <sup>9</sup>	310	10	340	10	375	10	410	10	450	10	1,885	50
<i>Northern Native Treasuries</i>																

<i>ment</i> <sup>10</sup>																	
Grants for primary schools	950	—	1,492	—	1,716	460	1,973	460	2,269	460	2,609	460	3,000	460	11,567	2,300	
Secondary schools, teacher training and administration .....	695	175	816	116	878	410	951	410	1,029	410	1,111	410	1,198	410	5,167	2,050	
Special grants <sup>7</sup> .....	—	64	—	64	—	—	—	—	—	—	—	—	—	—	—	—	
Technical education .....	141	111	135	142	195	302	251	282	312	282	373	212	424	212	1,555	1,290	
Scholarships .....	100	—	100	—	105	—	110	—	116	—	122	—	128	—	581	—	
Miscellaneous .....	12	—	12	—	12	—	12	—	12	—	12	—	12	—	60	—	
Total <sup>5</sup> .....	1,897	350	2,556	321	2,906	1,172	3,297	1,152	3,738	1,152	4,227	1,082	4,762	1,082	18,930	5,640	
of which grants to Native Treasuries and local governments .....	73	—	482 <sup>9</sup>	—	555	150	638	150	734	150	844	150	971	150	3,742	750	
<i>Western Native Treasuries and Local Governments.</i>	311	39	353	150	1,436	150	1,646	150	1,887	150	2,153	150	2,481	150	9,603	750	
<i>Eastern Regional Government</i> <sup>11</sup>																	
Grants for primary schools	1,048	—	1,245	—	1,200	75	1,200	75	1,200	75	1,200	75	1,200	75	6,000	375	
Secondary schools, teacher training and administration .....	481	190	585	171	591	410	657	410	720	410	786	410	849	410	3,603	2,050	
Special grants <sup>7</sup> .....	—	50	—	50	—	—	—	—	—	—	—	—	—	—	—	—	
Technical education .....	78	43	99	53	102	76	131	75	160	75	189	40	213	40	795	306	
Scholarships .....	49	—	90	—	84	—	88	—	93	—	97	—	102	—	464	—	
Miscellaneous .....	4	—	4	—	4	—	4	—	4	—	4	—	4	—	20	—	
Total <sup>5</sup> .....	1,661	282	2,023	274	1,981	561	2,080	560	2,177	560	2,276	525	2,368	525	10,882	2,731	
of which grants to Native Treasuries and local governments .....	35	—	40 <sup>9</sup>	—	30	10	30	10	30	10	30	10	30	10	150	50	
<i>Eastern Native Treasuries and Local Governments.</i>	170	13	180	15	231	85	317	85	408	85	504	85	606	85	2,066	425	
<i>Southern Cameroons Government</i> <sup>12</sup>																	
Administration .....	—	—	—	—	30	—	31	—	32	—	33	—	34	—	160	—	
Primary schools .....	—	—	—	—	90	25	97	25	105	25	113	25	122	25	527	125	

	Approved or Preliminary Estimates				Projections of Mission											
	1953-54		1954-55		1955-56		1956-57		1957-58		1958-59		1959-60		Total 1955-60	
	R	C	R	C	R	C	R	C	R	C	R	C	R	C	R	C
Secondary schools .....	—	—	—	—	24	—	26	45	29	—	32	—	35	—	146	45
Teacher training schools..	—	—	—	—	35	—	35	45	40	—	40	45	50	—	200	90
Technical education .....	—	—	—	—	16	52	30	55	44	55	58	—	60	—	208	162
Scholarships .....	—	—	—	—	10	—	11	—	11	—	12	—	12	—	56	—
Total <sup>6</sup> .....	—	—	—	—	205	77	230	170	261	80	288	70	313	25	1,297	422
of which grants to Native Treasuries	—	—	—	—	10	5	11	5	12	5	13	5	14	5	60	25
<i>Southern Cameroons Native Treasuries</i> .....	21	1	23	1	25	30	27	30	29	30	31	30	34	30	146	150

<sup>1</sup> Excluding education expenditures for Lagos, except for those on King's College. These are included in projections of Western Region expenditure. For explanation, see Appendix C, p. 625.

<sup>2</sup> Transferred to Western Region.

<sup>3</sup> Contribution to Northern Region scholarship fund not included; this is assumed to be taken over by the Northern regional government.

<sup>4</sup> Projections of recurrent expenditure assume an increase of 10% per annum. Projections of capital expenditure are based on proposals of the Ministry of Health and are additional to the expenditures from funds already turned over to the Teaching Hospital. After preparing the projections, the mission was informed that additional expenditure of about £ 300,000 would be required for housing for medical consultants and other staff.

<sup>5</sup> Totals may not equal sum of components because of rounding.

<sup>6</sup> Information for a further breakdown under this head is not available.

<sup>7</sup> Included under other heads after 1954-55.

<sup>8</sup> At present most of the scholarships awarded in the North are financed from the Northern Region scholarship fund, to which the federal government will contribute until 1957. It is assumed that the regional government will take over the payments thereafter.

<sup>9</sup> Rough estimate.

<sup>10</sup> Including Lagos schools. See Appendix C, p. 625.

<sup>11</sup> Including Southern Cameroons in 1953-54 and 1954-55.

<sup>12</sup> Included in Eastern Region prior to 1955-56.

PART **III** *APPENDICES*



## APPENDIX A THE LEGISLATIVE LISTS

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### I THE FEDERAL LEGISLATIVE LIST

Matters with respect to which the Federal Legislature has, and the Legislature of a Region has not, power to make laws.

1. External affairs, that is to say—
  - (a) such external relations as may from time to time be entrusted to the Federation by Her Majesty's Government in the United Kingdom;
  - (b) the implementation of treaties, conventions and agreements with, and other obligations towards or arrangements relating to, countries or international or similar organizations outside the Federation,

but not including relations between the United Kingdom and any of the Regions.

2. Passports and visas.
3. Immigration into and emigration from the Federation.
4. Citizenship of the Federation.
5. Aliens; naturalisation.
6. Deportation.
7. Defence.
8. The generation, supply and use of nuclear energy.
9. Trade and commerce with other countries; the establishment of standards of quality for goods to be exported out of the Federation.
10. The regulation of trade and commerce among the Regions.
11. Copyright, patents, trade marks, designs and merchandise marks.
12. Duties of customs and excise (including export duties).

13. Exchange control. Control of imports into and exports from the Federation.

14. Currency, coinage and legal tender.

15. Banks and banking; bills of exchange and promissory notes.

16. Public debt of the Federation.

17. Borrowing of monies by the Federation.

18. Companies, that is to say, general provision as to the incorporation, regulation and winding up of bodies corporate, other than bodies incorporated directly by a law of the Legislature of a Region, and other than co-operative societies.

19. Mines and minerals (including oilfields and oil mining); geological survey.

20. Railways and ancillary services, including ancillary transport services.

21. Maritime shipping and navigation, including shipping and navigation on tidal waters; lighthouses, lightships, beacons, and other provisions for the safety of shipping and navigation; ports appointed or declared by or under existing or federal law, (including their delimitation, and the constitution and powers of port authorities); shipping and navigation on the River Niger and its affluents and on any other inland waterway declared by the Governor-General to be an international waterway or to be an inter-Regional waterway.

22. Aviation, aerodromes and ancillary services, including ancillary transport services; safety of aircraft.

23. The construction, alteration and maintenance of all roads declared by the Governor-General to be Federal trunk roads.

24. Posts, telegraphs and telephones; wireless other than broadcasting or television; Post Office Savings Bank.

25. Broadcasting and television other than broadcasting and television provided by a Regional Government; allocation of times and wave-lengths for wireless and television transmission.

26. The control, distribution and use of water from sources designated by the Governor-General by order as affecting more than one Region.

27. The following higher educational institutions—

The University College, Ibadan

The University College Teaching Hospital

The Nigerian College of Arts, Science and Technology  
 The West African Institute of Social and Economic Research  
 The Pharmacy School, Yaba  
 The Forest School, Ibadan  
 The Veterinary School, Vom  
 The Man O'War Bay Training Centre.

28. The following existing museums and any other museums established by the Federal Government—

The Jos Museum  
 The Oron Museum  
 The House of Images at Esie  
 The Nigerian Museum, Lagos.

29. Meteorology.

30. Weights and measures.

31. Census.

32. Police (other than local government or native authority police) including bureaux of intelligence and investigation.

33. Compulsory acquisition of land for the purpose of any of the matters in this List.

34. Works, lands and buildings in the possession of, or vested in or held in trust for, Her Majesty for the purposes of the Federation.

35. The Federal public service (including the settlement of disputes between the Federation and its officers); pensions and gratuities payable out of Federal funds.

36. Federal public relations.

37. Audit of Federal public accounts.

38. Archives, other than the public records of Regional Governments relating to the period after the 23rd January, 1952.

39. Offences against laws with respect to any of the matters in this List.

40. Jurisdiction of the courts, other than the Federal Supreme Court, in respect of any of the matters in this List.

41. Any other matter with respect to which by virtue of the Nigeria (Constitution) Order in Council, 1954 the Federal Legislature has and a Regional Legislature has not power to make laws.

## II THE CONCURRENT LEGISLATIVE LIST

Matters with respect to which both the Federal Legislature and the Legislature of a Region have power to make laws.

42. Statistics.
43. Dangerous drugs.
44. Chemical (including analytical) services.
45. Subject to Item 52, trigonometrical, cadastral and topographical surveys.
46. Welfare of labour, conditions of labour, industrial relations; trade unions.
47. Higher education, that is to say, institutions and other bodies offering courses of a university, technological or professional character, other than institutions referred to in item 27.
48. Insurance.
49. Scientific and industrial research.
50. Industrial development.
51. Electricity, gas and water-power.
52. Professional qualifications in respect of such professions as and to the extent that the Governor-General may designate; registration and disciplinary control of members of professions so designated.
53. National parks, that is to say, the control of any area designated as a national park by the Governor-General with the consent of the Governor of the Region in which that area is situated; monuments designated by the Governor-General, with the consent of the Governor of the Region in which the monument is situated, as National Monuments.
54. Prisons and other institutions for the treatment of offenders against the law, whether or not that law is within the legislative competence of the Federal Legislature or, as the case may be, of the Legislature of the Region.
55. Fingerprints, identification and criminal records.
56. Movement of persons between Regions or between Lagos and any Region.
57. The service and execution in any Region of the civil and criminal processes, judgments, decrees, orders and decisions of the

courts of any other Region or country, and the attendance of persons from any Region at the courts of any other Region or country.

58. Promotion of tourist traffic.
59. Commissions of inquiry.
60. Quarantine.
61. Compulsory acquisition of land for the purpose of any of the matters in this List.
62. Regulation of traffic on roads mentioned in item 23.
63. Antiquities.
64. Bankruptcy and Insolvency.
65. Administrators-general and official trustees.
66. Registration of business names.
67. Commercial and industrial monopolies, combines and trusts.
68. Incorporation of trustees of communities, or of bodies or associations established for religious, educational, literary, social, scientific or charitable purposes.
69. Sanctioning of cinematograph films for exhibition.
70. The maintaining and securing of public safety and public order (but not including defence); the providing, maintaining and securing of such supplies and services as the Governor-General may declare to be essential supplies and services.
71. Evidence.
72. Offences against laws with respect to any of the matters mentioned in this List.
73. Any other matter with respect to which by virtue of the Nigeria (Constitution) Order in Council, 1954 both the Federal Legislature and the Legislature of the Region have for the time being power to make laws.

## APPENDIX B NATIONAL INCOME DATA

TABLE 1 Gross Domestic Product of Nigeria

	1950-51 at Market Prices (Million £)	Price Change (%)	1950-51 at 1952-53 Prices (Million £)	Volume Change (%)	1952-53 at Market Prices (Million £)
Field Crops .....	282.8	—	283.5	8	305.0
Tree Crops .....	62.3	16	72.3	7	77.2
Forest Products .....	25.7	5	27.0	1	27.3
Livestock Products .....	30.5	22	37.1	7	34.4
Fishing .....	6.3	—	6.3	—	6.3
Transport and Distribution..	88.0	-3	85.6	22	104.5
Minerals .....	7.8	1	7.9	20	9.5
Manufacture and Public					
Utilities .....	2.4	12.5	2.7	45	3.9
Craft Industries .....	8.6	5	9.0	5	9.5
Building and Civil					
Engineering .....	41.6	5	43.5	11	48.3
Banks, Insurance and					
Other Professions .....	0.9	10	1.0	10	1.1
Missions .....	2.2	15	2.6	15	3.0
Domestic Service .....	2.9	10	3.2	10	3.5
Miscellaneous Services .....	6.4	—	6.4	—	6.4
Government:					
(a) Export Duties .....	5.7	146	14.0	—	14.0
(b) Other .....	13.5	12.5	15.2	8	16.4
Ownership of Buildings.....	5.1	8	5.5	9	6.0
Intrahousehold Services .....	4.0	—	4.0	—	4.0
Total .....	596.7	5.0	626.5	8.6	680.3

SOURCES: For 1950-51 estimates: A. P. Prest and I. G. Stewart: *The National Income of Nigeria, 1950-51* (London: H. M. Stationery Office, 1953). The 1952-53 estimates were prepared at the request of the mission by the Department of Statistics of the Nigerian Government on the basis of information of price and quantity changes of goods and services produced in Nigeria. They therefore do not represent new estimates but merely an attempt to bring the earlier estimates up to date. The valuable assistance of Miss J. Tyrrell is gratefully acknowledged. For information on the computation of the 1950-51 data and the reliability of the estimates, see Prest and Stewart, *op. cit.*

TABLE 2 Value of Field Crops

	1950-51 at Market Prices (Million £)	Price Change (%)	1950-51 at 1952-53 Prices (Million £)	Volume Change (%)	1952-53 at Market Prices (Million £)
Guinea Corn .....	37.1	-25	28.1	15	32.3
Millet .....	18.1	-15	15.0	10	16.5
Maize:					
N .....	4.0	- 5	3.8	—	3.8
W .....	5.6	5	5.9	—	5.9
E .....	3.1	5	3.2	3	3.3
Rice .....	9.3	—	9.3	25	11.7
Other Cereals .....	1.4	—	1.4	—	1.4
Cassava:					
N .....	20.1	- 5	19.3	10	21.2
W .....	33.5	15	38.6	—	38.6
E .....	25.5	5	26.8	3	27.6
Yams:					
N .....	20.4	-15	17.4	—	17.4
W .....	24.7	12	29.6	—	29.6
E .....	39.6	5	41.5	3	42.7
Cocoyams .....	6.4	—	6.4	3	6.6
Sweet Potatoes .....	3.1	—	3.1	—	3.1
Peas and Beans .....	6.7	-15	5.7	—	5.7
Groundnuts:					
(a) Exports .....	3.0	60	4.8	200	14.5
(b) Domestic Consumption..	4.9	25	6.2	-15	5.3
Sugar Cane .....	2.5	—	2.5	—	2.5
Cotton:					
(a) Exports .....	1.5	50	2.3	17	2.7
(b) Domestic Consumption..	1.4	25	1.7	—	1.7
Other Crops .....	10.9	—	10.9	—	10.9
Total .....	282.8	—	283.5	8	305.0

NOTE: N = Northern Region; W = Western Region; E = Eastern Region, including the Southern Cameroons.

TABLE 3 Value of Tree Crops

Crops	1950-51 at Market Prices (Million £)	Price Change (%)	1950-51 at 1952-53 Prices (Million £)	Volume Change (%)	1952-53 at Market Prices (Million £)
Cocoa .....	13.1	40	18.3	- 3	17.7
Palm Produce: Palm Kernels..	9.7	30	12.6	9	13.8
Palm Oil:					
(a) Export .....	7.6	33½	10.1	27 <sup>1</sup>	12.8
(b) Home Consumption ....	10.6	—	10.6	11	11.8
Rubber .....	4.7	-13	4.1	-17	3.4
Kola Nuts .....	4.7	—	4.7	12	5.3
Bananas:					
(a) Export .....	1.8	—	1.8	28	2.3
(b) Home Consumption ....	2.5	—	2.5	—	2.5
Other Tree Crops .....	7.6	—	7.6	—	7.6
Total .....	62.3	16	72.3	7	77.2

<sup>1</sup> Including improvement in quality.

TABLE 4 Value of Forest Products

	1950-51 at Market Prices (Million £)	Price Change (%)	1950-51 at 1952-53 Prices (Million £)	Volume Change (%)	1952-53 at Market Prices (Million £)
<i>Timber</i>					
Logs exported .....	2.8	10	3.1	-30	2.1
Sawn timber exported .....	1.0	30	1.3	40	1.8
Home consumption of logs and timber .....	2.2	33½	2.9	30	3.8
	6.0		7.3		7.7
Minus license fees, etc. ....	- 0.3		- 0.3		- 0.4
	5.7		7.0		7.3
<i>Firewood</i> .....	20.0	—	20.0	—	20.0
Total .....	25.7	5	27.0	1	27.3

TABLE 5 Value of Livestock Products

	1950-51 at Market Prices (Million £)	Price Change (%)	1950-51 at 1952-53 Prices (Million £)	Volume Change (%)	1952-53 at Market Prices (Million £)
<i>Cattle</i>					
Fresh beef .....	9.3	55	14.4	- 7.5	13.3
Dried meat .....	0.9	33	1.2	5	1.3
Hides (exports and domestic consumption) .....	1.3	-15	1.1	- 6	1.0
Milk and Butter .....	7.0	—	7.0	—	7.0
<i>Sheep and Goats</i>					
Mutton and Goat Meat .....	4.1	50	6.1	-15	5.2
Sheepskins .....	0.4	—	0.4	-50	0.2
Goatskins (exports and domestic consumption) .....	2.2	-25	1.6	-33.5	1.1
Goatmilk .....	2.3	—	2.3	—	2.3
Eggs and Poultry .....	3.0	—	3.0	—	3.0
Total .....	30.5	22	37.1	- 7	34.4

TABLE 6 Gross National Income of Nigeria

(Million £)

	1950-51	1952-53
Gross Domestic Product .....	596.7	680.3
less: payments abroad of interest and dividends .....	-6.3	-8.0
plus: earnings on foreign assets .....	3.0	4.8
plus: net remittances of migrant workers .....	.3	.3
equals: Gross National Income .....	593.7	677.4
of which: African component .....	585.2	666.1
non-African component .....	8.5	11.3

TABLE 7 Per Capita Income of African Population, by Regions

(£)

	1950-51	1952-53
Northern Region .....	15	17
Western Region .....	31	34
Eastern Region, incl. Southern Cameroons .....	19	21
National Average .....	19	21

SOURCE: 1950-51 figures derived from Table 34, "Gross Product of the Regions," in A. R. Prest and I. G. Stewart: *The National Income of Nigeria, 1950-51* (H. M. Stationery Office: London, 1953). Since regional data for 1952-53 are not available, a rough adjustment of the regional components of the 1950-51 data has been made on the basis of the national 1952-53 data. The per capita estimates pertain to gross national income and not to gross domestic output.

## APPENDIX C FISCAL DATA AND PROJECTIONS

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### I NOTES TO TABLES ON GOVERNMENT EXPENDITURE (Tables 1 to 11)

#### *Method of Presenting Accounts 1951-55*

These Tables are adaptations of the accounts of the central and regional governments, and of native treasuries, local governments, townships and town councils. 1951-52 figures show actual expenditures throughout, except that the breakdown between sectors of "public works extraordinary" in the accounts of Eastern Region native treasuries and local governments has had to be estimated. 1952-53 figures are figures of actual expenditure for the federal and regional governments, and approved or revised Estimates for local authorities. 1953-54 figures are approved Estimates throughout, except that "development loan expenditure" and expenditure from central renewals and other funds are revised Estimates. The federal government's 1954-55 Estimates are those approved early in 1954; for the regional governments they are preliminary Estimates, and for native administrations they are merely projections of the 1953-54 Estimates based, except in special cases, on an average growth of 3% per annum.

Our figures for 1951-52 to 1954-55, though based on the official Estimates differ from them both in content and in classification of expenditure:

First, Development and Welfare expenditures (Head 58 of the central Estimates) have been divided up between the federal and regional governments, according to the administering authority, despite the fact that payments originate in, or pass through, the federal government.

Second, the following *deductions* have been made from the published accounts:

1. Transfer payments from one government body to another (e.g. central grants to regions, regional grants to native administrations, payments from one native administration or local government to another, etc.) have been eliminated from the figures of total expenditure of the government paying out the transfer in order to eliminate double counting and, so far as possible, to show expenditure at the level of government actually executing the work. Where they are shown in the Tables, they appear in parentheses and are excluded from the totals. Occasionally, these transfers have had to be estimated for lack of precise data. In the case of regional government transfers to local authorities, published accounts at the two levels are often inconsistent; in all such cases figures shown in regional government accounts have been used.

2. Internal transfers, such as payments to renewals funds, revenue equalization funds, etc. Examples are the central government's payments to the Loan Development Fund, payments into the Revenue Equalisation Funds of the central government and of the Western Region, payments into the Cameroons Development Fund, payments to the Highways Capital Account, and payments to the Northern Region Capital Development Account.

Third, certain extrabudgetary expenditures have been *added*:

1. Expenditure from renewals funds held by the central and regional governments. Expenditures from native administration renewals funds are omitted because complete data were not readily available, but the amounts involved are believed to be small.

2. Expenditure from the central government Highways Capital Account, the Cameroons Development Fund, and the distributed profits of the Cameroons Development Corporation, and from the Northern Region Capital Development Account.

3. Payments from the Loan Development Fund and Development Loan expenditure chargeable to advances pending reimbursement from loans authorized but not yet raised. In this category are expenditures on roads and on urban water supplies carried in the central Estimates but actually spent by regional governments, and shown therefore in the Tables as regional expenditures.

4. Expenditure by the central and regional governments reimbursable by Marketing Boards or Regional Production Development Boards, and published in appendices to the Estimates.

Some variation in the pattern of expenditure shown for 1953-54 and 1954-55 is certain to take place, both through the nonutilization of appropriated funds and through the introduction of supplementary Estimates. Underexpenditure is most likely to occur in technical departments which have had difficulty in recruiting their full establishment of specialized personnel, and in the category of public works extraordinary, where it is now known that in 1953-54 only £ 1.7 million of the £ 3,063,370 appropriated was spent. Miscellaneous supplementary appropriations cancel out part of this underexpenditure.

In the Tables "capital expenditure" is not necessarily the same as "special expenditure" in the Estimates, for in general it does not include expenditure on temporary or semipermanent buildings (mud and thatch), expenditure on vehicles (except public works department equipment and ambulances), and expenditure on typewriters and other office equipment. Except for work given out to private contractors, capital expenditure comprises only direct expenditure on capital projects—labor, materials and equipment—and does not include an allocation of the salaries and other overhead costs of the Public Works Department or of other executive departments.

Grants to local authorities appear in the Tables of regional expenditure, in parentheses, but since these items also appear as expenditures of the local authorities, they have been excluded from regional government totals, to avoid double counting.

Expenditures have been classified by sector in the following manner: <sup>1</sup>

1. *General administration* includes the establishments of the Governor, the Lieutenant-Governors, the Chief Secretary and Civil Secretaries, the Financial Secretary, the Treasury, Audit, Public Relations, the legislatures, the offices maintained by Ministers, the commercial activities of the Department of Commerce and Industry,

<sup>1</sup> Numbers preceding the following paragraphs refer to lines of the Tables.

customs and excise, inland revenue, printing, the Legal Department, and the courts; expenditure on pensions and gratuities, on the public debt, on the recruitment and transport to Nigeria of European personnel; the salaries of development officers, and the cost of native authority, district and village administration.

2. *Security* includes the contribution to the United Kingdom for the maintenance of a military establishment in Nigeria, the cost of the Nigerian Police and of native administration police, and the cost of prisons and lock-ups.

3. *Education* includes, in addition to the expenses of government and native administration schools, contributions to voluntary agencies for schools maintained by them, the cost of scholarship programs, educational visits to the United Kingdom, libraries, and the lump sum grants by the Government to the University College, Ibadan, and the Nigerian College of Arts, Science and Technology. Expenses of specialized schools run by departments other than Education (i.e. pharmacy, veterinary) are included under the respective specialized heads.

4. *Medical and Health* includes hospitals, dispensaries, public sanitation and medical research.

5. *Water supply* includes the cost of providing water to both urban and rural districts. The heading Public Works—Miscellaneous includes amounts for administrative and technical personnel, stores, equipment and workshop services which are used in the provision of water supplies, but are not allocated separately.

6. *Roads* includes up to 1954-55 only expenditure on day labor, materials and equipment used directly for roads, plus the price of road work contracted out. Engineering and supervisory personnel, much of the equipment used on roads, stores, and workshops are included in Public Works—Miscellaneous, and are not shown separately. Funds for capital expenditure on roads are derived from a number of sources: the central, regional and local Estimates of Public Works—Extraordinary; the Highways Capital Account; Development Loan expenditure; the Cameroons Development Fund; and regional government expenditure reimbursed by Marketing and Production Development Boards. Central government expenditures on Trunk Roads 'A' are actually made by regional public works

departments, but a breakdown of these expenditures by region is not available.

7. *Harbors and Waterways* is made up chiefly of the expenditure of the Marine Department, plus capital works on ports carried out by the Public Works Department, and the cost of Apapa Wharf extension.<sup>2</sup>

8. *Aviation* includes expenditures of the Department of Aviation, maintenance and construction of aerodromes carried out by the Public Works Department (but not overheads of the PWD), the contribution to capital of the West African Airways Corporation and the current subsidy to that Corporation, and expenditure from Development and Welfare Funds on aeronautical telecommunications.

9. *Posts and Telecommunications* includes expenditure by the Posts and Telegraphs Department, expenditure by the Public Works Department on new post offices and other buildings used for communications, expenditure from Development Loan Funds on telecommunications, and expenditure by the Nigerian Broadcasting Service. Although a breakdown by region is available for broadcasting, all expenditure has been included with that of the central government since broadcasting is centrally administered.

10. *Public Works—Miscellaneous* includes the whole establishment cost of the Public Works Department, the maintenance of public buildings and official dwellings, the construction of administrative buildings and dwellings (but not of buildings for the exclusive use of one of the functional departments), and local government and native administration expenditure on markets, drainage and various minor works, as well as on public buildings.

11. *Agriculture* includes the budgets of the central and regional Departments of Agriculture, expenditure on agricultural schools, payments to the Cameroons Development Corporation and the Niger Agricultural Project Ltd., the cost of various research projects, of mines land reclamation, payments to international agricultural organizations, and payments by local governments and native administrations on small agricultural schemes.

<sup>2</sup> Although much of the expenditure in this sector will be taken over by the Ports Authority, all expenditure and the corresponding revenue are included in the federal government accounts for reasons given in Technical Report No. 18, p. 540.

12. *Veterinary* includes expenditure shown in the relevant heads of the Estimates and, in the Northern Region, the cost of tsetse control.

13. *Marketing and Exports* includes the central department, the West African Stored Products Research Unit, expenditure on marketing publicity, and the expenditure on cotton markets in the Northern Region which is reimbursed by the Cotton Marketing Board.

14. *Forestry* includes only expenditure shown in the relevant heads of the government accounts.

15. *Fisheries* shows the amounts provided in Development and Welfare Estimates, plus an approximation of the sums spent on fisheries by the Northern Department of Local Industries.

16. *Industry* includes an estimate of the expenditure on industry by the Department of Commerce and Industries, expenditure on small industrial projects by regional governments and native administrations, and Development and Welfare funds for textile development.

17. *Electricity* includes subsidies to the Electricity Corporation of Nigeria and loans to that Corporation. In 1951-52 and 1952-53 running expenses of undertakings operated by native administrations are included.

18. *Mining and Geology* includes the cost of the Department of Mines and of the Geological Survey, payments to the Nigerian Coal Corporation and to international organizations.

19. *Survey* includes only expenditure by the federal and regional departments; small local expenditures on surveying have been included in "Other."

20. *Co-operatives* includes only the expenditures by federal and regional departments on promotion of, and technical assistance to, the co-operative movement.

21. *Railway* includes only capital payments by the federal government.

22. *Other* includes expenditures on statistics, labor, land, meteorology, chemistry, antiquities, exhibitions, social welfare, sports, etc.

Table 11 gives a reconciliation of the totals for 1952-53 in the Tables in this report with the published government accounts.

### *Projections 1955-60*

The mission's projections of recurrent expenditure are based on the level of expenditure officially budgeted in 1954-55.<sup>3</sup> In the case of sectors to which the mission has paid particular attention, projections have been made by adding recommended expenditure to the 1954-55 level. The methods of calculating expenditure in other sectors are described below. Since it is probable that the level budgeted for 1954-55 will not in many departments be reached until 1955-56, owing largely to staffing problems, in most cases no allowance has been made for any substantial rise between 1954-55 and 1955-56. Thereafter, a steeper rise is foreseen. More detailed explanations of the projections in most sectors are contained in the Technical Reports. In each sector recurrent expenditure includes salaries, allowances, and, in the case of European personnel, the cost of passage, as well as transport and travel, maintenance of buildings, equipment, etc. Capital expenditure includes the cost of housing additional personnel.

The following comments apply to the method of projecting expenditures in sectors not covered by the Technical Reports:

*General Administration, Security and "Other"* Recurrent expenditure is assumed to rise by 3% per annum from the level reached when the amended constitution comes into force during 1954-55. Reallocation of expenditure between levels of government is based on the Report of the Fiscal Commissioner. No attempt has been made to project public debt, the figures for 1954-55 being continued throughout the period. The error thus introduced is compensated for by the contingency allowance mentioned in Chapter 5.

*Medical and Health* Projections of expenditure on medical and health services of the federal government are based on the preliminary estimates prepared for the next Colonial Development and Wel-

<sup>3</sup> The expenditure program, as well as the projections of revenues, was formulated before the Nigerian government's supplementary Estimates 1954-55 were available.

fare Scheme. Capital expenditure includes £ 4 million for slum clearance, £ 5 million for sewerage projects in Lagos and £ 1.7 million for Lagos medical facilities. Recurrent expenditure for Lagos medical services is included in the lump sum adjustment at the bottom of Tables 1 and 3.<sup>4</sup> Recurrent local and regional expenditures on medical and health services are shown arbitrarily to increase by 5% per annum,<sup>5</sup> and capital expenditure to remain constant or to rise slowly. £ 3 million has been included for slum clearance in the Western Region, and £ 1 million in the East.

*Public Works—Miscellaneous* In the case of Public Works—Miscellaneous (which includes some overhead charges which more properly belong in other sectors but cannot be separated), the annual increase of recurrent expenditure is assumed to be 5% per annum. Capital expenditure under this head is shown to decline somewhat from 1954-55 because much of the staff housing shown in that head up to 1954-55 is provided for in the sector estimates in following years.

*Marketing and Exports* We have assumed that the Department of Marketing and Exports will be partially regionalized following the creation of regional marketing boards. This would entail a rise in the total cost of this activity because of the additional administrative apparatus involved. The breakdown as between regions was computed according to the value of controlled produce originating in each region, after allowing for one-quarter of the increased cost to be used for the Federal Produce Inspection Service. To the extent that regionalization of marketing and export services is not carried out, expenditures projected for regional governments should be transferred to the federal government.

#### *Expenditure for Lagos*

Lagos, which under the existing constitution has been administered as part of the Western Region, will become federal territory. Expen-

<sup>4</sup> Revised Estimates received after the preparation of these projections indicate that the recurrent cost of medical service in Lagos may exceed the projections by about £ 1.5 million over the five years. We believe that this additional expenditure is within Nigeria's capacity to finance without curtailing expenditure on other services.

<sup>5</sup> By 8% in the case of the Northern and Western regional governments.

ditures on Lagos—chiefly for education, medical services and public works—will be transferred from the Western Region to the federal government. The best estimate available to the mission of the recurrent cost of these Lagos services (£ 800,000 in 1953-54) was contained in the report of the Fiscal Commissioner; the report did not break this total down by sector. The mission has provided for a 6% annual increase in this figure, and has deducted the resulting annual totals in a lump sum from total Western Region expenditures, adding them to federal expenditures. A similar transfer, £ 250,000 per year, has been made in respect of capital expenditure. Exceptionally, the mission's projection of federal government expenditure on medical services includes substantial amounts for Lagos hospital facilities, as provided in the Development and Welfare proposals drawn up in early 1954. These are in addition to those provided for in the lump-sum transfers.

TABLE 1 Expenditures of Federal Government, 1951-60

	Actual Expenditures				Approved Estimates			
	1951-52		1952-53		1953-54		1954-55	
	R	C	R	C	R	C	R	C
1. General Administration .....	4,820	—	5,128	—	5,880	—	6,589	—
2. Security .....	1,744	425	1,471	466	2,226	631	2,279	725
3. Education <sup>1</sup> .....	1,007	4,461	1,412	1,958	902	368	1,090	67
4. Medical and Health .....	848	103	468	89	593	135	501	105
5. Water Supply .....	50	79	62	124	78	48	76	46
6. Roads .....	32	186	532	1,094	651	1,878	713	1,604
7. Harbors and Waterways .....	804	951	949	1,242	1,024	1,462	1,149	3,343
8. Aviation .....	209	209	281	978	508	602	532	428
9. Post, Telecommunications and Broadcasting .....	1,049	548	1,471	627	1,792	1,105	2,077	1,098
10. Other Public Works .....	1,321	847	1,756	1,089	1,046	1,396	1,098	1,648
11. Agriculture .....	98	47	87	45	130	271 <sup>2</sup>	135	380 <sup>2</sup>
12. Marketing and Exports .....	338	—	422	<sup>3</sup>	536	4	565	1
13. Veterinary .....	75	1	73	20	93	31	101	38
14. Forestry .....	46	1	26	1	34	4	34	4
15. Fisheries .....	28	—	26	<sup>3</sup>	31	1	32	6
16. Industries .....	108	1	113	<sup>3</sup>	145	—	151	1,200
17. Electricity .....	103	2,250	2	1,720	116	3,280	86	2,955
18. Mining and Geology .....	119	138	118	373	168	266	169	495
19. Survey .....	85	—	68	29	94	<sup>3</sup>	110	3
20. Co-operatives .....	20	—	3	—	4	—	4	—
21. Railway .....	—	20	—	617	—	1,100	25	2,190
22. Capital for Cameroons Development Agency .....	—	—	—	—	—	—	—	—
23. Other .....	510	102	464	22	721	616 <sup>4</sup>	574	67
Total <sup>5</sup> .....	13,413	10,368	14,930	10,494	16,772	13,200	18,088	16,404
Add: expenditures on Lagos not included above .....	—	—	—	—	—	—	—	—
Net total .....	—	—	—	—	—	—	—	—
Recurrent and capital expenditures combined <sup>5</sup> .....	23,781	—	25,425	—	29,972	—	34,492	—
Grants to Regions .....	11,968	—	13,185	—	14,583 <sup>6</sup>	—	15,616	—
Grants to Lagos and other Native Treasuries .....	162	—	185	—	152	—	171	—
Total expenditures .....	35,911	—	38,795	—	44,707	—	50,279	—

<sup>1</sup> Including payments to the Nigerian College and the University College, Ibadan.

<sup>2</sup> Including loans to Cameroons Development Corporation.

<sup>3</sup> Less than £ 500.

<sup>4</sup> Including £ 600,000 loan to Lagos Executive Development Board.

<sup>5</sup> Totals may not equal sum of components, because of rounding.

<sup>6</sup> Revised estimate, derived from regional government accounts.

NOTE: R = Recurrent; C = Capital.

FISCAL DATA AND PROJECTIONS 627

(Thousand £)

Projections of Mission											
1955-56		1956-57		1957-58		1958-59		1959-60		Total 1955-60	
R	C	R	C	R	C	R	C	R	C	R	C
5,411	—	5,526	—	5,644	—	5,765	—	5,890	—	28,236	—
4,159	1,025	4,284	1,025	4,413	1,025	4,545	1,025	4,681	1,025	22,082	5,125
1,245	485	1,422	522	1,524	125	1,577	145	1,652	160	7,420	1,437
551	750	606	1,350	667	1,900	733	3,500	806	3,600	3,363	11,100
112	110	134	110	156	50	178	50	200	50	780	370
900	2,000	950	2,000	1,000	3,000	1,050	3,500	1,100	4,000	5,000	14,500
1,150	1,535	1,250	1,835	1,300	1,835	1,350	1,535	1,400	1,535	6,450	8,275
474	368	475	368	478	370	484	140	493	140	2,404	1,386
2,240	967	2,470	950	2,732	914	3,006	980	3,375	980	13,823	4,791
1,050	1,200	1,100	1,200	1,160	1,200	1,215	1,200	1,280	1,200	5,805	6,000
215	215	245	210	275	120	305	100	335	80	1,375	725
179	22	184	23	189	—	201	—	207	—	960	45
85	20	93	10	100	—	105	—	110	—	493	30
39	36	40	47	46	37	72	—	83	—	280	120
20	10	20	—	25	—	25	—	25	—	115	10
80	480	82	125	84	125	86	—	88	—	420	730
86	1,740	86	650	86	1,335	86	1,845	86	2,800	430	8,370
205	132	227	126	232	77	238	77	246	77	1,148	489
140	15	170	15	175	—	180	—	185	—	850	30
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	1,200	—	1,200	—	1,200	—	3,600
—	500	—	—	—	—	—	500	—	—	—	1,000
590	40	610	40	625	40	665	40	665	40	3,155	200
48,931	11,650	19,974	10,606	20,911	13,353	21,866	15,837	22,907	16,887	104,589	68,333
899	250	953	250	1,010	250	1,071	250	1,135	250	5,068	1,250
9,830	11,900	20,927	10,856	21,921	13,603	22,937	16,087	24,042	17,137	109,657	69,583
31,730	—	31,783	—	35,524	—	39,024	—	41,179	—	179,240	—
156	—	161	—	166	—	171	—	176	—	830	—
31,886	—	31,944	—	35,690	—	39,195	—	41,355	—	180,070	—

TABLE 2 Expenditures of Northern Region, 1951-60

	Actual Expenditures				Approved Estimates	
	1951-52		1952-53		1953-54	
	R	C	R	C	R	C
1. General Administration:						
Direct .....	609	—	1,145	—	1,173	—
Grants to Native Treasuries ..	(302)	—	(305)	—	(41)	—
2. Security:						
Direct .....	245	13	357	44	400	106
Grants to Native Treasuries ..	(32)	—	(40)	—	(253)	—
3. Education:						
Direct .....	471	226	612	391	934	455
Grants to Native Treasuries ..	(109)	(80)	(127)	(116)	(220)	(153)
4. Medical and Health:						
Direct .....	541	172	753	229	1,082	359
Grants to Native Treasuries ..	(47)	(11)	(59)	(7)	(165)	(15)
5. Water Supply .....	103	374	101	513	151	712
6. Roads:						
Direct .....	280	315	143	334	72	300
Grants to Native Treasuries ..	(60)	—	(94)	—	(160)	—
10. Other Public Works .....	320	295	385	556	486	564
Local Development Fund ....	—	—	—	—	—	—
11. Agriculture:						
Direct .....	287	153	366	170	492	263
Grants to Native Treasuries ..	(30)	—	—	—	(19)	—
12. Marketing and Exports:						
Direct .....	—	—	—	—	3	10
Grants to Native Treasuries ..	—	—	(8)	—	(15)	—
13. Veterinary:						
Direct .....	67	12	86	4	136	3
Grants to Native Treasuries ..	(11)	—	(18)	—	(45)	—
14. Forestry:						
Direct .....	47	9	62	13	81	11
Grants to Native Treasuries ..	—	—	—	—	(19)	—
15. Fisheries .....	5	—	6	—	10	—
16. Industries .....	8	<sup>1</sup>	23	—	41	—
19. Survey .....	60	—	75	5	104	—
20. Co-operatives .....	7	—	10	—	9	—
22. Contribution to Capital of Development Corporation .....	—	—	—	—	—	—
23. Other .....	13	—	18	—	33	—
Total <sup>2</sup> .....	3,063	1,570	4,142	2,259	5,205	2,783
Direct Recurrent and Capital Expenditures Combined <sup>2</sup> .....	4,633		6,400		7,988	
Grants to Native Treasuries:						
Current .....	591		652		936	
Capital .....	91		123		168	
Grand Total .....	5,315		7,175		9,092	

<sup>1</sup> Less than £ 500.<sup>2</sup> Totals may not equal sum of components because of rounding.

NOTE: R = Recurrent; C = Capital.

FISCAL DATA AND PROJECTIONS 629

(Thousand £)

Preliminary Estimates				Projections of Mission									
1954-55		1955-56		1956-57		1957-58		1958-59		1959-60		Total 1955-60	
R	C	R	C	R	C	R	C	R	C	R	C	R	C
1,316	—	1,770	—	1,820	—	1,875	—	1,930	—	1,990	—	9,385	—
(41)	—	(40)	—	(40)	—	(40)	—	(40)	—	(40)	—	(200)	—
463	222	—	—	—	—	—	—	—	—	—	—	—	—
(289)	—	(298)	—	(307)	—	(316)	—	(325)	—	(335)	—	(1,581)	—
1,207	563	1,327	407	1,503	404	1,707	404	1,900	304	2,133	304	8,570	1,823
(280)	(200)	(310)	(10)	(340)	(10)	(375)	(10)	(410)	(10)	(450)	(10)	(1,885)	(50)
1,041	366	1,161	375	1,254	400	1,354	430	1,462	460	1,579	500	6,810	2,165
(168)	(15)	(80)	—	(80)	—	(80)	—	(80)	—	(80)	—	(400)	—
146	519	209	850	224	900	238	950	252	1,000	268	1,050	1,191	4,750
78	220	140	500	180	700	225	900	300	1,100	375	1,100	1,220	4,300
(175)	—	(80)	—	(80)	—	(80)	—	(80)	—	(80)	—	(400)	—
533	962	536	600	563	600	591	600	621	600	652	600	2,963	3,000
—	—	—	(100)	—	(100)	—	(100)	—	(100)	—	(100)	—	(500)
550	366	724	428	787	330	846	349	893	345	949	411	4,199	1,863
(19)	—	(20)	—	(20)	—	(20)	—	(20)	—	(20)	—	(100)	—
—	10	142	10	146	10	151	10	155	10	160	10	754	50
(15)	—	(15)	—	(15)	—	(15)	—	(15)	—	(15)	—	(75)	—
179	10	195	20	220	10	245	5	260	—	270	—	1,190	35
(25)	—	(25)	—	(25)	—	(25)	—	(25)	—	(25)	—	(125)	—
85	7	90	25	100	25	110	20	120	10	135	10	555	90
(20)	—	(20)	—	(20)	—	(20)	—	(20)	—	(20)	—	(100)	—
12	—	15	5	20	5	20	—	20	—	20	—	95	10
41	—	60	—	81	—	92	—	93	—	94	—	420	—
111	1	130	10	160	10	164	—	168	—	172	—	794	20
13	—	25	20	35	20	45	—	50	—	55	—	210	40
—	—	—	—	—	—	—	—	—	1,000	—	1,000	—	2,000
33	—	34	—	35	—	36	—	37	—	38	—	180	—
5,808	3,248	6,558	3,250	7,128	3,414	7,699	3,668	8,261	4,829	8,890	4,985	38,536	20,146
9,056	—	9,808	—	10,542	—	11,367	—	13,090	—	13,875	—	58,682	—
1,032	—	888	—	927	—	971	—	1,015	—	1,065	—	4,866	—
215	—	110	—	110	—	110	—	110	—	110	—	550	—
10,303	—	10,806	—	11,579	—	12,448	—	14,215	—	15,050	—	64,098	—

TABLE 3 Expenditures of Western Region, 1951-60<sup>1</sup>

	Actual Expenditures				Approved Estimates	
	1951-52		1952-53		1953-54	
	R	C	R	C	R	C
1. General Administration:						
Direct .....	306	—	769	—	763	—
Grants to Native Treasuries ..	(110)	—	(139)	—	(156)	—
2. Security:						
Direct .....	209	25	498	113	583	142
Grants to Native Treasuries ..	(12)	—	(34)	—	(34)	—
3. Education:						
Direct .....	727	215	1,258	281	1,824	350
Grants to Native Treasuries ..	(30)	—	(39)	—	(73)	—
4. Medical & Health:						
Direct .....	285	122	756	71	1,022	157
Grants to Native Treasuries ..	(8)	—	(8)	—	(8)	—
5. Water Supply .....	36	143	35	449	48	141
6. Roads:						
Direct .....	186	294	144	211	174	324
Grants to Native Treasuries ..	(19)	—	(23)	—	(24)	—
10. Other Public Works .....	214	259	398	300	499	322
Local Development Fund .....	—	—	—	—	—	—
11. Agriculture .....	273	24	392	23	510	77
12. Marketing and Exports .....	—	—	—	—	—	—
13. Veterinary .....	18	9	29	7	45	9
14. Forestry .....	79	—	95	1	118	—
15. Fisheries .....	4	—	5	—	7	—
16. Industries .....	10	—	10	2	23	24
19. Survey .....	17	—	35	4	48	—
20. Co-operatives .....	14	—	33	—	43	—
22. Contribution to capital of development corporation .....	—	—	—	—	—	—
23. Other .....	47	—	72	—	111	2
Total <sup>3</sup> .....	2,427	1,092	4,529	1,460	5,819	1,546
Less expenditure on Lagos to be transferred to federal govern- ment .....	—	—	—	—	—	—
Net Total .....	—	—	—	—	—	—
Recurrent and capital expendi- tures combined .....	3,519	—	5,989	—	7,366	—
Grants to native treasuries and local governments:						
Current .....	179	—	243	—	296	—
Capital .....	—	—	—	—	—	—
Grand Total .....	3,698	—	6,232	—	7,661	—

<sup>1</sup> Including expenditures on Lagos. The estimates of recurrent expenditure on Lagos were calculated by applying an arbitrary annual increase of 6% to the estimates in the report of the Fiscal Commissioner. Distribution among all categories of expenditure was not specified in the report. The expenditures are therefore deducted in one line, and are added to the expenditures of the federal government in Table 1.

<sup>2</sup> Less than £ 500.

<sup>3</sup> Totals may not equal sum of columns because of rounding.

NOTE: R = Recurrent; C = Capital.

FISCAL DATA AND PROJECTIONS 631

(Thousand £)

Preliminary Estimates		Projections of Mission												Total 1965-60	
		1954-55		1955-56		1956-57		1957-58		1958-59		1959-60			
R	C	R	C	R	C	R	C	R	C	R	C	R	C		
931	—	1,325	—	1,360	—	1,400	—	1,445	—	1,490	—	7,020	—		
(128)	—	(134)	—	(106)	—	(109)	—	(110)	—	(113)	—	(572)	—		
663	73	—	—	—	—	—	—	—	—	—	—	—	—		
(34)	—	(35)	—	(36)	—	(37)	—	(38)	—	(40)	—	(186)	—		
2,074	321	2,351	1,022	2,659	1,002	3,004	1,002	3,383	932	3,791	932	15,188	4,890		
(482)	—	(555)	(150)	(638)	(150)	(734)	(150)	(844)	(150)	(971)	(150)	(3,742)	(750)		
1,085	201	1,172	250	1,266	320	1,367	900	1,476	1,450	1,594	2,000	6,875	4,920		
(8)	—	(8)	—	(8)	—	(8)	—	—	—	—	—	(24)	—		
56	62	78	150	105	370	130	590	135	910	139	910	587	2,930		
187	288	240	400	260	400	280	400	300	400	320	400	1,400	2,000		
(25)	—	(25)	—	(25)	—	(25)	—	(25)	—	(25)	—	(125)	—		
539	205	566	300	594	300	624	300	655	300	688	300	3,127	1,500		
—	—	—	(100)	—	(200)	—	(200)	—	(200)	—	(200)	—	(900)		
511	160	496	417	532	127	567	116	603	90	639	85	2,837	835		
—	—	149	—	154	—	158	—	163	—	168	—	792	—		
47	12	50	15	55	10	65	5	70	—	75	—	315	30		
129	—	130	88	130	88	140	88	140	88	150	88	690	440		
7	—	10	5	20	10	30	5	30	—	30	—	120	20		
20	10	50	—	71	—	82	—	83	—	84	—	370	—		
49	19	70	10	90	10	93	—	96	—	99	—	448	20		
44	—	65	40	75	58	90	—	100	—	110	—	440	98		
—	—	—	—	—	—	—	2,000	—	2,000	—	2,000	—	6,000		
93	2	96	—	99	—	102	—	105	—	108	—	510	—		
6,437	1,351	6,848	2,697	7,470	2,695	8,132	5,406	8,784	6,170	9,485	6,715	40,719	23,683		
—	—	—899	—250	—953	—250	—1,010	—250	—1,071	—250	—1,135	—250	—5,068	—1,250		
—	—	5,949	2,447	6,517	2,445	7,122	5,156	7,713	5,920	8,350	6,465	35,651	22,433		
7,788	—	8,396	—	8,962	—	12,278	—	13,633	—	14,815	—	58,084	—		
677	—	757	—	813	—	913	—	1,017	—	1,149	—	4,649	—		
—	—	250	—	350	—	350	—	350	—	350	—	1,650	—		
8,465	—	9,403	—	10,125	—	13,541	—	15,000	—	16,314	—	64,383	—		

TABLE 4 Expenditures of Eastern Region, 1951-60

	Actual Expenditures				Approved Estimates	
	1951-52		1952-53		1953-54	
	R	C	R	C	R	C
1. General Administration:						
Direct .....	443	—	842	—	840	—
Grants to Native Treasuries ..	(82)	—	(61)	—	(46)	—
2. Security .....	404	—	490	9	579	4
3. Education:						
Direct .....	999	218	1,306	198	1,626	282
Grants to Native Treasuries ..	(17) <sup>1</sup>	—	(23) <sup>1</sup>	—	(35)	—
4. Medical and Health .....	535	159	681	73	1,012	79
5. Water Supply .....	56	94	61	60	64	91
6. Roads:						
Direct .....	209	139	84	73	93	106
Grants to Native Treasuries ..	(15) <sup>2</sup>	—	(20) <sup>2</sup>	—	(27)	—
10. Other Public Works:						
Direct .....	295	234 <sup>3</sup>	350	259 <sup>3</sup>	384	136 <sup>3</sup>
Local Development Fund ....	—	—	—	—	—	—
11. Agriculture .....	111	50	146	30	209	100
12. Marketing and Exports .....	—	—	—	—	—	—
13. Veterinary .....	20	4	24	—	33	—
14. Forestry .....	53	8	66	11	75	11
15. Fisheries .....	4	—	4	—	5	—
16. Industries .....	—	—	2	—	3	—
19. Survey .....	18	—	25	—	34	—
20. Co-operatives .....	12	—	21	—	31	—
22. Contribution to capital of development corporation .....	—	—	—	—	—	—
23. Other: Direct .....	26	—	24	10	72	1
Total <sup>4</sup> .....	3,185	905	4,126	732	5,059	810
Recurrent and capital expendi- tures combined <sup>4</sup> .....	4,091	—	4,849	—	5,869	—
Add: Grants to Native Treasuries:						
Current .....	116	—	104	—	107	—
Capital .....	—	—	—	—	—	—
Grand Total .....	4,207	—	4,953	—	5,976	—

<sup>1</sup> Estimated on basis of native treasury receipts.

<sup>2</sup> Approved Estimates.

<sup>3</sup> Including "Code grants" and "Special grants." A code grant is paid to a deposit account in the native treasury and is not spent until the project is approved by the regional government. Because of the time lag that results, actual expenditure is probably less than the amounts included in this Table. A breakdown of the purpose of expenditure of special grants was available for 1953-54, and a large part of the total (£ 65,000) is included as capital expenditure on roads and on medical facilities. This breakdown was not available for 1952-53 or 1954-55. The entire expenditure on special grants (£ 81,000 in 1952-53 and £ 55,000 in 1954-55) has been included in miscellaneous

(Thousand £)

Preliminary Estimates		Projections of Mission											
1954-55		1955-56		1956-57		1957-58		1958-59		1959-60		Total 1955-60	
R	C	R	C	R	C	R	C	R	C	R	C	R	C
886	—	1,110	—	1,145	—	1,175	—	1,210	—	1,250	—	5,890	—
(30)	—	(13)	—	(13)	—	(13)	—	(13)	—	(13)	—	(65)	—
633	6	—	—	—	—	—	—	—	—	—	—	—	—
1-983	274	1,951	551	2,050	550	2,147	550	2,246	515	2,338	515	10,732	2,681
(40)	—	(30)	(10)	(30)	(10)	(30)	(10)	(30)	(10)	(30)	(10)	(150)	(50)
907	97	840	120	882	140	926	360	972	480	1,021	700	4,641	1,800
60	138	73	185	85	250	97	320	108	400	117	470	480	1,625
94	70	110	175	120	225	140	225	160	225	180	225	710	1,075
(22)	—	(25)	—	(25)	—	(25)	—	(25)	—	(25)	—	(125)	—
391	267 <sup>3</sup>	315	150	331	150	348	150	365	150	384	150	1,743	750
—	—	—	(100)	—	(200)	—	(200)	—	(200)	—	(200)	—	(900)
199	119	244	73	273	95	314	85	357	85	405	80	1,593	418
—	—	191	—	197	—	203	—	209	—	215	—	1,015	—
41	—	30	10	34	5	38	5	44	—	50	—	196	20
85	8	65	45	70	40	70	35	75	35	90	35	370	190
5	—	10	5	15	10	20	5	25	—	25	—	95	20
3	—	28	—	48	—	59	—	59	—	60	—	254	—
37	—	47	10	57	10	59	—	61	—	63	—	287	20
34	—	35	40	45	40	55	30	65	40	70	40	270	190
—	—	—	—	—	—	—	1,000	—	1,000	—	1,000	—	3,000
67	1	69	—	71	—	73	—	75	—	77	—	365	—
5,424	978	5,118	1,364	5,423	1,515	5,724	2,765	6,031	2,930	6,345	3,215	28,641	11,789
6,402	—	6,482	—	6,938	—	8,489	—	8,961	—	9,560	—	40,430	—
91	—	68	—	68	—	68	—	68	—	68	—	340	—
<sup>5</sup>	—	110	—	210	—	210	—	210	—	210	—	950	—
6,493	—	6,660	—	7,216	—	8,767	—	9,239	—	9,838	—	41,720	—

public works—capital. Capital expenditure on roads and medical facilities is therefore understated somewhat in those years. For the years 1955-60 provision is made for a "local development fund," capable of giving loans and grants of £ 100,000 per year to native treasuries and local governments.

<sup>4</sup> Totals may not equal sum of components due to rounding.

<sup>5</sup> "Code grants" (1951-52 to 1953-54) and "Special grants" (1952-53 to 1954-55) made to native treasuries and local governments for small capital works projects, are shown as direct capital expenditure of the regional government.

N.B. Includes Southern Cameroons prior to 1955-56.

NOTE: R = Recurrent; C = Capital.

TABLE 5 Expenditures of Southern Cameroons, 1955-60<sup>1</sup>

(Thousand £)

	Projections of Mission											
	1955-56		1956-57		1957-58		1958-59		1959-60		Total 1955-60	
	R	C	R	C	R	C	R	C	R	C	R	C
1. General Administration .....	266	—	274	—	282	—	291	—	300	—	1,413	—
3. Education:												
Direct .....	195	72	219	165	249	75	275	65	299	20	1,237	397
Grants to Native Treasuries .....	(10)	(5)	(11)	(5)	(12)	(5)	(13)	(5)	(14)	(5)	(60)	(25)
4. Medical and Health .....	114	10	120	20	126	30	132	40	139	50	631	150
5. Water Supply .....	10	20	15	40	20	60	21	75	22	75	88	270
6. Roads:												
Direct .....	10	50	15	75	20	75	25	75	30	75	100	350
Grants to Native Treasuries .....	(5)	—	(5)	—	(5)	—	(5)	—	(5)	—	(25)	—
10. Other Public Works:												
Direct .....	86	120	90	120	95	120	100	60	105	60	476	480
Transfers to Native Treasuries, Local Development Fund .....	—	(10)	—	(10)	—	(10)	—	(10)	—	(10)	—	(50)
11. Agriculture .....	65	63	79	63	102	23	115	23	128	13	489	185
12. Marketing and Exports .....	23	—	23	—	25	—	25	—	25	—	121	—
13. Veterinary .....	15	12	20	10	25	5	27	—	30	—	117	27
14. Forestry .....	25	14	25	14	30	13	30	12	35	12	145	65
15. Fisheries .....	5	—	5	5	10	5	10	—	10	—	40	10
19. Survey .....	15	5	15	5	16	—	16	—	17	—	79	10
20. Co-operatives .....	10	7	15	8	20	—	20	—	20	—	85	15
23. Other .....	10	—	11	—	11	—	12	—	12	—	56	—
Total .....	849	373	926	525	1,031	406	1,099	350	1,172	305	5,077	1,959
Recurrent and capital expenditures combined		1,222		1,451		1,437		1,449		1,477		7,036
Grants to Native Treasuries:												
Current .....		15		16		17		18		19		85
Capital .....		15		15		15		15		15		75
Grand Total .....		1,252		1,482		1,469		1,482		1,511		7,196

<sup>1</sup> Expenditure prior to 1955-56 is shown under Eastern Region.  
NOTE: R = Recurrent; C = Capital.

TABLE 6 Expenditures of Lagos Town Council, 1951-60<sup>1</sup>

(Thousand £)

	Actual Expenditures		Approved Estimates				Projections of Mission								Total					
	1951-52		1952-53		1953-54		1954-55		1955-56		1956-57		1957-58		1958-59		1959-60		1955-60	
	R	C	R	C	R	C	R	C	R	C	R	C	R	C	R	C	R	C	R	C
1. General Administration .....	119	—	129	—	101	—	104	—	107	—	110	—	114	—	117	—	121	—	569	—
2. Security .....	4	—	5	—	11	—	11	—	12	—	12	—	12	—	13	—	13	—	62	—
3. Education .....	2	—	7	—	4	—	4	—	4	—	4	—	5	—	5	—	5	—	23	—
4. Medical and Health .....	119	26	163	29	217	13	224	13	230	13	237	13	244	13	252	13	259	13	1,222	65
5. Water Supply .....	20	—	20	—	20	—	21	—	22	—	23	—	24	—	25	—	26	—	120	—
6. Roads .....	38	3	46	30	60	30	62	30	64	30	66	30	68	30	70	30	72	30	340	150
10. Other Public Works .....	46	12	48	34	66	100	68	100	70	100	72	100	74	100	77	100	79	100	372	500
23. Other .....	17	—	26	<sup>2</sup>	4	—	4	—	4	—	4	—	5	—	5	—	5	—	23	—
Total .....	365	41	444	93	483	143	498	143	513	143	528	143	546	143	564	143	580	143	2,731	715
Recurrent and capital expenditures combined .....	406		537		626		641		656		671		689		707		723		3,446	

<sup>1</sup> If it is decided that the Lagos Town Council should finance a portion of the cost of Lagos schools, we assume that this will be done by levying an education "rate"; revenues would be increased by the same amount as expenditures.

<sup>2</sup> Less than £ 500.

NOTE: Includes contribution to renewals funds as capital expenditure. Also includes expenditure from "loans" (loans from own reserves). Does not include so-called "repayment of loans" (to own reserves).

NOTE: R = Recurrent; C = Capital.

TABLE 7 Expenditures of Northern Natives Treasuries, 1951-60<sup>1</sup>  
(Excluding Transfers Between Native Treasuries)

	Actual Expenditures		Approved Estimates			
	1951-52		1952-53		1953-54	
	R	C	R	C	R	C
1. General Administration .....	924	—	939	—	1,123	—
2. Security .....	442	2	472	2	565	49
3. Education .....	341	202	437	202	523	205
4. Medical and Health .....	328	53	388	54	470	74
5. Water Supply .....	61	23	73	17	94	58
6. Roads .....	207	107	212	136	344	187
7. Harbors and waterways .....	—	—	—	—	—	1
10. Other Public Works .....	468	357	420	400	511	306
11. Agriculture .....	204	35	228	62	188	74
13. Veterinary .....	51	24	72	15	84	11
14. Forestry .....	68	6	79	6	96	8
16. Industries .....	39	9	40	3	32	4
17. Electricity .....	83	—	130	—	3	—
23. Other .....	35	23	60	18	137	13
Total .....	3,251	840	3,550	914	4,170	989
Recurrent and capital expenditures combined .....	4,091		4,464		5,159	

<sup>1</sup> Includes, as capital expenditure, contribution to renewals funds.

<sup>2</sup> Included in Other Public Works.

NOTE: R = Recurrent; C = Capital.

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(Thousand £)

Projections of Mission													
1954-55	1955-56		1956-57			1957-58		1958-59		1959-60		Total 1955-60	
	C	R	C	R	C	R	C	R	C	R	C	R	C
—	1,191	—	1,227	—	1,264	—	1,302	—	1,341	—	6,325	—	—
50	599	50	617	50	636	50	655	50	675	50	3,182	250	—
200	633	200	696	200	765	200	842	200	926	200	3,862	1,000	—
75	520	75	546	75	573	75	602	75	632	75	2,873	375	—
61	100	65	105	70	110	75	115	80	120	85	550	375	—
200	450	250	475	250	500	250	525	250	550	250	2,500	1,250	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
306	563	350	591	400	621	450	652	500	685	500	3,112	2,200	—
76	300	78	345	82	396	136	447	190	499	245	1,987	731	—
10	100	10	108	10	120	10	132	10	150	10	610	50	—
8	110	10	120	10	130	10	140	10	150	10	650	50	—
4	34	4	35	4	36	4	37	4	38	4	180	20	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
13	145	13	150	13	154	13	159	13	164	13	772	65	—
1,003	4,745	1,105	5,015	1,164	5,305	1,273	5,608	1,382	5,930	1,442	26,603	6,366	—
5,359	5,850	6,179	6,578	6,990	7,372	32,969	—	—	—	—	—	—	—

TABLE 8 Expenditures of Western Native Treasuries  
and Local Governments, 1951-60  
(Excluding Transfers Between Native Treasuries)

	Actual Expenditures		Approved Estimates			
	1951-52		1952-53		1953-54	
	R	C	R	C	R	C
1. General Administration .....	401	—	464	—	546	—
2. Security .....	83	5	118	27	139	15
3. Education .....	88	41	154	52	311	39
4. Medical and Health .....	198	31	259	58	325	97
5. Water Supply .....	57	5	74	15	100	26
6. Roads .....	162	99	206	96	240	100
10. Other Public Works .....	71	101	104	117	116	93
11. Agriculture .....	19	5	28	3	33	<sup>2</sup>
13. Veterinary .....	1	—	4	<sup>2</sup>	7	—
14. Forestry .....	79	<sup>2</sup>	107	2	87	—
15. Fisheries .....	—	<sup>2</sup>	—	—	—	—
16. Industries .....	3	<sup>2</sup>	3	2	3	<sup>2</sup>
17. Electricity .....	87	2	34	1	—	—
23. Other .....	9	<sup>2</sup>	16	—	26	—
Total .....	1,258	289	1,571	373	1,933	370
Recurrent and capital expenditures combined .....	1,547		1,942		2,303	

<sup>1</sup> The distribution among sectors of works extraordinary (which comprises the major part of capital expenditure) is not known. Approved Estimates are substituted in this Table. Actual expenditure (£ 281,000) did not differ substantially from the Estimates (£ 278,000).

<sup>2</sup> Less than £ 500.

NOTE: R = Recurrent; C = Capital.

FISCAL DATA AND PROJECTIONS 639

(Thousand £)

Projections of Mission

1954-55	1955-56		1956-57		1957-58		1958-59		1959-60		Total 1955-60		
	C	R	C	R	C	R	C	R	C	R	C		
562	—	579	—	597	—	615	—	633	—	652	—	3,076	—
143	15	147	15	152	15	156	15	161	15	166	15	782	75
353	150	1,436	150	1,646	150	1,887	150	2,153	150	2,481	150	9,603	750
341	100	358	100	376	100	395	100	415	100	436	100	1,980	500
103	30	106	35	109	40	113	45	116	50	119	50	563	220
250	110	325	150	350	150	375	150	400	150	425	150	1,875	750
121	93	127	150	133	200	140	250	147	300	154	350	701	1,250
34	—	35	—	36	—	37	—	38	—	39	—	185	—
7	—	8	—	9	—	10	—	11	—	12	—	50	—
90	—	95	5	100	10	110	10	120	10	130	10	555	45
—	—	—	—	—	—	—	—	—	—	—	—	—	—
3	—	3	—	3	—	3	—	3	—	3	—	15	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
27	—	28	—	28	—	29	—	30	—	31	—	146	—
34	498	3,247	605	3,539	665	3,870	720	4,227	775	4,648	825	19,531	3,590
	2,532	3,852		4,204		4,590		5,002		5,473		23,121	

TABLE 9 Expenditures of Eastern Native Treasuries and Local Governments, 1951-60

	1951-52 <sup>1</sup>		Estimates <sup>2</sup> 1952-53		Preliminary Estimates 1953-54	
	R	C	R	C	R	C
1. General Administration .....	384	—	407	—	430	—
2. Security .....	<sup>3</sup> —	—	1	1	1	—
3. Education .....	68	<sup>4</sup> —	77	20	170	13
4. Medical and Health .....	109	<sup>4</sup> —	132	33	187	22
5. Water Supply .....	5	<sup>4</sup> —	13	2	13	7
6. Roads .....	162	<sup>4</sup> —	193	29	252	10
10. Other Public Works .....	82	196 <sup>5</sup>	91	93	110	92
11. Agriculture .....	2	<sup>4</sup> —	2	<sup>3</sup> —	6	<sup>3</sup> —
13. Veterinary .....	<sup>3</sup> —	<sup>4</sup> —	1	<sup>3</sup> —	1	—
14. Forestry .....	1	<sup>4</sup> —	1	—	<sup>3</sup> —	<sup>3</sup> —
16. Industries .....	—	—	—	—	—	1
23. Other .....	6	—	8	—	5	—
Total <sup>6</sup> .....	821	196	924	178	1,174	145
Recurrent and capital expenditure combined .....	1,017		1,102		1,319	

<sup>1</sup> Figures in this column are a composite of estimated expenditures for local governments, native treasuries which have since become local governments, and townships, and actual expenditures for all other native treasuries.

<sup>2</sup> Wherever available, revised Estimates are used; in other cases, preliminary Estimates are incorporated.

<sup>3</sup> Less than £ 500.

<sup>4</sup> Included in Other Public Works—Capital.

<sup>5</sup> A detailed breakdown of actual expenditure in 1951-52 under the headings "Public Works Extraordinary" and "Development" is not available. All capital expenditure (including grants to town planning authorities) has therefore been lumped together.

<sup>6</sup> Totals may not equal sum of components because of rounding.

N.B. Excluding Southern Cameroons (1951-55).

NOTE: R = Recurrent; C = Capital.

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(Thousand £)

Projections of Mission													
1954-55		1955-56		1956-57		1957-58		1958-59		1959-60		Total 1955-60	
R	C	R	C	R	C	R	C	R	C	R	C	R	C
43	—	456	—	470	—	484	—	499	—	514	—	2,423	—
1	—	1	—	1	—	1	—	1	—	1	—	5	—
'80	15	231	85	317	85	408	85	504	85	606	85	2,066	425
'96	33	206	33	217	33	227	33	239	33	250	33	1,139	165
13	7	14	10	15	10	16	10	17	10	18	10	80	50
'60	20	320	30	340	40	360	50	380	50	400	50	1,800	220
16	92	121	100	127	200	134	300	140	300	147	300	669	1,200
6	—	6	—	7	—	7	—	7	—	8	—	35	—
1	—	2	—	2	—	3	—	4	—	4	—	15	—
1	—	2	—	3	—	4	—	5	—	5	—	19	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
5	—	5	—	5	—	6	—	6	—	6	—	28	—
22	167	1,364	258	1,504	368	1,650	478	1,802	478	1,959	478	8,279	2,060
<b>1,389</b>		<b>1,622</b>		<b>1,872</b>		<b>2,128</b>		<b>2,280</b>		<b>2,437</b>		<b>10,339</b>	

TABLE 10 Expenditures of Southern Cameroons Native Treasuries, 1951-60

(Thousand £)

	Actual 1951-52		Estimates <sup>1</sup> 1962-53		Preliminary Estimates 1953-54		Projections of Mission												Total 1955-60	
							1954-55		1955-56		1956-57		1957-58		1958-59		1959-60			
	R	C	R	C	R	C	R	C	R	C	R	C	R	C	R	C	R	C	R	C
1. General Administration .....	55	—	60	—	61	—	63	—	65	—	67	—	69	—	71	—	73	—	345	—
2. Security .....	<sup>2</sup>	—	<sup>2</sup>	—	<sup>2</sup>	—	<sup>2</sup>	—	<sup>2</sup>	—	<sup>2</sup>	—	<sup>2</sup>	—	<sup>2</sup>	—	<sup>2</sup>	—	—	—
3. Education .....	14	<sup>3</sup>	15	1	21	1	23	1	25	30	27	30	29	30	31	30	34	30	146	150
4. Medical and Health .....	14	<sup>3</sup>	17	1	23	1	24	6	25	6	26	6	28	6	29	6	31	6	139	30
5. Water Supply .....	<sup>2</sup>	<sup>3</sup>	<sup>2</sup>	<sup>2</sup>	<sup>2</sup>	—	<sup>2</sup>	—	1	2	1	2	2	4	2	4	2	4	8	16
6. Roads .....	10	<sup>3</sup>	12	5	16	1	18	5	24	10	26	10	28	10	30	10	32	10	140	50
10. Other Public Works .....	7	16	9	8	8	12	8	12	8	12	9	12	9	12	9	12	10	12	45	60
11. Agriculture .....	1	<sup>3</sup>	2	<sup>2</sup>	2	—	2	—	2	—	2	—	2	—	2	—	2	—	10	—
13. Veterinary .....	2	<sup>3</sup>	2	1	3	—	3	1	4	1	5	1	6	1	7	1	8	1	30	5
14. Forestry .....	3	<sup>3</sup>	5	<sup>2</sup>	4	<sup>2</sup>	4	—	5	—	5	—	5	—	5	—	5	—	25	—
23. Other .....	1	—	1	—	1	—	1	—	1	—	1	—	2	—	2	—	2	—	8	—
Total <sup>4</sup> .....	109	16	123	21	141	15	146	25	160	61	169	61	180	63	188	63	199	63	896	311
Recurrent and capital expenditures combined ....		125		144		156		171		221		230		243		251		262		1,207

<sup>1</sup> Whenever available, revised Estimates are used; in other cases preliminary Estimates are incorporated.<sup>2</sup> Less than £ 500.<sup>3</sup> Included in Other Public Works—Capital.<sup>4</sup> Totals may not equal sum of components because of rounding.

NOTE: R = Recurrent; C = Capital.

TABLE 11 Reconciliation of Expenditures with Published Government Accounts, 1952-53

(Thousand £)

	Federal <sup>1</sup>	Lagos <sup>2</sup>	Northern Region <sup>1</sup>	Northern local <sup>2</sup>	Western Region <sup>1</sup>	Western local <sup>2</sup>	Eastern Region <sup>4</sup>	Eastern local <sup>3</sup>	Southern Cameroons local <sup>2</sup>
Total shown in Tables .....	38,795	537	7,175	4,464	6,232	1,942	4,953	1,102	144
<i>Deduct:</i>									
1. Development & Welfare expendi- tures shown under regions .....	—	—	-1,559	—	-865	—	-821	—	—
2. Loan and Development Loan ex- penditure .....	-3,643	—	-540	—	-496	—	-92	—	—
3. Reimbursement from Marketing Boards and Production Devel- opment Boards .....	-40	—	-127	—	-380	—	-12	—	—
4. Payments from Renewals and other capital funds .....	-1,325	—	-1	—	-11	—	-11	—	—
5. Expenditures from "internal" loans.	—	-59	—	—	—	—	—	—	—
<i>Add:</i>									
1. Payments to funds .....	+7,071	—	+8	—	—	—	+5	—	+1
2. Transfers between local authorities.	—	—	—	+101	—	+31	—	+93	—
3. Development & Welfare expendi- tures shown under regions .....	+3,245	—	—	—	—	—	—	—	—
4. Repayment of "internal" loans.....	—	+10	—	—	—	—	—	—	—
5. Errors due to rounding .....	—	—	-1	+1	—	—	-1	-1	—
Total in published accounts <sup>5</sup> ..	44,103	488	4,955	4,566	4,480	1,973	4,021	1,194 <sup>5</sup>	145

<sup>1</sup> Actual expenditure.<sup>2</sup> Approved Estimates.<sup>3</sup> Latest Estimates available; chiefly approved Estimates, but in a few cases preliminary or revised Estimates have been used.<sup>4</sup> Including Southern Cameroons.<sup>5</sup> Corrected for minor arithmetical errors.

## II NOTES TO TABLES ON GOVERNMENT REVENUE

(Tables 12 to 18)

The projections of government revenues shown in Tables 12-18 are based on a series of assumptions which, although by necessity speculative, are believed to reflect the most likely course of developments of national income, expenditures, and exports and imports. The projections are designed to show the likely movement of government revenues and their distribution among the various government authorities at currently prevailing tax rates. The effects of changes in certain rates and other changes in the tax structure are discussed in Chapter 5.

The basic assumption which underlies the projections for all government revenues not specifically mentioned here is that an increase in the gross national product of 3% per year will result in a proportionate increase in revenues. As to the distribution of revenues between the federal government and the regional governments, the revenue allocation scheme proposed by the Fiscal Commissioner and accepted with minor modifications by the Lagos Conference in early 1954 has been followed.<sup>6</sup>

The mission realizes that the revenue projections are subject to a potentially wide margin of error since the revenue system is highly sensitive to even minor changes in the value of exports and imports. Therefore the annual figures and, to a lesser extent, the five-year totals must be taken only as an indication of orders of magnitude.

Nevertheless, in order to determine the financial practicability of its expenditure proposals, the mission had to estimate the movement of public revenues in the next five years in some detail, particularly since the financial position of each of the regional governments depends heavily on the price and quantity movements of only one or two export commodities. Moreover, the revenue projections were necessary to determine where financial difficulties were most likely to arise.

The following notes explain the bases for the projection of specific taxes and other federal and regional revenues:

1. *Customs and Excise*

(a) *Import and excise duties on tobacco.* A rate of growth of

<sup>6</sup> *Report of the Fiscal Commissioner on the Financial Effects of the Proposed New Constitutional Arrangements* (Government Printer: Lagos, 1953).

tobacco consumption of 6% per year has been assumed. This is a conservative estimate in comparison with the rapid growth of tobacco consumption in recent years.

(b) *Import duties on motor spirit.* An increase of 10% per year has been assumed in line with the experience of recent years, and with the proposed expansion of road construction and road improvement. (See Technical Report No. 17).

(c) *Other import duties.* An increase of 5% per year has been projected. The reason for this high percentage is that there are strong indications that the proportion of *additional* income spent on imports is substantially higher than the *average* proportion of income spent on imports.<sup>7</sup> No effect has been given to the recommendation of the Fiscal Commissioner that imports by government authorities be taxed at prevailing rates since, although the recommendation was accepted by the Lagos conference "in principle," it apparently will be applied only after a detailed study of the tariffs.

(d) *Export duties* have been projected on the basis of the expected price and volume movements of the major exports, as discussed in Technical Report No. 4. The following price and quantity projections have been used:

(i) *Cocoa:* A decline from the present price level to 40 cents U.S. c.i.f. New York in 1955-56 and to 30 cents by 1959-60;<sup>8</sup> the volume of exports to remain constant at 100,000 tons per year.

(ii) *Groundnuts:* A price decline from £ 65 to £ 61 per ton c.i.f. Europe between 1955 and 1960; volume: 400,000 tons in 1955-56 (because of the backlog), thereafter a 5% increase per year, beginning with 336,000 tons in 1956-57. No distinction has been made between exports of unprocessed and processed groundnuts; it is assumed that the duty on groundnut oil and cake combined will be equal to the duty on an equivalent quantity of groundnuts.

(iii) *Benniseed:* The same price projections as for groundnuts were used; volume: 15,000 tons in 1955, rising 5% per year.

<sup>7</sup> The average propensity of Nigeria to import is around .16. The marginal propensity may be as high as .4. In projecting a 5% increase in imports per year with a 3% increase in income, we have assumed a marginal propensity of slightly over .25.

<sup>8</sup> In the case of all commodities the duty was computed on the basis of the f.o.b. prices; i.e. allowing for freight, insurance, etc.

(iv) *Palm oil, edible*: A price decline from £ 65 to £ 61 per ton c.i.f. Europe between 1955 and 1960; volume: 130,000 tons—equal to 65% of total production—in 1955-56, rising 3% per year.

(v) *Palm oil, technical*: A price decline from £ 45 to £ 41 c.i.f. Europe between 1955 and 1960; volume: 70,000 tons in 1955-56, rising 3% per year.

(vi) *Palm kernels*: A price decline from £ 50 to £ 46 per ton c.i.f. Europe between 1955 and 1960; volume: 400,000 tons in 1954-55, rising 2% per year.

(vii) *Cotton*: A price decline from 30 cents U.S. to 26 cents (New York quotations) between 1955 and 1960; volume: 48,000 bales in 1955-56, rising 8% per year.

(viii) *All other dutiable exports*: An increase of 3% per year has been assumed for the export of hides and skins, timber and logs; and a 5% increase for bananas. Regarding rubber, it has been assumed that the price will be below the dutiable minimum.

(e) *Excise duties other than tobacco*. A 10% increase per year has been assumed because of the rapid growth in the consumption of locally produced beer.

(f) *Miscellaneous customs receipts* (mostly payment for services) were projected at the rate of a 3% increase per year.

2. *Produce Sales Taxes*: The projections of the produce sales taxes are based on the same assumptions regarding the volume of exports (from each region) as those made for the computation of export duties.

3. *Direct Taxes*: Individual income taxes and companies' income taxes were projected at a rate of increase of 3% per year. The regional share of individual income taxes is shown separately in the regional Tables. "Other direct taxes" represent the regional shares of local direct and cattle taxes; they have been expanded at 3% per year.

4. *Licenses and Internal Revenues* were projected as growing 4% per year because of the expected increase in motor vehicle registration.

5. *Mining*: Federal royalty receipts were allocated entirely to the Northern Region and kept at the present level of £ 1.205 million per year because of the uncertainty regarding exports of tin and columbite.

6. *Fees of Court or Office*: Revenue of the Widows' and Orphans'

Pension Scheme of £ 170,000 has been eliminated because of the funding of the scheme, and an adjustment has been made because of the regionalization of produce inspection. An increase of 3% per year has been assumed.

7. *Marine Services*: An increase of 3% per year. Revenues include the revenues of the proposed Ports Authority since expenditures for the Ports Authority are also included in federal expenditures.<sup>9</sup>

8. *Posts and Telegraphs*: The Fiscal Commissioner's estimate of £ 600,000 as the cost to the federal and regional governments of postal and telegraph services has been added to the approved Estimate for 1954-55 and a 3% increase per year has been assumed. The cost of these services has been added to the expenditures of the federal and regional governments.

9. *Interest Receipts*: In projecting this item the figures in the 1954-55 Estimates have been adjusted by adding extrabudgetary interest earnings (mainly of the Revenue Equalisation Fund and various renewals funds) and deducting from federal revenues, and adding to regional revenues, interest earnings on £ 7 million, the sum to be transferred to the regional governments in accordance with the Lagos Conference decisions. The resulting amounts have been left unchanged for the entire period because of the impossibility of forecasting the timing of borrowing operations. See, however, Chapter 5, page 106.

10. *Other Nontax Receipts*: This item includes the headings of water supplies, earnings of government departments, rent of government property, reimbursements, land sales and miscellaneous. The estimates of water supplies revenues and receipts from rent of government property have been expanded by 3% per year; earnings of government departments and land sales have been carried forward unchanged. Reimbursements have been adjusted to reflect the redistribution of government functions under the amended constitution and other changes. Receipts for auditing are no longer shown under federal revenues; similar adjustments have been made in the regional estimates. Reimbursements from the Marketing Boards to the Department of Marketing and Exports have been increased by 20% to take account of expected increased cost, and have been divided among the federal and the regional governments. (See, however, p. 624,

<sup>9</sup> See Technical Report No. 18.

supra.) An increase of 3% per year has been projected. Under miscellaneous receipts of the federal government, profit disbursements of the West African Currency Board are no longer shown, consistent with the mission's proposal for a state bank (see Chapter 4). Reimbursements by the U.S. Economic Co-operation Administration (now Foreign Operations Administration) are also no longer shown, as they will be terminated in 1954-55. The adjusted amounts have been carried forward unchanged.

The following items in the Tables are shown only from 1951 to 1955:

1. *Extrabudgetary Receipts*: This item comprises all revenue not included in the main Estimates. Included in this revenue are interest receipts of the Revenue Equalisation Fund and other funds, and reimbursement receipts from Marketing Boards and similar institutions. The former are shown from 1955 on under "Interest Receipts" and the latter, if our recommendations are followed, will cease.

2. *Colonial Development and Welfare Grants and Development and Welfare Funds*: The central accounts include all receipts of Colonial Development and Welfare grants from the U.K. government. The regional accounts include amounts equivalent to those spent on regional Development and Welfare projects by the central government, since these expenditures have been included in the Tables showing regional expenditures. In the future, Colonial Development and Welfare grants for the regions will be paid directly to them by the United Kingdom. Although the mission assumed that these grants would continue, it had no basis on which to project them.

3. *Code and Other Grants*: These receipts of the regions from the central government, including grants under the revenue allocation system of the 1951 constitution ("code" grants).

4. *Development Loan Funds*: These funds represent payments by the central government for regional projects out of central Loan Funds. Under the new constitution, these projects will be financed by the regional governments.

The receipts of native treasuries, local governments and townships are shown under five headings; receipts under the first three have been projected as rising 3% per year:

1. *Direct and Property Taxes:* These include all revenues from direct taxes, cattle taxes (jangali), general and special rates.

2. *Court Fees:* These include receipts of court fees and, in some instances, fees of other offices.

3. *Other Local Receipts:* This item includes all receipts from public services (water, cemeteries, etc.) and commercial operations (markets, slaughterhouses, etc.), interest, and "miscellaneous" receipts.

4. *Grants from Nongovernmental Sources:* This item includes payments and reimbursements from Marketing Boards, Production Development Boards, etc. Transfers between local authorities have not been included, to avoid double counting.

5. *Grants from Regional Governments:* These represent receipts, by local authorities, of "recurrent" and "capital" grants from regional governments. The projections for 1955 to 1960 are the amounts which the mission has proposed that the local authorities receive from the regional governments. They are discussed in detail in Chapter 5.

The following comments apply to the Southern Cameroons:

Under the constitutional arrangements going into effect in 1954, the receipts and expenditures of the Southern Cameroons will continue to be treated differently from those of the regional governments. Because of the special status of the Cameroons as a trust territory, the share of federal revenues originating in the Southern Cameroons is allocated to the Southern Cameroons, but the territory's share in the cost of the federal government is charged against it. In addition, the Southern Cameroons receives annual profit payments from the Cameroons Development Corporation.<sup>10</sup> The projections of the special financial arrangements for the Southern Cameroons are shown in Table 18.

1. *Revenues Corresponding to Regional Receipts:* A breakdown of these receipts is shown in Table 16. Their projection is based on the same assumptions as those used for estimating federal and regional revenues.

<sup>10</sup> Under existing arrangements, profits are received by the central government and credited to a special fund for the benefit of the Cameroons. The Northern Cameroons has declared its willingness to forego its share in these profit payments. All other special arrangements likewise will apply to the Southern Cameroons only.

2. *Federal Revenues Originating in the Southern Cameroons:* This item consists of two parts. One part is the federal share of those revenues which are shared between the federal and the regional governments. They were estimated on the same basis as the revenues included in 1. The other part is an estimate of federal revenues, not shared with the regions, which originate in the Southern Cameroons; it includes proceeds of the companies' income tax, postal and telegraph services, marine receipts and "miscellaneous." These estimates are based on those shown in the report of the Fiscal Commissioner and expanded by 3% per year; "miscellaneous" receipts have been kept constant.

3. *Southern Cameroons Share of Cost of Federal Government:* The estimate has been taken from the report of the Fiscal Commissioner. It has been kept constant because of its tentative character.

4. *Profits of Cameroons Development Corporation:* The amount is based on the mission's proposal discussed in Chapter 5 and Technical Report No. 5.

TABLE 12 Receipts of Federal Government, 1951-60

(Thousand £)

	Actual Receipts		Revised	Approved	Projections of Mission					Total 1955-60
	1951-52	1952-53	Estimates	Estimates	1955-56	1956-57	1957-58	1958-59	1959-60	
Customs Duties and Excise Taxes .....	32,106	33,948	35,022	33,755	18,188	18,237	18,395	18,631	18,943	92,394
Direct Taxes .....	6,777	6,810	5,200	5,200	4,805	4,949	5,098	5,252	5,409	25,513
Licenses and Internal Revenues .....	542	203	181	187	248	258	269	279	290	1,344
Mining Royalties, etc. ....	1,565	1,631	1,005	1,205	—	—	—	—	—	—
Fees of Court or Office .....	696	583	606	638	218	225	231	238	245	1,157
Receipts from Marine Services .....	906	938	927	946	974	1,003	1,033	1,064	1,096	5,170
Post and Telegraph .....	759	865	916	940	1,588	1,636	1,686	1,738	1,790	8,438
Interest Receipts .....	1,155	1,469	1,784	1,689	1,734	1,734	1,734	1,734	1,734	8,670
Other Nontax Receipts .....	3,322	1,557	2,126	1,766	1,387	1,404	1,422	1,440	1,459	7,112
Extrabudgetary Receipts .....	7,194 <sup>1</sup>	535	634	715	—	—	—	—	—	—
Total <sup>2</sup> .....	55,022	48,538	48,402	47,041	29,142	29,446	29,868	30,376	30,966	149,798
Colonial Development and Welfare Grants .....	2,499	2,903	4,142	3,961	—	—	—	—	—	—
Total Receipts .....	57,521	51,441	52,544	51,002	—	—	—	—	—	—

<sup>1</sup> Including proceeds of £ 6.8 million London loan.<sup>2</sup> Total may not equal sums of components because of rounding.

TABLE 13 Receipts of Northern Regional Government, 1951-60

(Thousand £)

	Actual Receipts		Revised Estimates	Pre- liminary Estimates	Projections of Mission					Total 1955-60
	1951-52	1952-53			1953-54	1954-55	1955-56	1956-57	1957-58	
Regional Share in Customs Duties and Excise										
Taxes .....	—	—	—	—	5,191	5,188	5,440	5,711	5,991	27,521
Produce Sales Tax .....	—	—	500	500	381	402	423	444	469	2,119
Regional Share in Individuals' Income Tax .....	—	—	—	—	371	382	393	405	418	1,969
Other Direct Taxes .....	320	334	351	449	462	476	490	505	520	2,453
Licenses and Internal Revenues .....	121	150	146	174	178	185	192	200	208	963
Mining Royalties, etc. ....	60	58	64	65	1,270	1,270	1,270	1,270	1,270	6,350
Fees of Courts or Office .....	59	63	41	47	128	132	135	139	144	678
Interest Receipts .....	—	82	77	72	152	152	152	152	152	760
Other Nontax Receipts .....	192	201	227	331	398	405	413	420	428	2,064
Extrabudgetary Receipts .....	94	127	170	338	—	—	—	—	—	—
Total .....	846	1,015	1,576	1,976	8,531	8,592	8,908	9,246	9,600	44,877
Code and other Grants from Federal Government.	5,905 <sup>1</sup>	4,531 <sup>2</sup>	4,775	5,003 <sup>3</sup>	—	—	—	—	—	—
Development and Welfare Funds .....	1,100	1,559	2,344	2,159	—	—	—	—	—	—
Development Loan Funds .....	554	540	434	114	—	—	—	—	—	—
Total Receipts .....	8,405	7,645	9,129	9,252	—	—	—	—	—	—

<sup>1</sup> Including an "under-development grant" of £ 2 million, shown in regional accounts in 1952-53 but in central government accounts in 1951-52.

<sup>2</sup> Excluding transfer of treasury balances in connection with establishment of separate regional financial administrations and "under-development grant."

<sup>3</sup> Approved central government Estimate.

TABLE 14 Receipts of Western Regional Government, 1951-60

(Thousand £)

	Actual Receipts		Revised Estimates	Pre- liminary Estimates	Projections of Mission					Total 1955-60
	1951-52	1952-53			1953-54	1954-55	1955-56	1956-57	1957-58	
Regional Share in Customs Duties and Excise										
Taxes .....	—	—	—	—	9,941	9,759	9,535	9,570	9,568	48,373
Produce Sales Taxes .....	—	—	350	600	586	590	594	599	604	2,973
Regional Share in Individuals' Income Tax .....	—	—	—	—	93	95	98	101	104	491
Other Direct Taxes .....	21	29	534	570	587	605	623	642	661	3,118
Licenses and Internal Revenues .....	132	307	307	329	241	251	261	271	282	1,306
Fees of Court or Office .....	46	81	123	121	209	215	222	228	235	1,109
Interest Receipts .....	—	17	29	29	78	78	78	78	78	390
Other Nontax Receipts .....	96	190	222	234	261	267	273	280	287	1,368
Extrabudgetary Receipts .....	310	380	504	504 <sup>1</sup>	—	—	—	—	—	—
Total .....	605	1,004	2,069	2,387	11,996	11,860	11,684	11,769	11,819	59,128
Code and Other Grants from Federal Government	2,698 <sup>2</sup>	4,764 <sup>2</sup>	5,467	6,027 <sup>3</sup>	—	—	—	—	—	—
Development and Welfare Funds .....	758	865	1,329	1,481	—	—	—	—	—	—
Development Loan Funds .....	259	496	196	55	—	—	—	—	—	—
Total Receipts .....	4,320	7,129	9,061	9,950	—	—	—	—	—	—

<sup>1</sup> Official Estimate not available; 1953-54 figure carried over.<sup>2</sup> Central government expenditure figure.<sup>3</sup> Approved central government Estimate.

TABLE 15 Receipts of Eastern Regional Government,<sup>1</sup> 1951-60

(Thousand £)

	Actual Receipts <sup>2</sup>	Revised Estimates	Pre-liminary Estimates	Projections of Mission					Total 1955-60	
				1952-53	1953-54	1954-55	1955-56	1956-57		1957-58
Regional Share in Customs Duties and Excise										
Taxes .....	—	—	—	4,163	4,345	4,539	4,744	4,962	22,753	
Produce Sales Tax .....	—	—	—	374	384	392	400	410	1,960	
Regional Share in Individuals' Income Tax .....	—	—	—	77	80	82	84	87	410	
Other Direct Taxes .....	39	41	41	37	38	39	40	41	195	
Licenses and Internal Revenues .....	141	133	177	226	236	245	255	265	1,227	
Mining Royalties, etc. ....	1	2	3	1	1	1	1	1	5	
Fees of Court or Office .....	55	60	64	188	193	199	205	211	996	
Interest Receipts .....	13	16	13	66	66	66	66	66	330	
Other Nontax Receipts .....	292	629	459	361	368	376	384	390	1,879	
Extrabudgetary Receipts .....	12	22	27	—	—	—	—	—	—	
Total .....	553	903	784	5,493	5,711	5,939	6,179	6,433	29,755	
Code and other Grants from Federal Government.	3,889 <sup>3</sup>	4,340	4,587 <sup>4</sup>	—	—	—	—	—	—	
Development and Welfare Funds .....	821	1,003	1,033	—	—	—	—	—	—	
Development Loan Funds .....	92	135	183	—	—	—	—	—	—	
Total Receipts .....	5,355	6,381	6,587	—	—	—	—	—	—	

<sup>1</sup> Until 1954-55 including, thereafter excluding, Southern Cameroons.<sup>2</sup> Actual receipts for 1951-52 not available.<sup>3</sup> Excluding transfer of treasury balances in connection with establishment of separate regional financial administration.<sup>4</sup> Approved central government Estimate.

TABLE 17 Receipts of Native Treasuries, Local Governments, and Townships, 1951-60

(Thousand £)

	Actual Receipts	Approved Estimates		Projections of Mission						Total 1955-60	
		1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59		1959-60
1. <i>Lagos Town Council</i> <sup>1</sup> .....											
Rates .....	228	230	289	298	307	316	325	335	345	1,628	
Court Fees .....	14	15	15	15	15	15	15	15	16	76	
Other Local Receipts .....	168	73	74	76	79	82	85	88	90	424	
Total Local Receipts .....	410	318	378	389	401	413	425	438	451	2,128	
Grants from Federal Government and (until 1954) from Western Region .....	134	208	169	170	155	160	165	170	175	825	
Total Receipts .....	544	526	547	559	556	573	590	608	626	2,953	
2. <i>Northern Region Native Treasuries and Townships</i>											
Direct and Property Taxes .....	2,523	3,057	3,775	3,888	4,005	4,125	4,249	4,376	4,507	21,262	
Court Fees .....	131	153	172	177	182	187	193	199	205	966	
Other Local Receipts .....	608	624	600	618	637	657	676	696	717	3,383	
Grants from Non-Governmental Sources .....	65	114	146	—	—	—	—	—	—	—	
Total Receipts from Local and Non-Govern- mental Sources .....	3,327	3,948	4,693	4,683	4,824	4,969	5,118	5,271	5,429	25,611	
Grants from Regional Government .....	682	775	1,104	1,247	998	1,037	1,081	1,125	1,175	5,416	
Total Receipts .....	4,009	4,723	5,797	5,930	5,822	6,006	6,199	6,396	6,604	31,027	
3. <i>Western Region Native Treasuries and Local Governments</i>											
Direct and Property Taxes .....	900	1,022	1,169	1,204	1,240	1,277	1,315	1,354	1,395	6,581	
Court Fees .....	200	204	215	221	228	235	242	249	256	1,210	
Other Local Receipts .....	513	508	491	506	521	537	553	571	588	2,770	
Grants from Non-Governmental Sources .....	—	—	14	—	—	—	—	—	—	—	
Total Receipts from Local and Non Govern- mental Sources .....	1,613	1,734	1,889	1,931	1,989	2,049	2,110	2,174	2,239	10,561	

TABLE 16 Revenues of Southern Cameroons, Corresponding to Regional Receipts, 1955-60

(Thousand £)

	Projections of Mission					Total 1955-60
	1955-56	1956-57	1957-58	1958-59	1959-60	
Regional Share in Customs Duties and Excise Taxes .....	359	345	334	323	316	1,677
Produce Sales Tax .....	34	34	35	36	36	175
Regional Share in Individuals' Income Tax .....	5	5	5	6	6	27
Other Direct Taxes .....	5	5	5	6	6	27
Licenses and Internal Revenues .....	13	13	14	14	15	69
Fees of Court or Office .....	17	18	18	19	19	91
Other Nontax Receipts .....	31	32	33	33	33	162
<b>Total .....</b>	<b>464</b>	<b>452</b>	<b>444</b>	<b>437</b>	<b>431</b>	<b>2,228</b>

Grants from Regional and Federal Governments ..	157	220	279	678	1,008	1,164	1,264	1,368	1,500	6,304
Total Receipts .....	1,770	1,954	2,168	2,609	2,997	3,213	3,374	3,542	3,739	16,865
4. <i>Eastern Region Native Treasuries, Local Governments and Townships</i>										
Direct and Property Taxes .....	743	836	1,028	1,059	1,091	1,123	1,156	1,190	1,227	5,787
Court Fees .....	129	133	136	140	144	149	153	158	162	766
Other Local Receipts .....	105	119	144	148	152	157	161	166	170	806
Total Local Receipts .....	977	1,088	1,308	1,347	1,387	1,429	1,470	1,514	1,559	7,359
Grant from Regional Government .....	96	84	92	76	178	278	278	278	278	1,290
Total Receipts .....	1,073	1,172	1,400	1,423	1,565	1,707	1,748	1,792	1,837	8,649
5. <i>Southern Cameroons Native Treasuries</i>										
Direct and Property Taxes .....	95	107	109	112	115	118	122	126	130	611
Court Fees .....	15	16	17	17	18	18	19	19	20	94
Other Local Receipts .....	15	15	16	17	18	19	19	20	20	96
Total Local Receipts .....	125	138	142	146	151	155	160	165	170	801
Grants from Regional Government .....	20	20	15	15	30	31	32	33	34	160
Total Receipts .....	145	158	157	161	181	186	192	198	204	961

<sup>1</sup> See footnote 1 to Table 12.

TABLE 18 Receipts of Southern Cameroons

*(Thousand £)*

	Projections of Mission					Total 1955-60
	1955-56	1956-57	1957-58	1958-59	1959-60	
1. Revenues Corresponding to Regional Revenues (Table 16) . . . . .	464	452	444	437	431	2,228
2. Federal Revenues originating in Southern Cameroons . . . . .	799	797	798	801	807	4,002
3. <i>Deduct:</i> Southern Cameroons share of cost of federal government	450	450	450	450	450	2,250
4. Net Federal Revenues Attributable to Southern Cameroons (line 2 minus line 3) . . . . .	349	347	348	351	357	1,752
5. Profits of Cameroons Development Corporation . . . . .	200	200	200	200	200	1,000
6. Total Revenue Available to Southern Cameroons (lines 1, 4, and 5) . . .	1,013	999	992	988	988	4,980

TABLE 19 Estimated Financial Position of Federal Government, March 31, 1955

*(Thousand £)*

General Revenue Balance . . . . .	32,943
Revenue Equalisation Fund . . . . .	16,057
Loan Development Fund . . . . .	3,756
Renewals Funds . . . . .	2,814
Highway Capital Account . . . . .	1,479
Supplementary Sinking Fund <sup>1</sup> . . . . .	534
Proceeds of Loans <sup>2</sup> . . . . .	4,273
	61,856
<i>Deduct:</i>	
Loan and Development Loan Expenditures, 1953-54 and 1954-55 . . . . .	13,478
Funding of Widows' and Orphans' Pension Scheme . . . . .	4,230 <sup>3</sup>
Distribution of Reserves to Regional Governments . . . . .	7,000 <sup>4</sup> 24,708
Total . . . . .	37,148

<sup>1</sup> As of October 31, 1953.<sup>2</sup> Unspent balances as of March 31, 1953 plus £ 2 million loan from Marketing Boards.<sup>3</sup> Announced at presentation of 1954-55 Estimates.<sup>4</sup> As agreed by Lagos Conference.

SOURCE: Approved Estimates for 1954-55.

## APPENDIX D CAPITAL FORMATION DATA

TABLE 1 Gross Capital Expenditures on Fixed Assets, 1950-1952

(Thousand £)

Sector and Industry	1950	1951	1952
<i>Government</i>			
Agriculture, Forestry and Fishing .....	450	531	492
Mining .....	3	1	1
Railway .....	1,891	1,537	1,391
Other transportation and communications .....	2,459	2,860	4,330
Building and Construction .....	5,221	207	289
Administration and Services, n.e.s. ....}		5,792	7,102
Total .....	10,024	10,928	13,605
<i>Government Corporations</i>			
Agriculture, Forestry and Fishing .....	977	1,063	1,704
Mining .....	68	47	95
Manufacturing and Processing <sup>1</sup> .....	664	1,536	3,579
Transport and Communications .....	91	197	1,230
Trading and Business Services .....	48	18	286
Building and Construction .....	44	117	207
Administration and Services, n.e.s. ....	224	1,266	1,667
Total .....	2,116	4,244	8,768
<i>Major Companies</i>			
Agriculture, Forestry and Fishing .....	527	493	864
Mining .....	808	2,035	2,405
Manufacturing and Processing .....	271	573	947
Transport and Communications .....	813	1,274	704
Trading and Business Services .....	1,688	1,893	2,068
Building and Construction .....	276	348	577
Total .....	4,383	6,616	7,565
Total, Main Sectors .....	16,523	21,788	29,938
Other Enterprises and Personal Investment .....	20,077 <sup>2</sup>	20,212 <sup>3</sup>	25,800
Total, All Sectors .....	36,600 <sup>2</sup>	42,000	55,738

<sup>1</sup> Including electric power.

<sup>2</sup> Prest and Stewart estimates for 1950-51.

<sup>3</sup> Notional estimate of mission.

SOURCE: Department of Statistics, Lagos.

TABLE 2 Gross Capital Expenditure on Fixed Assets, by Type of Assets, 1952

(Thousand £)

Sector and Industry	Total	Vehicles	Plant, Machinery and Equipment	Residential Building	Office Bldg. and Construction	Mining and Agricultural Development n.e.s.
<i>Government</i>						
Agriculture, Forestry and Fishing .....	492	28	69	24	242	129
Mining .....	1	1	—	—	—	—
Railway .....	1,391	348	167	154	722	—
Other Transport and Communications .....	4,330	528	391	81	3,330	—
Building and Construction .....	289	73	152	—	64	—
Administration and Services, n.e.s. ....	7,102	261	349	1,638	4,854	—
Total .....	13,605	1,239	1,128	1,897	9,212	129
<i>Corporations</i>						
Agriculture, Forestry and Fishing .....	1,704	159	271	495	416	363
Mining .....	95	1	24	43	22	5
Manufacturing and Processing <sup>1</sup> .....	3,579	63	2,144	218	1,154	—
Transport and Communications .....	1,230	667	11	370	182	—
Trading and Business Services .....	286	7	37	45	197	—
Building and Construction .....	207	107	90	—	10	—
Administration and Services, n.e.s. ....	1,667	4	36	474	1,153	—
Total .....	8,768	1,008	2,613	1,645	3,134	368
<i>Major Companies</i>						
Agriculture, Forestry and Fishing .....	864	173	133	95	224	239
Mining .....	2,405	230	813	94	102	1,166
Manufacturing and Processing .....	947	50	431	226	240	—
Transport and Communications .....	704	461	25	99	119	—
Trading and Business Services .....	2,068	591	356	364	757	—
Building and Construction .....	577	136	331	71	39	—
Total .....	7,565	1,641	2,089	949	1,481	1,405
Total, Main Sectors .....	29,938	3,888	5,830	4,491	13,827	1,902
Other Enterprises .....	25,800	4,000	800	15,800	—	—
Personal Investment .....		5,200				
Total, All Sectors .....	55,738	13,088	6,630		34,118	1,902

<sup>1</sup> Including electric power.

SOURCE: Department of Statistics, Lagos.

*Notes to Tables 1 and 2*

*Government:* Figures relate to the fiscal year. To capital expenditures proper an allowance for administrative overhead expenses has been added. For this reason, and also because in the financial tables prepared by the mission purchases of motor vehicles have been classified as current expenditures, the figures shown here are higher than those included by the mission in capital expenditures.

*Corporations:* Most of the figures relate to the fiscal year. They include expenditures of the Regional Production Development Boards, Marketing Boards, Electricity Corporation, West African Airways Corporation, Lagos Executive Development Board, Cameroons Development Corporation, Colonial Development Corporation, Nigerian Railways Caterers, University College, University College Teaching Hospital, West African Institute of Social and Economic Research, Nigerian College of Arts, Science and Technology, and West African Institute of Oil Palm Research.

*Major Companies:* Figures are based on the replies to questionnaires. The companies were asked to supply figures for their accounting year ending between July 1 of the year shown in the heading and June 30 of the following year.

*Other Enterprises:*

(a) *Vehicles:* The estimates are based on the final sales value of all commercial vehicles and chassis, road haulage tractors, ships and boats imported during the year, including an allowance for duty, mark-ups and the revalue of locally built bodies, minus the revalue of vehicles purchased by government, corporations, and "major companies."

(b) *Plant and Machinery:* The figures represent the estimated sales value of 90% of the imports of sewing machines and estimated capital expenditures of small business firms assisted by loans boards, and other firms not included among the list of "major companies."

*Private Investment in Vehicles:* This represents 90% of imported cars and all bicycles at retail values. It is realized that in most countries these expenditures would be regarded as expenditures on durable consumer goods; in Nigeria, however, they are more appropriately regarded as capital equipment.

*Building:* The figures are based on estimates of cement consumption not previously accounted for. It should be noted that the estimates do not include the value of temporary houses and huts since these are considered "consumption" rather than capital goods.

## APPENDIX E TRADE AND PAYMENTS DATA

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### I PRICE AND VOLUME INDICES

The indices for the volume of trade in individual commodities are calculated directly from physical measures provided in the trade statistics. To obtain the indices for the total trade, these individual indices are weighted by the share of the respective items in the total trade during 1949-53 and totaled. As the individual items included do not cover the whole trade, the total obtained must be adjusted for the uncovered items. For this purpose it has been assumed that the price movements of the items included are representative of the price movements of the items not included. The total of the weighted items for each period was divided by the proportion of total trade over the period represented by these items. Thus the index of total exports for 1944-48 was obtained by dividing the total of the weighted items by 87.5, the percentage share of these items in 1944-48 trade.

Since the sample covers only half of total imports, the import index has a wide margin of error; but it seems unlikely that this affects the major movements of the index.

### II BALANCE OF PAYMENTS ESTIMATES

#### *Merchandise Exports and Imports*

Figures for merchandise trade were taken from the Nigeria customs returns. Imports were adjusted for customs undervaluations arising because buying commissions attributable to head offices located abroad are not included in the declared price. This item was estimated by Prest and Stewart as 2% of the imports of the principal firms which have 70% of the commercial trade.<sup>1</sup> It amounted to £ 1.1

<sup>1</sup> *Op. cit.*, p. 75.

million in 1950, £ 1.5 million in 1951 and £ 1.9 million in 1952. Similarly the commission of the Crown Agents on government purchases is included here. Currency notes and bullion are excluded.

There is a considerable amount—perhaps as much as £ 5 million or 5% of trade each way—of unrecorded trade with French territories which is not covered. It is presumed that it is largely self-balancing so that the omission does not cause a large net error.

### *Services*

*Travel* Payments cover travel expenditures of Nigerian residents abroad, of government scholars and of private students. Receipts include expenditure of nonresident travellers in Nigeria.

*Transportation and Insurance* Imports are valued on a c.i.f. basis; inward freight payments are included with imports. Payments shown cover passenger fares of Nigerian residents, payments to expatriate shipping companies for coastal transport and insurance premiums paid. Receipts cover primarily inland freight on goods transported to French territories, disbursements by expatriate shipping companies in Nigeria, net receipts from abroad of the West African Airways Corporation and insurance claims paid.

*Investment Income—Direct* Payments cover the total profit of expatriate companies in Nigeria after payment of income tax.

*Investment Income—Other* Payments cover the interest charges on Nigeria's public debt held in London. Receipts include all interest receipts on government balances held in London, as well as Nigeria's share (assumed to be 53%) of the West African Currency Board's accrued profits. The figures in this section are all on a fiscal year basis, except for the receipts of the Marketing Boards and of the Currency Board. The Currency Board's profits are estimated for a calendar year by averaging two years ending June 30.

*Other Government* Payments include £ 1 million to UAC for royalty rights in 1950, the defense contribution of Nigeria paid to the United Kingdom, expenses abroad for the selection of administration per-

sonnel, and pension payments. Receipts cover chiefly the expenditures of the U.K. Government on defense in Nigeria and other minor inter-governmental receipts, including the contribution towards the deficit of the West African Airways Corporation.

*Miscellaneous* Payments cover primarily private provident fund contributions and an estimated allowance for head office expenses in connection with the purchase of export crops by expatriate companies.

#### *Donations*

*Private* Payments cover remittances abroad by Nigerian residents and the assets of emigrants. Remittances do not include those for students, which are included under travel. Receipts cover assets of immigrants and the receipts of missions.

*Official* Receipts are Colonial Development and Welfare grants on a calendar year basis, and in 1952 include receipts from ECA and on U.K. Air Ministry reimbursements.

#### *Private Capital*

The figures entered cover physical investment in fixed assets and stocks by expatriate companies, less depreciation allowances. As pointed out in Technical Report No. 2, other items in the balance sheets of these companies are not covered. It is to be expected that this omission may amount to several millions of pounds in the three years.

#### *Official and Banking Capital*

*Changes in Nigerian Liabilities* Payments reflect the retirement of Nigerian public debt. Receipts cover loans raised in London, and in 1952 the purchase of West African Airways Corporation debentures by other West African governments.

*Changes in Nigerian Assets* The entries cover the net change in Nigerian assets, both long- and short-term. Payments represent the purchase of sterling securities or addition to short-term balances in Lon-

don. Receipts represent the reduction of short-term balances or the sale of sterling securities. The Currency Board figures cover the addition to the currency issued in Nigeria and the undistributed portion of the profits accrued to Nigeria (estimated under investment income). Except for these figures and those for the banks, which are based on the calendar year, the entries in this section refer almost entirely to the financial year.

### III STERLING BALANCES

#### *Marketing Boards*

The figure does not include £ 6.1 million of accounts receivable from the Nigerian Produce Marketing Company, Ltd. in London.

#### *Currency Board*

The figure shown is that appearing in the Digest of Statistics (Lagos) as the amount of currency in circulation in Nigeria, plus 8% to account for the excess of Currency Board reserves over the amount of currency issued.

#### *Central Government*

The figure includes sinking fund balances of £ 4.5 million.

#### *Other (Semi-Official)*

The holdings are principally those of the Post Office Savings Bank; Nigerian Railway; West African Institute for Oil Palm Research; University College, Ibadan; University College Teaching Hospital; and the Electricity Corporation of Nigeria. The £ 1.6 million holdings of the Custodian of Enemy Property are not included.

## IV TOTAL TRADE

## Total Trade, 1913, 1919-53

*(Million £)*

Year	Imports	Exports	Export Surplus as % of Exports	Year	Imports	Exports	Export Surplus as % of Exports
1913.....	6.3	7.1	11	1934.....	5.4	8.6	37
1919.....	10.8	14.7	27	1935.....	7.8	11.3	31
1920.....	20.7	17.0	-22	1936.....	10.8	14.8	27
1921.....	10.2	8.3	-23	1937.....	14.6	19.3	24
1922.....	10.3	8.9	-16	1938.....	8.6	9.5	9
1923.....	10.3	10.9	6	1939.....	6.8	10.3	34
1924.....	10.9	14.5	25	1940.....	7.5	11.4	34
1925.....	14.8	17.0	13	1941.....	6.5	13.6	52
1926.....	12.8	16.7	23	1942.....	10.5	14.3	27
1927.....	14.4	15.7	8	1943.....	12.4	15.0	17
1928.....	15.8	17.1	8	1944.....	15.8	17.1	8
1929.....	13.2	17.8	26	1945.....	13.5	18.0	25
1930.....	12.6	15.0	16	1946.....	19.8	24.6	20
1931.....	6.5	8.8	26	1947.....	32.6	44.3	26
1932.....	7.2	9.5	24	1948.....	42.0	62.5	33
1933.....	6.3	8.6	27	1949.....	58.2	81.1	27
				1950.....	61.9	90.2	31
				1951.....	84.6	120.1	30
				1952.....	113.2	129.0	12
				1953.....	108.2	125.3	14

SOURCE: Digest of Statistics, Lagos.

League of Nations: International Trade Statistics.

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