# PUBLIC HEALTH PROBLEMS

in 14 French Speaking Countries in Africa and Madagascar

## A SURVEY of Resources and Needs

Volume I

DIVISION OF MEDICAL SCIENCES National Academy of Sciences National Research Council



#### PUBLIC HEALTH PROBLEMS IN 14 FRENCH-SPEAKING COUNTRIES IN AFRICA AND MADAGASCAR

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#### FOREWORD

In 1959 the Division of Medical Sciences of the National Academy of Sciences-National Research Council undertook an extensive survey of the major health problems of the tropical regions of the world and the opportunities and resources for research in tropical health. A voluminous report was published in 1962.\*

In the course of this study a considerable library of information was assembled and valuable contacts with many correspondents overseas were established. Since that time the Office of Tropical Health of the Division, under the direction of Dr. Zygmunt Deutschman, has sought to maintain these channels of communication so that its files of information may continue to reflect the current scene.

There have been frequent discussions with officers of the Agency of International Development (AID) on health programs in many developing countries in tropical regions. The Division, therefore, was glad to accept an invitation from AID to prepare "an orderly inventory of available information on the main public health problems in 15 countries of Africa, formerly under French administration." A contract was signed in June 1965 and the results of the study are now offered in two volumes of which this is the first.

The preparation of the report was under the direction of Dr. Deutschman and was materially assisted by major contributions from Dr. B. B. Waddy, Reader in Tropical Hygiene, London School of Hygiene and Tropical Medicine. Dr. Waddy's firsthand knowledge of the health problems in several countries of French-speaking Africa was especially valuable. The Division is also indebted to many authorities in France, in Geneva and in Africa for important information and expressions of opinion.

The report is designed primarily as a factual inventory. No attempt has been made to develop recommendations that would reflect the evaluations and judgments of authorities on tropical health in the United States. Such opinions and recommendations as are found in the report represent a consensus derived from consultations with West African, European and international authorities experienced in the planning and execution of public health assistance programs.

It is the hope of the Division that the material contained in this report will be helpful to the Agency of International Development in its task of "evaluating the role of public health in economic and social development programs of these countries" and in "formulating questions requiring independent judgment relating to the choice of assistance programs."

> R. Keith Cannan Chairman, Division of Medical Sciences

\*Tropical Health: A Report on a Study of Needs and Resources. NAS-NRC Publication 996.

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## Acronyms for Organizations Concerned with the French-Speaking Countries of Africa

ADB AIPD	- African Development Bank (affiliated with UN ECA) - African Institute of Planning and Development
BCEAO BEI	- Banque centrale des Etats de l'Afrique de l'Ouest - Banque européenne d'investissements
CCCE CCTA	- Caisse centrale de coopération économique - Commission pour la coopération technique en Afrique (replaced by STRC)
DAC	- Development Assistance Committee (OECD)
ECA EEC EIB EPTA	<ul> <li>Economic Commission for Africa (UN)</li> <li>European Economic Community (Common Market)</li> <li>European Investment Bank (Common Market)</li> <li>Expanded Program of Technical Assistance (UN)</li> </ul>
FAC FAO FED	- Fund for Aid and Cooperation (replaced FIDES) - Food and Agriculture Organization (UN) - Fonds europeen de developpement
IBRD IDA IFC ILO IOTA	<ul> <li>International Bank for Reconstruction and Development (World Bank)</li> <li>International Development Association (affiliate of IBRD)</li> <li>International Finance Corporation (affiliate of IBRD)</li> <li>International Labor Organization (UN)</li> <li>Institut d'ophtalmologie tropicale en Afrique (OCCGE)</li> </ul>
OAMCE OAU OCAM OCCGE OCCGEAC OCCGEAC	<ul> <li>Organisation africaine et malgache de coopération économique</li> <li>Organisation of African Unity</li> <li>Organisation commune africaine et malgache (replaced UAMCE)</li> <li>Organisation de coordination et de coopération pour la lutte contre les grandes endemies</li> <li>Organisation de coordination et de coopération pour la lutte contre les grandes endemies en Afrique centrale</li> <li>Organization for Economic Cooperation and Development (replaced OEEC)</li> <li>Office de recherches sur l'alimentation et la nutrition en Afrique (OCCGE)</li> <li>Office de la recherche scientifique et technique outre-mer</li> </ul>
STRC	- Scientific Technical and Research Commission of the OAU (replaced CCTA)
UAM UAMCE UDE UDEAC UDEAO UDEAO UMOA UN UNESCO UNICEF	<ul> <li>Union africaine et malgache (replaced by UAMCE)</li> <li>Union africaine et malgache de coopération économique (replaced by OCAM)</li> <li>Union douanière equatoriale</li> <li>Union douanière et économique de l'Afrique centrale (replaced UDE)</li> <li>Union douanière des Etats de l'Afrique de l'Ouest</li> <li>Union monetaire ouest africaine</li> <li>United Nations</li> <li>United Nations Educational, Scientific and Cultural Organization</li> <li>United Nations Children's Fund</li> </ul>
UNT'A WHO	- United Nations Technical Assistance

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#### A SUMMARY AND THE MAJOR HEALTH PROBLEMS

I. The 15 Countries and Technical Assistance

Introduction. The 15 countries covered by this survey include 8 former territories of French West Africa, 4 territories of former French Equatorial Africa, the former French UN trusteeships of Togo and Cameroun (the latter with the southern part of the ex-British trusteeship) and the island of Madagascar. The 15 countries have in common the use of French as the official language. All but Guinea and Mali have a common currency—the CFA franc. The French form of centralized government and educational systems were retained by these countries.

The countries under review (except Guinea) became fully independent in 1960 and either elected to remain within the French Community or established special relations with France by agreements. Guinea, which became independent in 1958, has made some agreements with France, but none regarding technical cooperation and assistance.\*

The total area of the 15 countries is about that of conterminous United States and the total population is estimated at 42 to 45 million. Except for a short-lived union between Senegal and Mali (then French Soudan), independence resulted in the creation of countries with a population varying from less than 1 million (Gabon, Congo) to 4.7 million in Upper Volta and 5.5 million in Madagascar. This unfortunate fragmentation explains efforts made by the new countries to maintain some of the pre-existing ties or to create new common services and organizations.

<u>Common services and organizations</u>. Attempts to set up a strong common political, economic and cultural organization of the French-speaking countries began in 1960 with the <u>Union africaine et malgache</u> (UAM) but so far have not been fully successful. The new <u>Organisation commune africaine et malgache</u> (OCAM), created in February 1965 by the heads of 13 states (other than Guinea and Mali), is faced by grave political problems. The <u>Conseil de l'Entente</u>, set up by Ivory Coast, Upper Volta, Niger and Dahomey in 1959 to insure the control of common facilities (ports, railways) and the control of epidemics and epizootics, has also agreed on a customs union, introduced a solidarity fund and unified legislation which could facilitate future federation of these countries.

All of the 15 countries are members of the United Nations and its specialized agencies and all (except Guinea) became associate members of the European Economic Community.

Common economic and financial organizations for the West African group of countries (excluding Guinea) include the monetary union, a central bank and the West African Customs Union. Cameroun and the four countries of Equatorial Africa have a separate monetary union, central bank and customs union. The latter union

In December 1965 relations were strained by France's request for the recall of the Guinean ambassador in Paris.

was expanded in January 1966 into an economic and customs union of the five states.

Organizations grouping four or more of the 15 countries deal with telecommunications, aerial safety, control of pests and locusts and higher education.

<u>Regional projects</u>. Regional projects of interest to several countries include the Senegal River Committee, the Niger River Commission and the Chad Basin Commission. A common airline company organized by 12 of the countries was opened in 1961.

<u>Common health services</u>. The need for a technical coordinating body for the control of endemic diseases in the new countries of West Africa led to the creation (in 1960) of the <u>Organisation de Coordination et Coopération pour la Lutte contre les grandes Endemies (OCCGE) which controls a number of special institutes located in Dakar, Bamako and Bobo-Dioulasso (Upper Volta), headquarters of the organization. A similar organization (OCCGEAC) with headquarters at Yaoundé was set up in 1965 by the four countries of equatorial Africa and Cameroun.</u>

<u>Gross national product and medical assistance</u>. The GNP of the 15 countries varies, according to several estimates, between \$50 per capita income per year in Upper Volta and Chad to \$200 in Gabon, Senegal and Ivory Coast. Per capita assistance to these countries by members of the Development Assistance Committee (DAC) is evaluated (1963) at \$8.30.

The vast area of the 15 countries is served by about 2000 fully trained physicians or about 1 per 20,000, varying from 1 per 11,000 in Gabon to 1 per 65,000 or even 1 per 80,000 in the sub-Saharan countries of Niger, Chad and Upper Volta. The area has about 74,000 hospital beds (1 bed per 560 - 600 inhabitants) in 135 hospitals and less than 900 maternity clinics.

Total aid by DAC countries. The flow of long-term financial resources from member countries of DAC to all developing countries amounted in 1963 to \$8145.5 million, of which some \$372 million or 4.5 per cent of the total went to the African countries under review.\* France's contribution to the assistance programs of the world is considerable, accounting in 1963 for 14 per cent, while that of the United States was 60 per cent of the total. France has further the highest number of technical assistance personnel sent to developing countries and of foreign students and trainees.

<u>French cooperation and assistance</u>. The total resources provided by France for the countries under review<sup>\*</sup> represent about one quarter of French assistance to developing countries, <u>i.e.</u>, \$340 million in 1961 and \$382 million in 1962. The latter amount represents total disbursements under bilateral aid, including \$303 million of government funds and \$79 million of private funds. In 1965, France's budget provided only \$227.5 million of government funds for the 14 countries, of which \$157.4 million was for personnel, training grants and technical assistance, \$44 million in investments and payment credits and \$25.9 million in military aid.

The total of France's disbursements in 1963 of \$382 million does not include

Excluding Guinea but including French Somaliland.

the cost of price supports for a number of products of the 14 African countries (groundnuts and oil, rice, coffee, bananas, sugar) which probably could add at least 10 per cent to the total official and private aid.

The machinery for assistance operations includes the Ministry of Cooperation,\* a high level council, a central fund for economic cooperation and the Fund for Aid and Cooperation (FAC). FAC controls the funds destined for the 14 countries of Africa. It has two main accounts: (i) the operating budget dealing with operating credits (about \$33 million in 1964) and grants (\$102 million provided for 1965); (ii) the equipment budget which provided \$22.5 million in 1965 for projects of general or regional interest and \$56.2 million for national programs accepted by the Ministry. Public health projects financed by FAC, 1959-1964, represented about \$22.5 million of which approximately one-third was for disease control.

Technical public health personnel provided by France numbered 800 (November 1, 1964). Physicians provided by the Ministry of Cooperation to these African countries numbered 575 (September 1, 1965). Two-thirds of these physicians are selected from graduates of the Marine Corps Medical School; others are recruited among civilians by the Ministry of Health. Technical and scientific personnel is provided by a remarkable governmental organization—Office de la Recherche scientifique et technique outre-mer (ORSTOM).

Medical research in Africa is conducted by the five Pasteur Institutes, four institutes under the <u>Organisation de Coordination et de Coopération pour la Lutte</u> <u>contre les Grandes Endemies</u> (OCCGE), one institute in Madagascar, and the medical school of the University of Dakar.

Teaching in African secondary and higher education institutions is mainly insured by some 4000 French teachers. Some 3500 African stipendees studying in-France include 1700 at university level, of which 345 are medical students.

Private French medical assistance is provided mainly by Catholic missions which operate in all 15 countries under review. There are some 450 Catholic institutions with a staff of 1400. French Protestant missions operate some 50 institutions in 6 of the 15 countries.

<u>French assistance policies</u>. The French policies of cooperation with developing countries were reviewed by a special commission in 1963. The Commission's report recommended that priority be given to assistance to French-speaking countries of Africa south of the Sahara and to efforts to stimulate production. The lack of highly qualified personnel was recognized as the main problem of the developing countries. In the field of public health, the report pointed out that the provision of a large number of French physicians must be considered as a stop-gap arrangement. It warned against excessive investments in new hospitals which invariably result in additional operating costs requiring further support by France.

The report divided the African countries into three categories in accordance with the number of years (5 to 30) for which they will require continued technical assistance in public health. These categories were based on the estimate of time

Became a Secretariat of State in the Ministry of Foreign Affairs in January 1966.

required by the new countries to train their own physicians. More discipline regarding future African physicians was advocated. African countries should be able to require African medical students to return home after 6-7 years of study; to prevent their costly specialization; and to find a way to compel young physicians to serve in rural areas. Private practice in these poor countries should be discouraged. African paramedical personnel should be trained in Africa, stipends for study in France being granted only after 5-10 years of service.

In connection with planning for future needs, attention was drawn to the changing role of the French medical advisers in the health administration and in central hospitals. It warned against increasing demands for new hospitals and medical centers which most of the new countries cannot afford. Preventive medicine in rural areas remains a major problem as presently only the French marine corps doctors are trained for this task. In view of the inadequate distribution of drugs and supplies, it was also suggested that procurement be taken over by France for a period of five years.

A special report prepared for the Commission stated that WHO's technical advice often disregards financial and staff implications to the African country and to France. It recognizes, however, the need to reorient medical teaching in France towards public health to bring it nearer to the "international" standard advocated by WHO and required for action in rural areas of Africa.

In 1965, the lack of progress in the replacement of French by African physicians and the gradual deterioration of working conditions of French doctors in Africa prompted the Ministry of Cooperation to adopt a new policy advocating the regrouping of medical aid in rural areas into a network of health centers, each with two or three physicians. The proposed reorganization will require planning and additional funds of which France is willing to provide a share. It is suggested that further funds should be sought from multilateral or bilateral sources.

U.S. AID assistance. The United States, most of the Western European countries, USSR, and a few other countries have concluded technical assistance agreements with some of the African countries under review. U.S. AID's assistance during FY 1964 amounted to \$32.7 million of which \$12.9 million was for technical cooperation with the 15 countries.

A total of 16 projects in 12 countries and one regional (measles control) project were in progress during FY 1965, at a cost of \$2.8 million of which \$1 million was for the measles control program. Four projects related to water supply and development of water resources (in Cameroun, Ivory Coast, Madagascar and Senegal); other projects included assistance to endemic disease control services (in Gabon, Niger, Upper Volta), village development and special training (in Mali, Senegal, Togo), rural health and rural development (Togo), school health education (Chad), improvement of health services (Mauritania) and health planning assistance (Central African Republic).

The regional program of measles control included during FY 1965 assistance to Ivory Coast, Guinea, Mauritania, Mali, Niger and Dahomey. As of July 1966, the U.S. Government will assist, in the countries under review for a period of five years, the measles control and smallpox eradication programs.

Assistance by countries other than France and U.S. Aid by West Germany is considerable and consists of long-term credits and technical assistance; contributions

in the field of public health include the construction of a nursing school. water supply works in Conakry, a hospital at Diourbel (Senegal) and a public health institute at Lomé. Israel has formal agreements with 10 of the countries; effective training programs in Israel for government officials and agricultural leaders are most valuable to the French-speaking African countries, except for higher academic courses (agricultural engineering, medicine) which are given in English. Italy is dealing mainly with planning and construction projects. China (Taiwan) whose aid was confined to rice cultivation projects has recently made a grant to Chad for reconstruction in the town of Fort Lamy. USSR's aid to Guinea and Mali consists of long-range credits. In Guinea, USSR built a 500-bed hospital and in Mali its mission includes some 20 physicians. Projects under contract are also in progress in four other countries. The UAR has cultural and other agreements with six of the countries. Communist China, recognized by 6 of the 15 countries, provided credits and gifts to Mali and Guinea and a considerable number of advisers to the latter country; long-term loans were granted to the Congo (Brazzaville) (1964) and to the Central African Republic (1965). The latter country, however, severed diplomatic relations with Communist China in January 1966.

<u>Multilateral assistance programs</u>. The European Development Fund (FED) of the European Economic Community (EEC) approved from 1958 to June 1964, 270 projects in the countries under review, excluding Guinea, at a cost of \$380 million. Of these, 64 health and sanitation projects were credited with \$58.4 million. A new convention signed by EEC with the African associated states (which include the 14) will provide, for 1963-1968, \$730 million of which \$500 million is designated for economic and social investment and general technical cooperation.

The International Bank for Reconstruction and Development (IERD) provides long-term loans through its affiliate, the International Development Association (IDA), and attempts to develop capital markets through the International Finance Corporation (IFC). The IERD has a West African bureau at Abidjan to help in identifying projects and to assist in preliminary studies.

United Nations technical assistance activities are being carried out under the Expanded Program of Technical Assistance (EPTA), the UN regular program and the UN Special Fund. EPTA, financed by voluntary contributions from member governments, coordinates programs of the UN and its specialized agencies. In 1964, EPTA projects in the 15 countries accounted for \$4.9 million of which only \$856,000 was for WHO projects and \$686,000 for UN technical assistance projects. UN Special Fund, also financed by voluntary contributions from member governments, (\$331 million from 112 countries, 1959-1964) funds pre-investment studies and long-range programs; most of the countries under consideration benefited from these loans. Over \$25 million were provided for projects of interest to 9 of the 15 countries (Niger, Senegal, Guinea, Mali, Central African Republic, Chad, Cameroun, Togo and Madagascar) in 1965.

The Economic Commission for Africa (ECA) coordinates action of the UN and its specialized agencies in Africa and recommends promising projects. ECA, located in Addis Ababa, opened a sub-regional bureau for West Africa at Niamey in 1965.

The World Food Program, sponsored by the UN and the FAO as a three-year experiment (1963-1965), provides food in lieu of payments for development projects and also for a number of child-feeding programs in 10 of the 15 countries.

UNICEF, working in close cooperation with WHO and FAO, has allotted from 1960

to 1964 about \$6 million for assistance in several regional projects and for 54 projects in the 15 countries (for maternal and child health, disease control, nutrition, vocational training, etc.).

WHO assistance to the 15 countries in 1965 involved a technical staff of 99 at a cost of \$1,682,000, of which \$815,000 came from the regular budget and \$867,000 from UN technical assistance funds. Malaria control programs accounted for 20.6 per cent of this total (staff 30), public health administration for 19 per cent (staff of 12), environmental health for 14.2 per cent (staff of 13), nursing for 13.5 per cent (staff of 17), maternal and child health for 9 per cent (staff of 11) and education and training of medical and paramedical personnel for about 9 per cent of the total expenditure.

FAO cooperates with WHO in nutrition projects and in the technical supervision of projects funded by UNICEF. FAO participated in nutrition programs in 12 of the 15 countries under review.

National and health planning. Planning of priorities in the various branches of economic life and machinery for planning exist at present in all of the 15 countries (see Chapter IX).

Assistance by WHO and U.S. AID has been provided for national health planning. Eight of the 15 countries have special plans for health.

#### II. Major Health Problems

<u>Communicable diseases</u> still represent the most important factor in the health of Africa, outranking under-nourishment, but both factors are closely linked. Control measures should be aimed at increasing the efficiency of the agricultural labor force mainly during the crucial planting season. Indeed the injection of additional energy during a single planting season may have a trigger effect on the agricultural production cycle. The resulting improvement in the food situation will also influence the resistance to disease, affect general and infant mortality and may stimulate the desire and ability to deal with sanitation problems.

Varying intensity and incidence of communicable diseases correspond to the sharply defined climatic zones of West and Equatorial Africa. The methods of control depend upon the manner of transmission of the arthropod-borne, water- or food-borne and the air-borne diseases. Arthropod-borne infections (malaria, trypanosomiasis) are controlled by attacks on the insect-vector, by breaking the contact between human host and vector or by prevention or treatment of human cases. Contact diseases (leprosy, treponematoses, trachoma) recede, as a rule, as general standards of personal hygiene rise. Thus cheap and abundant water supply may be more effective than campaigns with treatment teams; prevention by mass treatment of all cases is the next step.

Water-borne intestinal infections are best dealt with by environmental sanitation and health education. Many air-borne diseases (smallpox, cerebrospinal meningitis) can be limited by vaccination or chemoprophylaxis, but raising standards of living is important.

The disease problems of tropical Africa should be viewed according to the

ability of such diseases to (1) kill persons of all ages, (2) produce physical or mental inefficiency, and (3) kill infants and young children.

Trypanosomiasis and cerebrospinal meningitis have been the greatest killing diseases, and both could recur on a major scale if their control were neglected. Malaria, yaws, onchocerciasis and (wherever it occurs) guineaworm are among the most important crippling diseases. Malaria, intestinal diseases, measles and faulty weaning are among the greatest causes of child death.

<u>Malaria</u>. The main and most effective vectors of malaria—<u>Anopheles gambiae</u> and <u>A. funestus</u>—in tropical Africa insure continuous transmission without epidemics (stable malaria). Attempts to interrupt transmission of the disease in the savannah by spraying with DDT have failed, but it is believed that residual spraying could interrupt transmission in forest zones. Thus spraying alone will not control and ultimately eradicate malaria carried by <u>A. gambiae</u>, and other control methods have been carefully explored during recent years. The WHO-assisted center at Lome trains the personnel for malaria pre-eradication programs in the countries under review. Meanwhile, malaria in African adults continues to cause only two to seven days of fever per year, responding to a single dose of an antimalarial drug. Pending new prospects of eradication of <u>A. gambiae</u>-carried infection, control measures have to rely on protecting young children by chemoprophylaxis and making drugs readily available to the public.

<u>Trypanosomiasis</u>. Trypanosomiasis infection due to <u>Trypanosoma gambiense</u> and carried by the <u>Glossina palpalis</u> group of tsetse flies was formerly epidemic and is still present in most of West and Equatorial Africa. Ecological factors limit the distribution of tsetse flies and the man-fly contact—the bases of transmission.

Sleeping sickness is controlled by mass diagnosis, treatment, tsetse control and mass prophylaxis with pentamidine (lomidine), but eradication of the disease would be difficult and costly. Residual foci in forest areas are a constant menace, as workers from savannah areas may contract the disease and bring it back to their villages. This potential danger would justify compulsory prophylactic injections to workers in the forest foci and to all itinerants. Such lomidine prophylaxis can reduce incidence, however, without actually stopping transmission. Improved diagnostic methods may lead to a more selective treatment of cases in residual foci.

Yellow fever. Among the arthropod-borne virus diseases, yellow fever, carried from man to man by <u>Aedes aegypti</u>, is by far the most important. The French neurotropic virus vaccine, widely used since 1940 in all countries under review (over 100 million vaccinations up to 1962), is not used at present in children under 10 years of age on account of its tendency to produce post-vaccinal encephalitis. The Pasteur Institute in Dakar wishes to commence the production of 17D vaccine for vaccination of children.

Leprosy, treponematoses and trachoma. Among the contact diseases, leprosy, yaws, endemic syphilis and trachoma readily respond to treatment and are mainly organizational problems.

Leprosy is widespread in the countries under review. Cases diagnosed, mostly by mobile units, require a network of treatment stations and trained staff to insure the prolonged treatment and to keep lepromatous lepers under observation or treatment for life. Over 500,000 cases have been diagnosed in seven countries of West Africa and the progress of the disease has been arrested in about one-half of them. Specialized training in leprosy control is provided at the Marchoux Institute at Bamako.

Yaws, the spirochetal disease causing florid rashes in children, has been practically eliminated from savannah areas. Penicillin campaigns have, however, not eradicated yaws in the forest areas. A control campaign was carried out with determination in Ivory Coast where, however, the originally recommended single dose of PAM has now been replaced by three injections of benzathine penicillin given to those found positive by the Kline test performed on every person.

All venereal diseases are common in tropical Africa, but serological surveys (in Abidjan, Dakar, Bamako) give ambiguous or conflicting results regarding the prevalence of venereal syphilis.

Trachoma, a common disease outside the forest area, is the main cause of blindness. Antibiotics and sulfonamides provide at present a ready cure.

<u>Bilharziasis</u> (schistosomiasis) due to <u>Schistosoma haematobium</u> and <u>S. mansoni</u> is found in all countries under review. Peculiarities of their life cycle and the dependency of the two schistosomes on the snail intermediate hosts (<u>Bulinus</u> and <u>Biomphalaria</u> species) account for the focal distribution of the human infection. Except for limited snail control with carbamate of zinc (zirame), efforts to control bilharziasis have failed so far. Absence of prospects for effective control of the disease explains the lack of interest of health authorities in a comprehensive survey of the situation. However, it is known that important foci due to <u>S. haematobium</u> exist in Senegal, Ivory Coast, Mali, Mauritania, Niger and Chad. The importance of bilharziasis as a major public health problem is still debated. However, freshly introduced infection into the area of an irrigation project may cause serious invalidism in the labor force.

Filariasis due to <u>Wuchereria</u> <u>bancrofti</u> is transmitted by the <u>Culex pipiens</u> <u>fatigans</u> mosquito and the <u>Anopheles</u> species. Increasing urbanization favors the spread of <u>C. pipiens</u> <u>fatigans</u>. Bancroftian filariasis responds to treatment with hetrazan. OCCGE teams are engaged in surveying foci of the disease prior to attempting control projects.

Onchocerciasis. The microfilariae of Onchocerca volvulus migrate in the human skin and cause pruritic dermatitis; invading the eye, they may cause blindness. In the savannah between 10° and 14° N latitude, blindness rates of more than 10 per cent are frequently found. Higher rates among males can lead to the extinction of an agricultural community through starvation.

The blackfly <u>Simulium damnosum</u>, the main vector of onchocerciasis, breeds in swift running water and the nuisance caused by its bite makes it one of the world's worst pests. The combined effect of mass blindness and the blackfly nuisance leads to a progressive retreat from rivers with resulting denudation of the watershed and soil erosion. The disease and its vector constitute a major social scourge and an economic threat. Building of numerous small dams has recently extended the range of the fly and its breeding season.

Treatment of the disease is possible but would be a lengthy process, as probably some 3 million are infected in the Volta River focus alone.

Control of the vector can be organized because <u>S. damnosum</u> larvae are susceptible to DDT, but the wide range of flight of the insect requires planning such control measures in terms of complete river systems. A WHO-sponsored project in the Volta River basin will commence in 1966. A promising control project, deserving support, is planned by OCCGE in Ivory Coast and Upper Volta.

<u>Guineaworm infection</u> (dracontiasis) is a cause of serious disablement, mostly coinciding with the planting season. To complete its life cycle, the guineaworm requires the presence of the water flea <u>Cyclops</u>. Properly constructed wells or regulated water supply would bring the transmission of the parasite to an end.

<u>Cerebrospinal meningitis, smallpox, measles and tuberculosis</u>. This group includes diseases: (1) of special importance to areas outside the forest zone, such as cerebrospinal (meningococcal) meningitis and smallpox, (2) measles, the cause of high mortality among children, and (3) tuberculosis, probably the most important emerging health problem of Africa south of the Sahara.

Cerebrospinal (meningococcal) meningitis — the greatest killing disease of countries bordering on the Sahara — is still feared in dry countries extending from Mali to the Central African Republic. The case-fatality rate has been reduced to less than 10 per cent since the introduction of sulfonamides and standard treatment is based on one dose of sulphamethoxypyridazine. However, the appearance of sulfaresistant strains of meningococcus revived the proposals for vaccination. Experimental vaccines held in stock by OCCGE await epidemic conditions suitable for a controlled field trial. Stocks of sulfa are held in every country, and a WHO central drug deposit was set up at Niamey to cope with outbreaks of this unpredictable disease.

Smallpox is still present in all of the 14 countries of West and Equatorial Africa (about 39,000 cases in the five-year period, 1960-1964). Most countries aim at vaccination of the entire population once every four years, but vaccination levels are irregular in various parts of each country. Rapid decrease of potency of dried vaccine after being made up with glycerin, incompetence of vaccinators and the difficulty of reaching the entire population of a village are blamed for past failures to control the disease. WHO eradication programs will require strict adherence to a number of rules and international coordination and timing to be successful. The U.S. Government made a commitment to support the smallpox eradication program in 19 African countries for a period of five years from July 1966. The countries covered include those under review except Madagascar.

Measles is a lethal disease in small children and its incidence is high in all countries under review. The highly successful U.S. AID-assisted vaccination project (800,000 children) in Upper Volta with live Enders (Edmonston B) vaccine has now been extended to Dahomey, Ivory Coast, Guinea, Mali, Mauritania and Niger, aiming at the vaccination of 1 million children. A program for Cameroun was planned for FY 1966. The new (1966-1971) U.S. Government measles control program will extend vaccination to most countries under review. Experiments are also in progress with a combined smallpox-measles vaccine.

Tuberculosis is a serious problem in Africa. Pilot tuberculin tests (in Upper Volta, Ivory Coast, Chad and Mali) only begin to disclose the importance and extent of the prevalence (in the absence of any mortality data). A new case-finding method advocated by WHO, provides for diagnosis in dispensaries and indiscriminate BCG vaccination,  $\underline{i} \cdot \underline{e} \cdot$ , without tuberculin testing. Large-scale BCG vaccination

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has been carried out in one country-Chad-and among schoolchildren in Bamako and other urban areas. The mobile units will soon expand BCG vaccination but domiciliary treatment will have to await the development of the fixed dispensary system.

In the absence of reliable numerical data, it is difficult to form an opinion on the relative importance of the main diseases. According to a statement by the French Ministry of Health, malaria occupies the first place among the disease problems in 10 of the 15 countries, tuberculosis occupies the first place in Chad and Gabon and the second place (after malaria) in Ivory Coast, Cameroun and Guinea. Onchocerciasis is believed to be the main disease problem in Upper Volta and Guinea. Leprosy is still a problem for the health administrations of some 10 countries; it occupies the first place in the Central African Republic. Trypanosomiasis is mentioned as a potential danger in 4 of the countries and cerebrospinal meningitis is an important problem in the sub-Saharan countries.

Among non-communicable diseases, protein malnutrition is often mentioned. Infant mortality is believed to be high in most of the countries.

Problems other than control of communicable diseases. The control of endemic diseases is still the main health problem; vaccination campaigns (against smallpox, yellow fever and measles) as well as chemoprophylaxis and treatment of malaria, leprosy or cerebrospinal meningitis deserve active support. Pending the organization of peripheral health services and static rural health centers the control of endemic diseases by mobile health units will remain indispensable.

The most pressing health problems of the 15 countries, according to the consensus of opinion, fall into the following broad categories (1) training of medical and paramedical personnel, (2) rural health services, (3) water supply in rural areas, (4) health education, (5) research, (6) health and vital statistics. These categories have been listed in the order of their importance. However, in view of the time factor in obtaining significant results, it is thought that provision of water supplies in rural areas would serve public health and rural development in the shortest period of time.

<u>Training of medical and paramedical personnel</u>. The shortage of medical personnel is at present and will remain in the near future the major factor in slowing down the expansion of medical assistance and the development of rural areas.

The distribution of the 2000 fully trained physicians (one third of whom are on loan by France) is most uneven, with considerable variation from country to country and with heavy concentration in urban areas. In Senegal, for instance, 160 physicians reside in Dakar and about 40 outside the capital serve a population of 3 million.

About 650 medical students from the countries under review study in France and in the three medical schools offering a full six-year program—Dakar, Abidjan and Tananarive. In addition, there are in Madagascar some 125 students at the old Tananarive Medical School (five-year study program). The enrollment of first- and second-year medical students at these schools is low and it is doubtful whether in the near future the new countries will have at their disposal more than 50 new African doctors per year.

The African School of Medicine and Pharmacy established at Dakar in 1918 for training of medical assistants (<u>médecins</u> <u>africains</u>) on a five-year program became

a Faculty of Medicine in 1950; a medical faculty was created in 1961 at the University of Madagascar in addition to the old School of Medicine and Pharmacy set up in 1896 and a Faculty of Medicine was opened at Abidjan in March 1963. Plans are being made to open a Faculty of Medicine at Yaoundé in 1968.

The three medical faculties provide at present teaching covering the full sixyear curriculum in accordance with the French program. Proposals were recently made to re-establish the five-year training program of <u>médecins intermediares</u>. In spite of its rejection by the majority of governments, the five-year program is still favored by some heads of African health services. As is known, this system continues to be used in Madagascar and will probably be adopted by Mali and Guinea in their future joint school of medicine. The possibility of reviving a five-year training program for African doctors as a stop-gap measure is well worth considering.

As is known, France supports most of the cost of higher education institutions and retains the control of universities in matters of program, nomination of the <u>recteurs</u> and the teaching staff. In 1965, France provided \$7.5 million for salaries of teaching staff; \$6 million was contributed to the budgets of the three universities.

The Dakar Medical School, originally planned to serve most of the Frenchspeaking countries covered by this report, had in 1964-1965 a teaching staff of 44 for a total enrollment of 244. The reputation of the school, by international standards, is good, but its lack of impact on public health and <u>médecine de masse</u> in Africa makes it imperative, according to Prof. Sankalé, to orientate its programs toward preventive medicine and epidemiology.

The question of teaching of public health was discussed by medical experts of the French-speaking countries at a symposium held at Dakar in January 1965. The conference, presided over by Prof. Payet, dean of the Dakar School, recommended that public health teaching should be developed within the university; it should be done by specialists (public health, epidemiology, social medicine); students should participate in field surveys. Postgraduate initiation in public health for physicians could be a special stage linked with the teaching of tropical medicine and practical work in one of the institutes of OCCGE. A special postgraduate diploma was thought to be desirable by those who wish to specialize in health administration and planning. It was suggested that the small number of physicians requiring such diplomas would not justify the planning for a special public health school in Dakar. However, a special practical stage in Africa should supplement a diploma obtained abroad. WHO has arranged to provide for the Dakar School in 1967 a visiting professor of public health to promote postgraduate public health training. Further assistance in teaching and in practical field work in public health will be required but the choice of qualified experts able to teach in the French language is limited.

The number of nurses and assistant or auxiliary nurses in the countries under review, estimated at 12,200 to 13,500, corresponds to 1 nurse per 2700-3200 inhabitants; of these, about 6 per cent were fully trained (1962). About 2000 midwives (1 per 21,000 inhabitants) were registered in the countries under review; 15 per cent were fully qualified, 45 per cent certificated and 40 per cent non-certificated auxiliary midwives.

The need for better qualification of nurses and midwives and for new training facilities has been fully recognized by all countries under review and some

encouraging results have been obtained mainly through multilateral assistance (see Chapter XVI). There is a further need to upgrade the training of auxiliary staff required for service in rural areas. Assistance is also required for a higher nurse training institution to be set up in Dakar. The WHO project intended for French-speaking countries—the Center for Post-Basic Nursing Education in Dakar—was terminated in 1965.

In connection with the public health laboratories which will be required in the countries under review, a careful study was made of the problem of training laboratory technicians. Plans were made for such training at the Pasteur Institute, Brazzaville and also under OCCGE. Plans for the <u>Ecole de Laborantins</u> at the <u>Centre</u> <u>Muraz</u> were discussed by OCCGE in November 1965. Rapid implementation of these plans will, it is hoped, provide the indispensable staff for the new public health laboratories.

<u>Rural health services</u>. The development of peripheral health services within the existing manpower resources is now recognized as the most urgent problem facing the new health administrations. Unfavorable prospects for increasing the staff of mobile units makes the integration of all medical personnel in a single scheme of rural health services essential.

WHO advisers have given special attention to the establishment of an organized network of peripheral health units. Thus the assistance to malaria pre-eradication aims at the development of basic health services on which malaria eradication can be built; such assistance is currently provided to nine of the countries under review. Assistance in the development of rural health services is also given to Madagascar and assistance in the development of community services to Cameroun.

The question of integration of the mobile units for control of endemic diseases into a broader scheme of basic health services or their articulation with static medical assistance has been studied by OCCGE. Gradually a new pattern of polyvalent health centers with limited mobile unit work is being developed. Meanwhile, Cameroun has already implemented a system of health centers based on <u>département</u> (or regional) centers of preventive medicine separate from the curative medicine and hospital service.

The French Ministry of Cooperation requested the ministers of health (June 1965) to give a high priority to this reorganization of rural health services. This action will require, in the near future, assistance in planning and in building individual health centers and also assistance in training or retraining of the paramedical personnel for the new tasks.

France is willing to contribute financially to the reorganization, but the new scheme will permit the financing of individual health centers by multilateral or bilateral sources other than France.

The work pattern of the health centers and their articulation with mobile units will differ in various regions and according to area served. Some interesting patterns of activity could be studied. OCCGE, for instance, suggested that a pilot health center could be set up in the Dori district of Upper Volta, where U.S. AID has helped to develop water resources and to set up a demonstration cattle ranch, which would serve a wide sahelian area.

It is desirable that a rural demonstration area or a rural training center be

located near a school of medicine. Such a training center for rural health work could be set up in connection with the Abidjan medical school.

Lack of funds for actual buildings,  $\underline{e} \cdot \underline{g}$ , health centers and their indispensable staff quarters, not infrequently holds up projects for which staff and equipment could be obtained from international or other sources.

<u>Water supply in rural areas</u>. Several rural water supply schemes have been initiated by WHO with UNICEF assistance. WHO has also been stressing the need for close collaboration between ministries of health, of public works, and of agriculture. Water supply projects were funded by FED in 11 of the 15 countries (1958-1964). U.S. AID has assisted water supply projects in Cameroun, Madagascar, Senegal, Ivory Coast and Upper Volta. There is, however, a need for further assistance. In view of its importance to the development of most of the areas under review, a comprehensive survey of resources, future needs and planning activities would be desirable. Such a survey would permit planning an assistance program in areas relatively neglected by the French technical assistance and other bilateral programs.

Health education. During the last three years most of the countries under review decided to develop health education services as an integral part of the public health services particularly in rural areas. The most difficult problem still remains the lack of trained staff at the postgraduate level. WHO is assisting four of the countries (Ivory Coast, Senegal, Upper Volta and Togo) in establishing health education units in the Ministries of Health and training programs. A program for training in health education methods is being developed at the Dakar University. Health education has been discussed by OCCGE and by a special technical conference. OCCGE decided to integrate health education in the teaching provided at its school at Bobo-Dioulasso. Arrangements will be made to send specialists to Paris (to the Centre National d'Education Sanitaire, Le Vesinet) or to Montreal (Canada) for training. Health education has great potentialities in the French-speaking countries, not only in rural areas but also in the training of teachers and future leaders. An effort to provide teaching material in the French language and postgraduate training for a number of teachers would well deserve consideration.

Research. Medical research in the countries under review is conducted by five Pasteur Institutes, four institutes under OCCGE, the Medical School at Dakar and one institute in Madagascar.

Current research connected with the control of endemic diseases and in relation with field surveys is carried on in the <u>Centre Muraz</u>. Some of the work, for instance, on trials of insecticides is done on contract with WHO. There are a number of activities in immunochemistry, entomology and parasitology which could be expanded and which would be indispensable in connection with any regional project in the control of onchocerciasis, filariasis and bilharziasis. Activities in the field of nutrition of the ORANA in Dakar are of obvious practical interest to the African countries. Research on subjects, such as aflatoxins, is of worldwide interest. Among the Pasteur Institutes, the Institute at Dakar is by far the most important. Although its role as the main research center is recognized by the West African countries and the government of Senegal, the Institute is still financed mainly by the Pasteur Institute in Paris.

Some of the research is done in collaboration with OCCGE. This is related to

case-finding and diagnostic methods in trypanosomiasis and to rickettsial diseases in West Africa. Contracts with WHO include studies of abnormal hemoglobins and G-6-PD deficiencies in relation with protection to malaria, work on insecticides and the important regional activities in connection with arboviruses. Other studies are related to tuberculosis, immunology, and virology. A study of Burkitt's disease is being carried on in collaboration with the Dakar School, OCCGE and the endemic disease control services of Upper Volta and Ivory Coast.

In view of the role played by this institute in the production of vaccine and research in the countries under review, its functioning and expansion should be assisted until such time as Senegal and other African countries will be in position to assume their share of responsibilities. At present, no doubt, a method of cooperation or of joint operation could bring in scientists other than the French Pasteurians and provide new funds to this essential research institute.

<u>Vital and health statistics</u>. The development of statistical services essential for the appreciation of health conditions, population problems and for national health planning is making little progress in the countries under review. Only four of these countries (Senegal, Ivory Coast, Dahomey and Togo) have WHO advisers to organize and develop statistical services at the ministry of health level, and only Senegal appears to have a program of development of peripheral statistical services. WHO is also encouraging training of assistant statisticians in specialized institutes, such as in Yaoundé, and by the award of fellowships. It is evident that services for vital and health statistics need to be established as a part of the central health authorities in every one of the African countries.

Individual projects and epidemiological surveys such as those of tuberculosis have benefited from the services of the statistician of a consultative team. It would be of interest to investigate the value of a team of statisticians which would survey the present needs of the countries, stimulate the development of health statistical services and as a stop-gap assist in current epidemiological surveys. Summary: The 1<sup>4</sup> conterminous territories of West and Equatorial Africa and Madagascar, formerly under French rule (aggregate population: 42-45 million) became independent by 1960 and thereafter established formal ties with France under the French Community participation agreements or, bilaterally, under economic, cultural and technical agreements. All of the 15 countries have in common the use of French as the official language and all but two (Guinea and Mali) have a common currency—the CFA\* franc (246.8 to 1 U.S.\$).

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The purpose of the survey covered by the report was to "make an orderly inventory of available information on the main public health problems in 15 countries of Africa, formerly under French administration, in order to provide a basis for the evaluation of the role of public health in economic and social development programs of these countries and for the formulation of questions requiring independent judgment relating to the choice of assistance projects."

A substantial part of the material on public health of the 15 countries and on assistance programs was assembled from official reports available in the United States. First-hand information on French assistance was obtained from the Ministry of Cooperation and the Ministry of Health and from a number of intergovernmental organizations in Paris.

Data on planning for public health and on current and future WHO programs in these 15 countries were obtained from the WHO secretariat in Geneva. The comprehensiveness of the information provided by WHO officials in Geneva made a visit to the WHO Regional Office for Africa in Brazzaville unnecessary.

First-hand information on current projects and on priorities in health needs of several of the countries was obtained by Z. Deutschman and B. B. Waddy during a visit to Dakar (Senegal), Abidjan (Ivory Coast), Ouagadougou and Bobo-Dioulasso (Upper Volta).

<u>Countries covered</u>. The countries covered by the survey include the eight countries formerly part of French West Africa: Dahomey, Ivory Coast, Mauritania, Niger, Senegal, Upper Volta, Guinea and Mali (formerly French Soudan); the four countries formerly part of French Equatorial Africa: Central African Republic (formerly Oubangi-Chari), Chad, Congo (Brazzaville) and Gabon; the island of Madagascar (Malagasy Republic) and the former French UN trusteeships of Togo and Cameroun. The latter augmented by the southern part of the UK trusteeship of

CFA - Communaté financière africaine (African Financial Community).

Cameroons now forms the Federation of Cameroun. The area covered by the 15 countries, around 3.1 million square miles, is about that of conterminous United States, and the aggregate population is estimated at 42 to 45 million. While Madagascar lies in the Indian Ocean south of the equator some 2300 miles southeast of the nearest of the other 14 states, the latter are located in the western and equatorial parts of the African continent between 18° W and 28° E longitude and 28° N and 5° S latitude, extending from the Atlantic Ocean to the Sudan and from the southern boundary of Algeria to the Congo River. The density of population is between 2 and 9 per square mile in 7 of these states: Mauritania, Niger, Mali, Central African Republic, Chad, Gabon and Congo; 22 to 28 in Ivory Coast, Guinea, Cameroun and Madagascar; and varies from 38 to 74 in Senegal, Upper Volta, Dahomey and Togo.

The mean density of population in the 15 countries and in Africa in general (20 per square mile) represents only a fraction of densities observed in other developing areas of South and East Asia and Latin America. There are only two or three areas (in Upper Volta, Togo and Dahomey) in which the density of rural population,<sup>\*</sup> under present agricultural technology, may reach a level requiring migration of workers to other areas and towns.

The natural increase of the population was estimated (in 1963) for the 15 countries to be less than 2 per cent per year. This would raise the total population within the next 20 years (by 1985) by 66 per cent to a total of about 65 million.<sup>1</sup>

<u>Historical background</u>. By the end of the nineteenth century France had firmly established her colonial empire in Africa and Madagascar. Her policy was marked by administrative centralization and operation through an indigenous elite educated in French schools. Investments were left to private initiative and local efforts.

At the end of World War II relations between France and her colonies entered a new phase. The Brazzaville Conference convened in 1944 by the French Provisional Government, stressing a wide degree of administrative and economic freedom, marked the beginning of decolonization. The French constitution of 1946 replaced colonial dependence by association and autonomy within the framework of the French Union.

<u>Developments since 1958</u>. Decolonization gained momentum following the creation of the French Community established by the Constitution of the Fifth Republic of France and adopted by referendum on September 28, 1958. Seven of the 8 former French West African territories chose membership in the French Community; however, Guinea decided to become a fully independent state (October 2, 1958). The four territories of former French Equatorial Africa voted to join the French Community as did Madagascar.

Under the amendment to the French Constitution of May 18, 1960, which permitted a member state to become independent without ceasing to belong to the Community, 14 African states chose to become independent. Six of these (Central

Over 130 per square mile.

African Republic, Chad, Congo, Gabon, Madagascar and Senegal) elected to remain in the Community and concluded formal "Community participation agreements" while the others decided to establish their ties with France through bilateral agreements. "Special relations" were duly established by agreements between France and Dahomey, Ivory Coast, Mauritania, Niger, and Upper Volta. French cooperation in certain fields with Mali and Guinea is based on special agreements. Cooperation with Cameroun and Togo, the former French Trusteeships, was established by conventions of 1960 and 1963 respectively. Under these various agreements, the powers which belonged to the former Community were transferred to the 14 independent republics. Cooperative relations were established in the fields of economic aid, technical assistance, and cultural and commercial exchange.

Languages. French is the official language in all of the 15 states but 3 of them have a second official language, namely, Arabic in Mauritania, English in the Federation of Cameroun and Malagasy in Madagascar. Further, the Central African Republic adopted Sangho as a national language; and according to Guinea's President, French is presently the working language of Guinea, but not necessarily the future official language.

<u>Currency</u>. The basic monetary unit of all the states except Guinea and Mali is the CFA franc. One Metropolitan French franc equals 50 CFA francs. The rate of exchange is 246.8 CFA francs equal U.S. \$1. Guinea has its own currency, the Guinean franc (FG) since March 1960, and Mali has the Malian franc (FM) since July 1962. Theoretically the Guinean and Malian francs are equal to the CFA franc (value 0.0036 g. of gold), but in practice the import and export of these currencies is controlled and their exchange value outside Guinea and Mali difficult to establish. .

PART I

.

ORGANIZATIONS AND PROGRAMS

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#### Chapter I

#### POLITICAL AND ECONOMIC ORGANIZATIONS

<u>Summary</u>: The 15 countries belong to the United Nations and its specialized agencies and collaborate with the UN Economic Commission for Africa and the African Development Bank. All 15 countries also are members of the Organization of African Unity (OAU). All but Guinea are associate members of the European Economic Community (Common Market). • Attempts of the former French territories to form a strong <u>Union africaine et malgache</u> (UAM) for economic, cultural and technical cooperation of French-speaking countries begun in 1960 resulted in 1965 in the creation of a new <u>Organisation commune africaine et malgache</u> (OCAM) which has yet to reach full agreement on policies.

<u>United Nations and its specialized agencies</u>. All of the 15 states are members of the United Nations and of its specialized agencies. With the exception of Guinea and Mali, these states are also parties to the General Agreement on Tariffs and Trade (GATT).

Regional African organizations of the UN are the Economic Commission for Africa (ECA), with its headquarters at Addis-Ababa and a West African office at Niamey, and the African Development Bank (ADB) affiliated with ECA. The UN has further established the African Institute for Economic Development and Planning (IDEP) in Dakar (see page 80).

The African Development Bank, founded by 25 independent countries of Africa in December 1964, was officially installed at Abidjan in April 1965 (under the presidency of Mammoun Beiry, former governor of the Bank of Sudan). The ADB has an authorized capital of \$250 million; units of account—U.S. dollars. Twelve of the 15 French-speaking countries are members of the ADB; Chad, Gabon and Madagascar have not adhered.

Organization of African Unity (OAU), founded in May 1963, has at present (March 1, 1965) 36 member states. All of the 15 states concerned in this survey are members. The organization has set up five technical commissions; two are of special interest: the Health, Sanitation and Nutrition Commission and the Scientific, Technical and Research Commission (STRC). The former met in Alexandria in January 1964, but its second session in Addis Ababa (December 1964) was not held, owing to the lack of the required two-thirds quorum. The latter met in Algiers (February 1964) and in Lagos (January 1965). It set up an executive secretariat in Lagos (interim headquarters) and a budget for 1965 of \$796,300. As of January 1, 1965, STRC absorbed the Commission for Technical Cooperation in Africa (CCTA), established in Nairobi in 1950 by Colonial governments. STRC assumed its functions of promoting scientific and technical cooperation among the member states. The Scientific Council for Africa (CSA) made up of scientists nominated by African governments is the advisory body to STRC. The program of work of the Commission (STRC) was established by the CSA, which is also entrusted with the coordination of programs of the various national scientific councils.

<u>European Economic Community</u> (EEC). The six member nations of the European Community (France, West Germany, Italy, Belgium, Luxembourg, and the Netherlands) established the EEC (better known as the Common Market) under the Treaty of Rome, March 1957. The purpose of this union, which became effective in January 1958, was to merge the economies of the six member states into a single economy through development of free trade and common policies in regard to agriculture, commerce, industry, transport, capital, labor and services, etc.

With the signing of the five-year Convention of Association in 1957, eighteen<sup>\*</sup> of the African states at that time territories of the member states became associated with the Common Market. At the end of the five years, all countries included in this survey (except Guinea) chose to remain associated with the Common Market. A new five-year convention was signed at Yaoundé in July 1963 and became effective in June 1964 after having been ratified by each of the six member states and the African associated members (see page 59).

Common African and Madagascar organization. Efforts to set up a strong common political, economic and cultural organization of French-speaking countries of Africa and Madagascar date back to October 1960 when the first conference of heads of states was held in Abidjan. The Union africaine et malgache (UAM) was formally created at Tananarive in September 1961. It comprised originally 12 member states (i.e., the 15 with the exception of Guinea, Mali and Togo). Rwanda was admitted in March 1963 and Togo became the fourteenth member in July 1963. In addition to the main political organization (and special bodies dealing with defense and postal and telecommunication matters), the original 12 member states also set up the economic organization, Organisation africaine et malgache de Coopération économique (OAMCE). The secretariat general of OAMCE established its headquarters at Yaoundé. Since OAMCE had the status of an international organization, the following countries were officially represented: France, Canada, United States, United Kingdom, Israel and Italy. OAMCE set up five committees dealing with economic and social development, foreign trade, financial and monetary matters, scientific and technical research and coordination of transport.

Within less than three years, with the setting up of OAU and its charter, UAM was transformed into the <u>Union</u> <u>africaine</u> <u>et malgache</u> <u>de</u> <u>Coopération</u> <u>économique</u> (UAMCE). However, the charter of UAMCE set up in March 1964 failed to be ratified by all the member states.

In February 1965 the new <u>Organisation commune africaine et malgache</u> (OCAM) was created at Nouakchott by the heads of 13 states (<u>i.e.</u>, the 15, excluding Guinea and Mali). The new organization intends to be both political and economic. Its stated aim is to "reinforce the cooperation and solidarity of the African states and of Madagascar in order to hasten their progress and development in the political, economic, social, technical and cultural fields."

Countries included in this survey (except Guinea), Burundi, Congo (Leopoldville), Rwanda and Somalia.

OCAM set up its headquarters at Yaoundé under a secretary general (Diakha Dieng). The charter now being drafted for the new organization will be submitted to heads of OCAM member states at their meeting in Tananarive in January 1966.<sup>\*</sup> At the Nouakchott conference the countries of the <u>Conseil de l'Entente</u> (see page 24) announced their decision to introduce the principle of "multinationality" in their countries. The important question of dual nationality will therefore be examined at the next conference of OCAM.

In May 1965 the heads of member states of OCAM held a special meeting at Abidjan to admit Congo (Leopoldville). It also called upon OAU member states to abstain from hostile acts against the Congo. The meeting was not attended by heads of the states of Mauritania, Cameroun and Congo (Brazzaville). In July 1965 Mauritania (whose head of state is at present the president of OCAM) withdrew from the organization in protest against the admission of Congo (Leopoldville) under its present government (then Tshombé).

Meanwhile the secretary general of OCAM announced plans for the creation of an <u>Institut de Développement appliqué</u> at Yaoundé and of regional centers of development at Bangui, Niamey and Tananarive. The secretariat of OCAM soon will have a new department dealing with science and research.

This meeting has been postponed owing to recent political events.

#### Chapter II

#### COMMON SERVICES AND ORGANIZATIONS IN THE 15 COUNTRIES

<u>Summary</u>: The <u>Conseil de l'Entente</u>, resulting from an agreement between the Ivory Coast, Upper Volta, Niger and Dahomey (1959), is an attempt to create a federation of several countries providing common services, a customs union and a solidarity fund for economic aid.

In addition to financial agreements, customs unions and tariff agreements grouping several of the 15 countries, there are also regional projects (Chad basin, Senegal and Niger Rivers) and common technical services, including an airline (Air Afrique).

<u>Conseil de l'Entente</u>. Among the political, economic and cultural groups of the French-speaking states, the <u>Conseil de l'Entente</u> is the oldest, having been set up in May 1959. Organized by agreement between Ivory Coast, Upper Volta, Niger and Dahomey, the <u>Entente</u> sought mainly to insure the control during the decolonization period of epidemics and epizootics and of the administration of common facilities, such as the port of Abidjan, the wharf at Cotonou and the railways connecting the landlocked Upper Volta and Niger with the coast. Togo was expected to join the <u>Entente</u> some time in 1965. The organization is composed of heads of states, each of them presiding for a period of one year. A permanent secretariat has its headquarters in Cotonou.

So far the <u>Conseil de l'Entente</u> has weathered a number of conflicts, of which the most serious was that between Niger and Dahomey (October-December 1963). Following the overthrow in Dahomey of President Maga and a movement of troops towards the northern frontier, Niger expelled civil servants of Dahomean nationality. The transport of goods to and from Niger was suspended.

In December 1964 the presidents of Ivory Coast and Upper Volta decided to establish double nationality for the citizens of the two republics in 1965. This new regime is to be extended to Niger and Dahomey and will, it is hoped, prevent the type of conflicts which arose between the two countries in 1963.

The <u>Conseil de l'Entente</u> set up the customs union of the four states and a solidarity fund for mutual economic aid, based on 10 per cent of their respective budget incomes which is distributed annually among the four states in inverse proportion to their contributions. In addition to the administration in common of ports and railways and the coordination of road transports, the four countries also agreed on other matters, such as unification of electoral laws, duration of parliamentary mandates, civil service regulations and mutual representatives abroad in countries where one of the four states is not represented.

#### Economic and financial organizations.

In West Africa:

West African Monetary Union (<u>Union monétaire ouest-africaine</u>, UMOA), set up in May 1962, to serve six West African States (Dahomey, Ivory Coast, Mauritania,
Niger, Senegal and Upper Volta), and, since November 1963, also Togo.

Central Bank of West African States (<u>Banque centrale des Etats de l'Afrique</u> <u>de l'Ouest</u>, BCEAO) is the bank of issue of the group of West African countries. Headquarters: Paris.

West African Customs Union (Union douaniere ouest-africaine, UDOA), organized in 1959, includes the six countries and Mali. Headquarters: Dakar.

In Equatorial Africa and Cameroun:

Equatorial Monetary Union (<u>Union monétaire equatoriale</u>, UME) comprises the four equatorial states (Central African Republic, Chad, Congo and Gabon). Headquarters: Paris.

The common bank of issue, created in 1955, is the <u>Banque centrale des Etats</u> de <u>l'Afrique equatoriale et du Cameroun</u> in Paris.

Equatorial Customs Union (Union douanière equatoriale, UDE). The convention signed in 1959 provided for an effective customs union and for free circulation of goods and funds within the four equatorial states. A mixed commission of UDE-Cameroun extended the agreements relating to a common customs tariff and certain investment and fiscal matters to the five countries. UDE is expected to be replaced by a new organization to be known as the Customs and Economic Union of Central Africa (Union douanière et économique de l'Afrique centrale, UDEAC). This is being set up under a treaty of December 1964 between Cameroun and the four equatorial states and will become effective in January 1966. Headquarters: Bangui.

<u>Regional projects</u>. Three regional bodies deal with international projects. Nigeria participates in two of these projects.

1) Chad Basin Commission (<u>Commission</u> <u>du</u> <u>Bassin</u> <u>tchadien</u>). Created in May, 1964 by Niger, Nigeria, Chad and Cameroun. Secretariat at Fort-Lamy.

2) Inter-state Senegal River Committee (<u>Comité inter-états pour l'Amenagement</u> <u>du Bassin du Fleuve Sénégal</u>). Convention between Guinea, Mali, Mauritania and Senegal, adopted in February 1964. Secretariat at Bamako.

3) Niger River Commission (<u>Commission du Fleuve Niger</u>). Created in November 1964. Member states: Dahomey, Ivory Coast, Niger, Nigeria, Upper Volta, Guinea, Mali, Chad and Cameroun.

<u>Air Afrique</u>. The French-speaking countries with the exception of Guinea, Mali and Madagascar set up in March 1961 a common airline company with headquarters in Abidjan.

Other organizations or common services grouping four or more of the 15 states deal with telecommunications, aerial safety, higher education (see page 127), tourism and the control of pests (birds) and locusts. The Inter-African Committee for Research in Hydrology includes the following member states: Dahomey, Ivory Coast, Mauritania, Niger, Senegal, Upper Volta, Chad and Madagascar.

## Chapter III

#### COMMON HEALTH SERVICES

<u>Summary</u>: The need for a coordinating body for the control of endemic diseases in the new countries resulted in the creation in 1960 of an international organization for cooperation in the control of endemic diseases known as OCCGE, set up at Bobo-Dioulasso (Upper Volta), the former headquarters of the mobile services in French West Africa. OCCGE controls the research center of <u>Centre Muraz</u> and the <u>Ecole Jamot</u> for training of auxiliaries in Bobo-Dioulasso, the Institute of Tropical Ophthalmology and the Marchoux Institute for research in leprosy at Bamako and the office for Food and Nutrition Research at Dakar.

In spite of the excellent record of the OCCGE and the mobile units, OCCGE is sometimes blamed for not giving sufficient attention to the static rural dispensary. However, in the sparsely populated sahel, \* mobile units have had considerable success with penicillin campaigns, but a system of strategically sited treatment centers would offer more hope of providing treatment for chronic diseases.

An organization similar to OCCGE was set up in 1965 to serve Cameroun and the four countries of Equatorial Africa.

Organisation de Coordination et de Coopération pour la Lutte contre les grandes Endemies (OCCGE) - Mobile and static medical services. Historically, the French colonial administrations discovered more than 50 years ago that a system of static medical centers, waiting for patients to attend them, was inadequate to deal with the epidemic of sleeping sickness that was decimating, even eradicating, the population in many rural areas. A system of mobile teams, diagnosing and treating sleeping sickness in the villages, was devised by Colonel Jamot. His first campaign began in 1917 in Oubangi-Chari (now Central African Republic). He went on to Cameroun and was transferred to West Africa in 1932 to organize his system there.

The mobile method of attacking sleeping sickness was so successful that in 1944 the sleeping sickness services in the French colonies of West Africa, and those of Equatorial Africa, were reorganized as polyvalent services to deal with other mass diseases in addition.

In West Africa, the headquarters was established at Bobo-Dioulasso, the central point of the area as regards communications. Four institutions, designed to serve all the West African colonies, were established:

The Marchoux Institute, at Bamako, Mali (then French Soudan) for leprosy research.

The Institute of Tropical Ophthalmology (<u>Institut</u> <u>d'Ophtalmologie</u> <u>tropicale</u>, IOTA) and its inter-country mobile ophthalmological units (<u>Groupes</u> <u>Ophtalmologiques</u> Mobiles Inter-Etats, GOM) are also at Bamako.

Borderland of the Sahara.

The Office for Food and Nutrition Research (Office de Recherche sur l'Alimentation et la Nutrition en Afrique, ORANA), at Dakar.

The Centre Muraz, with the Ecole Jamot, at Bobo-Dioulasso, Upper Volta.

The <u>Ecole Jamot</u>, at Bobo-Dioulasso, to train auxiliaries for mobile campaigns. This school was started by Jamot in 1932 at Ouagadougou, with an initial core of 12 experienced men trained earlier at the <u>Ecole Ayos</u>, Cameroun. The Rev. Father Goarnisson, of the White Fathers Mission, the original tutor, is still working as a physician and ophthalmologist at Ouagadougou. The school was transferred to Bobo-Dioulasso in 1944. The training course lasts 21 months; the first year is spent in residence and the final nine months in field training. Students are taken from all the member states of OCCGE. The intake was 62 students in 1963, 76 in 1964. It is hoped to increase the intake to 100 students by the end of 1965. U.S. AID has supplied equipment for this purpose.

In 1957 each of the autonomous states of the French Union in West Africa created its own mobile medical service, and the institutions came under the control of whichever country geographically contained them. The results, in failure of coordination and slackening of control work, were rapidly seen to be disastrous in West Africa. In 1959 and 1960 interministerial conferences of the following countries—Ivory Coast, Dahomey, Upper Volta, Mali, Niger, Mauritania and Senegal —decided to recreate a common organization for mobile mass disease control. These seven countries, with the addition of France itself, were the original members of the OCCGE.

The OCCGE has a President, elected annually. Dr. Paul Lambin, Minister of Health, Upper Volta, was elected as the first President and has been re-elected ever since. The headquarters is at Bobo-Dioulasso, where the Secretary-General since the outset has been Médecin Inspecteur Général Pierre Richet. (General Richet was the last commandant of the former colonial organization centered at Bobo-Dioulasso. Without questioning the statesmanship of the African politicians who set up the OCCGE, there can be no doubt that General Richet's personality and influence—in West Africa and in France—have contributed very greatly to its success. He is due to retire in a year's time, and the choice of his successor will be of exceptional importance. So far, no suitable African candidate for the post has come forward, although the member states were asked to select such a man to work with General Richet and gain experience.)

The work of the OCCGE is organized in sections. Apart from the Marchoux Institute, IOTA and ORANA, which come under its general control, there is the <u>Centre Muraz</u> at Bobo-Dioulasso, with sections for Administration, Pharmacy-Chemistry-Immunology, Entomology (sub-sections tsetses, anophelines, other vectors), Parasitology (sub-sections trypanosomiasis, malaria, filariasis, bilharziasis, other helminthiasis), Biology (sub-sections microbiology, treponematoses, tuberculosis, zoonoses, meningitis), Onchocerciasis, Documentation, Teaching (<u>Ecole</u> Jamot, Teaching Dispensary).

Each member state sends monthly returns of important endemic and epidemic diseases discovered and dealt with by the mobile units to Bobo-Dioulasso, and can ask for specialist teams to make surveys or carry out projects away from headquarters. As illustrative examples of the latter, many detailed surveys, clinical and serological, of the treponematoses have been carried out in almost every member state, by teams from the Centre Muraz. The project for tsetse fly eradication at Bamako was carried out by another team. Recently a pilot survey of trypanosomiasis, using the  $\beta_2$  macroglobulin and other refined tests, has been carried out in the Ivory Coast.

Interministerial and technical conferences are held, at different meeting places, twice yearly. At these, all neighboring, non-member states are invited to attend as observers, and (with the unfortunate exception of Ghana) most states send representatives regularly. Guinea and Togo have now joined the OCCGE, and the English-speaking Nigeria and Gambia are considering doing so. Representatives of outside institutions including WHO, UNICEF, U.S. AID, the Pasteur Institute, the Office de la Recherche scientifique et technique Outre-Mer (ORSTOM), the West African Institute for Trypanosomiasis Research (WAITR) have also attended many of the technical conferences.

The medical and scientific staff of the OCCGE are provided and paid by France, from officers of the Service de Santé des Troupes de Marine and of ORSTOM. As of September 1, 1965, a total of 22 physicians were detailed by the French Ministry of Cooperation to serve in the OCCGE. Officers of the Marine Corps and civilian French doctors on contract are also provided by France, in considerable numbers, to take charge of "sectors" of mobile medical work in the member states. In the original member states, in February 1965, there was a total of 81 such sectors.

The ordinary budget of the OCCGE for 1965 totals approximately \$1.2 million. This is apportioned among the member states (including France) at the interministerial meetings, according to their resources. It does not include the salaries of French officials.

In addition to the ordinary budget, funds for specific projects are provided by outside organizations. Between 1960 and 1965 FAC (see page 38) provided a total of approximately \$800,000 for the campaign against onchocerciasis. (This aid will be continued in the future by the Common Market's FED.) Funds or material aid for other projects have been provided by WHO, UNICEF, U.S. AID and the Communicable Disease Center, U.S. PHS.

The OCCGE is doing magnificent work both in research on and control of the communicable diseases of West Africa. Collation of current data on screening, diagnosis and international distribution of disease would by itself be an achievement of great value, since the very existence of frontiers (even with the greatest of good will across them) is a restraint on the control of diseases. Moreover, the OCCGE has been a great influence for peace and good will between young member states of very varying sympathies: the cooperation of Mali and now Guinea are examples.

However, there is no unanimous agreement regarding some of the policies advocated by OCCGE. The following considerations seem to be pertinent to these differences of opinion.

When a disease, such as sleeping sickness, is occurring on a large scale, the mobile method of diagnosis and treatment is by far the most efficient and also the cheapest. As the disease becomes reduced in scale, a mobile diagnostic campaign remains an economic proposition only if it becomes polyvalent, surveying other diseases in addition, vaccinating, and giving single dose treatments such as penicillin for treponematoses. The original sleeping sickness teams have adapted themselves thus, to changing conditions.

The treatment of sleeping sickness takes three months. Obviously, mobile treatment teams are an economic proposition only when the disease is occurring on a huge scale. A comparatively small number of cases is much better dealt with by establishing static treatment centers at strategic points and referring each diagnosed patient to the appropriate center. Naturally, the centers should have general clinical responsibilities and should treat other diseases diagnosed in the field (e.g., leprosy). Obviously, the centers should be connected by ambulance with larger, better equipped centers—hospitals or health centers. A balance is thus struck between mobile and static medicine, which become complementary parts of a rural health service.

The question must arise, at what stage does the responsibility of the mobile service give way to that of the hospital service? There is a good case for the view that the mobile service should staff and supervise the outermost of the static centers—the treatment centers, rural dispensaries, or whatever they are called locally. The mobile medical auxiliaries are trained to diagnose and treat the diseases concerned. Their officers know what to look for in supervisory visits. The mobile life is too hard for most middle-aged men, and a static center makes a natural promotion post for an experienced, valuable man who cannot keep up field work.

This is a natural development of campaign medicine in West Africa and has actually taken place with good results in Ghana. Unfortunately, in the Frenchspeaking countries of West and Equatorial Africa there has been a long history of jealousy and rivalry between static and mobile medical services. At one time the mobile services would be autonomous: at another, a shift in the balance of power at headquarters would place them under a single command. Probably as a direct result of this antagonism, the intermediate stage—the small rural dispensary has been neglected, and there is an unfilled gap between field and static medicine. The consequences are somewhat serious. To take only one example, the best advance guard of a tuberculosis service, both for diagnosis and treatment, is a medical auxiliary at a dispensary, trained to use a microscope and stain sputum specimens, provided that he is well known and trusted by the people of his area.

Thus, it is possible to criticize the administration of the OCCGE for not having given sufficient attention to the role of the static rural dispensary.

It is accordingly of interest to note that the first item mentioned (independently) by Dr. Kouame, Director, Office of the Minister of Health, Ivory Coast, and Dr. Pascal, Chief Technical Adviser, when they were asked about development plans for the health services of the Ivory Coast, was the articulation of the different branches of the health service—the static (hospital) services, the mobile services and the environmental services. It is their intention to introduce a certain degree of common training for auxiliaries in each branch. They intend that, even with the static services, prevention rather than cure shall be the emphasis. They also lay great emphasis on the development of health education.

The mobile diagnostic campaign ceases to be economic or effective in areas of very low population density, such as are found in Chad, the Central African Republic, Mali, Upper Volta, Niger and Senegal. In the sahel, the population

consists of pastoral nomads living with, on and for their herds of camels and cattle. The Tuaregs keep camels. The cattle (and also sheep and goats) are kept by the Peul or Fulani, a people spread right across West Africa. Since the absence of the tsetse fly is necessary for the existence of their herds, they move in areas devoid of surface water. It is hard to see how their cattle survive in such places; it is all too easy to see that few of the human beings ever have water in which to wash. Many of them literally never own a cake of soap, and the dirt diseases, e.g., leprosy and so-called endemic syphilis, are extremely common among them. Up to 80 per cent are, or were before the penicillin era, positive to serological tests for treponematoses infection.

There is also a small population of Negro people in the sahel. They are known as "sedentaires" because they settle and practice agriculture as groups in places where a little well water is available. Endemic syphilis is relatively rare among them.

Mobile teams in the sahel, using single-dose penicillin treatment, have brought about a dramatic fall in the prevalence of endemic syphilis. An incidental result was an equally dramatic rise in the birth rate, among people who were in danger of dying out through infertility. As a consequence, whenever the news spreads in the sahel that penicillin therapy is on offer, the nomads congregate like flies round a honey pot. This is probably the greatest opportunity there has ever been, or will ever be, of attracting them to medical attention, and it will be correspondingly disappointing if good use is not made of it.

Mobile teams work in conditions of dreadful discomfort in the sahel. It would not be possible to set up a permanently staffed dispensary system, if only for the reason that medical auxiliaries would refuse point blank to be stationed in such places. A possible solution would be to build permanent dispensary buildings, providing accommodation, both living and working, for a team, and shade for waiting patients. These buildings would be visited by a doctor and his auxiliaries at known times. The records would travel with the doctor, since the same nomads might be seen at three different dispensaries according to the season. A scheme of this nature was discussed with Dr. Lambin, Minister of Health, Upper Volta, in 1961, and incorporated in a report to WHO on the non-venereal treponematoses. However, nothing has been done, if only because funds for such buildings are not available locally, nor are they provided by any international organization.

At present, therefore, endemic syphilis is the only mass disease of the sahel that has been attacked with any success. An attempt is being made, in one or two areas, to tackle leprosy by giving each patient a month's supply of drugs at a time. The drugs concerned, the sulphones, unfortunately are toxic in overdose or during intercurrent malaise; there are therefore very grave disadvantages to this scheme. Tuberculosis, which may be common among the nomads, has scarcely been touched.

Organisation de Coordination et de Coopération pour la Lutte contre les grandes Endemies en Afrique centrale (OCCGEAC). The newly independent states of Equatorial Africa, (Central African Republic, Chad, Congo, Gabon) and Cameroun, did not follow the example of the West African states until this year. In April 1965 they initiated the OCCGEAC, an organization similar to the OCCGE with the important difference that France is not a member.

The headquarters of OCCGEAC are at Yaoundé, Cameroun. Its first President

is Dr. Happi (High Commissioner for Health and Population, Cameroun) and its Secretary-General Dr. Labusquière, assisted by Dr. Dutertre (both officers of the French Marine Corps). The first conference of Ministers of Health met at Yaoundé in July 1965. The proposed budget for 1966 is about \$100,000 of which 40 per cent will be contributed by Cameroun. The hope was expressed that the organization will later be joined by Congo (Leopoldville) "with its experience and research institutes." The aims of the organization are similar to those of the OCCGE, though at present less ambitious. The Conference also discussed a modest research program based on the following institutes: the Veterinary Research Institute at Farcha, the Pasteur Institutes of Brazzaville, Bangui and Yaoundé, and the Filariasis Research Center at Kumba, West Cameroun. The last named used to be a British institute connected with the Liverpool School of Tropical Medicine, and is still directed by Dr. B. O. L. Duke whose services are provided by the U.K. government, under a treaty with the Cameroun government.

The first technical conference of OCCGEAC was held in December 1965.

#### Table 1

Country	OAU	OCCGE	OCCGEAC	OCAM	EEC1	UDEAO or UDOA	UDEAC	UMOA	ADB	Conseil de l'Entente
Dahomey	x	x		x	x	x	ļ	x	x	x
Ivory Coast	x	x		x	x	x		x	x	x
Mauritania	x	x		<b>x</b> <sup>2</sup>	x	x		x	x	
Niger	x	x		x	x	x		x	x	x
Senegal	x	x		x	x	x		x	x	
Upper Volta	x	x		x	x	x		x	x	x
Guinea	x	x							x	
Mali	x	x			x	x	1	1	x	
Central African Republic	x		x	x	x		x		x	
Chad	x		x	x	x		x	1		
Congo	x		x	x	x		x		x	
Gabon	x		x	x	x	1	x			
Cameroun	x	†	x	x	x		x		x	
Togo	x	x		x	x	1	<u>+</u>	x	x	x
Madagascar	x		1	x	x	1	1	1		<u> </u>

# Membership in Political, Economic and Social Groups and Common Services of Madagascar and Specified Countries of Africa

<sup>1</sup>Associate Members.

<sup>2</sup>Withdrawn July 1965.

ADB - African Development Bank

- EEC European Economic Community
- OAU Organization of African Unity
- OCAM Common Organization for Africa and Malagasy States
- OCCGE Organisation de Coordination et de Coopération pour la Lutte contre les grandes Endemies

OCCGEAC - Organisation de Coordination et de Coopération pour la Lutte contre les grandes Endemies en Afrique centrale UDEAC - Customs and Economic Union of Central Africa

- UDEAO or UDOA West African Customs Union
- UMOA West African Monetary Union

## Chapter IV

## FLOW OF FINANCIAL RESOURCES

Summary: Assistance to the developing countries of the world by member countries of the Development Assistance Committee (DAC) amounted in 1963 to \$8145.5 million of which 69 per cent was bilateral grants and loans and 4.9 per cent multilateral aid (UN, special funds, etc.). The countries of Africa under review (except Guinea) and one French territory received \$372 million or about 4.5 per cent of the world total. Per capita assistance by DAC countries in these African countries was about \$8.30, while the world average for developing countries per capita was \$4.10.

The volume of the assistance effort and the flow of financial resources to the developing countries throughout the world from member states of the Organization for Economic Cooperation and Development (OECD)\* are reviewed briefly.

The total resources placed at the disposal of the developing countries of the world by OECD countries participating in the Development Assistance Committee (DAC) has increased steadily since 1956 and reached a maximum in 1961 with \$8.6 billion; the total official (government) bilateral and multilateral grants and loans to developing countries remained at about \$6 billion for the years 1961 to 1963. The table below shows the disbursements of funds to the developing countries and multilateral agencies in 1963, the last year for which data have been published by OECD. Four states account for about 90 per cent of the total resources provided in 1963: United States (60 per cent), France (14 per cent), the United Kingdom (9 per cent), and West Germany (7 per cent), while about 10 per cent was provided by eight other DAC countries-Belgium, Canada, Denmark, Italy, Japan, Netherlands, Norway and Portugal.

Bilateral grants and loans amounted to \$5678.7 million in 1963 and represented about 69 per cent of the total assistance to developing countries.

In 1963 two countries provided 79 per cent of the total bilateral grants and loans—United States (\$3627 million) and France (\$830.9 million). Of the total of \$5678.7 million for bilateral grants and loans, \$3949.3 million or 69.5 per cent represented bilateral grants and 30.5 per cent mainly government longterm loans (for more than five years). Official multilateral contributions, including grants and capital subscription payments, to multilateral agencies and funds accounted in 1963 for \$396.2 million, <u>1.e.</u>, about 4.9 per cent of the total aid. Of the \$396.2 million, \$228.4 million went to UN agencies. Official

<sup>&</sup>quot;OECD was set up under a convention of December 1960 by the member countries of the Organization for European Economic Cooperation and by Canada and the United States. Japan is also a member. OECD has a number of specialized bodies. The Development Assistance Committee (DAC) is one of these.

# Flow of Long-Term Financial Resources to Less Developed Countries and Multilateral Agencies in 1963<sup>2</sup>

	France	West Germany	<u>U.K.</u>	<u>u.s.</u>	Other DAC Countries*	Total DAC Countries
TOTAL, OFFICIAL AND PRIVATE, NET	1087.9	557.1	724.1	4726.0	1050.4	8145.5
Total official, net	857.9	421.0	412.9	3844.0	539.1	6074.9
Total bilateral, net	830.9	396.2	369.5	3627.0	455.1	5678.7
of which bilateral grants	696.8	141.4	209.1	2651.0	251.0	3949.3
Total multilateral, r of which grants and capital	net 27.0	24.8	43.4	216.6	84.4	396.2
subscription to UN agencies	6.6	11.9	18.1	155.0	36.8	228.4
Private investments and lending	208.7	107.4	281.3 <sup>**</sup>	* 878.2**	371.1	1846.7
Export credits of 5 years and over	21.3	28.7	29.9	4.0	140.0	223.9

(disbursements in millions, U.S.\$)

Belgium, Canada, Denmark, Italy, Japan, Netherlands, Norway and Portugal \*\* Estimate.

contributions received by developing countries of the world from DAC countries \*\*\* represented about \$4.10 per capita of developing countries of the world.

In Africa south of the Sahara the total amount of aid by DAC countries amounted in 1963, to \$835.6 million. About \$372 million or some 4.5 per cent of the total assistance to developing countries went to 14 French-speaking countries of Africa and the French Somaliland. The per capita assistance to the African countries covered by the survey can be estimated (in 1963) at about \$8.30.

It is to be noted that contributions by the Sino-Soviet countries to developing countries were estimated in 1961 at \$294 million and in 1962 at \$391 million.

#### Chapter V

#### FRENCH COOPERATION AND ASSISTANCE

<u>Summary</u>: Over 2 per cent of France's gross national product, more than 50,000 technical assistance personnel in developing countries, and 11,000 students and trainees in France indicate the scope of the French program. Assistance to the African countries under review, accounting for about one-quarter of the total French funds involved, was about \$300 million in official grants and loans and \$79 million in private investments in 1962. During recent years the share of official aid has been decreasing.

The machinery for assistance operations includes the Ministry of Cooperation, a high level council, a central fund for economic cooperation and the Fund for Aid and Cooperation (FAC). FAC controls the funds destined for the 14 countries of Africa. It has two main accounts: (i) the operating budget dealing with operating credits (about \$33 million in 1964) and grants (\$102 million provided for 1965); (ii) the equipment budget which provided \$22.5 million in 1965 for projects of general or regional interest and \$56.2 million for national programs accepted by the Ministry. Public health projects financed by FAC, 1959-1964, represented about \$22.5 million of which approximately one-third was for disease control.

Technical public health personnel provided by France numbered 800 (November 1, 1964). Physicians provided by the Ministry of Cooperation to these African countries numbered 575 (September 1, 1965). Two-thirds of these physicians are selected from graduates of the Marine Corps Medical School; others are recruited among civilians by the Ministry of Health. Technical and scientific personnel is provided by a remarkable governmental organization-Office de la Recherche scientifique et technique outre-mer (ORSTOM).

Medical research in Africa is conducted by the five Pasteur Institutes, four institutes under the <u>Organisation</u> de <u>Coordination et de Coopération pour la Lutte contre les</u> <u>Grandes Endemies</u> (OCCGE), one institute in Madagascar, and the medical school of the University of Dakar.

Teaching in African secondary and higher education institutions is mainly insured by some 4000 French teachers. Some 3500 African stipendees studying in France include 1700 at university level, of which 345 are medical students.

Private French medical assistance is provided mainly by Catholic missions which operate in all 15 countries under review. There are some 450 Catholic institutions with a staff of 1400, mostly nuns. French Protestant missions operate some 50 institutions in 6 of the 15 countries. France's contribution to the assistance programs. In 1963 France's share of resources contributed to the assistance programs throughout the world represented 14 per cent while that of the United States was 60 per cent of the total. Compared with the GNP, the contribution of France is considerable, representing in 1961 2.41 per cent of its GNP as compared with 1.32 per cent for the United Kingdom, 1.17 per cent for Germany and 0.97 per cent of the GNP for the United States. France also has the highest number of technical cooperation personnel sent to developing countries and of foreign students and trainees receiving grants. In 1963, the total number of personnel sent by 12 countries (members of DAC) to developing countries was 81,508, of which France accounted for 51,185, United Kingdom 13,548, United States 11,428 and Belgium 2674. The total number of foreign students and trainees receiving training grants was 41,171, of which France provided for 11,581, United States 9826, Germany 8549, United Kingdom 4039, Italy 2298 and Belgium 2134.

The total resources provided by France for the 14 countries of Africa (excluding Guinea) represent about one quarter of the French assistance to developing countries, i.e., approximately \$342 million in 1960, \$340 million in 1961 and \$382 million in 1962.

Most of the aid by France is bilateral; in 1962 out of the total French aid of \$1.402 billion, only \$115.7 million (or 8.3 per cent) were contributions to multilateral programs (FED, etc.) and international organizations.

The bilateral aid to the 14 countries of Africa based on payments made during the years 1960-1962 is summarized as follows:

French Assistance to the 14 Countries of Africa,\* 1960-1962<sup>3</sup>

1960 1961 1962 341.7 Total disbursements 339.9 382.1 Official funds: I. Grants 246.6 244.9 279.2 incl. Technical Assistance (71.3)(89.8)(102.7)II. Loans 33.8 30.8 24.3 Total official funds (I + II) 280.4 275.7 303.5 Private funds 61.3 63.2 78.6

(in millions of U.S. \$)

French franc zone, excluding Guinea but including French Somaliland in 1961 and 1962.

The 1965 budget for France provided about \$422 million for aid in Africa, of which \$227.5 million will be spent in the 14 countries. This total covers only

official (government) funds provided by the budget and none of the disbursements of the Treasury. It includes \$157.4 million for civilian aid (personnel, training grants, technical assistance), \$44 million in investments and credits for payments and \$25.9 million in military aid (personnel and other assistance).

The above is a brief summary of France's commitments in the 14 countries. The figures do not take into consideration the cost of price supports for a number of products (groundnuts and oil, rice, coffee, bananas, sugar) which probably account for at least 10 per cent of the total (official and private aid). Assistance to the national defense services in Africa has been included recently in the assistance budgets of France. However, the withdrawal of metropolitan troops from these countries has resulted in a substantial saving to France and a loss of revenues to the African countries.

#### Organization in France.

1. Legislation. The machinery set up by the French government to deal with aid for development in the 14 countries ( $\underline{i} \cdot \underline{e} \cdot$ , excluding Guinea) is based on legislation of 1959 relating to financing of aid and cooperation and establishing permanent missions in the developing countries and on decrees of 1961 which set up the Council of African and Madagascar Affairs (<u>Conseil pour les Affaires</u> <u>africaines et malgaches</u>) and defined the duties of the Ministry of Cooperation (see below). A special decree (1961) redefined the field of competence of the Ministry of Foreign Affairs in those 14 countries. The Council consists of the Prime Minister, the Ministers of Cooperation and Foreign Affairs and secretaries of state; other ministers and secretaries of state can be invited. The Minister of Foreign Affairs is entrusted with the prerogatives of the Prime Minister in dealing with the African countries in matters other than those entrusted to the Minister of Cooperation. (See note, page 43.)

2. <u>Caisse centrale de Coopération économique</u> (CCCE). All aid funds voted by the parliament are transferred to the CCCE in the name of the Fund for Aid and Cooperation (see below) which (with the exception of a few technical funds) groups all the funds destined for aid in African countries. However, FAC has no exclusive rights with regard to loans; CCCE can finance directly certain investments and loans and is acting as a development bank.

3. <u>Ministry of Cooperation</u>. The Ministry of Cooperation deals with aid and cooperation (decree of June 10, 1961) regarding the countries of Africa south of the Sahara and Madagascar. The Minister of Cooperation is the minister-delegate in charge of cooperation and is the only spokesman of the French government in these countries on aid matters. He can initiate new agreements and is responsible for the execution of existing agreements with the exception of those dealing with foreign policy and defense. The minister is also the president of the governing body of the Fund for Aid and Cooperation (FAC).

The Ministry of Cooperation has concluded assistance agreements with all of the countries under review except Guinea. Separate agreements relating to technical assistance personnel, except that with Mali, provide for common decision regarding personnel requirements. (Mali, presumably, is free to set up its own list of required staff.) While there is no assistance agreement with Guinea, some action is taken by the Ministry in connection with the agreement on cultural cooperation signed in February 1963. The Ministry provides most of France's bilateral aid but its action is not exclusive. CCCE (see above) is still transmitting a share of the assistance and a number of ministries (public works, aviation) send technicians for specific tasks.

a. Fund for Aid and Cooperation (Fond d'Aide et de Coopération, FAC). FAC is the essential machinery of the ministry for action in the assisted countries of Africa south of the Sahara. FAC is not exclusively an investment fund as it finances all forms of assistance in the 14 countries, such as technical assistance personnel, budgetary aid, and aid to development and cultural cooperation. The following brief summary, referring only to the main functions of FAC, shows the complexity of its operations. The total funds are destined for the 14 countries which are member states of the OCAM, except for a small fraction to be spent in Congo (Leopoldville), Rwanda and Burundi.

The credits voted for the ministry are placed under two separate budget headings: (1) operating budget and (2) equipment budget.<sup>4</sup>

(1) The operating budget comprises operating credits and grants.

(a) The operating credits for 1964 amounted to about \$32.6 million, of which \$13.3 million were for research, \$8 million for teaching and training, \$4 million for cultural cooperation, and \$5.6 million for radio and television. The operating credits also included \$720,000 for health and social cooperation.

In accordance with agreements, France is assuming financial responsibility for scientific and technical research institutions serving the developing countries. France is also contributing to local research programs and specialized institutions in Africa. In 1964, FAC contributed \$5.1 million to ORSTOM (see page 41) whose activities are oriented toward fundamental research. ORSTOM also receives a subvention from the Ministry of National Education (\$2.1 million in 1965). Other contributions were made to the eight institutes of applied agricultural research.

(b) Grants and other donations accounted for \$113 million in 1964 and \$102 million in 1965. Their main components in 1965 were: technical assistance personnel (\$82.6 million, \$39 million of which was for teachers), budget support (\$23.9 million) and technical assistance to armed forces (\$16 million).

(2) The <u>equipment budget</u> covers missions, cultural centers and economic and social equipment. The cost of assistance missions in various countries and of cultural centers has decreased in recent years, accounting for about \$1.2 million in 1965.

The economic and social equipment budget includes two categories of operations: (i) projects of general interest mainly due to the initiative of the French government and carried out by French or interstate organizations, and (ii) development programs of the African states resulting from negotiations with the Ministry of Cooperation.

(i) The cost of the first category of projects is gradually decreasing. The total amount was estimated for 1965 at \$22.5 million against \$35.6 million in 1964. The operations in 1964 included the following:

(in millions)

General studies	\$ 2.8
Prospection and field research	6.8
Cooperation with special technical bodies (agriculture, textiles, mapping)	2.8
Important construction projects (such as Trans- cameroun railway, port of Cotonou, Mikambo project, etc.)	9 <b>•3</b>
Education and training (including university)	9.0
Research in public health (Pasteur Institute and OCCGE)	0.183
Other scientific research institutions in France	2.6

(ii) The total budget of development programs decreased from \$62.3 million in 1963 to \$56.2 million in 1965. During the period 1962-1964, 42-45 per cent of the total allotment was destined for the development of production, 27-33 per cent for infrastructure, and 15-18 per cent for social equipment (education and health).

The total investments of FAC under the development programs in the field of public health from the date of its creation, March 27, 1959 to February 25, 1964 amount to about \$22,557,000. Of this amount almost one-third was or is destined for campaigns against the endemic diseases (see Table 2). Other in-vestments by France were made through FED (see page 59).

b. <u>Technical assistance personnel</u>. The total number of technical assistance personnel on November 1, 1964 was 8442, of which 4486 were in education, 801 in public health and 742 in staff work for infrastructure.

The medical personnel (physicians and paramedical personnel) is unevenly distributed in the developing countries, whose requests for physicians are often difficult to satisfy.

Two-thirds of the medical personnel provided by the Ministry of Cooperation is placed at its disposal by the Ministry of the Armed Forces, mainly from the <u>Service de Santé des Troupes</u> <u>de Marine</u> who are trained at the Marine Corps Medical School at Bordeaux and do postgraduate work at the <u>Ecole d'Applica-</u> tion at Marseilles which is also carrying on research of interest to Africa (meningitis). Other physicians are recruited by the Ministry of Health while research personnel are provided by ORSTOM and the Pasteur Institute. Physicians, Paramedical and Administrative Health Personnel as Requested by 14 African Countries and Common Services and as Provided by the Ministry of Cooperation, September 1, 1965

	Physic	ians
Country	Requested	Provided
Dahomey	18	15
Ivory Coast	75	73
Mauritania	28	23
Niger	38	31
Senegal	<b>6</b> 2	56
Upper Volta	57	40
Mali	17	12
Central African Republic	45	37
Chad	52	41
Congo (Brazzaville)	61	43
Gabon	46	42
Cameroun	76	67
Togo	10	<b>4</b> ·
Madagascar	76	68
OCCGE	22	22
OCCGEAC	_2	1
Total physicians	685	575
Administrative staff	51	n.a.
Paramedical (Technical B) staff	311	n.a.
Total requested	1047	n.a.

n.a. = not available.

c. <u>Ministry of Health</u>. The Technical Assistance Service of the Ministry of Health under the direction of Dr. Aujoulat includes a Section of Health Cooperation and a Section of Social Services. In addition to the procurement of personnel, the service also has important responsibilities in the training of medical and paramedical personnel.

About one-third of the medical and health personnel is recruited by the Section of Health Cooperation. It includes physicians, pharmacists, dentists, midwives and fully-trained specialized nurses.

The Ministry of Health has also under its supervision the medical and paramedical staff of the former Ministry of Overseas Territories which remained in Africa up to the termination of their pre-1960 contracts.

d. <u>Military personnel</u>. A number of army personnel, some of whom have medical, paramedical or engineering qualifications, can, in accordance with recent legislation, be placed at the disposal of the Ministry of Cooperation for technical assistance tasks during the period of their military services. Their number is increasing and by November 1, 1964 there were 938, of whom two-thirds were teachers. The increase in number of this new category of assistance workers has permitted reduction of the over-all cost of personnel provided by the Ministry of Cooperation.

e. <u>Voluntary services</u>. The association of <u>Volontaires du Progrès</u>, established recently, reflects a realization of an important need for leaders in the rural adult education programs. The group includes young men, 22 to 27 years of age, with agricultural or artisan background who, after the completion of their military obligations, are willing to serve for a period of two years in rural areas of Africa.

f. Office de la Recherche scientifique et technique Outre-Mer (ORSTOM). ORSTOM was founded in 1943, a most significant fact in view of France's troubles at that time. It is directed by the Ministry of Cooperation and the Ministry of National Education. In addition to improvement in agriculture and creation of a permanent infrastructure for a wide area of fundamental research, ORSTOM aims at the development of local personnel to specialize in tropical scientific and technical research. ORSTOM's 17 laboratories, missions and centers in 12 of the African countries, with a central laboratory in Paris, employ about 1800 people, a fifth of whom are researchers. Work is carried on in eight problem areas of which two are of special interest to this report: medicine and hygiene and natural biology. The budget, about \$7.2 million in 1965, is provided by the two sponsoring ministries.

The personnel of ORSTOM consist of the following categories: (1) Permanent staff, on a career basis, with regular promotion prospects. (Normally promotion in grade takes two years, but it may be accelerated.) (2) Research workers on temporary contract (who need not necessarily be French). (3) Research students who apply and are accepted for assignment to an overseas research project, for one year extendable to two years, while working for a higher degree and remaining under the direction of a university. ORSTOM pays these students \$223 monthly. (4) Technicians, on contract.

The effectiveness of ORSTOM derives from its permanent staff, secure in their careers wherever they are, but with the stimuli of promotion and scientific distinction always before them. They are well paid, and their terms of service (including travel and transportation), are defined and jealously guarded by their organization.

Their relations with the Pasteur Institute do not appear to be defined on paper, but the Director of Overseas Pasteur Institutes is a member of the ORSTOM council.

g. The Pasteur Institutes and medical research. There are Pasteur Institutes at Dakar, Yaoundé, Bangui, Brazzaville and Tananarive. The primary function of Pasteur Institutes is to provide vaccines (initially, of course, rabies vaccine). The Institute at Dakar has been producing yellow fever vaccine (see page 100). Theoretically, they are expected to support themselves on the proceeds of this service, but the staffs of overseas Institutes usually include Marine Corps officers, ORSTOM scientists and technicians. French government funds have been supplied in recent years for buildings and equipment, notably to the Institute at Dakar.

Over and above the work of vaccine production, the Institutes undertake research. Among subjects of recent research, the Dakar Institute has done work on arborviruses and trypanosomiasis, the Brazzaville Institute on trypanosomiasis and meningitis, and the Yaoundé Institute on entomology, mainly in relation to malaria. The Tananarive Institute, which publishes its own Archives, has been very active in research on malaria and its vectors, bilharziasis and its snail hosts, tuberculosis (human and veterinary), plague (including rodents and fleas), leptospirosis, poliomyelitis, blood diseases and other subjects.<sup>5</sup>

The Director of Overseas Pasteur Institutes, Dr. M. A. Vaucel, is a general in the Marine Corps with a distinguished record of field work and research in Africa.

The essential tasks performed by the Pasteur Institutes in Africa in vaccine production and research would suggest that the Institutes are particularly worthy causes with regard to bilateral aid.

In addition to the OCCGE and the Pasteur Institutes in France and in Africa, and the <u>Ecole</u> <u>d'Application</u> at Marseilles, other institutions actively interested in research are the Medical Faculty at the University of Dakar, the four institutes under OCCGE (see page 26), and the Madagascar Institute for Social Hygiene and Scientific Research (IRSM).

Among periodicals in which researches relative to Africa are published are the <u>Bulletin de la Société de Pathologie Exotique</u> (Paris), <u>Médecine Tropicale</u> (Marseilles), the <u>Bulletins et Mémoires de l'Ecole Préparatoire de Médecine et de</u> <u>Pharmacie de Dakar</u>, and the <u>Bulletin de la Société Médicale d'Afrique Noire de</u> <u>Langue Française</u> (Dakar).

h. Training of African personnel. A considerable effort is being made to help the African countries to increase school attendance in secondary and higher educational institutions. The number of French teachers rose in four years from 2558 to 4420 and accounted in 1964 for 48 per cent of the total technical assistance personnel. France has also supported African universities and centers of higher education in Abidjan, Brazzaville, Dakar, Tananarive and Yaoundé where the number of students increased from 2399 in 1959-1960 to 6969 in 1963-1964. This policy has permitted the total of African students studying in Africa to reach in 1963-1964 twice the total of African students registered at universities in France. The total of students receiving government or FAC grants (excluding free students) studying in France was 3542 in 1963-1964. Of the 3542 stipendees only 996 benefit from FAC grants while 2546 receive grants from African governments. Among the 3542 stipendees (1963-1964), 1697 were students at universities and higher educational institutions; of these, 345 were studying medicine, 93 pharmacy and 38 dentistry.

In addition to students at universities and higher educational institutions, there is in France a considerable number of African trainees (<u>stagiaires</u>) in technical schools and government services. The total of <u>stagiaires</u> and students from the African countries south of the Sahara in France is about 7000. A special association (ASATOM) created in 1960 is responsible for the reception and welfare of the technical trainees. An Office of Cooperation and Reception (OCAU), created in 1962, assists the African university students on their arrival in France.

i. Private medical cooperation. French private or missionary medical

assistance, which in many areas preceded assistance by colonial and national governments, continues to play an important role in the developing countries of Africa.

<u>Catholic missions</u>. In 1962 there were in the 15 countries, 50 hospitals, 350 dispensaries, 30 maternity homes and 20 leprosaria operated by Catholic missionaries. The medical and paramedical personnel numbered about 1400, mostly nuns, of whom 200 were employed in government hospitals.

Training of nuns in medicine and surgery is provided by two Catholic universities (Lille, Lyon). There are further a number of specialized institutions and training centers operated by Catholic missionaries in Madagascar, Congo (Brazzaville), Mali, Ivory Coast, Cameroun and Upper Volta. In the latter country, at Ouagadougou, the well known ophthalmological dispensary operated by the Rev. Father Goarnisson who began his medical work in 1931, has developed into a hospital and training center for nurses. About 800 nurses (male and female) were trained in 13 years. It has a staff of 2 physicians, 1 pharmacist and 10 nurses.

Ad Lucem, a voluntary Catholic association created in 1932, grouping physicians and other professional people, began its work in Africa with a medical foundation in Cameroun (5 small hospitals, a leprosarium and 2 dispensaries) with its own physicians.

Medicus mundi, created first in The Netherlands in 1957 and in France (by Dr. Aujoulat) in 1962, aims at setting up medical and paramedical teams destined to serve in the developing countries.

Secours catholique has no activities connected directly with medical care; its direct assistance to the rural population (procurement of agricultural tools, wells, irrigation, rural training centers) is of importance to the villages. In the leprosaria of Madagascar and the Central African Republic, the <u>Secours</u> provides training for former lepers. They also operate re-education centers for crippled children in Brazzaville and train medico-social assistants in Gabon.

Protestant missions of the French Société des Missions Evangeliques undertake medical action in many developing countries and operate in Cameroun, Congo (Brazzaville), Gabon, Senegal, Togo and Madagascar. They have set up 7 hospitals, 20 dispensaries-hospitals, 10 maternity homes and 5 leprosaria. The missions operate a nursing school at Douala, Cameroun, with a regular three-year program. The missions employ 10 physicians and 30 nurses, but only a part of this personnel operates in the countries under review.

NOTE: In January 1966, the French Ministry of Cooperation became a Secretariat of State, Ministry of Foreign Affairs, under a Secretary of State for Cooperation.

# Table 2

# FAC Medical and Public Health Investments from 1959 to February 25, 1964 in Madagascar and Specified Countries of Africa (in thousands)

Country	Project	Amount	Total
Dahomey	Hospital at Cotonou Campaign against endemic diseases	\$ 1786 406	\$2191
Ivory Coast	Bouaké Hospital Laundry facilities for hospitals	893	<u></u>
	in Abidjan	61	
	Pediatric pavilion at Treichville	264	
	Equipment for physiotherapy center Preliminary study for university	102	
	hospital center	264	
	Rural medical training	568	
	Purchase of medicines and materials	81	001(
	Campaign against endemic diseases	670	2916
Mauritania	Construction of dispensaries	85	
	Medical supplies	20	106
Niger	Medical equipment for Niamey Study for extension of Hospital	162	
	at Zinder	20	
	Rural medical equipment	467	
	OMNES equipment*	264	
	Campaign against endemic diseases	162	1100
Senegal	Thiaroye Psychiatric Hospital	325	
	Ziguinchor Hospital	386	
	Extension of Le Dantec Hospital	050	
	at Dakar Proliminowy work of Soint Louis Hospits	573 1 202	
	Construction of school for staff mem- bers of the mobile medical units at	LL 203	
	Kambele	162	
	Construction of rural maternity clinics	162	
	Campaign against endemic diseases	487	2607
Upper Volta	Hospital at Ouagadougou	771	
-	Hospital at Bobo-Dioulasso	792	
	Hospital at Ouahigouya	223	
	Rural maternity clinics	142	
	Campaign against endemic diseases	487	2427

\* Organisation médicale mobile nigérienne et d'éducation sanitaire.

# Table 2 (cont'd)

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Country	Project	Amount	Total
Mali	Rural medical equipment Campaign against endemic diseases	\$ 264 122	\$ 393
Central African Republic	Rural medical equipment Campaign against endemic diseases	609 731	1354
Chad	Completion of hospital at Fort Lamy Enlarging pharmacy at Fort Lamy Rural medical equipment Campaign against endemic diseases	467 102 61 1360	1991
Congo (Brazzaville)	Medical equipment for Pointe-Noire Dolisie maternal and child care center Brazzaville Hospital Rural medical equipment Campaign against endemic diseases	568 102 41 629 650	1993
Gabon	Furnishing Libreville Hospital Equipment for Ebeigue leprosarium Rural medical equipment Purchase of medicines and insecticides Campaign against endemic diseases	102 41 61 81 508	799
Cameroun	La Quintinie Hospital at Douala Regional hospitals Rural medical equipment Child care centers Medical equipment for Bamiléké district Establishment of a general public health plan Purchase of antimalarial drugs Campaign against endemic diseases	467 284 102 325 61 · 41 162 1238	2693
Тодо	Rural medical equipment	265	265

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Country	Project	Amount	Total
Madagascar	Regional hospitals at Maroantsetra,		
	Tuléar, Majunga, Vohémar,		
	Mananjary, Antsirabé	\$ 751	
	Maternal and child care center	203	
	Extension of provincial health	0	
	services	142	
	Campaigns against tuberculosis and		
	veneres disesses	102	
	Purchase of vehicles for health	TOF	
	actions	61	
	Services	01	
	Completion of Girard and Robic		
	Hospital	204	
	Campaign against endemic diseases	162	\$1723
	TOTAL	···· • ···· ·	\$22,558*

Table 2 (cont'd)

\* Amounts in round figures of thousands do not add up to the totals of the last column.

#### Chapter VI

#### POLICIES AND TRENDS IN FRENCH ASSISTANCE

<u>Summary</u>: The French policies of cooperation with developing countries were studied by the Jeanneney Commission in 1963. The Commission's report recommends that priority be given to assistance to French-speaking countries of Africa south of the Sahara and to efforts to stimulate production. The lack of highly qualified personnel is recognized as the main problem of the developing countries. In the field of public health the report points out that the provision of a large number of French physicians must be considered as a stop-gap arrangement. It warns against excessive investments in new hospitals which invariably result in additional operating costs requiring further support by France.

A note on assistance in public health prepared by the Ministry of Cooperation for the Commission divides the African countries into three categories in accordance with the number of years (5 to 30) for which they will require continued technical assistance. These categories are based on the estimate of time required by the new countries to train their own physicians. The note advocates more discipline regarding future African physicians. African countries should be able to require African medical students to return home after 6-7 years of study; to prevent their costly specialization; and to find a way to compel young physicians to serve in rural areas. Private practice in these poor countries should be discouraged. African paramedical personnel should be trained in Africa, stipends to study in France being granted only after 5-10 years of service.

In connection with planning for future needs, the note draws attention to the changing role of medical advisers in the health administration and in central hospitals. It warns against increasing demands for new medical centers which most of the new countries cannot afford. Preventive medicine in rural areas remains a major problem as presently only the French military doctors are trained for this task. In view of the inadequate distribution of drugs and supplies, the note suggests that procurement be taken over by France for a period of five years.

A special report prepared for the Commission, discussing the relationship of France's bilateral aid to WHO assistance, states that WHO's technical advice often disregards financial and staff implications to the African country and to France. It recognizes, however, the need to reorient medical teaching in France towards public health to bring it nearer to the "international" standard advocated by WHO.

In 1965 the lack of progress in the replacement of French by African physicians and the gradual deterioration of working conditions of French doctors in Africa prompted the Ministry of Cooperation to adopt a new policy advocating the regrouping of medical aid in rural areas into a network of health centers, each with 2 or 3 physicians. The proposed reorganization will require planning and additional funds of which France is willing to provide a share. It is suggested that further funds should be sought from multilateral or bilateral sources.

The Jeanneney Commission. The scope of French aid and the complexity of its administration have prompted the Ministry of Administrative Reform to initiate a study of the principles of the policies of cooperation with developing countries and of the administrative and financial organization best suited to implement these policies. The Commission of Study of the Policy of Cooperation with the Developing Countries under the chairmanship of J. M. Jeanneney submitted its report in July 1963.<sup>3</sup> The Jeanneney report examined the motives of the present French policy toward the developing countries, discussed the share of France's resources which could be devoted to aid without harming its own development and examined the modalities of cooperation and areas of priorities. In estimating the future needs of assistance, the report concludes that priority should be given to aid for the French-speaking countries of Africa whose future needs should be met partly by an increasing share of multilateral aid. Further, priority should be given to a means of stimulating production over other requirements. It notes that the main "bottleneck" is and will remain the lack of highly qualified personnel. The use of physicians provided by the Troupes de Marine is only a stop-gap arrangement. Moreover, difficulties of recruiting physicians in France are quite real. The report warns against excessive investment in infrastructures which invariably call for additional fiscal commitments or further financial support by France to the national budgets. (The report notes that recurrent annual expenses in public health, for instance, represent 50 per cent of the original investment and even the annual maintenance cost of a vehicle is equal to 20 per cent of its original cost.)

The impact of the progress in medicine is referred to in the report, but no attempt is made to analyze the role of public health in economic development. Special reports submitted to the Jeanneney Commission define a number of principles of technical assistance in public health and discuss the question of bilateral versus multilateral aid (through WHO) to African states south of the Sahara and to Madagascar.

1. <u>Public health assistance</u>. The following principles of assistance in public health have been formulated by the Bureau of Public Health Cooperation of the Ministry of Cooperation. Two conditions appear essential for effective and fruitful assistance in public health: (a) highest priority should be given to training of African technical personnel; and (b) planning of needs should be made by the young states with full knowledge of financial responsibilities they are capable of assuming and of the resources the donor country is prepared to provide without claiming special rights to supervise their use.

a. <u>Training of personnel</u>. The African countries can be divided into three groups according to the probable time period for continued technical assistance: Dahomey, Ivory Coast, Senegal, Cameroun and Madagascar requiring 5 to 10 years; Congo and Gabon, 10 to 15 years; Mauritania, Niger, Upper Volta, the Central African Republic and Chad, 25 to 30 years.

These estimates are based on the fact that the states in the first group have a number of their own physicians and the highest number of medical students; those in the second group have medical students who reasonably could insure the future expansion of health services; the third group has a low percentage of high school students.

The above assumes that the young states will have the necessary authority to compel their physicians, especially those trained abroad, to take up posts designated by the government. The Ministry warns that this is known to be a fallacy at present. Indeed the African medical students have ambitions to take up specialties of their choice. Such specialties are often of no practical value to the dispersed rural populations of their homelands. It is known that most of the students have lost contact with the bush and are not aware of health problems of the rural masses which represent the active part of their countries.

The Ministry of Cooperation suggests that it would seem reasonable to require the student to terminate his medical studies in six or seven years and to require him on his return to spend two years in a mobile medical group and two years in a rural outpost. Lists of specializations to be chosen should be set up each year by the government. The government should have the necessary means to force the student to return to his own country (by some form of military service, for instance).

The report further states that some means should be found to prevent the physicians in government service from taking up private practice. Private practice may be justified in some of the wealthier countries, but is against the national interests of poorer states where the cost of treatment, and especially of drugs, is not within the reach of the population.

High priority should be further given to the training of African paramedical personnel in Africa, whether in national or regional institutions. Only after 5 to 10 years of service should medical assistants be considered for a training period in France. The present system of stipends to paramedical personnel for study abroad deprives the country of essential assistants. Indeed it is useless to send physicians to the rural outposts if they do not find there the essential competent assistants.

b. <u>Planning of needs</u>. Physicians in the technical assistance programs are employed in the four main subdivisions of health services: (1) administration, (2) central hospitals, (3) medical assistance, and (4) preventive medicine and control of endemic disease.

(1) <u>Administration</u>. The responsibility for the control of central health services is now passing to the African physicians. High qualifications in the technical adviser to the Minister is therefore of special importance.

(2) <u>Central hospitals</u>. The pressure by young African physicians to occupy posts in the larger hospitals indicates that these hospitals will soon pass from the supervision of technical assistance personnel. The quality of special services has already deteriorated. The Ministry of Cooperation suggests that the states concerned should authorize a special service of surgery and medicine (60 beds), in the main hospital of the respective capitals, for the technical assistance staff and their families, and staffed and paid for by technical assistance.

(3) Medical assistance. Requests for the setting up of new medical

centers are increasing. The motives behind these requests are often political. In many areas the new states accept credits from various sources without concern for the recurrent expenses (operation, drugs, subordinate staff, transportation) and the resulting need for additional aid. The states cannot at present expect their economic expansion level to cover the financial needs of their social services. Their public health budgets represent 9 to 12 per cent of their total budgets, and the Ministry of Cooperation believes that this is the maximum possible for the poorer states. (It notes that in these budgets the share of local [mainly non-medical] personnel has already reached 55 to 65 per cent; a further increase of this unproductive share is anticipated.)

The problem of assigning physicians to remote areas should be re-examined. Adequate living conditions, salaries, means of transportation, and facilities for education for their children should be provided if further recruitment of French physicians is to be assured.

(4) <u>Preventive medicine and control of endemic diseases</u>. The problems of recruitment for this essential service are similar to those for medical assistance. This branch of public health work, requiring 20 days per month of absence from comfort and family life, does not appeal at all to the African physician.

It is recognized by the Ministry of Cooperation that the French teaching of medicine is not oriented toward the problems of preventive medicine in the field, being centered on curative and individual medicine. Only young military doctors of the <u>Service de Santé des Troupes de Marine</u> receive the training for this work.

Supplies and drugs are at present paid by the national budgets. Their availability and distribution are subjects of serious complaints by the technical personnel. It is suggested that procurement should be handled by France for a period of five years or so. This would permit the reduction of some of the grants to balance budgets and would reduce the cost of drugs. Finally, it is noted that the building of medical facilities has been financed by FAC, FED and foreign direct aids without the necessary discrimination. It is essential that the French government intervene firmly to prevent some of the more grandiose projects which only result in additional recurrent expenses.

2. French bilateral assistance and WHO. Another report by two members of the Jeanneney Commission (Baillou and Gregoire) early in 1963 is of interest, as it throws some light on the difficulties arising in the attempt to harmonize an enormous French bilateral program with a modest multilateral WHO program. The authors state that harmony between the two programs in countries south of the Sahara has yet to be reached. They cite as an example the proposal by WHO to establish a network of medical posts (with a staff of two) to serve a population varying from 2500 to 20,000 each, as a part of the malaria pre-eradication program. Such a network would require, for instance, in Dahomey 1200 technical subordinates, while at present their total number is about 1000. The authors claim that this corresponds to the setting up of a second-rate rural health service which would replace the French type of mobile service by a static curative pattern. In East Cameroun, it was claimed, the program suggested by WHO would require setting up 400 new medical outposts at an initial investment of \$4.9 million and a recurrent cost of \$2.4 million, while the health budget of the state was only about \$5.7 million (1960-1961). Further, international organizations rarely assume

responsibility for the recurrent expenses of projects funded by them. WHO may offer to organize a rural health service but leaves to the country the task of finding assistance funds to insure the working of the new service. African countries have a tendency to accept such proposals without thinking of the financial implications. Thus Mauritania received \$200,000 for a program proposed by WHO and had to seek funds for its implementation. In Gabon, WHO proposed a special school for training of staff for the sanitation program. A request was addressed by Gabon to FAC to finance the building of the school.

The authors state that African countries appear to accept WHO leadership and advice readily. However, as France provides both the physicians and financial resources for the programs, a revision of her policies may be required should WHO plans be adopted by the African states. Meanwhile, France has to take into account the new trends in the control of endemic diseases in rural areas and prepare the transition from the mobile service to a service built around a health center. The transfer must be gradual and be based entirely on financial resources which may be made available by the African countries. In the future, French aid should be directed towards the creation of public health institutes, in accordance with international concepts, which would then train French and African personnel required for the new tasks.

It is significant that the report concludes that France has not the influence it should have in WHO actions in Africa. It correctly ascribes this to the lack of qualifications as a result of the fundamental divergence in the concept of medical education which opposes the French system to the WHO concepts of teaching medicine, of organizing health services, and of understanding the role assigned to public health. "It seems that WHO trends are not yet fully known to those responsible for the teaching of medicine in France."

However, the report claims that the new School of Public Health at Rennes will give the French doctors the internationally recognized notions of preventive medicine.

<u>New trends in medical assistance policies</u>. Two years after the publication of the Jeanneney report (1963) the situation with respect to conditions of medical personnel in Africa had not improved and prospects of replacement of French physicians by Africans appeared still more remote. The gradual deterioration of working conditions and logistic support and the increasing difficulties in recruitment of French physicians, whose services will obviously be required for many years to come, have prompted the Ministry of Cooperation to revise its policies and to make a bold proposal for the reorganization of rural health services. The proposed reorganization, it is claimed, aims at more efficient medical assistance but, in fact, is introducing the concept of "medical teams" and of health centers new to the French-speaking countries of Africa.

The new orientation of French policies was outlined for the Ministers of Health of African countries during their conference at the Ministry of Cooperation in Paris on June 29, 1965. The reasons for the proposed change in policies and the proposal itself can be summarized as follows:

1. <u>Recruitment of French physicians</u> is becoming more difficult; the Ministry of Health has at present fewer offers for service in Africa and it is likely that salaries and working conditions will have to be improved to attract civilian physicians. Already one-half the <u>Corps de Santé des Troupes des Marines</u> is serving

in technical assistance in Africa and their number cannot be increased. The proposal to use young physicians serving their time in the armed forces involves their supervision by senior medical officers and excludes longer periods of service in isolated posts.

2. <u>Replacement of French by African physicians</u> is almost at a standstill in the lower echelons and in the field. African countries have failed so far in their efforts to compel African physicians to return to their own countries or to serve a period of time in a rural environment. It is noted that no effort has been made to limit the period of studies to 6-7 years and no restrictions exist on specialization by the African physicians. It is imperative that conditions of employment of African government doctors be made more attractive by African countries. In the future, France intends to withdraw one physician in the technical assistance program for every two trained African physicians returning to their countries.

African governments are also expected to orient a larger percentage of successful high school students towards the study of medicine.

3. <u>Conditions of work of French physicians</u> are not satisfactory. Inadequacies of housing, educational facilities for their children, transportation facilities and supplies are reducing the effectiveness of the physicians. Further, the military doctors will in future serve 10 months in Africa, followed by two months' leave, as is the case for other higher echelon assistance staff. This will aggravate the problem of replacement.

Unless conditions can be improved by the use of the national resources of the countries concerned, France suggests a complete <u>regrouping of medical aid in</u> <u>rural areas</u> in a system of health centers. Each of the proposed centers would group two to three physicians who would work as a team. One of the physicians would be entrusted especially with the control of endemic diseases, but adequate means of transportation would be available to all members of the team.

The proposed concentration would permit better working and housing conditions, would break the isolation and permit the employment of young physicians, both French and African.

The reorganization will be no doubt an important operation requiring a great deal of planning and investment. The French government is, however, willing to finance a share of this project. African governments are encouraged to apply for additional funds from other multilateral or bilateral sources. Indeed it is stated that a center provided by Germany or U.S. AID would readily be integrated in the new network.

In view of the complex personnel problems, France has decided to appoint in each country a senior medical officer who will head the group of French physicians serving with technical assistance and also act as their spokesman without affecting the authority of the Ministries of Health in which they serve.

# Chapter VII

## ASSISTANCE OF OTHER COUNTRIES - BILATERAL AGREEMENTS

Summary: The United States, most of the Western European countries, USSR, and a few other countries have concluded technical assistance agreements with some of the African countries under review. U.S. AID's assistance during FY 1964 amounted to \$32.7 million of which \$12.9 million was for technical cooperation with the 15 countries. Aid by West Germany is considerable and consists of long-term credits and technical assistance; contributions in the field of public health include the construction of a nursing school, of water supply works in Conakry, a hospital at Diourbel (Senegal) and a pub-lic health institute at Lomé. Israel has formal agreements with 10 of the 15 countries; its effective training programs in Israel for government officials and agricultural leaders are most valuable to the French-speaking African countries, except for higher academic courses (agricultural engineering, medicine) which are given in English. Italy is dealing mainly with planning and construction projects. China (Taiwan) whose aid was confined to rice cultivation projects has recently made a grant to Chad for reconstruction in the town of Fort Lamy. USSR's aid to Guinea and Mali consists of long-range credits. In Guinea, USSR built a 500-bed hospital and in Mali its mission includes some 20 physicians. Projects under contract are also in progress in four other countries. Several other countries of Eastern Europe have technical and cultural agreements with two or more of the countries under review. The UAR has cultural and other agreements with six of the countries. Communist China, recognized by 7 of the 15 countries, provided credits and gifts to Mali and Guinea and a considerable number of advisers to the latter country; long-term loans were granted to the Congo (Brazzaville) (1964) and to the Central African Republic (1965).

During the last three years (1963-1965) agreements on economic and technical assistance and on cultural, technical and scientific cooperation have been made by the United States, by most of the Western European countries, Israel and the USSR. The type and scope of these agreements vary considerably. After the United States, Germany and Israel have made the largest number of agreements with the 15 countries under review.

United States Agency for International Development. In Africa, United States economic assistance to 34 countries amounted, for the fiscal year 1964, to \$201.9 million but only \$32.7 million (16 per cent) was spent in the 15 countries under review.

Of the total of \$32.7 million, \$11.9 million (36.4 per cent) accounted for development loans to five countries (Congo (Brazzaville), Ivory Coast, Mali, Niger and Senegal) \$7.9 million (24.2 per cent) for supporting assistance to Guinea and Mali and \$12.9 million (39.4 per cent) for technical cooperation in all of the 15 countries.

The following brief reference is made to current health and sanitation projects during FY 1965 (see Appendix 1) which have also been mentioned in the chapters relating to each country (Part III).

A total of 16 projects in 12 countries and one regional (measles control) project were in progress during FY 1965, at a cost of \$2.8 million of which \$1 million was for the measles control program. Four projects related to water supply and development of water resources (in Cameroun, Ivory Coast, Madagascar and Senegal); other projects included assistance to endemic disease control services (in Gabon, Niger, Upper Volta), village development and special training (in Mali, Senegal, Togo), rural health and rural development (Togo), school health education (Chad), improvement of health services (Mauritania) and health planning assistance (Central African Republic).

The regional program of measles control included during FY 1965 assistance to Ivory Coast, Guinea, Mauritania, Mali, Niger and Dahomey. As of July 1966, the U.S. Government will support the measles control and smallpox eradication programs in the countries under review.

<u>West Germany</u>. A Ministry of Cooperation was created in 1961. German assistance to developing countries, which accounts for 0.88 per cent of its GNP, consists of long-term credits for German supplies, training of technical personnel, and gifts (vehicles, medical supplies, drugs, etc.). The cost of German technical assistance to developing countries of the world amounted in 1963 to \$23.6 million which has permitted sending more than 900 German technical assistants and the award of some 8500 study grants.

The total credits to the countries under review (including all except Gabon) from the beginning of the program to the end of 1963 amounted to \$74 million. The highest credits were granted to the former German territories: \$18.25 million to Togo and \$10 million to Cameroun. A special agreement with Guines (April 1962) provided for a long-term credit of \$12.5 million, of which \$6.2 million was for the construction of a water supply for Conakry.

Expenses involved in study-grants and training periods for the countries under review are not available but the total for the associated members<sup>#</sup> of EEC was, in 1963, \$14.16 million, of which \$4.17 million was for Cameroun and \$2.3 million for Togo.

Germany has also concluded agreements with Madagascar and Guinea for military cooperation and for training and equipment.

Projects in the field of public health financed by Germany and gifts of medical equipment and drugs are mentioned in sections dealing with each country. Recent German contributions to the infrastructure of public health include:

<sup>&</sup>lt;sup>7</sup>18 countries, including countries under review (except Guinea), Congo (Leopoldville), Burundi, Rwanda and Somalia.

Cameroun: construction of a nursing school at Bamenda.

Guinea : water supply for Conakry.

- Senegal: construction of a hospital (120 beds) at Diourbel (\$2.026 million), agreement of March 1965.
- Togo : construction of the public health institute at Lomé (\$980,000), agreement of March 1965.

<u>Israel</u>. Twenty of the 34 countries of Africa receive aid from Israel. Among the countries under review, 10 out of 15 have formal agreements with Israel on technical, scientific or economic cooperation; others cooperate occasionally with Israel. Only Guinea has an agreement with UAR forbidding it to trade with Israel.

Israel's technical aid program<sup>6</sup> is administered by the Department of International Cooperation in the Ministry of Foreign Affairs but professional supervision is usually "sub-contracted" to professional bodies. Training in Israel includes: (1) short seminars intended for upper-echelon civil servants; (2) intensive courses (3-10 months) for intermediate level personnel relating to agriculture, youth organization, community development, cooperatives, trade unionism, public and police administration, and vocational training; (3) one to three years' training for physical education teachers and nurses; (4) academic courses in agricultural engineering and medicine—but these are, no doubt, of little interest to French-speaking Africans as the courses are given in English.

The cost of Israel's technical assistance abroad was estimated for 1963 at \$7 million. The assistance includes surveys and fact-finding missions (one to four months) and provision of experts in advisory and planning capacities (one to four years of service). In addition, numerous foremen and engineers work abroad under the auspices of Israeli companies. At least half of the assistance activities in Africa are in rural areas. Training in rural development planning, training of leaders for youth organizations and organization of cooperatives are most valuable to African countries.

Among projects related to public health, mention should be made of the medical mission to Mali (1961) dealing with the main public health problems (tuberculosis, malaria, bilharziasis, smallpox eradication and sanitation)<sup>7</sup> and the recent (April 1965) agreement with the Central African Republic for a loan (\$101,300) intended for 300 low-cost houses at Bangui, part of a program to provide 1000-1500 dwellings.

<u>Italy</u>. Since 1960 bilateral financial aid has been granted to the countries under review on the basis of agreements with Senegal, Guinea, Mali, Cameroun, Chad and Madagascar; negotiations are still in progress with Niger and Gabon. The important technical assistance effort in Africa based on Italian legislation of 1961 is concentrated outside the 15 French-speaking countries. However, a recent law provides \$1.6 million for the period from 1962-1963 to 1966-1967 to finance research, prospection, planning and execution of projects by private and public Italian companies in countries which have concluded agreements with Italy. Many projects are in progress in Ivory Coast, Niger, Senegal, Upper Volta, Guinea, Mali, Cameroun and Congo (Brazzaville). Among those of interest to this report are the following: In Ivory Coast, design and construction of the new Pasteur Institute at Abidjan; this is a FED project (value \$1.053 million) entrusted to an Italian company (PIRO). Another Italian firm (Vianini) is dealing with a sanitation project in Adjamé. In Niger a new lot of 126 wells has been entrusted by FED to an Italian contractor.

Further, the comparative study of various plans relating to the Niger River, a project of interest to several countries (see page 25), has been entrusted by the United Nations to an Italian group.

The Netherlands' cooperation is mainly multilateral; bilateral aid to Africa is negligible. In 1963 there were in Africa 28 Dutch physicians; a team of members of a voluntary service operates in Cameroun. There were 19 African students in The Netherlands in 1963 and 78 trainees in 1964. Senegal, Ivory Coast and Cameroun have recently signed agreements on technical and economic cooperation with The Netherlands.

Sweden's action in Africa is quite important, corresponding to 1 per cent of its GNP. Out of an assistance budget of \$43.7 million provided for 1964-1965, \$21.3 million will be spent on bilateral aid. None of these credits has been granted so far to any of the 15 French-speaking countries.

Switzerland's per capita contribution to the assistance of developing countries is even higher than that of France, reaching \$32.65 in 1961. In December 1964, the Swiss government voted \$20.8 million to be spent in two and one-half years. Projects financed by Switzerland are found in Dahomey, Guinea, Chad, Cameroun, Togo and Madagascar. Most of these relate to educational infrastructure, and educational material but none to public health. However, a religious order has set up a school in a rural area for training 30 African nurses a year.

<u>China (Taiwan)</u>. The following countries have at present (1965) diplomatic relations with China (Taiwan): Dahomey, Ivory Coast, Niger, Upper Volta, Chad, Gabon, Cameroun, Togo and Madagascar. Agreements on economic and technical cooperation were made with the Ivory Coast, Niger, Gabon, Cameroun and, recently, with Chad. Assistance, heretofore mainly confined to rice cultivation projects, has entered a new phase with a grant of \$3 million made to Chad. One third of this grant is destined for the reconstruction of the capital (Fort Lamy), the remainder for agricultural and industrial development aided by a large number of Chinese technical advisers. Chad trainees will attend technical schools in Taiwan.

USSR. The Soviet Union awarded long-term credits (at 2.5 per cent interest) of \$80 million to Guinea and \$55 million to Mali. However, by the end of 1962 aid allocated effectively represented only \$30 million for Guinea and \$8 million for Mali. In Guinea, USSR has built a 500-bed hospital and set up the advanced technical school. In Mali, in accordance with an agreement of November 1964, USSR will provide 20 physicians, of whom 17 were already in Mali among the 225 Soviet technicians working in the country. Soviet technical missions were sent to Mauritania and Cameroun; projects are also in progress in Senegal, Niger, Congo (Brazzaville) and Madagascar.

Other countries of Eastern Europe. Yugoslavia has technical assistance agreements with Dahomey, Mauritania, Niger, Senegal, Guinea, Mali and Togo and a trade and economic agreement with Congo (Brazzaville). In Mali, 15 specialists train

technical cadres; Yugoslav experts work on the Ségou industrial project; 30 Malians were sent for special training in Yugoslavia. In Guinea, assistance is in the fields of industry, prospection for minerals and town-planning. A dam at Kalé and a furniture factory have been completed. In Chad, Yugoslavs are building a pilot farm and in Mauritania they undertook to build several industrial cold storage plants and slaughterhouses.

Among other countries of Eastern Europe, <u>Poland</u> has technical and cultural cooperation agreements with 7 of the 15 countries (Dahomey, Niger, Senegal, Guinea, Mali, Cameroun and Togo). Assistance to Mali involved a credit of \$7.5 million (November 1961). <u>East Germany</u> has agreements with Dahomey, Mali, Guinea (loans and technical advisers) and Gabon. <u>Bulgaria</u> has agreements on technical cooperation with Dahomey, Guinea, Mali, Cameroun and Togo. Ninety Bulgarian technical advisers work in Guinea. <u>Czechoslovakia</u> has economic, technical and cultural agreements with Dahomey, Mali and Niger, and recently made a scientific and technical cooperation agreement with Congo (Brazzaville). <u>Hungary</u> has economic and technical agreements with Dahomey, Guinea, and Mali, and <u>Rumania</u> has an agreement with Dahomey.

The <u>United Arab Republic</u> has technical and cultural cooperation agreements with the predominantly or partly Moslem countries of Mauritania, Niger, Mali and also with Senegal, Dahomey, Guinea and the Congo (Brazzaville).

<u>Communist China</u>. The following countries have diplomatic relations with continental China: Guinea (1959), Mali (1960), and Dahomey<sup>\*</sup>, Central African Republic<sup>\*</sup>, Congo (Brazzaville) (1964) and Mauritania (1965). Senegal recognizes both Nationalist China and Communist China but maintains no formal diplomatic relations. China's credits to Africa during the last ten years are estimated at \$364 million but only a small fraction of these credits has been effectively used. The delays in negotiation and processing are partly to blame for this. A treaty of friendship and of economic, technical and cultural cooperation has been signed in 1964 with Congo (Brazzaville), and a credit of \$20 million has also been granted.

Guinea has recieved a gift of \$1.5 million in 1960 and Mali \$4 million in 1964. Of the credits of \$25 million awarded to Guinea in 1960, only \$6.5 million were utilized (1965) and out of \$46.6 million awarded to Mali (1964) \$1.5 million were utilized. In Guinea and Mali the agreement provides for a considerable number of technical advisers and for training of Guineans in China.

Following an agreement of January 1965 a long-term loan of \$4 million was granted to the Central African Republic, of which \$810,000 was provided to establish chemical industries for pharmaceutical products, fertilizers and insecticides.

Severed diplomatic relations in January 1966.

#### MULTILATERAL ASSISTANCE PROGRAMS

Summary: The European Development Fund (FED) of the European Economic Community (EEC) approved from 1958 to June 1964, 270 projects in the countries under review (excluding Guinea) at a cost of \$380 million. Of these, 64 health and sanitation projects were credited with \$58.4 million. A new Convention signed by EEC with the African Associated States (which include the 14) will provide, for 1963-1968, \$730 million of which \$500 million is designated for economic and social investment and general technical cooperation.

The International Bank for Reconstruction and Development (IERD) provides long-term loans through its affiliate, the International Development Association (IDA), and attempts to develop capital markets through the International Finance Corporation (IFC). The IERD has a West African bureau at Abidjan to help in identifying projects and to assist in preliminary studies.

United Nations technical assistance activities are being carried out under the Expanded Program of Technical Assistance (EPTA), the UN regular program and the UN Special Fund. EPTA, financed by voluntary contributions from member governments, coordinates programs of the UN and its specialized agencies. In 1964, EPTA projects in the 15 countries accounted for \$4.9 million of which only \$856,000 was for WHO projects and \$686,000 for UN technical assistance projects. UN Special Fund, also financed by voluntary contributions from member governments, (\$331 million from 112 countries, 1959-1964), funds pre-investment studies and longrange programs; most of the countries under consideration benefited from these loans. Projects of interest to 9 of the 15 countries (Niger, Senegal, Guinea, Mali, Central African Republic, Chad, Cameroun, Togo and Madagascar) were awarded over \$25 million in 1965.

The Economic Commission for Africa (ECA) coordinates action of the UN and its specialized agencies in Africa and recommends promising projects. ECA, located in Addis Ababa, opened a sub-regional bureau for West Africa at Niamey in 1965.

The World Food Program, sponsored by the UN and the FAO as a three-year experiment (1963-1965), provides food in lieu of payments for development projects and also for a number of child-feeding programs in 10 of the 15 countries.

UNICEF, working in close cooperation with WHO and FAO, has allotted from 1960 to 1964 about \$6 million for assistance in several regional projects and for 54 projects in the 15 countries (for maternal and child health, disease control, nutrition, vocational training, etc.).

WHO regional activities and projects in the 15 countries,

in 1965, involved a technical staff of about 100 at a cost of \$1.7 million. Malaria control programs, public health administration and planning, and environmental health accounted for 54 per cent of the total cost.

Reference is made to FAO joint activities with WHO. FAO participated in nutrition programs in 12 of the countries under review.

<u>European Development Fund</u> (Fond <u>européen de Développement</u>, FED). The European Economic Community was established by the Treaty of Rome in March 1957 (see page 22). To implement the provisions of the Treaty in regard to the economic and social development of the overseas territories, the Treaty provided for the establishment of the European Development Fund which was created in 1958 to make grants to present and former overseas territories of the member states of the EEC.

The six member states endowed the Fund with \$581 million for the first five years, 1958-1962. More than nine-tenths of this sum were allocated to the African territories, the bulk of it to all the countries under review except Guinea.

At the end of the first five-year period, the actual grants fell behind the planned allocation goal, but the remainder of the unused funds covered the gap, January 1963 to June 1964, created by the delay in the ratification of the Second Convention of Association.

At the end of June 1964, the FED had approved 359 projects amounting to \$483,481,000 for overseas countries and territories associated with the member states. For the approved economic and social development projects, a sum of \$411,219,000 (or 85 per cent) was granted to the 18 African Associated States and \$380,166,000 of this went to the countries covered in this survey (except Guinea) for 270 projects. Out of the total of \$380 million, \$58.4 million was credited for 64 health and sanitation projects (see Table 3).

Under the new convention, \$800 million will be available to all associated overseas countries and territories for the second five-year period, 1963-1968. Of this \$800 million, \$730 million (or 90 per cent) was earmarked for the 18 African Associated States. A total of \$666 million (\$620 million in the form of grants and \$46 million in the form of loans) will be provided by the six member states through the FED and the remaining \$64 million in the form of loans by the European Investment Bank (EIB). The EIB was originally created by the Treaty of Rome to finance investment within the European Community, but under the new convention, the bank is now authorized to make loans to the associated members of the EEC.

The new convention will also enable EEC to finance, through FED, activities connected with general technical cooperation (experts, fellowships, training periods, etc.).

Of the \$730 million, \$500 million was designated for economic and social investment and general technical cooperation and \$230 million for projects to improve the efficiency of production and "to achieve appropriate diversification in the fields of agriculture, industry and commerce." The new convention did not list a breakdown of the \$500 million among the associated member states. However, under the convention, \$198 million of the \$230 million was divided among the 14 countries under review as aid to production and diversification. The highest amounts were allocated to Senegal and Ivory Coast (\$46.7 million each), Madagascar (\$31.6 million) and Cameroun (\$15.8 million).

The World Bank. The International Bank for Reconstruction and Development (IBRD) or World Bank was founded in 1945 with the main purpose "to assist in the reconstruction of member countries by facilitating investment of capital." All countries covered by this survey are members of the bank. IBRD has two affiliates:

1. <u>International Development Association</u> (IDA), an association of development bankers, established in 1960, providing credits on special terms with maturities as long as 50 years, with nominal interest rates or without interest. (Total membership: 91 countries; capital: \$986 million.)

2. <u>International Finance Corporation</u> (IFC) established in 1956 to stimulate the development of capital markets and to promote the establishment of new private enterprises and the development of industrial finance companies. Ivory Coast, Madagascar, Senegal and Togo are among the 76 member countries of the IFC. (Capital: \$99 million.)

The Economic Development Institute of the Bank offers, to officials of its member countries, six-month courses, given in French, in economic development planning. The Bank's Development Advisory Service provides qualified advisers to serve in member countries. A feasibility study service for promising projects has also been set up.

A West African bureau of the IBRD, opened at Abidjan in January 1965, will help most countries covered by this survey to identify projects offering reasonable prospects, to coordinate and direct preliminary studies, and to prepare the requests for financing by IBRD or IDA. Only projects connected with agriculture and transport are dealt with at present.

Only four loans have been made to the countries under review, namely, to Gabon for manganese mining (\$35 million in 1959) and road construction (\$12 million, 1964), to Mauritania for iron mining (\$66 million, 1960) by IBRD, and a loan to Niger for road construction (\$1.5 million, 1964) by IDA.

Two grants for technical assistance studies (road improvement, cocoa production) have been made by the Bank to Cameroun in 1964 (total, \$300,000).

United Nations Technical Assistance. The UN technical cooperation activities are carried out under the following programs: the Expanded Program of Technical Assistance, the United Nations' regular program, the Special Fund program and funds-in-trust operation. The UN-FAO World Food Program is discussed separately.

The Expanded Program of Technical Assistance (EPTA) was created in 1950 to coordinate technical assistance of the UN (United Nations Technical Assistance, UNTA) and its nine specialized agencies. EPTA is a cooperative effort financed by voluntary contributions from member governments.

The forms of assistance provided include experts, fellowships, and supplies, each of these three chapters accounting on an average for 71, 18 and 11 per cent, respectively, of the total. The total cost of EPTA projects in operation in 1964
was about \$51,785,000, of which the 15 African countries under review accounted for \$4,939,094 (or 9.5 per cent of the over-all total). The latter total includes UNTA project costs of \$685,506, WHO project costs of \$855,982 and project costs of other specialized agencies \$3,397,606.

Regular UN Technical Assistance (UNTA) programs, financed as a rule by the regular UN budget, include a training program for foreign service officers, assistance and advice in the social field, economic development projects and training programs.

The total program expenditures on technical assistance activities of the United Nations in 1964 were about \$32.8 million of which the regular program accounted for \$6.4 million, the expanded program (i.e., UNTA only, excluding the share of specialized agencies) \$10.5 million, the Special Fund for \$12.3 million and funds-in-trust, about \$3.6 million.

UN Special Fund, financed by voluntary contributions from governments, provides funds for pre-investment surveys and for long-range programs. From May 1959 to June 1964, 112 countries contributed \$331 million to the Special Fund. The Fund has financed in Africa 123 projects in the amount of \$284,478,000 (excluding regional and inter-regional projects). Of these, Senegal received \$10,566,000 for five projects. Other countries under review received: Central African Republic and Niger, under \$2 million each; Cameroun, Gabon, Mauritania and Togo, \$2-3 million each; Congo (Brazzaville), Guinea, Upper Volta, \$3-6 million each; and Madagascar, under \$8 million.

In January 1965 the Fund approved 70 new projects (cost: \$173 million) of which the following are of interest to the countries covered by this survey:

Niger	National School of Administration School for Nurses	\$ 1,148,700 1,059,600
Mali	Program of training for leaders in agriculture Rural Polytechnic Institute	5,927,600 5,927,600
Central Afri- can Republic and Cameroun	Study of transport in the southern areas of the two countries. (IERD administers this project for the Fund). After a first period of one year, a study will be made of the resources of the areas to be served by new roads	3,779,500
Guinea, Mali, Mauritania and Senegal	Studies of regularization of the water flow of the Senegal River	1,257,200
and benefict	Irrigation scheme in the Senegal River basin	4,611,300
The follo	wing projects were approved in June 1965:	

CamerounStudy of channeling of the overflow of the Logone\$ 465,000andRiver(of which Special FundChadwill provide \$325,000)

Cameroun, Chad, Niger and Nigeria	Study of water resources of the Lake Chad basin	<pre>\$ 468,100 (of which Special Fund will provide \$369,100)</pre>
Madagascar	Study of agricultural development scheme in the Farafangana region	<pre>\$ 1,683,000 (of which Special Fund will provide \$500,000)</pre>
Togo	Survey of an agricultural development project in the Kara region	<pre>\$ 563,000 (of which Special Fund will provide \$383,100)</pre>

1. <u>Economic Commission for Africa</u> (ECA). The main task of this regional commission of the UN Economic and Social Council is to coordinate action by specialized agencies, to study economic and social projects and to recommend promising projects. ECA is making a special effort in training statisticians and planning specialists. The secretariat of the ECA is located in Addis-Ababa. In February 1965, the ECA decided to create four sub-regional bureaus, of which the West African will be located at Niamey.

2. The World Food Program (WFP). The World Food Program was established by the UN and FAO as a three-year experiment (commencing January 1, 1963) to clarify to what extent and in what manner food can be used on a multilateral basis in developing countries to stimulate economic and social development, assist in preschool and school feeding and meet emergency needs.

The Program has a governing body, known as the Intergovernmental Committee, composed of 20 members, and an Executive Director. The WFP is financed by the UN and FAO member countries. As of December 31, 1964, 70 countries had pledged the equivalent of \$94 million against an original goal of \$100 million.

The United States has pledged to the three-year program \$40 million in commodities and \$10 million in cash and shipping services; from the inception of the program to December 31, 1964, the United States has contributed \$13.4 million worth of commodities.

The scheme is most easily explained by reference to a project actually sponsored by the Program. In Chad, in the region of Lake Chad itself, there is an area suitable for wheat growing—provided that drainage and irrigation works on a somewhat large scale are undertaken as a preliminary. The people of the area were without work or the prospect of useful work, and were in need of famine relief. The WFP sponsored a project to use food as payment for the labor involved in building a system of dams and polders. If the project is successful, the result should be an independent farming area with an export surplus of food.

This project illustrates not only the potentialities but also the difficulties of the Program. Sea transport is easy enough to arrange, but Lake Chad is some 800 miles from the sea and 350 miles from a railhead (at Kano in Nigeria). On arrival in the receiving country, theoretically the food should be taken over and administered by the country. In fact, the local administrative mechanism may not be adequate to undertake this. (There has been an example, in recent years, of the public health services of a small West African country being brought virtually to a standstill while their staff wrestled with the distribution of skimmed milk.)

It is obvious, therefore, that food aid demands a large organization for its distribution. It cannot be given without considerable monetary expense, and the projects accepted for food aid must be on a correspondingly large scale.

The above difficulties are logistical. There is also difficulty in overcoming the objections of organized labor to payment in kind rather than in cash. The Program consulted the International Labour Office from the outset and reached an agreement that not less than half the national wages given out shall be in cash.

In 1963-1964, WFP project agreements reached 47 and the food included therein a value of \$19 million. In the countries under review, the following schemes have been put into operation:

Mauritani	a:	A school feeding program
Mali	:	A rural development project A literacy campaign (food being accepted by teachers as part of their wages)
Guinea	:	A scheme for feeding scholars in technical schools
Madagasca	r:	A pilot land settlement scheme in the region of the lower Mangoki River
Dahomey	:	An experiment into the feasibility of using (imported) yellow maize to stabilize the violent seasonal fluctu- ations in the price of (local) white maize
Togo	:	A school feeding program
Upper Volta	:	A food price stabilization scheme
Chad	:	A project for land development and wheat growing A school-feeding program-part of the same project to encourage semi-nomadic people to remain in the area
Senegal	:	A rural development program, aimed at increasing groundnut (peanut) production, in part for local consumption as a food A project, linked with the above, for developing a cheap weaning food from groundnuts Expansion of rural employment-food for trainees under a rural-leader training program and for workers clearing land and building dikes
Congo (Brazza-		
ville)	:	Training of unemployed urban youth for rural settlement (partial diet)

United Nations Children's Fund (UNICEF). UNICEF is currently helping in Africa in 169 projects in 39 countries and territories and in 3 regional projects. For the period 1960-1964, a total of \$25,431,000 was allotted to Africa and a further \$5,995,000 is held as advanced commitment for future distribution. During this five-year period, \$6,024,000, or about 24 per cent of the total for Africa, was allotted for assistance in 54 projects in the 15 countries under review. The distribution of the allotted funds by type of programs in the 15 countries was as follows: 28 per cent for health services (maternal and child health; environmental sanitation; immunizations), 26 per cent for disease control, 21 per cent for applied nutrition, 15 per cent for education and vocational training and 9 per cent for family and child welfare. The projects in each of the 15 countries under review are summarized in tables following each country chapter (Part III).

WHO, other specialized agencies and the UN provide technical and consultative services in connection with UNICEF-assisted projects at the planning stage, during the implementation of the projects and in the evaluation of results. The role of these agencies is a key factor in the development and implementation of the projects. The summary of the UNICEF-assisted projects does not refer, in each of the projects, to the relationship with other agencies; some of the individual projects may be overlapping with those of WHO.

The following two regional projects are of special interest to the countries under review:

1) Public Health Seminars (University of Dakar, Senegal). UNICEF contributed \$40,000 in 1962 to the public health seminars held in 1963 and 1964 (Journées médicales de Dakar) organized by ARMAO (Association pour la Recherche médicale en Afrique occidentale). It also contributed to the Seminar held in 1965. (See page 131.)

2) Training in nutrition, agriculture and home economics extension. Since 1961, UNICEF has contributed \$1,345,000 to this project. A conference of 26 Frenchspeaking ministers of African countries held in La Napoule, France, in 1962, discussed the bases for this program.

The part of the program of interest to French-speaking countries of Africa is as follows: <u>Aid to higher-level training</u> concerned with production and consumption of a well-balanced food supply for the family. Arrangements were made by UNICEF with two universities in Nigeria and with the University of Madagascar for a fiveyear program of teaching (agricultural extension, home economics, nutrition). <u>Seminars</u>: Nutrition seminars designed for auxiliary level personnel took place in Dahomey and the Central African Republic. A seminar on health and nutrition education of the public was held in the Congo (Brazzaville) for 67 participants from 12 countries. In 1963, Cameroun, Ivory Coast and Niger held national seminars on nutrition and agricultural extension. A symposium on planning and evaluation of applied nutrition projects took place in Togo in 1963. UNICEF reimbursed FAO for eight consultants for two years to prepare the seminars.

World Health Organization. The role of WHO is limited to assisting, guiding, advising, educating, promoting and, in general, furnishing technical assistance only upon the request of a government. The work of WHO in Africa, south of the Sahara, and south of Sudan, Ethiopia and Somalia, is directed by the Regional Office for Africa established in Brazzaville under the guidance of its Regional Committee. In 1965, the regular budget of the regional office was about \$3.9 million and the technical assistance budget about \$25.5 million; it maintained a staff of 360 on regular and 123 on technical assistance funds.

1. WHO activities in the 15 countries. During recent years, while assisting

the countries in malaria eradication techniques, the strengthening of health services and the training of personnel, the main effort of WHO was to orient the interests of the countries concerned towards national health planning. The need for integration of components of long-term programs and of projects dealing with specific problems in order to develop such national health plans has been understood by some of the governments. Further it is stressed that such health plans should be an integral part of an over-all scheme for the economic and social development of the country.\*

In 1964, WHO provided direct assistance for <u>national health planning</u> programs in Gabon, Mali and Niger, helping both in drawing up the plans and in establishing permanent planning organizations within the ministries of health to work on coordination with the national bodies responsible for over-all development plans. WHO has also provided public health advisers to work with the ministries of health in Guinea, Niger and Togo on the strengthening of health services at all levels and their extension to cover all communities, especially in the rural areas.

The largest share of WHO assistance in the field of communicable disease was allocated to <u>malaria pre-eradication programs</u> in operation in Cameroun, Dahomey, Mauritania and Togo. Professional and auxiliary personnel for this program in French-speaking countries are being trained at Lomé in Togo. In connection with malaria pre-eradication programs, the organization has also provided public health advisers (in Cameroun and Togo) for guiding the development of integrated community health services. In the field of <u>tuberculosis</u>, WHO established two pilot programs in Gabon and Niger where tuberculosis control services have been introduced aiming at the development of a national tuberculosis control program.

<u>Leprosy</u> control programs with the material assistance of UNICEF (see tables following country chapters, Part III) and guidance from WHO are in operation in most of the countries under review.

<u>Smallpox eradication</u> projects are assisted by a WHO medical officer. WHO has assisted in providing vaccine for Mali, Togo and Upper Volta and is helping to increase the production of freeze-dried smallpox vaccine within the African Region. The prevalence of <u>yaws</u> has been drastically reduced and, recently in many areas, the search for residual cases is already combined with smallpox vaccination and leprosy case-finding as a first step toward integrating the work into rural public health or communicable disease control services. The regional treponematoses advisory team continues to advise on control projects and also carries out simultaneously other epidemiological-serological sampling surveys.

Discussions have been held with the governments of Ghana, Togo and Upper Volta with regard to a proposed inter-country project for the control of <u>onchocerciasis</u>. In 1964, a consultant visited Guinea to report on the onchocerciasis problem in the Corubal River area. A course on trypanosomiasis was given in

<sup>\*&</sup>quot;In Africa...national health plans would considerably speed up health progress. There is an additional note of urgency in the case of this continent: assistance is being offered from many sources to the newly independent States, and coordination, which can be best provided by comprehensive health plans, is essential if national and international resources are to be utilized to maximum advantage." --Dr. M. Candau in The Work of WHO, 1964.

Bobo-Dioulasso, Upper Volta (November 1964). Assistance in the field of <u>bilhar</u>ziasis has been confined so far to advisory services to Cameroun, the Central African Republic and Mauritania.

WHO provides assistance in a number of <u>environmental health</u> projects, some dealing with training of sanitation staffs (the Central African Republic, Chad, Gabon, Mali); some include demonstration work in pilot areas (Guinea, Togo), others deal with the organization of central services (Dahomey, Madagascar) and development of water supply programs (Senegal, Niger and Mali). WHO engineers assisted in preliminary studies on a water supply project for Cotonou, Dahomey, and made a preliminary survey for extension of the water supply and sewerage systems of Bamako, Mali. WHO sanitary engineers are stationed in Senegal, Gabon, Madagascar, Ivory Coast, Chad, the Central African Republic, Mali and Togo. WHOassisted <u>maternal</u> and <u>child health</u> programs have provided impetus for the development of community health services. Such programs were functioning (1965) in Chad, Gabon, Guinea, Ivory Coast, Mauritania, Togo and Upper Volta with UNICEF providing material aid for the operation of these projects.

WHO assisted in basic surveys on <u>nutritional problems</u> in several of the countries under review and in the provision of training facilities (Ivory Coast, Madagascar, Senegal). Liaison is maintained with FAO in many of these activities (see below).

<u>Health education</u> projects have concentrated on the setting up of health education units in the ministries of health (Ivory Coast, Togo, Upper Volta, Senegal) and of training programs.

Education and training. All WHO-assisted projects have a sizeable training component but, in addition, the organization gives assistance to medical and nurses training schools and, through its fellowship programs, has provided facilities for basic and postgraduate professional studies. However, in several countries, the lack of secondary education has led to a shortage of suitable candidates for professional training. WHO is assisting in the establishment of a medical school and teaching hospital at Yaoundé, and in the training of medical and auxiliary personnel in Madagascar and has provided consultants to review problems related to the opening of a public health institute at the University of Dakar. From July 1964 to June 1965, 66 fellowships were granted to 12 of the 15 countries, including 33 for medical training, 17 for nursing, 9 for environmental sanitation, 6 for public health administration and 1 for maternal and child health. WHO has advisers in all of the 15 countries. WHO representatives are stationed in Cameroun, the Central African Republic, Ivory Coast, Madagascar, Niger, Senegal, Togo and Upper Volta and cover one or more of the countries under review.

WHO assistance to the 15 countries in 1965 involved a technical staff of 99 at a cost of \$1,682,300 of which \$815,600 came from the regular budget and \$866,700 from technical assistance funds (EPTA, page 60). Malaria control programs accounted for 20.6 per cent of this (staff of 30), public health administration for 19 per cent (staff of 12), environmental health for 14.2 per cent (staff of 13), nursing for 13.5 per cent (staff of 17), maternal and child health for 9 per cent (staff of 11), and education and training for about 9 per cent.

UNICEF contributed an additional \$1,181,000 for assistance to health services in 1965 while the Voluntary Fund for Health Promotion made a grant of \$84,621 to 10 countries from its Malaria Eradication Special Account and \$101,600 to 4

#### countries from its Special Account for Community Water Supply.

The WHO programs and total budgetary obligations (for both the regular and the technical assistance budgets) for the years 1965, 1966 and 1967 have been included at the end of each country chapter in Part III. Inter-country programs of interest to the 15 countries under review are listed in Table 4. It should be noted that about one-half of the estimated obligations are under the EPTA while the other extra-budgetary funds are provided by UNICEF.

Food and Agriculture Organization. Reference was made to the FAO/WHO cooperation and to projects funded by UNICEF under the technical supervision of WHO and FAO. In many cases FAO is providing consultants on nutrition and the home economics of food technology, and the cost of their services is reimbursed by UNICEF. Funds are often made available from a variety of sources including the Freedom from Hunger Committees (see Table 5). For these reasons it is difficult to evaluate FAO's contribution to the 15 countries under review in terms of fund obligations. The type of programs in the 15 countries referred to in this report which were assisted by FAO, Nutrition Division, are summarized as follows:

Central African Republic:	Nutrition education
Chad :	Nutrition education and home economics extension
Dahomey :	Organization of nutrition programs; home economics
Gabon :	Organization of nutrition services-applied nutrition
Ivory Coast :	Food chemistry; nutrition education and school feeding; home economics development
Madagascar :	Home economics development
Mali :	Home economics
Mauritania :	Food production and distribution
Niger :	Organization of nutrition services and programs; food industries; home economics
Senegal :	Food technology; promotion of protein-rich foods; nutrition training center; school feeding; home economics; Special Fund project in food technology
Togo :	Home economics
Upper Volta :	Nutrition education

### Table 3

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Country	Health Projects	Т	otal	Water Supply and Sani- tation Projects	T	otal	Grand Total
Dahomey	Nursing school at Cotonou Hospital at Savalou Hospital at Athiéme (Lokossa) Building of a secondary hospital at Parakou Supplies for buildings	\$	222 10 <b>7</b> 67 594	Water supply at Ouidah Construction of wells Storm drains at Cotonou (first part)	\$ 2 2	275 ,046 ,714	
	destined for health services		87				<b>\$6,</b> 112
Ivory Coast	Five new secondary hospitals Pasteur Institute at		580	Water supply for Bouaké Rural water supply: wells and watering	Water supply for Bouaké \$1,58 Rural water supply:		
	Abidjan	1	,053	holes	3	, 314	<b>\$6,</b> 527
Mauritania	Hospital and nursing at Nouakchott Central pharmacy at	\$2	,009	50 new village wells	\$	693	
	Nouakchott		203	· · · · · · · · · · · · · · · · · · ·			\$2,905
Niger	Hospital at Niamey	\$	101				<b>\$</b> 101
Senegal	Building of the hospital at Saint Louis Tuberculosis control (mobile X-ray units) Blood transfusion at Dakar		,254 122	Wells and watering holes \$2,43		,431	
			203				<b>\$7,</b> 010
Upper Volta	Infrastructure and equipment for health services	\$3	, 765	Rural water supply (90 wells and 4 markets) Water supply (Koudougou, Ouahigouya and Kaya) Water supply and sanitation for town of Ouagadougou	\$ ,	365 466 ., 754	<b>\$6,</b> 350

### FED Health and Sanitation Investments from 1958 to June 30, 1964 in Madagascar and Specified Countries of Africa (in thousands)

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Table	3 (	(cont'	d)
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Country	Health Projects	Total	Water Supply and Sani- tation Projects	Total	Grand Total
Mali	Dispensary at Nioro Tuberculosis dispensary at Sikasso Maternity clinic at Goundam Tuberculosis control Institute for Human Biology at Bamako	\$ 143 47 39 213 352	Water supply at Sikasso Construction of wells and watering holes	\$ 336 932	\$2,062
Central African Republic	Buildings for health services: First part Second part Third part Control of endemic diseases, five laboratories Dispensaries, Southwest	\$ 276 312 972 243 608	Rural water supply: First part Second part	\$ 228 658	\$3,297
Chad	Health services: a) Hospital at Fort Lamy; b) Hospital at Moundou Hospital at Fort- Archambault Rebuilding for health services: First part Second part (65 units) Buildings for health services: Third part (36 units)	\$1,878 1,458 1,211 1,864 719	Sanitation of the St. Martin area at Fort Lamy Rural water supply: well construction	\$1,014 2,977	\$11,121
Congo	Buildings for maternal and child health	<b>\$</b> . 457	Sanitation for the town of Brazzaville	\$2,917	\$3,374
Gabon	Nursing school ) Technical equipment for health services ) Maternity clinic at Port Gentil )	\$ 505	Sanitation for the town of Libreville (M'Batavea quarter)	\$ 972	
	Dispensaries	652			\$2,129

Country	Health Projects	T	otal	Water Supply and Sani- tation Projects	Ţ	otal	Grand Total
Cameroun	Building of a hospital pavilion at Meiganga Building of a hospital pavilion at N'Tui	\$	52 30	Water supply at M'Balmayo	\$	227	
	Dispensaries for Northern Cameroun	2	,107				<b>\$</b> 2,416
Тодо	Construction of a maternity clinic at Anécho Construction of a maternity clinic and a hospital pavilion at Palimé Nursing school and maternity clinic at Lomé (under study)	\$	30 90 968	Sanitation at Lomé (first part) Water supply at Lomé	\$	835 677	\$2,600
Madagascar	Building of a hospital pavilion at Majunga Hospital at Manakara Hospital at Fort-Dauphin	\$	442 405 405	Water supply for Diégo-Suarez Sanitation at Tananarive	\$	608 527	\$2,387

# Table 3 (cont'd)

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### Table 4

# Selection of Inter-Country WHO Programs in Africa<sup>8</sup> of Special Interest to the 15 Countries under Review

		Posts		Est	Estimated Obl	
	<u>1965</u>	1966	1967	1965	1966	<u>1967</u>
Malaria: Malaria eradication training center - French language	8 -	8 -	8 -	\$213,646 -	\$181,972 32,000*	\$178,666 45,000*
Tuberculosis: TB advisory services	3	3	3	61,078	57,616	63,393
Venereal disease: Treponematoses advisory team	4	4	4	79 <b>,</b> 383	56,771	58 <b>,</b> 529
Cerebrospinal meningitis, control measures	-	-	-	6,400	10,300	10,300
Bilharziasis advisory team	-	l	3	-	16,153	<b>52,21</b> 0
Onchocerciasis advisory team	2	2	2	17,013	36,914	40,188
Ophthalmological advisory team on onchocerciasis	-	-	-	9,700	27,300	27,300
Smallpox eradication, planning and implementing program	2	3	3	26,368	32,946	39,754
Public health administration, advisory services	l	l	1	6,556	19,139	21 <b>, 2</b> 16
Public health administration, consultant services	. <b>-</b>	1	1	-	47, 305	58,674
Public health administration, laboratory services	_	-	1	-	-	19 <b>, 1</b> 54
Nursing center for post-basic nursing education - French language	4	-	-	25,984	-	-
Nursing: public health nursing education	-	1	3	-	15,289	44,540
Maternal and child health - Fellowships and grant in aid to ICC, Paris	-	-	-	10,000	10,000	10,000
Nutrition: Joint FAO/WHO/CCTA regional food and nutrition commission for Africa	2	2	2	24,277	22,487	21,957

\* From Malaria Eradication Special Account

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# Table 4 (cont'd)

		Posts		Est	imated Ob	ligations
	1965	1966	1967	<u>1965</u>	1966	1967
Nutrition: Inter-country nutrition consultants	2	7	8	\$21,107	<b>\$66,</b> 009	<b>\$</b> 82,830
Fellowships for graduate and postgraduate nutrition training courses at Dakar and Paris or in Ibadan and London	-	-	-	6,000	8,000	18,000
Education and training: Teaching of epidemiology	-	-	2	-	-	32,240

#### Table 5

Freedom from Hunger Campaign Projects in Madagascar and Specified Countries of Africa as of November 1964

#### COUNTRY PROGRAMS

#### Dahomey

Home Gardens for Improved Nutrition (\$455,444) sponsored by The Netherlands Freedom from Hunger Committee. Improvement of the local diet by the production of better food for home use through the introduction and improvement of home gardens and the growing of vegetables, fruit and beans. Also aimed at promoting better knowledge and use of vegetables and fruit, and introduction of better hygienic and dietary habits.

Poultry Production (\$38,000) sponsored by the French Freedom from Hunger Committee. Modernization of a poultry production center near Cotonou and establishment of several smaller pilot centers in the central and northern areas of the country.

#### Niger

Farm Implements (\$4,025) provided by the Italian Federation of Catholic Women.

#### Senegal

Associate Expert (\$21,000) provided by the French Freedom from Hunger Committee.

#### Chad

Poultry Schema (\$103,000) sponsored by the Swiss Freedom from Hunger Committee. Similar to the World Veterans Federation project in West Africa.

#### Madagascar

Improvement of Agricultural Implements (\$141,955) sponsored by "Misereor," German Catholic Bishops. Improvement of the small farmer's means of production, particularly through the introduction of improved tools and animal-drawn transport.

Fuelwood Plantations (\$15,000) sponsored by Oxford Committee for Famine Relief. Creation of ten reforestation teams to work in 30 communities.

Rice Mill Equipment (\$8,051) sponsored by the City of Verona.

Modernization of fishing craft, gear, and methods (\$26,250) sponsored by the Icelandic FFH Committee.

Development of village communities in South Madagascar (\$105,000) sponsored by Misereor, German Catholic Churches.\*

Additional project November 1964 to October 1965.

#### REGIONAL PROGRAMS

#### West Africa

Improved Poultry Production (\$35,000) sponsored by the World Veterans Federation. Training courses and demonstrations to increase egg and poultry meat production to meet the need for more food protein.

Fertilizer Program, sponsored by the Fertilizer Industry. Operational in Dahomey, Senegal and Togo.

Mechanization of Fishing Boats, sponsored by Outboard Marine Corporation and the Canadian Freedom from Hunger Committee in Dahomey and Togo.

#### MICROPROJECTS FROM UNEARMARKED GIFTS

#### Mali

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Fish Distribution ($2,100).
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#### Dahomey

Introduction of Animal-Drawn Equipment (\$2,940).

Forage Improvement (\$5,600).

#### Madagascar

Audiovisual Material (\$630).

#### Togo

Provision of Two Bulls for Livestock Improvement (\$500).

#### Chapter IX

#### NATIONAL AND HEALTH PLANNING

<u>Summary</u>: Planning of priorities in the various branches of economic life and machinery for planning exist at present in all of the 15 countries

Assistance by WHO and U.S. AID has been provided for national health planning. Planning activities are described and are also summarized in Table 6.

National Planning. Planning activities were initiated in some of the territories as early as 1958. Following independence, the countries, faced with the problem of choosing a development policy, gave early attention to planning in order to establish priorities between the various branches of economic life and to attempts to coordinate their rhythm of development.

All 15 countries have at present some form of development plan and a planning organization. Some of the preliminary "perspective plans" have been prepared with the assistance of <u>Société générale</u> <u>d'Etudes et de Planification</u> (SOGEP) and <u>Société</u> <u>d'Etudes pour le Développement economique et social</u> (SEDES) in Paris, others with the assistance of UN experts.

Four of the countries have separate comprehensive plans for health (Ivory Coast, Niger, Mali and Gabon) while development plans in Mauritania, Senegal and Madagascar include a brief health component.

<u>Planning for Health</u>. National health planning is now recognized in many African countries as an essential component in economic and social planning. Health planning in three of the countries (Gabon, Mali, Niger) has been initiated with the aid of WHO and U.S. AID. WHO advisers have also assisted in the establishment of special committees for national health planning within the Ministries of Health and in insuring coordination with the countries' socio-economic planning. The need for regrouping of medical aid in rural areas in most of the countries will further enhance the importance of adequate planning machinery and technical advice.

The planning activities can be summarized as follows:

<u>Dahomey</u>: The Four-Year Plan, 1962-1965, part of a Perspective Plan, 1960-1980, was prepared by SOGEP. An Interim Plan with short-term objectives in priority sectors is now being prepared by the Ministry of Planning. The Interim Plan will be followed by a revised long-range Development Plan. (The first Four-Year Plan (1962-1965) was merely a compilation of projects without a time-table, objectives or priorities; no serious efforts were made to implement it.)

<u>Ivory Coast</u>: Planning includes: A Four-Year Plan for Economic and Social Development, 1958-1962; a Ten-Year Plan for Economic and Social Development, 1960-1970—a merging of all sectorial plans to form an over-all plan; an Intermediate Two-Year Plan, 1962-1963; and a Five-Year Plan, 1965-1969, which is still restricted. The latter may not be published at all, owing to the present policy of the government to leave private enterprise as free as possible.

The General Administration for Planning forms an integrated part of the Ministry of Finance, Economic Affairs and Planning. Special development committees and commissions have been created.

The full text of the Health Plan is not published yet, but priority will be given in this plan to training of personnel and preventive medicine. The need for "articulation" of the three branches of health services, <u>i.e.</u>, the mobile control of endemic diseases, the static dispensary and the environmental health activities, with training in common of auxiliaries has been mentioned in connection with this plan.

The plan is being prepared by the Director General of Health, assisted by a technical adviser, an Office of Studies and one planner. A preliminary inventory has been prepared by a private consultant (Dr. Ferraud, Paris).

<u>Mauritania</u>: The Intermediate Three-Year Plan, 1960-1963, was followed by a Four-Year Plan, 1963-1966. A comprehensive Social and Economic Development Plan will be prepared during the Four-Year Plan.

The 1963-1966 Plan is divided into sections, phased annually and gives priority to the productive sectors.

The responsible authority is the Commissariat Général du Plan, directly attached to the Presidency. It comprises the Planning Unit, the Statistical Services and the Office of "Mauritanization."

Health constitutes one of the sectors of the over-all plan. The Directorate of Public Health in the Ministry of Health is responsible for health planning.

<u>Niger</u>: The Interim Triennial Plan, 1961-1963, concentrating mainly on agriculture, was followed by a longer term plan, 1965-1974, (<u>Perspectives décennales</u> de développement, 1965-1974). The first phase of this plan covers four years.

The <u>Commissariat Général du</u> Plan, established in 1960, directly under the Presidency of the Republic, is responsible for the planning activities. The Commissariat has been assisted by the <u>Institut des Sciences Economiques Appliquées</u> of Grenoble University (Prof. de Bernis).

The health plans, <u>Perspectives</u> <u>décennales</u> (1965-1974) <u>de</u> <u>développement</u> <u>des</u> <u>Services</u> <u>de</u> <u>Santé</u> <u>de</u> <u>la</u> <u>Republique</u> <u>du</u> <u>Niger</u> (WHO-U.S. AID) are to be integrated in the general plan.

The headlines of the Ten Year Plan might be mentioned, being (1) reorganization of health administration, (2) priority to mass medicine, (3) priority to health education, (4) priority to training medical auxiliaries, (5) investment to be concentrated on (a) rural zones (comprising 97 per cent of the population), (b) projects giving the maximum services at the minimum expense, (c) needed repairs to existing buildings, (d) no new buildings until staff for them is available. (The Planning Sub-Commission suggested rejecting the plan for a \$3.2 million hospital at Niamey, and the use of these funds for general health development in the interior.)

Senegal: The First National Four-Year Plan for Economic and Social Development, 1961-1965, will be followed by the Second Four-Year Plan, 1965-1969, which is in preparation.

Long-term objectives (25 years) have been defined. Planning is the responsibility of the Central Planning Commission at the presidential level supported by a Ministry of Planning and a <u>Conseil Superieur du Plan</u>—an inter-ministerial body. National commissions for different sectors are attached to the Ministry of Planning.

In connection with the Second Four-Year Plan, it is of interest to note the following proposal. The United Nations Special Fund and the Senegal Ministry of Energy and Water Supply have published a Study for the Provision of Water and Sanitation for Dakar and its neighborhood. It is proposed to develop the Lac de Guiers in the north of Senegal. The line from this source to Dakar passes through or close to about one third of the population of the country and could eventually be developed to supply much more than Dakar. The cost of the first three-years' stage is being borne by the UN Special Fund, \$1,640,000, and the country, \$1,243,000. Two estimates, for the total cost of the main contract, have been made by private firms of \$41 million (with a storage reservoir) and of \$25 million (with no storage reservoir).

The Four-Year Health Plans (1961-1965, 1965-1969) were integrated in the overall development plans.

The main objectives of the second Four-Year Plan will be strengthening rural rather than urban health services, preference for mass treatment over individual medical care, preventive medicine and health education. These objectives are to be reached by (1) giving high priority to training personnel, (2) raising the share of health in the general budget (it was only 6.5 per cent in 1963-1964, raised to 9 per cent in 1964-1965), (3) reinforcement of regional hospitals and rural health centers; strengthening of the control of endemic diseases, of the action against malnutrition, and of environmental hygiene, and (4) priority to building and equipping regional hospitals rather than large hospitals in the main centers.

The Under-Commission for Health and Social Affairs, as well as the advisers in the Ministry of Health, have some misgivings regarding this Plan in view of the shortcomings of the first Four-Year Plan due mainly to shortage of investment credits. Investments under the second Plan will probably call for outside (bilateral or multilateral) assistance. However, such aid must be studied carefully regarding the resulting recurrent expenses.

The Under-Commission for Health and Social Affairs is attached to the Ministry of Planning, but is closely associated with the Department of Public Health; WHO and UNICEF are represented in the Under-Commission.

Upper Volta: An Intermediate Plan was conceived for 1963-1964. The Five-Year draft Plan, 1964-1967, is part of a Perspective Plan extending to 1975 (prepared by SEDES).

The draft Five-Year Plan (1964-1967) was deemed unrealistic; neither the amount of investments nor the trained cadres to implement it were available.

The Intermediate Plan (1963-1964) called for a total outlay of \$66 million of which 61.6 per cent was for the production sector.

Planning activities are under a Director of the Plan in the Ministry of National Economy assisted by a UN expert. (The Director of Planning (Mr. Sanogo) seemed, in an interview in September 1965, to have an excellent grasp of his country's problems, but there is some vagueness about priorities and resources available.)

Some planning has been done in the Ministry of Health but its impact on the over-all planning is not clear. Over-all plans have not, so far, recognized onchocerciasis control as a priority project. As is known, Dr. Lambin, the Minister of Health, gave it as his most urgent public health problem, on account of its economic effect in depopulating fertile agricultural land even more than because of the 40,000 blind in the country. However, a considerable program of improving rural water supply has begun. Drilling of numerous wells and construction of some 200 dams, of which 70 will be built during the 1963-1966 period, are anticipated by 1979.

A draft plan prepared for the Ministry of Health by a consultant has been rejected. A new plan will be elaborated by the WHO representative who arrived in Upper Volta in September, 1965.

<u>Guinea</u>: The Three-Year Plan of Economic and Social Development of the Guinea Republic, 1960-1963, was followed by a Seven-Year Plan implemented from May 1, 1964, but the text of the Plan has not yet been published. Planning is under a Direction du Plan within the Ministry of Finance and Planning.

Mali: The Five-Year Plan, 1961-1965, with yearly phases was produced by the French Ministry of Cooperation. The Second Economic and Social Development Plan is in preparation.

The over-all responsibility for planning is under the <u>Ministère d'Etat Chargé</u> <u>du Plan et de la Coordination des Affaires Economiques et Financieres.</u>

Long-range health planning comprises three Five-Year Plans, the first one ending in June 1966, the second covering the period July 1966 to June 1971, and the third plan from July 1971 to June 1976. <u>Rapport Preliminaire de Planification</u> <u>Sanitaire Nationale</u> was prepared by a WHO consultant. The preliminary plan will serve as a basis for the preparation of a health plan by WHO, with the financial assistance of U.S. AID. This Health Plan will be integrated in the Second Economic and Social Development Plan now in preparation. Responsibility for planning rests with the Planning Commission, attached to the Ministry of Health, under the chairmanship of the Director General of Public Health and including representatives from the Ministry of Health and the Ministry of Planning. Also participating are the health inspectors, Director of Social Affairs adviser to the Director of Public Health, representatives from the Education Section and from trade unions. A WHO planner is participating.

There was 1 Malian doctor per 77,000 inhabitants in 1964; it is expected that there will be 1 Malian doctor for 40,000 inhabitants in 1975 by the selection each year of 20 candidates for the study of medicine.

<u>Central African Republic</u>: An Intermediate Three-Year Plan, 1960-1962, was prepared. At the end of 1964, the National Assembly approved an Intermediate Two-Year Plan for 1965-1966. The budget largely depends on outside assistance. Priority order in the Plan is as follows: (i) rural development, (ii) communication, (iii) trade and industry, (iv) social development (including health), (v) urbanization

and housing, national defense, statistics. Priorities will probably remain the same in the next four- or five-year plan, beginning in 1967 and now in preparation.

A National Council of Planning was set up in 1964; its secretariat is insured by the <u>Haut-Commissariat au Plan et à l'Assistance Technique</u> (which also coordinates technical assistance activities).

Chad: During the period of the Intermediate Two-Year Plan, 1964-1965, the First long-term National Plan will be prepared.

The Intermediate Plan relates to studies required for the next Plan and priority problems, such as rural development and water supply, small industries production and transport.

Congo (Brazzaville): The Three-Year Plan, 1961-1963, was followed by the Five-Year Plan, 1964-1968, to which were added two schemes: creation of an agro-industrial complex, and a hydro-electric dam at Kouilou and an industrial complex at Pointe-Noire.

The plan will involve some \$203 million of which \$41 million will be provided by the state, \$81 million by foreign assistance loans, and \$81 million by private sources. About 55 per cent of the funds are destined for industry and services, 18 per cent for infrastructure, 17 per cent for housing and town planning, 6 per cent for agriculture, 2 per cent for education and 2 per cent for health. Among the nine economic regions of the country, the coastal Kouilou region will receive about 40 per cent of the total funds.

<u>Gabon</u>: The Five-Year Plan, 1959-1964, was followed by a second Five-Year Plan, 1965-1970, which is in elaboration. The Interim Plan of Development covering 1963-1965 gives priority to economic infrastructure, to studies in the field of production, industrialization and social equipment. The Five-Year Plan now in preparation will begin on January 1, 1966. Over-all planning is done by a <u>Commis-</u> sariat au Plan set up within the Ministry of National Economy, Planning and Mines.

Health was one of the components of the first Five-Year Plan, 1959-1964. A Health Plan for the next 15 years has been prepared with the assistance of WHO and U.S. AID and will be integrated in the over-all economic development plan.

There is a Planning Section in the Ministry of Health, comprising the WHO planner and his counterpart, the Adviser to the Ministry of Health, the Director of Health and a departmental head nominated by him. The Planning Section reports to the Health and Hygiene Commission established at the highest level by the President of the Republic to work directly with the Ministry of National Economy and Planning.

<u>Cameroun</u>: The Twenty-Year Perspective Plan, covers the period, 1960-1980. The First Five-Year Development Plan, 1961-1965, was prepared by the government with the assistance of SOGEP, the main objective being the doubling of individual income in 20 years.

The elaboration of the Second Five-Year Plan is to be carried out in 1965-1966; it will cover the period July 1, 1966 to June 30, 1971. <u>Direction du Plan et de la Coopération Technique</u> attached to the Ministry of Finance and Planning is in charge of the execution of the plan.

The Health Plan, in preparation with FAC assistance, will be integrated in the Second Five-Year Plan, July 1, 1966 - June 30, 1971.

An inventory of the existing health facilities was initiated in 1963 with a view to elaborating a plan for the development of Basic Health Services to be carried out with WHO assistance.

<u>Togo</u>: A Five-Year Plan, 1966-1970, was adopted as part of a long-term Perspective Plan, 1965-1984. Stress will be put on agriculture.

The Division of Planning, responsible for the work, is now assisted by an EEC Planning Mission (French and German experts).

Madagascar: The Three-Year Plan of Economic and Social Development covered the period, 1959-1962. The Five-Year Plan, 1964-1968, is being implemented.

An ECA document states that "The Intermediate Plan for the period 1960-1962, based on an economic and social inventory of the period 1950-1960, followed by an Eight-Year Plan 1964-1971, consisting of two four-year phases. Eight-Year Plan, 1964-1971--not yet issued."

The 1965 budget priorities are: Education 16.5 per cent, general administration 14.9 per cent, health 12 per cent, public works 11.7 per cent.

A <u>Comité Interministeriel du Plan et du Développement</u> was set up in 1963. It is under the chairmanship of the President of the Republic and includes the Vice-President and most of the Ministers and the <u>Commissaire Général du Plan</u>. Others are invited when necessary. The <u>Commissariat Général du Plan</u> acts as the secretariat to the <u>Comité Interministeriel</u> which meets once a month.

Health planning is integrated in the over-all plan.

The Development Commission of Public Health Services of the Ministry of Health is responsible for health planning.

African Institute for Economic Development and Planning (IDEP). The Institute was established by decision of the United Nations Economic Commission for Africa (ECA). Its primary purpose is to train specialists and senior officials of the government services and institutions responsible for economic development and planning in African countries.

The Institute, located in Dakar, provides a nine months' regular training course, open primarily to selected high-ranking officials of government services. The third such course is to begin in October 1965. Other shorter courses on planning problems or methods and in planning of various sectors of the economy are also held. On request from governments, IDEP also provides advisory services. Such services are being rendered in 1965 to the government of Mali.

The Institute's activities are financed, for the first five years, as a project of the UN Special Fund to which African countries contribute one third of the total cost, while accommodation and other facilities are provided by the government of Senegal. Special seminars for students and university teachers are financed by contributions from interested governments. In 1964 such contributions were received from the United States, West Germany and Spain.

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### Table 6

### National and Health Planning

Summary of planning activities in specified countries of Africa

Country	Designation of Plan	Period Covered	Status	Planning Authority		
Cameroun	<u>Overall</u> Perspective Plan	1960-80	plan prepared by Govt. & SOGEP <sup>*</sup>	Direction du Plan et de Coopération		
	lst 5-year Development Plan	1961-65		technique		
	2nd 5-year Development Plan	1966 <b>-</b> 71	will be prepared in 1965- 66			
	<u>Health</u> Plan	1966 <b>-</b> 71	in preparation; to be in- tegrated in the 2nd 5- year development plan; planning is with FAC as- sistance based on inven- tory by WHO			
Central African Berublis	Overall Intermediate 3-year Plan	1960 <b>-</b> 62		Haut Commissariat au Plan et a l'Assistance		
	Intermediate 2-year Plan	1965 <b>-66</b>	approved end of 1964	technique		
	4- or 5-year Develop- ment Plan	1967-70 or -71	in preparation			
Chad	Overall Intermediate 2-year Plan	1964 <b>-</b> 65	adopted while 1st national plan is being prepared			
Congo	Overall 3-year Plan 5-year Plan	1961-63 1964-68	includes 2 new schemes at Kouilou and Pointe-Noire	· .		
Dahomey	<u>Overall</u> 4-year Plan	1962 <b>-</b> 65	part of perspective plan	Ministry of Plan-		
	Perspective Plan	1 <b>960-</b> 80				
	Interim Plan with short-term ob- jectives		to be followed by revised development plan			
	Jecorred		Planning by SOGEP			

\* SOGEP: Société générale d'Etudes et de Planification

# Table 6 (cont'd)

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Country	Designation of Plan	Period Covered	Status	Planning Authority		
Gabon	<u>Overall</u> 5-year Plan	1959 <b>-6</b> 4		Commissariat au Plan, Ministère de		
	2nd 5-year Plan	19 <b>65-7</b> 0	in elaboration; will start Jan. 1, 1966	l'Economie nationale du Plan		
	Interim Plan of Development	1963 <b>-6</b> 5		et des Mines		
	Economic Development Plan	1 <b>965-7</b> 0				
	<u>Health</u> Plan	1959 <b>-6</b> 4	health was a component of the 1st 5-year Plan	Planning Section, Ministry of Health, with WHO planner		
	Health Plan	1966-80	will be integrated in the overall Economic Development Plan; plan- ning with the assistance of WHO & U.S. AID			
Guinea	Overall 3-year Plan of Econ. & Social Development	1960 <b>-</b> 63		Ministry of Eco- nomic Development		
	<b>7-y</b> ear Plan	1964-70	coordination of techni- cal assistance: Dir. Gen., Economic and Tech- nical Cooperation, Ministry of Foreign Affair	*6		
Ivory Coast	Overall 3rd 4-year Plan of Economic and Social Develop- ment	1958 <b>-</b> 62		General Adminis- tration for Plan- ning, Min. of Finance, Econ. Affairs, and Plan-		
	10-year Plan for Econ. and Social Development	1960-70	a merging of all plans to form an overall plan	ning		
	Intermediate 2-year Plan	1962 <b>-</b> 63				
	5-year Plan	1965 <b>-6</b> 9	prepared but not made public			
	<u>Health</u> Plan	1960-70	full text unpublished; priority is given to training of personnel and preventive services	Director General of Health assisted by the Office of Studies		

# Table 6 (cont'd)

Country	Designation of Plan	Period Covered	Status	Planning Authority
Madagas- car	<u>Overall</u> 3-year Plan of Economic and Social Development	1959-62		Commissariat Général au Plan, a la Coopération, a l'Animation rurale
	5-year Plan	1 <b>964-6</b> 8	published by ECA	et au Service civique
	8-year Plan	1964-71	not yet published	-
	<u>Health</u> Plan		integrated in overall plan	Ministry of Health through the Develop ment Commission of Public Health Services
Mali	<u>Overall</u> 5-year Plan	1961 <b>-</b> 65	with yearly phases	Ministère d'Etat chargé du Plan et
	2nd Economic and Social Development Plan	1966 <b>-</b>	in preparation; pre- pared by French Ministry of Cooperation	de la Coordination des Affaires écon- omiques et finan- cières
	Health: 3 five-year Plans	1961-66 1966-70 1971-76	new health plan will be integrated in the 2nd Econ. and Social De- velopment Plan in preparation with WHO and U.S. AID assistance	Planning Commission, Ministry of Health
Mauri- tania	Overall intermediate 3-year Plan	1960-63		Commissariat Général au Plan
	4-year Plan	1963 <b>-66</b>		
	Social and Economic Development Plan	1966-	will be prepared during the 4-year Plan period	
	Health planning		sector of the overall plan	Directorate of Public Health

# Table 6 (cont'd)

Country	Designation of Plan	Period Covered	Status	Planning Authority
Niger	Overall interim tri- ennial Plan	1961 <b>-63</b>		Commissariat Général au Plan
	Perspectives décen- nales de dévelop- pement	1965-74	plan is phased: 1st phase, 4 years. Pre- pared by Commissariat with the assistance of Prof. de Bernis (1963-64)	
	<u>Health</u> planning: Per- spectives décennales (1965-74) de dévelop- pement des Services de Santé publique	1965-74	to be integrated in the overall plan; prepared by WHO/U.S. AID	Commission of Social Problems, Director General of Health and WHO adviser
Senegal.	Overall 1st national 4-year Plan for Econ. and Social Development	196 <b>1-65</b>		Ministry of Plan- ning
	2nd 4-year Plan	1965-69	in preparation; long- term objectives (25 years) defined in advance	
	<u>Health</u> planning	1965 <b>-</b> 69	integrated in the over- all development plans	Under-Commission for Health and Social Affairs, Min. of Planning; WHO, UNICEF repre- sented
Тодо	<u>Overall</u> 5-year Plan	19 <b>66-7</b> 0	part of long-term planning	Division of Plan- ning assisted by
	20-year Perspective Plan	1965-84		EEC Planning Mission (1965)
Upper Volta	Overall Intermediate	1963 <b>-</b> 64		Director, Min. of Nat. Econ. assisted by UN adviser
	5-year Draft Plan	1964-67	part of Perspective Plan	•
	Perspective Plan	1964-75	prepared by SEDES*	
	Health planning		draft plan to be prepared by WHO (1965	Ministry of Health

\*Société d'Etudes pour le Développement economique et social.

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PART II

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MAJOR HEALTH PROBLEMS

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#### COMMUNICABLE DISEASES AND THE MAIN HEALTH PROBLEMS

<u>Summary</u>: Tropical Africa has witnessed epidemics of some of the most lethal diseases (trypanosomiasis, cerebrospinal meningitis) and high prevalence of several crippling diseases (onchocerciasis and yaws). Intensive campaigns brought some of these diseases under control without eliminating the danger of their recurrence. Other social diseases (tuberculosis, poliomyelitis, measles) are gradually being recognized and are gaining in importance.

Communicable diseases still represent the most important factor in the health of Africa, outranking under-nourishment, but both factors are closely linked. Control measures should be aimed at increasing the efficiency of the agricultural labor force mainly during the crucial planting season. Indeed the injection of additional energy during a single planting season may have a trigger effect on the agricultural production cycle. The resulting improvement in the food situation will also influence the resistance to disease, affect general and infant mortality and may stimulate the desire and ability to deal with sanitation problems. However, with rational health planning there need be no danger in tropical Africa of population outstripping food supplies.

Varying intensity and incidence of communicable diseases correspond to the sharply defined climatic zones of West and Equatorial Africa. The methods of control depend upon the manner of transmission of the arthropod-borne, water- or foodborne and the air-borne diseases. Arthropod-borne infections (malaria, trypanosomiasis) are controlled by attacks on the insect-vector, by breaking the contact between human host and vector or by prevention or treatment of human cases. Contact diseases (leprosy, treponematoses, trachoma) recede, as a rule, as general standards of personal hygiene rise. Thus cheap and abundant water supply may be more effective than campaigns with treatment teams; prevention by mass treatment of all cases is the next step.

Water-borne intestinal infections are best dealt with by environmental sanitation and health education. Many air-borne diseases (smallpox, cerebrospinal meningitis) can be limited by vaccination or chemoprophylaxis, but raising standards of living is important.

The disease problems of tropical Africa should be viewed according to the ability of such diseases to 1) kill persons of all ages, 2) produce physical or mental inefficiency, and 3) kill infants and young children. The absence of reliable numerical data make such appraisal difficult.

Trypanosomiasis and cerebrospinal meningitis have been the greatest killing diseases, and both could recur on a major scale if their control were neglected. Malaria, yaws, onchocerciasis and (wherever it occurs) guineaworm are among the most important crippling diseases. Malaria, intestinal diseases, measles and faulty weaning are among the greatest causes of child death.

In the countries under review, such vital statistics as are published relate only to sample surveys. In no case are they collected on a countrywide basis, nor are they likely to be for a long time to come. (Dahomey, Ivory Coast, Senegal and Togo currently have WHO-aided projects for improving demographic and health statistical services.)

Tropical Africa has been the scene of the most lethal epidemics known (with the sole exception of the plague pandemics of the sixth and fourteenth centuries). Trypanosomiasis eradicated the population in many areas and decimated it in others. Cerebrospinal meningitis killed a sixth to a quarter of the people in certain savannah areas, in each of three or four epidemic cycles that took place before the sulphonamides were developed. Crippling diseases such as yaws, guineaworm and the blinding disease, onchocerciasis, also occur, or have occurred, on a scale not paralleled in any other part of the world.

Some of these diseases are under control at present, but only as a result of intensive campaigns and continuous vigilance. If the standards of field survey fall, there is abundant evidence that they can and do recur. At the same time, whenever some social disease not previously reported from West Africa is looked for, it is nearly always found on a scale indicating that it, too, is a developed or developing social scourge. Tuberculosis, poliomyelitis and measles are examples.

Hospital attendances are of help in revealing trends in the prevalence of some diseases, but can be grossly misleading. Hospitals treat those who ask for treatment. Those who ask for treatment are those with illnesses they believe to be treatable. A gap is left, with the result that certain diseases have occurred on a very large scale for forty years or more without medical authorities being aware of their existence. (Onchocerciasis is an example. The very existence of the Upper Volta-Ghana focus, the worst in the world, was only discovered shortly before 1939. A focus in Senegal, with up to 15 per cent blindness in some villages, was discovered in the last five years.)

The absolute and relative importance of public health problems in tropical Africa is assessed, therefore, from the consensus of opinion of experienced local and WHO authorities.

In some countries mobile health service teams aim at seeing 100 per cent of the population annually. These surveys provide figures of acceptable accuracy for a limited number of endemic diseases, especially trypanosomiasis, treponematoses, leprosy and often trachoma; also of onchocerciasis and bilharziasis as far as their surveys go, and for the major epidemic diseases, smallpox, yellow fever, plague, relapsing fever and cerebrospinal meningitis. In the sparsely populated lands near the Sahara, surveys are by no means universal. Thus, most published figures represent only a fraction of the true picture and may be misleading. However, such incomplete numerical data on communicable diseases, as reported by mobile services and among in- and out-patients, are of interest regarding seasonal and annual variations. (Annual totals for 1961, as collated by WHO, are included in Appendix 2.)

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In all countries with highly developed health services the first three causes of death are cardiac, malignant and cerebrovascular diseases, all noncommunicable conditions. In tropical African countries, these and other noncommunicable conditions, such as peptic ulceration and diabetes, are seen (mainly in urban communities), but their significance as public health problems is minute in comparison with communicable diseases and under-nutrition.

Although ignorance and relatively low soil fertility play their parts in producing under-nutrition, it is the load of communicable diseases that is by far the most important factor. Adults in what should be the prime of useful life are killed, crippled or weakened, and the population-age structure is heavily weighted towards the young age groups.

Modern therapeutics and insecticides have made spectacular campaigns against communicable diseases possible. Lives can be saved on a large scale. Some of these will be adults, but many more will be children, and therefore any advance in public health inevitably causes an increase in population. However, present population densities in Africa are so low that the problem of over-population need not arise in the foreseeable future. (The population density of the Ivory Coast, none of which is desert land, is only 30 to a square mile. In comparison, there is an area of mediocre savannah land in northern Ghana which supports a population of 300 to a square mile.) All that is needed, to prevent the growth of population outstripping food supplies, is a rational sense of priorities, planning public health measures to increase the efficiency of the community and not merely its size.

This can be explained thus. Diseases that kill persons of all ages indiscriminately—such as smallpox at the present time, and, possibly in the future, tuberculosis—demand urgent attention. But, basically, the value of any public health project in tropical Africa can reasonably be assessed by its effects on the efficiency of the agricultural labor force.

The assessment can, in fact, be based on the even narrower criterion of efficiency during the period of the planting season, the all important, brief time (six weeks, perhaps) in the spring or at the beginning of the rains. Upon the work done in these six weeks depends the amount of food grown for the whole year. If a farmer is sick for a fortnight at this time, a third of his productive work for the year is lost. Last year's food stocks may be very low by the planting season. Also, several crippling diseases have seasonal exacerbations during this period. Epidemiologists and nutritionists, approaching the problem of underproduction from different angles, have arrived at the same conclusion: that to inject additional energy into a community <u>during a single planting season</u>—by making extra food available or by decreasing the crippling effect of even some of the crippling diseases—can initiate a cycle of annual increases in agricultural production. In this way the whole standard of life in a rural community can be raised in four or five years.

The side effects of this improvement include the export of food. With the cash thus acquired, clothing, blankets, etc., can be purchased, and the seasonal incidence of air-borne epidemic diseases diminishes. Furthermore, the community acquires the energy and (perhaps with guidance, perhaps without) the will to improve its sanitation, thus lowering the incidence of intestinal infections.

Intestinal diseases and pneumonia are the first two causes of death in all

developing countries that publish vital statistics, mainly because they cause a large proportion of the very high infant mortality. No tropical African country collects rural vital statistics, but it is reasonable to assume that infant mortality will diminish sharply when the farming cycle becomes established satisfactorily.

All efforts that have been made so far to set down the effects of controlling mass diseases in economic terms have failed. However, all those workers who have actually seen the change occur in a community need no statistical aids to their convictions. In northwest Ghana a social revolution of this nature took place a few years after the war. As an example of the change, cold beer bars began to appear in villages where, five years before, the cowrie shell was the main currency and it was literally impossible to change a sixpence.

In reviewing the diseases prevalent in tropical African countries, their importance in the countries concerned will be viewed in relation to these criteria: (1) as killers of persons of all ages; (2) as producing physical or mental inefficiency; (3) as killers of infants and young children.

Except for Madagascar, all the countries with which this review is concerned belong to tropical West and Equatorial Africa. Four climatic zones can be distinguished in this area, succeeding each other very constantly according to latitude, right across the continent. Each zone has its own epidemiological characteristics. South of approximately 8° 30" N is the forest zone, in which rainfall is heavy, atmospheric humidity is always high, and temperature variation throughout the year is very small. At the other extreme, north of 16° N is the Sahara desert, in which rain seldom or never falls, humidity is virtually nil, and the temperature ranges from below freezing point to very high indeed-there is no shade. North of the bend of the Niger, there is no surface water. Between the forest and the desert two zones, the savannah and the sahel or semi-desert, are distinguished. In the savannah there are fine trees becoming smaller and more widely spaced northwards (except for fringing forest along river banks) and grassland. There is a single rainy season, providing from 30 to 50 inches of rain between May and early October and flooding most low-lying areas in September. In the long dry season all but one or two rivers cease to flow; there is plenty of surface water in pools and river beds, but there are also fairly large areas with no surface water. Relative humidity falls to as low as 2 per cent in the afternoons. The extreme temperature range is approximately 55° F to 110° F, over the year. In the northern part of the savannah, acacia thorn trees and bushes become commoner and other trees scarcer; north of latitude 12° N the acacia and baobab are almost the only trees and the sahel zone thus commences. This zone is intermediate between savannah and desert. It has a short but productive rainy season (many rivers arise in it) and a greater temperature range than the savannah. There are large areas without surface water, virtually deserts, but because they are free from tsetse flies, these areas support great cattle herds and the seminomadic pastoralists who live with them and for them.

As is well known, communicable diseases may be transmitted by four main routes: by arthropod vectors, by direct or close indirect contact, by intestinal infection through water or food, and by respiratory infection with air-borne organisms. In <u>Anopheles gambiae</u> and <u>A. funestus</u> tropical Africa possesses two of the most efficient malaria vectors in the world. The tsetse fly, vector of human and animal trypanosomiasis, occurs only in tropical Africa. Climatic conditions in the forest and savannah are ideal for the transmission of these and a host of other insect-borne diseases, without seasonal intermissions. In the warm, moist forest climate children have no need to wear clothes, and play together naked and sweaty: in the drier parts of the savannah and the sahel, water shortage precludes personal hygiene. Both sets of circumstances favor the transmission of contact diseases. The intensely arid dry season in areas close to the Sahara (allied, no doubt, with social habits) provides ideal conditions for epidemics of air-borne infections. Because of low population density, low water tables and (surprisingly) relatively poor fly-breeding conditions, diseases such as cholera are absent. With this exception, the combinations of insect population, climate and human habits found in tropical (and specially West) Africa have given rise to a concentration and variety of communicable diseases unequalled in any other part of the world.

The principles of controlling communicable diseases depend on their mode of transmission. Insecticides, vaccines, chemotherapy and antibiotics have made possible spectacular campaigns against most of them. However, almost all of them can be reduced, some even eliminated, by a rise in general living standards and in particular by improvement of water supply. The importance of rural water supplies, which are cheap compared with years of campaigning with vaccines and antibiotics, cannot be too strongly stressed.

#### Chapter XI

#### ARTHROPOD-BORNE DISEASES

<u>Summary</u>: The main and most effective vectors of malaria-<u>Anopheles gambiae</u> and <u>A</u>. <u>funestus</u>-in tropical Africa insure continuous transmission without epidemics (stable malaria). Attempts to interrupt transmission of the disease in the savannah by spraying with DDT have failed, but it is believed that residual spraying could interrupt transmission in forest zones. Thus spraying alone will not control and ultimately eradicate malaria carried by <u>A</u>. <u>gambiae</u> and other control methods have been carefully explored during recent years. Meanwhile, malaria in African adults continues to cause only two to seven days of fever per year, responding to a single dose of an antimalarial drug. Pending new prospects of eradication of <u>A</u>. <u>gambiae</u>-carried infection, control measures have to rely on protecting young children by chemoprophylaxis and making drugs readily available to the public.

Trypanosomiasis infection due to <u>Trypanosoma gambiense</u> and carried by the <u>Glossina palpalis</u> group of tsetse flies was formerly epidemic and is still present in most of West and Equatorial Africa. Ecological factors limit the distribution of tsetse flies and the man-fly contact—the bases of transmission. Following the pandemic in the Congo basin and the great lakes area at the end of the last century, sleeping sickness spread slowly from east to west (1915-1940), causing huge numbers of deaths. In Cameroun, the first survey revealed 106,000 cases among 355,000 examined. Some half a million cases were treated in French-speaking West Africa.

Sleeping sickness can be controlled by mass diagnosis, treatment, tsetse control and mass prophylaxis with pentamidine (lomidine), but eradication of the disease would be difficult and costly. Residual foci in forest areas are a constant menace as workers from savannah areas may contract the disease and bring it back to their villages. This potential danger would justify compulsory prophylactic injections in the forest foci and to all itinerants. Such lomidine prophylaxis can reduce incidence, however, without actually stopping transmission. Improved diagnostic methods may lead to a more selective treatment of cases in residual foci.

Among the arthropod-borne virus diseases, yellow fever, carried from man to man by <u>Aedes aegypti</u>, is by far the most important. The disease was most dreaded by expatriates prior to the introduction of vaccination. The French neurotropic virus vaccine, widely used since 1940 in all countries under review (over 100 million vaccinations up to 1962), is not used at present in children under 10 years of age on account of its tendency to produce post-vaccinal encephalitis.

Malaria. The main vectors of malaria in tropical Africa are Anopheles gambiae and A. funestus. The efficiency of any anopheline species as a vector depends on two factors, length of life and man-biting habit. At one extreme, the prevailing vector species may be shortlived and zoophilic by preference. Any individual mosquito of such a species is infinitesimally likely to pass on the disease, and malaria transmission is maintained only when the mosquito population is very great. In such conditions, malaria is a cyclical epidemic disease, rare in some years and in dry seasons, but causing great havoc in favorable seasons. At the other extreme, a longlived anthropophilic species maintains transmission at saturation level even when it is present in very small numbers. Because of the intense perennial transmission, epidemics do not occur, a state of affairs known as stable malaria. Both A. gambiae and A. funestus are in this category, and particularly the former.

<u>A. gambiae</u> invaded Brazil in the 1930's and was eradicated there by a vigorous campaign against its breeding sites. In the 1940's it invaded Upper Egypt and was eradicated there by similar methods. But it has never even been suggested that such an operation could be attempted on a countrywide basis in tropical Africa. Since the introduction of residual insecticides, several malaria control projects have been attempted in areas where <u>A. gambiae</u> is the main vector. In two forest areas, in Cameroun and Liberia, transmission was actually interrupted during the period while spraying (with DDT) was continued. In Cameroun, transmission re-commenced almost immediately when spraying ended. In Liberia, the area concerned has been left unsupervised since the WHO team withdrew.

In the savannah, a carefully planned and meticulously executed project at Bobo-Dioulasso, Upper Volta, failed to interrupt malaria transmission and has been discontinued. In Nigeria, a large area in the Birnin-Kebbi - Sokoto region has been sprayed regularly since 1954. The results, in the general increase in human well-being, are said to be striking, but transmission has not been interrupted.

The operations chief of the Malaria Eradication Division of WHO states succinctly that on this evidence (and that of some projects in other parts of Africa) the conventional residual spraying methods—carried out with full efficiency—can interrupt malaria transmission in forest zones, but not in the savannah.

In the course of these operations it has been discovered that resistance to the chlorinated hydrocarbon insecticide dieldrin is transmitted as a semidominant gene. Hybrids with one resistant parent are sufficiently resistant to survive doses practicable in the field, and specimens inheriting the gene from both parents are resistant to almost any dose. Where this gene is present in the mosquito population, dieldrin and benzene hexachloride (BHC) are not used.

Resistance to DDT is inherited as a recessive gene. Hybrids are therefore fully susceptible, and so far DDT resistance in <u>A. gambiae</u> has not been a problem. Nevertheless, the latter is not easy to control by spraying, one reason being that it tends to sheer off from the irritation of a DDT-treated surface.

Intense research into speciation and other aspects of <u>A</u>. <u>gambiae</u> biology have been going on for several years, including work actually in progress at the <u>Centre</u> <u>Muraz</u>, Bobo-Dioulasso, and <u>A</u>. <u>gambiae</u> is now known to be a complex of at least five species or sub-species. This work, besides being interesting as pure entomological research, is of great practical importance.

Since it is clear that residual spraying alone will not control, and certainly

will not eradicate, malaria carried by <u>A</u>. <u>gambiae</u>, there have been experiments in control by the alternative method of mass treatment to eliminate the reservoir of infection—there is no animal reservoir of the hominid species of malaria parasite. The so-called Pinotti method, mixing chloroquine with common'salt, was attempted in a carefully executed WHO project in Ghana, but was a failure. Chloroquine has a bitter taste, and it was not possible to create the necessary monopoly of distribution: the salt trade, after all, has been highly organized for centuries.

It is widely believed that if chloroquine (or an alternative drug, if one becomes available) were taken regularly by the whole population, malaria could be eradicated. This is quite possible, but already instances of chloroquine resistance in malaria parasites have been proved. A WHO team was investigating one of such reports at Ouagadougou, Upper Volta, in September 1965.

At present, therefore, there is no prospect of eradicating or controlling malaria throughout tropical Africa. It is without doubt a tremendous health problem, but the very intensity of its transmission in the region, over the centuries and millennia, makes its effects very different from those seen in an epidemic focus, such as those of Ceylon and Bengal. The tropical African baby inherits a degree of immunity from its mother (a subject currently under investigation). The genetically inherited sickle cell trait partially protects a proportion of Africans. Writers who have made prolonged and intimate investigations usually agree that the greatest single measure possible for infant welfare, in tropical Africa, would be their protection from malaria until the age of five years. On the other hand, a controlled experiment confirmed statistically what the clinician in Africa had always believed, that the exposed African infant is dead or virtually immune to the effects of malarial infection by the age of three years.

It is agreed that the African adult suffers only two to seven days of mild fever a year, as a result of constant challenge by malaria parasites. A single dose of an antimalarial drug cuts short any of these transitory episodes. The unhabituated expatriate suffers a slowing of his mental processes when in a state of chronic malaria, but as far as can be judged the tropical African is not similarly affected: he or she is quite capable of a distinguished university career or of gaining an Olympic medal.

One other criterion may be added. Suppose that nothing whatsoever is done about malaria in tropical Africa, what will be the results? With some other diseases, e.g., trypanosomiasis and cerebrospinal meningitis, disaster would ensue. With malaria, babies will continue to die, and adults will have their few days annually of malaise and inefficiency. In fact there will be no change in the situation that has remained stable since time immemorial. It seems that, unless new discoveries offer genuine prospects of eradicating malaria carried by <u>A. gambiae</u>, the situation can be dealt with by protecting young children (with regular chemoprophylaxis) and making antimalarial drugs readily available to the public (e.g., at post offices, as used to be done with good results in more than one West African country). These lesser ambitions are practicable, at the present time.

It is of interest to note that <u>A</u>. <u>gembiae</u> carries malaria right up to the verge of the Sahara. Surveys (which have not been universal) indicate that the people of the African sahel react to malaria in exactly the same way as those in more watered places.
The stability of the malaria situation is some comfort in the face of present inability to alter it, but is no cause for complacency. Apart from its effects on the African population (especially children) the continued existence of malaria in Africa will threaten reintroduction of the disease into other countries, which eradicate malaria but not the vector mosquitoes. In this era of easy rapid air travel, symptomless but infective carriers of malaria must be passing from Africa to other countries almost daily. <u>Anopheles gambiae</u> has twice invaded countries outside its normal habitat (Brazil and Southern Egypt) with disastrous effects on the local prevalence of malaria. WHO, recognizing now that insecticide spraying alone will not eradicate malaria from Africa, has changed its current policy to one of strengthening rural health services. The aim of this pre-eradication program is eventually to make a simultaneous double attack, insecticidal and therapeutic, possible, and to provide the clinical surveillance service essential for the final phase of an eradication campaign.

<u>Trypanosomiasis</u> (African sleeping sickness). Trypanosomiasis is not present in Madagascar. In all the other countries the gambian form, caused by <u>Trypanosoma</u> <u>gambiense</u> carried by tsetse flies of the <u>Glossina</u> palpalis group occurs, or used to occur.

For purposes of this review, the arguable statements that  $\underline{T}$ . <u>rhodesiense</u> is absent from our area and that if an animal reservoir or  $\underline{T}$ . <u>gambiense</u> exists it is unimportant may be left uncontested.

The African is an inveterate traveller, on foot or by lorry. He may spend years walking to Mecca, or bringing a flock of sheep from Mauritania to markets near the West African coast, or months visiting an ancestral home (or a doctor with a special reputation) in another country. The incubation period of gambian trypanosomiasis in man, before symptoms appear, may be very long, two years or more. A man may travel long distances in this time, while being infective to any tsetse that bites him. The disease is spread from place to place by asymptomatic carriers, giving rise to "sleeve-shaped" outbreaks along roads and river valleys. (Nevertheless, it is slowly but inexorably fatal to 80 per cent or more of those infected and not treated.)

The <u>G. palpalis</u> group of tsetses depend on a fairly high degree of atmospheric humidity. In the forest zone, they can range abroad at random, but in the savannah they are strictly limited to the vegetation on the verges of rivers and water holes. In order to transmit trypanosomiasis, a tsetse must first pick up the infection by biting an infected human being—and this must be the first blood meal of its life, and a full, leisurely one. Then, after an interval of two weeks or more, it will infect any other human being it bites. The ideal conditions for transmission occur, not in the forest where man-fly contact is casual, but in the savannah where all the world uses the same river crossings and the same village water holes. There is the proved record of almost the whole of a village, some 40 persons, being infected by 4 tsetses at their water hole.

In savannah conditions, sleeping sickness has proved itself to be one of the very few diseases which can literally wipe out entire populations. There are believed to have been a million deaths from it in the Congo area around the end of the 19th century. Carried across to Lake Victoria, by H. M. Stanley's expedition of 1888 or by some nameless Arab slave raider, it killed about three quarters of the lakeside population before the survivors were driven out of the area by force, to end the epidemic. Between 1915 and the 1940's, an epidemic of sleeping sickness spread slowly across Africa from east to west. There were huge numbers of victims, but this epidemic was the genesis of the mobile system of diagnosis and treatment, so that loss of life was not as great as it might have been. In Cameroun, Jamot's first survey revealed 105,902 cases out of the first 355,000 persons examined. In Nigeria, 300,000 cases were treated in six years. In the French-speaking West African countries, over half a million cases were treated.

But there were many river valleys, often close to hospitals or administrative centers, where the population ceased to exist before any official was aware that anything had happened. The <u>control</u> of sleeping sickness, by mass diagnosis and treatment of cases, by tsetse control and by mass prophylaxis with lomidine (pentamidine) is a straightforward business—provided all the danger areas are prospected regularly. The <u>eradication</u> of sleeping sickness has been achieved only at the extremity of its potential range (in Niger). Eradication is theoretically possible by eradication of tsetses with insecticides, but this would be very expensive and very difficult except as a local scheme (as at Bamako, Mali).

If regular and scrupulous search is not kept up, it has been proved repeatedly that sleeping sickness can revive in epidemic form in any of the old epidemic areas. Even nowadays, with the treatment, and where to get it, well known and fully accepted, these epidemics go undiscovered until someone actually surveys the area concerned. In some of the former epidemic areas, e.g., Congo (Leopoldville), the type of doctor needed for sleeping sickness work no longer exists and the disease must be occurring on an increasing scale.<sup>\*</sup>

In the countries under review, control is being maintained at present. But these countries have long frontiers with others in which control measures are no longer as efficient as in the colonial era. The problem of getting African doctors to take up this type of work—for which the short-term conscript is not even a poor substitute for the long-term volunteer—has not been solved. The reappearance of epidemic sleeping sickness is probably the greatest hazard facing the savannah countries.

In forest country, there are certain (well known) foci where man-fly contact is close enough to give rise to a steady and intractable incidence of trypanosomiasis. The sufferers are mostly special groups whose occupation brings them into contact with the fly. Palm wine tappers form one such group, but the great majority are laborers from savannah areas further north, who work on farms for a season (or longer) and then return home. They may carry the infection back and thus light up former epidemic areas. For this reason, the authorities of the mobile medical services in French-speaking African countries would like to continue compulsory prophylactic injections of lomidine in forest foci and to all itinerants.

Lomidine prophylaxis, given regularly and universally in sufficiently large areas, can reduce the incidence of trypanosomiasis to a very low figure (though it has never actually stopped transmission). Recent work suggests that lomidine

No statistics are available, nor can they be expected. Statistics of sleeping sickness prevalence reflect actual prevalence only when thorough survey work is covering all the areas at risk.

may be only masking infections rather than preventing them. However, a natural tendency to object to compulsory parades for unpopular health measures has reduced the proportion of persons at risk who actually receive the prophylaxis. Although some very experienced French authorities still have great faith in it, it does not seem likely to play an effective role in future eradication projects.

The substantive diagnosis of trypanosomiasis is made when trypanosomes are found in the blood, gland juice or spinal fluid. This cannot always be done, especially in patients who are in the later stages of the disease, and many patients have been diagnosed, and treated successfully, on other evidence. The latter procedure was undoubtedly justified in former times, both for the individual's sake and as a preventive measure (to make sure that a doubtful case could not act as a reservoir of infection).

However, the arsenical drugs used in the treatment of trypanosomiasis are by no means free of danger: an appreciable proportion of those treated develop encephalopathy or blindness. Therefore, there is an obvious need for more refined methods of diagnosis, and use is now being made of the increase in  $\beta_2$  macroglobulins in the blood serum. This test is being carried out on a fairly large scale in certain areas, but there is a divergence of opinion on its specificity. At one extreme, some experienced workers consider that a raised  $\beta_2$  macroglobulin level is sufficient justification for treatment. At the other extreme, equally experienced men consider that other conditions such as leprosy or even the omnipresent malaria may cause an increase in  $\beta_2$  macroglobulins.

Yellow fever and other arthropod-borne viruses. Yellow fever, carried from man to man by <u>Aedes aegypti</u>, was—until vaccination against it was introduced in the 1930's—one of the diseases most dreaded by the expatriate in West Africa. Yet it was and is seldom seen in indigenous people, in typical form, although laboratory examinations confirm that from time to time considerable epidemics occur under the eyes of experienced clinicians.

The same applies to many other arthropod-borne virus infections. Dengue, the "break-bone fever" of the European, is seldom diagnosed in a West African. O'nyong-nyong fever first appeared, to the eyes of medical science, when an epidemic of it swept through Uganda in 1959, killing few of its victims but causing severe invalidism. In contrast, recent researches have established that antibodies against O'nyong-nyong are present in a considerable proportion of the population of rural Senegal, and in 90 per cent of that of Upper Volta, and that during the last five years there has been a large epidemic—probably of O'nyong-nyong, but conceivably of Chikungunya—in Upper Volta, all without the clinical diagnosis of a single case.

The rural West African child is subjected from birth to bombardment with a large number of arthropod-borne viruses. These fall into related groups, and thus relatively non-pathogenic infections may provide partial immunity to the effects of severely pathogenic infections such as yellow fever. Whatever the reasons, the rural West African is less susceptible than the rest of mankind to the effects of arthropod-borne viruses. The same may not apply to the rapidly increasing urban populations of West Africa. Overt epidemics of yellow fever do occur, though rarely, in West Africans. In November and December 1965, an epidemic was reported in the region of Diourbel, Senegal, which had caused 72 deaths.

Moreover, despite improvements in urban sanitation, a waterpot exposed in any

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West African city will probably contain eggs of <u>Aedes aegypti</u> 24 hours later. (This experiment was carried out in Lagos, Nigeria, recently.) Therefore, there is good reason to reduce as far as possible the circulation of yellow fever virus. Since yellow fever is a zoonosis, transmitted normally among monkeys, mass vaccination cannot eradicate the disease—as, for example, smallpox can be eradicated. Nevertheless, the highest health authorities in the French-speaking countries unanimously consider that protection of their populations by yellow fever vaccination, as nearly universal as possible, should continue.

There are two different yellow fever vaccines in current use. The French neurotropic virus vaccine is prepared at the Pasteur Institute, Dakar. It is grown in the brains of white mice, and a relatively easy and inexpensive process produces a vaccine of high titre, reasonably stable to heat, administered (like smallpox vaccine and often simultaneously with it) by simple scarification of the skin. It confers strong and long-lasting immunity. It was developed in 1934. Yellow fever vaccination was made compulsory in French-speaking West Africa in 1941, and by 1956, 48 million vaccinations with French neurotropic virus vaccine had been given. The figure of 100 million was passed by 1962.

The disadvantage of this vaccine is its tendency to produce encephalitis as a side effect, particularly in young children. Generally, post-vaccinal encephalitis has been observed in isolated cases, rare but not in negligible numbers. However, there have been instances of what may be termed epidemics of post-vaccinal encephalitis. At Brazzaville, Congo, in 1944, 102 cases with 18 deaths occurred in 102,000 persons vaccinated. In Nigeria, in 1952, there were ten cases (three deaths) in 23,042 persons over ten years of age vaccinated, but 73 cases (29 deaths) in 19,358 children under ten years. In this episode, the age-incidence of cases and deaths was as follows:

Age (years)	Cases	Deaths	Case fatality 🖇
0-1	33	13	39
2 - 4	25	12	48
5 <del>-</del> 9	15	4	26.6
10 and over	10	3	30

Other focal occurrences of encephalitis after yellow fever, or combined yellow fever-smallpox, vaccination have been observed from time to time, e.g., at Pointe-Noire, Congo, in 1958 there were 26 cases (all but one in children under ten years old) after a campaign of combined vaccination.

The other yellow fever vaccine is 17D, derived from virus isolated in 1927 from a Ghanaian named Asibi who was still alive in 1962. 17D vaccine is prepared from virus grown on developing chick embryos. It has been used on an immense scale in endemic yellow fever areas of the America's, and is the vaccine usually given to international travellers at clinics in temperate lands. It is given by subcutaneous injection, and (as normally prepared) is not stable to heat: it must be kept refrigerated until within an hour or less of administration. Because refrigeration is not available in rural areas of South America, at the Rio de Janeiro laboratory of the Instituto Oswaldo Cruz, 17D vaccine is subjected to very intense dessication. In this state it can be used after 15 days without refrigeration.

For several reasons, 17D vaccine is very much more expensive than French neurotropic virus vaccine. The raw material, fertilized eggs, is more costly and more difficult to handle. The growth of 17D virus on eggs is much less than that of the neurotropic virus in mouse brains: therefore mouse brain material produces more vaccine doses than the equivalent amount of chick embryo material. The process of ultra-dessication is expensive in apparatus and skilled work.

Cases of post-vaccinal encephalitis have been reported after vaccination with 17D vaccine, but it is agreed that for children the latter is safer.

Since universal yellow fever vaccination continues to be the policy in the French-speaking countries of Africa, it is proposed in future to use 17D vaccine for children under ten years of age, but to continue to use French neurotropic vaccine—cheaper and easier to transport and administer—for those ten years or older. For this purpose, the Pasteur Institute, Dakar, wishes to commence the production of 17D vaccine.

# DISEASES TRANSMITTED THROUGH CONTACT

<u>Summary</u>: Among the contact diseases, leprosy, yaws, endemic syphilis and trachoma readily respond to treatment and are mainly organizational problems.

Leprosy is widespread in the countries under review. Cases diagnosed mostly by mobile units require a network of treatment stations and trained staff to insure the prolonged treatment and to keep lepromatous lepers under observation or treatment for life. Some 500,000 cases have been diagnosed in seven countries of West Africa and the progress of the disease has been arrested in about one half of them. Specialized training in leprosy control is provided at the Marchoux Institute.

Yaws, the spirochetal disease causing florid rashes in children, has been practically eliminated from savannah areas. Penicillin campaigns have, however, not eradicated yaws in the forest areas. A control campaign initiated by WHO has been carried out with determination in Ivory Coast where, however, the originally recommended single dose of PAM has now been replaced by three injections of benzathine penicillin given to those found positive by Kline test performed on every person.

Endemic syphilis, a disease of the desert fringe area, is transmitted mainly by communal use of drinking vessels; it readily responds to treatment and to the least improvement in hygiene.

All venereal diseases are common in tropical Africa, but serological surveys (in Abidjan, Dakar, Bamako) give ambiguous or conflicting results regarding the prevalence of venereal syphilis.

Trachoma, a common disease outside the forest area, is the main cause of blindness. Antibiotics and sulfonamides provide at present a ready cure.

Leprosy, though still very common, is no longer considered to be a great and intractable problem of public health. The cure and the regimen of treatment are known. Treatment must be very prolonged; indeed, it is still the consensus of opinion that a lepromatous leper should continue to receive treatment (or at least remain under observation) for life. Where mobile teams operate, leprosy is diagnosed during routine surveys. Treatment clinics must be organized at suitable distances apart, so that no leper has to walk an excessive distance for his weekly dose. If this is done, and if the clinic is held with unfailing regularity, lepers are remarkably faithful in attendance. General Richet, when he was in command of the endemic diseases service of former French Equatorial Africa, created a system of <u>circuits</u> <u>de</u> velo, which consisted simply of a network of weekly rounds by auxiliaries on bicycles, holding clinics at a series of known centers—a conveniently sited tree being as good a place as any. These clinics are very successful in holding their clientele. A proportion of students from the <u>Ecole Jamot</u> go on to the <u>Institut Marchoux</u> for special training in leprosy work.

The survey and treatment of leprosy in nomadic pastoralists, in whom it is common, is a difficult matter.

In the original OCCGE countries, Mauritania, Mali, Niger, Senegal, Ivory Coast, Upper Volta, and Dahomey, 500,000 lepers have been diagnosed up to the present. Of these, the disease has been at least arrested in a half; in some wellregulated areas up to 85 per cent have been controlled or cured.

Yaws and endemic syphilis are non-venereal treponemal diseases, usually acquired between the ages of 3 and 14 years. The treponemes (spirochetes) are difficult organisms to investigate since they cannot be cultured. All of them, including that causing venereal syphilis, give identical reactions to flocculation and complement fixation tests, but in experimental animals there are minor differences in behavior between yaws and syphilis strains. There is not complete cross immunity: a person with yaws can be infected with venereal syphilis.

Yaws and endemic syphilis are important for two main reasons. Infection is usually acquired during childhood; therefore the school child is often handicapped by fever, unsightly and uncomfortable secondary skin lesions, and dactylitis. In the adult these diseases are the rheumatism of the tropics; exacerbations are particularly liable to recur, year after year, when atmospheric humidity rises at the beginning of the rains. Since this is the all-important planting season, endemic yaws (especially in savannah areas) is a very serious economic handicap.

In humid forest country the treponeme of yaws passes freely between the skins of children, and florid secondary rashes are common. The organism is extremely susceptible to dryness, and in the savannah the drought of the dry season is inimical to yaws transmission. Yaws was endemic in the savannah until the advent of penicillin, but since then has virtually disappeared from the drier areas. This has been a major victory for public health, human well-being, and economic progress. Penicillin campaigns have not eradicated yaws in forest areas. In Ivory Coast, in particular, these campaigns have been carried on with determination and efficiency for several years. Initially, a single dose of penicillin aluminum monostearate (PAM) was given, as recommended by WHO. The policy now has been changed. The Kline flocculation test is being performed on every person in the endemic areas (no mean feat in the African bush) and each one found positive is given a course of three injections of the long-acting benzathine penicillin. Even so, there is grave doubt that yaws will be defeated thus in forest country.

On the other hand, it has been found repeatedly that the slightest increase in general hygiene, particularly following the improvement of water supplies, ends the transmission of yaws abruptly.

Endemic syphilis is a disease of people living on the edges of deserts, with exiguous water supplies that permit no personal hygiene at all. In some endemic areas, near the Sahara, seropositivity rates of up to 80 per cent have been found. The disease appears in similar areas of other continents under local names, of which Bejel in the Middle East is the best known. Its transmission depends mainly on the communal use of a family (or public) drinking vessel, the spout of which goes from mouth to mouth. Obviously, the least improvement of hygiene and water supply must end its transmission. Penicillin, on a mass scale, has been used in all the near desert areas of Africa, in Mauritania, Mali, Senegal, Upper Volta, Chad, Niger and the Central African Republic. It must be emphasized that these campaigns have been made possible only by the energy and enthusiasm of the French Marine Corps doctors: in Mali, for example, the campaign came to a halt as soon as the French withdrew. Where they have been continued, the results have been sensational. Endemic syphilis itself has declined, but there have been other incidental effects including an increase in fertility in people who were seriously threatened with extinction by low birth rates.

All the venereal diseases, and especially gonorrhoea, are common in nearly every part of tropical Africa. The prevalence and importance of venereal syphilis is of some interest. One extreme opinion holds that the eradication of endemic nonvenereal treponematoses opens the door to venereal syphilis and is therefore positively undesirable. It is doubtful if anyone who has actually seen a yaws-ridden community would express this view; anyway, if the continuation of yaws and endemic syphilis are desirable, not only penicillin but also every possible measure for raising living standards must be withheld.

Serological surveys in the towns of West Africa give results that baffle interpretation. In one survey at Abidjan, 5000 persons were examined with meticulous care, and one dubious syphilitic scar was found, but the Kline test was positive in nearly 25 per cent. At Dakar, a seaport with an area of endemic syphilis in its (fairly remote) hinterland, and at Bamako, an inland town also with endemic syphilis areas at some distance, seropositivity is about 25 per cent. Whatever the interpretation of these figures may be, they throw little light on the prevalence of venereal syphilis.

<u>Trachoma</u> is very common throughout tropical Africa, except in forest areas. Its manifestations seem to become more serious, the drier the area, and its transmission appears to depend on a combination of very low personal hygiene and abundance of houseflies. In the absence of either of these two factors it is rare. It is probably the commonest cause of blindness, at least in women, in whom trichiasis and entropion occur frequently as complications. Trachoma is now readily curable with antibiotics and sulfonamides, and the operation for the relief of trichiasis is very simple. The problem has become an organizational one, how to take the patients to treatment, or the treatment to patients.

# HELMINTHIC DISEASES

<u>Summary</u>: The main filarial diseases, bilharziasis and guineaworm, are dealt with in this chapter.

Bilharziasis (schistosomiasis) due to Schistosoma haematobium and S. mansoni is found in all countries under review. Peculiarities of their life cycle and the dependency of the two schistosomes on the snail intermediate hosts (Bulinus and Biomphalaria species) account for the focal distribution of the human infection. Except for limited snail control with carbamate of zinc (zirame), efforts to control bilharziasis have failed so far. Absence of prospects for effective control of the disease explains the lack of interest of health authorities in a comprehensive survey of the situa-However, it is known that important foci due to S. tion. haematobium exist in Senegal, Ivory Coast, Mali, Mauritania, Niger and Chad. The importance of bilharziasis as a public health problem is still debated. However, freshly introduced infection into the area of an irrigation project may cause serious invalidism in the labor force.

Filariasis due to <u>Wuchereria bancrofti</u> is transmitted by the <u>Culex pipiens fatigans</u> mosquito and <u>Anopheles</u> species. Increasing urbanization favors the spread of <u>C. pipiens</u> fatigans. Bancroftian filariasis responds to treatment with hetrazan. OCCGE teams are engaged in surveying foci of the disease prior to attempting control projects.

Onchocerciasis. The microfilariae of <u>Onchocerca volvulus</u> migrate in the human skin and cause pruritic dermatitis; invading the eye, they may cause blindness. In the savannah between 10° and 14° N latitude, blindness rates of more than 10 per cent are frequently found. Higher rates among males can lead to the extinction of an agricultural community through starvation.

The blackfly <u>Simulium</u> <u>demnosum</u>, the main vector of onchocerciasis, breeds in swift running water and the nuisance caused by its bite makes it one of the world's worst pests. The combined effect of mass blindness and the blackfly nuisance leads to a progressive retreat from rivers with resulting denudation of the watershed and soil erosion. The disease and its vector constitute a major social scourge and an economic threat. Building of numerous small dams has recently extended the range of the fly and its breeding season.

Treatment of the disease is possible but would be a lengthy process, as probably some 3 million are infected in the Volta River focus alone.

Control of the vector can be organized because <u>S</u>. <u>dam-</u> <u>nosum</u> larva is susceptible to DDT, but the wide range of flight of the insect requires planning such control measures in terms of complete river systems. A WHO-sponsored project in the Volta River basin will, it is hoped, commence during 1966. A promising control project, deserving support, is planned by OCCGE in Ivory Coast and Upper Volta.

Loa loa, transmitted by biting flies (<u>Chrysops</u>) in forest areas, is not a serious public health problem. Cases of loiasis are cured by hetrazan, which is also a prophylactic.

Guineaworm infection (dracontiasis) is a cause of serious disablement, mostly coinciding with the planting season. To complete its life cycle, the guineaworm requires the presence of the water flea <u>Cyclops</u>. Properly constructed wells or regulated water supply would bring the transmission of the parasite to an end.

Bilharziasis (Schistosomiasis). The two African schistosomes, Schistosoma haematobium (and the closely related S. intercalatum and S. curassoni) and S. mansoni are found in all the countries under review. The peculiarity of bilharziasis epidemiology is that the condition is not necessarily present wherever the snail intermediate hosts—Bulinus species for S. haematobium and Biomphalaria species for S. mansoni—occur. Yet when either condition, and particularly S. haematobium, is endemic a very high proportion of the population usually is infected. Foci of nearly 100 per cent infection are found within a mile or two of trouble-free areas.

This focal distribution is due to the nature of the transmission cycle and the fact that the schistosome is a sexual organism which must mate in order to. reproduce. The miracidium hatching from a schistosome egg, passed into water in urine or feces, must swim to a snail. The cercaria emerging after developing in the snail must swim until it finds a human skin to penetrate. Neither miracidium nor cercaria can swim far, or live longer than a day or two in free form. Therefore, transmission takes place only in places where human beings and snails mingle very closely. Irrigation canals are ideal transmission sites. Frequently transmission is maintained chiefly by children playing in water, and in one prolonged investigation in a hyperendemic area, the average size of pond in which infected snails were found was less than five yards in diameter. A recent mathematical study has demonstrated that because mating must take place in the human body, community infection is not readily established from a small, freshly introduced source of water pollution. The same study showed that established endemicity is best attacked by a combination of snail destruction and mass treatment of cases: improved sanitation has little effect.

Most efforts to control bilharziasis have ended in complete failure. As yet no really satisfactory clinical treatment has been developed. Molluscicides for snail control have been greatly improved. Some highly efficient compounds have the disadvantage of being also herbicides and of being rapidly destroyed by sunlight. However, carbamate of zinc, known as zirame, is very stable in sunlight and relatively non-toxic to plants. It is being used on an increasing scale, especially in Senegal.

If there were a drug with which the disease could be cured, with no toxic complications, in field conditions, every one of the countries under review could undertake a campaign against bilharziasis forthwith. Until such a drug is discovered, the attention paid to bilharziasis in these countries depends more on the interest of individual doctors than on policy. It is not always advisable to survey and thus publicize the prevalence of diseases that cannot be controlled. The precise distribution of the disease, and the numbers infected, have not been worked out in any of them. In Senegal, where the present Director of the Endemic Diseases Service, Colonel Lacan, is interested, infection rates approaching 100 per cent are found in Upper Casamance. There are foci in Lower Casamance, around Kedougou and along the northern frontier with the Gambia. In the east, the semi-nomadic pastoralists are commonly infected. In Ivory Coast, a WHO consultant estimated that there are 700,000 infected persons. In Mali, it is known that <u>S. haematobium</u> exists, and that there is one focus at Nioro. In Niger, foci are known to exist at many inland towns, including Tillabery, Magaria, Tessahoua. In Mauritania, there are foci of <u>S. haematobium</u> infection wherever surface water exists. In Chad, the <u>S.</u> haematobium infection was present in 20 to 50 per cent of children examined (1960-64).

Investigation of S. mansoni prevalence is more laborious than that of S. <u>haematobium</u> since it involves examination of stools instead of urines. Endemic foci are scattered all over tropical Africa.

The actual importance of bilharziasis, relative to other public health problems, is not easy to assess. Clinical investigations now in progress are revealing more and more evidence of the damage done to bladder, ureters and kidneys by <u>S. haematobium</u> infection, even in recently infected children. <u>S. mansoni</u> infection notoriously damages the liver. Yet none of the many surveys of child health in the countries under review have incriminated bilharziasis as one of the major causes of child mortality. <u>S. haematobium</u> infection does not appear to interfere with growth in height and weight, at least up to the age of twelve years. Even in the worst foci of endemic schistosomiasis, Egypt and the Sudan, farming goes on.

Taking the criterion applied earlier to malaria, what will happen if nothing is done? The answer is — nothing: no areas will be depopulated, no communities will be reduced to even lower efficiency and standards of living. The exception to this generalization is that bilharziasis, freshly introduced into the area of an irrigation project ( $\underline{e} \cdot \underline{g} \cdot$ , a sugar plantation) may cause serious invalidism in the labor force and supervisory staff. Taking as the criterion the mounting evidence of the clinical damage caused by the disease, it is one of the most serious and intractable of tropical diseases.

Filariasis. The following pathogenic filarial worms are present in Africa. <u>Wuchereria bancrofti</u>, the usual cause of elephantiasis, is transmitted by the omnipresent household mosquito, <u>Culex pipiens fatigans</u>, and by <u>Anopheles</u> species. Elephantiasis does not occur in Africa on such a scale as, for example, in the Pacific Islands. Nevertheless, it is common enough and is relatively unimportant only because of the multitude of more serious crippling diseases.

<u>C. pipiens fatigans</u> cannot be controlled by insecticides or antilarval measures, except in the most closely supervised urban areas. Campaigns against bancroftian filariasis depend therefore on mass administration of diethylcarbamazine (hetrazan). This drug kills adult <u>W. bancrofti</u> slowly, but kills microfilariae of all filarial worms rapidly. If one monthly dose of diethylcarbamazine can be administered to all infected subjects in an endemic area, the reservoir from which the mosquitoes pick up the infection is removed and transmission is ended. Projects of this nature have had considerable success in the Pacific Islands. They are obviously more difficult to organize in Africa, with its mobile population. However, the OCCGE teams are engaged in surveying foci of bancroftian filariasis, with a view to attempting to control projects. <u>C. pipiens fatigans</u> breeds freely in polluted water, notably in badly laid open drains. The spread of the mosquito, and consequently of bancroftian filariasis, is therefore closely associated with increasing urbanization. It is likely to become a more serious problem as urbanization progresses.

<u>Onchocerciasis</u>. The mature adults of <u>Onchocerca volvulus</u> migrate freely in human subcutaneous tissues for a while, but eventually settle down in pairs in fibrous subcutaneous nodules, in places where bone is close to the skin, especially the iliac crests, the ribs and the scalp. Their offspring microfilariae, produced in millions, migrate in the skin itself. They give rise to a pruritic dermatitis, which can be literally intolerable and lead to suicide. They also invade the eyes and may cause blindness.

As with most helminthic diseases, the presence of a few worms does the human body no harm. Blindness is common in communities in which children get their first infection at an early age, and are then superinfected annually. In such foci, all of which are located between 10° and 14° N latitude, blindness rates of more than 10 per cent are found frequently. Blindness occurs most frequently in males over the age of 30 years. In a village with an over-all blindness rate of 10 per cent, over 20 per cent of adult males are likely to be blind. The effect on the efficiency of an agricultural community needs no further emphasis; it can lead to extinction through starvation.

Onchocerciasis is transmitted by blackflies, <u>Simulium</u> species; in Africa by <u>S. damnosum</u> and <u>S. neavei</u>. The eggs of blackflies are laid, and the larvae and pupae develop, in running water particularly where rocks break the surface, giving rise to turbulence and higher oxygenation of the water. These flies, which range from two to six millimeters in length, have an extraordinary capacity for appearing in vast swarms, and the nuisance caused by their bites makes them one of the worst insect pests in the world, by no means only where they carry onchocerciasis. (Blackfly control is carried out in the Adirondacks, in Saskatchewan, around Gander airport and in many parts of Europe, simply to minimize their nuisance value.)

Where blackflies breed and bite, human beings prefer not to live or work. Therefore, in considering the effects of onchocerciasis on a community, the disease itself and its diabolical little vector must be linked together.

In Africa onchocerciasis is endemic wherever conditions favor the breeding of either of its vectors, of which only S. demnosum is important in the countries with which this report is concerned. Several aspects of the life cycle of this fly still baffle investigation though the researches of the onchocerciasis section of the OCCGE have made considerable progress in the last five years.

The combined effects of mass blindness and the blackfly nuisance result in a progressive retreat from rivers in the African savannah. After each retreat, trees are cut down and grass is burned for new agricultural land, and soil erosion inevitably progresses further and further towards the watersheds. The final result is an uninhabited, rocky, eroded valley in which the river itself dries up in the dry season and acts merely as a rainwater drain.

Individual foci will generally be mentioned in connection with the countries concerned, but as an example the Red Volta valley in Upper Volta may be cited. Here, in the 1930's, blindness rates as high as 30 per cent were found in some villages. By the present time, this valley has become completely depopulated. The savannah is capable of supporting a considerable agricultural population; some areas do in fact support 300 persons a square mile. But in such country, where surface water is confined to well-defined river systems and the soil is extremely liable to erosion, it is obvious that the valleys themselves should be populated, while the watersheds should be protected areas of afforestation and grass. The very reverse of this arrangement is common, and the drift away from the valleys is continuing, not very slowly, at present. Dr. Lambin, Minister of Health of Upper Volta, regards onchocerciasis as the most pressing public health problem of his country.

Onchocerciasis and its vector flies therefore constitute simultaneously a social scourge and an economic threat, both of the greatest importance, to the entire African savannah. They may not be the only causes of riparian depopulation, but until they are brought under control this disastrous trend will continue.

The problem is being accentuated at the present moment by the building of small dams intended to store rainwater in the smaller eroded riverbeds. More than 70 such dams have been built in Upper Volta alone. The idea is understandable and hard to condemn, but (as M. le Berre of the Onchocerciasis Section, OCCGE, and Dr. Lambin emphasized) <u>S. damnosum</u> breeds freely in the spillways of all these dams. The range of the fly and its breeding season are being dangerously extended.

As with any insect-borne disease, the problem of control can be tackled from two angles, reducing the reservoir of infection by mass treatment and/or attacking the vector.

<u>Onchocerca</u> volvulus is solely a human infection, and therefore universal mass treatment theoretically should be effective. The rapid death of <u>Onchocerca</u> microfilariae, caused by diethylcarbamazine, causes such violent allergic reactions that for this reason alone this drug could not be used for the purpose. A synthetic urea compound, suramin, cures onchocerciasis but has toxic hazards that make it unsuitable. Recent experiments have shown that a single dose of a privately developed drug, Melarsan W, probably clears onchocercal infection without toxic hazards. This offers good prospects. Nevertheless, immense numbers of persons in tropical Africa are infected and infective to the vector. In the Volta basin focus, out of a total population at risk of about five and a half million, perhaps three million are infected and a hundred thousand are blind. It will be a long time before treatment can be given to all of these.

Two factors dominate all plans to control <u>S</u>. <u>damnosum</u>. Firstly, the larval stages are intensely susceptible to DDT. A dose of as little as one part DDT in 30 million parts of water, maintained for half an hour, has been used successfully <u>in field conditions</u>. Moreover, since flowing water is always involved, the same DDT travels downstream: in Saskatchewan more than a hundred miles of river has been cleared of blackfly larvae by a single dose. Secondly, despite its small size, <u>S</u>. <u>damnosum</u> has a flight range which may be as great as 50 miles. Therefore reinvasion takes place immediately, if a single river is treated with DDT. The control of S. damnosum can only be planned in terms of complete river system.

Under the auspices of WHO, a project for onchocerciasis and blackfly control in the basin of the Volta River, the worst focus in the world, has been planned. Meanwhile the onchocerciasis section, OCCGE, has well-advanced plans in respect to the area where Ivory Coast and Upper Volta meet. This work deserves every possible encouragement. Loa loa is transmitted by biting flies, <u>Chrysops</u> species, only in forest country. Adult L. loa migrate in subcutaneous tissues, and the local allergic reaction to their periodic appearance close to the skin is known as a Calabar swelling. This is painful but transient: a swelling near a wrist can put a hand out of action for a few days. Loiasis is not a serious public health problem and individual infections are readily cured by diethylcarbamazine. The latter drug also acts as a true prophylactic, apparently killing infecting larvae before they can develop.

<u>Dracontiasis</u>. <u>Dracunculus medinensis</u> or the guineaworm matures for a year in the depths of the human abdominal cavity. The male, less than an inch in length, has been found very seldom. The mature fertilized female, which measures up to four feet long, though only a twentieth of an inch in diameter, attempts to make her way through the subcutaneous tissues down to the ankle. There she extrudes her head through the skin and, under the stimulus of cold, ejects living larvae. For purposes of the life cycle these must be ejected into water, which normally supplies the cold stimulus.

In water, the larvae penetrate the water flea Cyclops. Infection is picked up by a human being who drinks water containing infected Cyclops.

This should be the easiest of all human infections to prevent, simply by preventing human beings with pointing guineaworms walking about in the source of drinking water. The use of properly constructed wells, or any other form of regulated water supply, ought to bring the transmission of guineaworms to an end.

Yet in many foci almost every person picks up one or more guineaworms every year. A single guineaworm, emerging from an ankle without causing secondary sepsis, disables the joint for about four years. In multiple infections, guineaworms may point from the ankle, the knee, the hand, the penis, or may get lost and cause muscle abscesses. The pointing takes place when rain begins to fall after the dry season, supplying the cold stimulus. This, therefore, coincides exactly with the planting season, and a whole village community can be immobilized simultaneously at this all-important time.

Guineaworm is only a problem in certain localities but it emphasizes yet again the importance of water supplies in rural public health.

#### Chapter XIV

## AIR-BORNE EPIDEMIC DISEASES AND TUBERCULOSIS

<u>Summary</u>: This chapter groups the diseases: (1) of special importance to areas outside the forest zone, such as cerebrospinal (meningococcal) meningitis and smallpox, (2) measles, the cause of high mortality among children, and (3) tuberculosis, probably the most important emerging health problem of Africa south of the Sahara.

Cerebrospinal (meningococcal) meningitis-the greatest killing disease of countries bordering on the Sahara-is still feared in dry countries extending from Mali to the Central African Republic. The case-fatality rate has been reduced to less than 10 per cent since the introduction of sulfonamides and standard treatment is based on one dose of sulphamethoxypyridazine. However, the appearance of sulfaresistant strains of meningococcus revived the proposals for vaccination. Experimental vaccines held in stock by OCCGE await epidemic conditions suitable for a controlled field trial. Stocks of sulfa are held in every country, and a WHO central drug deposit was set up at Niamey to cope with outbreaks of this unpredictable disease.

Smallpox is still present in all of the 14 countries of West and Equatorial Africa (about 39,000 cases in the five-year period, 1960-64). Most countries aim at vaccination of the entire population once every four years, but vaccination levels are irregular in various parts of each country. Rapid decrease of potency of dried vaccine after being made up with glycerine, incompetence of vaccinators and the difficulty of reaching the entire population of a village are blamed for past failures to control the disease. WHO eradication programs will require strict adherence to a number of rules and international coordination and timing to be successful.

Measles is a lethal disease in small children and its incidence is high in all countries under review. The highly successful U.S. AID assisted vaccination project (800,000 children) in Upper Volta with live Enders (Edmonston B) vaccine has now been extended to Dahomey, Ivory Coast, Guinea, Mali, Mauritania and Niger, aiming at the vaccination of 1 million children. A program for Cameroun was planned for FY 1966. In 1966, the U.S. Government will assist measles control and smallpox eradication programs in the 14 countries.

Tuberculosis is a serious problem in Africa. Pilot tuberculin tests (in Upper Volta, Ivory Coast, Chad and Mali) only begin to disclose the importance and extent of the prevalence (in the absence of any mortality data). A new casefinding method advocated by WHO, provides for diagnosis in dispensaries and indiscriminate BCG vaccination, <u>i.e.</u>, without tuberculin testing. Large-scale BCG vaccination has been carried out in one country—Chad—and among schoolchildren in Bamako and other urban areas. The mobile units will soon expand BCG vaccination but domiciliary treatment will have to await the development of the fixed dispensary system.

<u>Cerebrospinal meningitis</u>. In the past, cerebrospinal meningitis rivalled and probably outdid sleeping sickness as the greatest killing disease (at all ages of life) in all the countries bordering on the Sahara.<sup>9</sup> Cycles of annual epidemics recurred every fifteen to twenty years, affecting only the savannah and sahel zones—there has never been a serious epidemic in forest country. In the days before specific treatment with sulphonamides became available, there was little point in seeking out all the victims, and only occasionally was this done by an enthusiastic medical officer. All that is known is that in the Central African Republic, Chad, Niger, Upper Volta, Mali and the extreme north of the Ivory Coast, Dahomey and Togo, tremendous epidemics occurred at intervals, killing upwards of a fifth of the population in some areas. Possibly the worst affected country was Upper Volta, but the south of Niger may have suffered equally badly. West of the Upper Niger, in Senegal, epidemics were less violent.

Since then epidemics have been tackled with the greatest vigor; figures recorded represent a very close approximation to the true incidence, and case mortality rates have been reduced to 10 per cent or even less. A French research team, in the early 1960's, perfected a single dose treatment with sulphamethoxypyridazine, and this is now the standard treatment for uncomplicated cases throughout the French-speaking countries.

To some degree, cerebrospinal meningitis on this scale is a social disease facilitated by low living standards. The possession of clothes and blankets leads to better ventilated houses and less congestion, for warmth, in bedrooms. However, the disease is still feared throughout the dry countries, by health authorities and the laity.

Sulphonamides can be used for chemoprophylaxis as well as for treatment, and they have been distributed for the former purpose on a very large scale. Penicillin, though not an effective treatment, is an admirable prophylactic. It has not been used in West Africa for that specific purpose, but two areas, in which it was used on a mass scale against treponematoses, subsequently missed out a cycle of meningitis epidemics. (There is no proof that this was due to the penicillin, but the timing was suggestive.)

As long as sulphonamide treatment continues to be effective, there is relatively little to fear. But sulfa-resistant strains of meningococcus have started to appear, and therefore the question of vaccination against the disease has been revived. With one notable exception, a dozen different vaccines tried out between 1915 and 1950 were either ineffective or too toxic. The exception was a vaccine produced at the Pasteur Institute at Brazzaville in 1936, but the strain from which this was derived was lost in the war years.

At the present moment, three experimental vaccines are in existence (one Canadian, two French) and stocks are being held at Bobo-Dioulasso for use under statistically controlled conditions when a suitable epidemic arises. However, in order to fulfill these conditions, a minimum incidence of fifteen cases per thousand population is demanded by the statisticians of WHO. (An idea of the scale is given by the fact that, outside the near-Sahara countries, three cases per thousand is the most intense epidemic ever to have occurred.) Meningitis epidemics have notorious vagaries, and it is quite likely that suitable conditions for the controlled vaccination experiment may not arise for many years.

The disease is relatively quiescent at present. The 1964 figures for the countries concerned were: Cameroun - 768 cases, Chad - 128, Congo - 12, Dahomey - 46, Gabon - 37, Guinea - 57, Ivory Coast - 23, Madagascar - 27, Mali - 384, Mauritania - 6, Niger - 2884, Senegal - 117, Togo - 193, Upper Volta - 1672; in 1963: Central African Republic - 101 cases.

Meanwhile, every country holds stocks of sulfas, and WHO has established a central deposit of the drug, for use in case of need by all neighboring countries, at Niamey in Niger.

<u>Smallpox</u>. Smallpox (and all air-borne epidemic diseases) resembles cerebrospinal meningitis in tending to be most violently epidemic in the dry season in dry areas. Unlike the latter, smallpox, measles, chickenpox and whooping cough are sufficiently infectious to become epidemic anywhere regardless of climate. Nevertheless, although smallpox has always been present and is still firmly established, there is no record of the occurrence of decimating epidemics as might be expected to have occurred in the past. Scars made by smallpox inoculation, before the era of Europeans, used to be seen on the wrists of old men in the savannah.

Smallpox vaccination was used in tropical Africa mainly to protect the towns, rather than in systematic campaigns in the rural areas, except when epidemics were discovered. It became the first extra activity taken on by sleeping sickness teams, so that rural vaccination was carried out in sleeping sickness foci before anywhere else. In 1945, an Anglo-French agreement was signed, providing for vaccination of everyone living within four miles of an international frontier. Since that time, it has become the ambition of most countries to vaccinate all their population every four years, and most have made great efforts to do this.

	Hig	hest	Lowest		
Cameroun	1500	[1961]	4	[1957]	
Central African Republic	898	[1953]	1	[1960]*	
Chad	2481	[1952]	4	[1960]	
Congo (Brazzaville)	1515	[1963]	2	[1958]	
Dahomey	1708	[1959]	16	[1955]	
Gabon	ill	[1963]	1	[1962]	
Guinea	2948	[1962]	12	[1951]	
Ivory Coast	5009	[1957]	11	[1964]	
Mali	2982	[1957]	321	[1964]	
Mauritania	234	[1954]	1	[1963]*	
Niger	2408	[1960]	29	[1964]	
Senegal	555	[1957]	2	[1964]	
Togo	628	[1952]	2	[1955]	
Upper Volta	2451	[1961]	8	[1964]	

Smallpox 1951-1964. Highest and Lowest Annual Figures, with Date of Occurrence in Brackets

<sup>n</sup>il in 1964

Some of these figures are not very encouraging. There are many possible reasons:

(1) The dried vaccine that has been used since 1945 is potent for only an hour or two after being made up with glycerin. It is admitted that the job of vaccinator has often been given to the dullard of a team and that a day's supply may be made up before starting work. Better supervision would prevent this cause of failure.

(2) Even in the best regulated area of Africa, it is virtually impossible to find every individual—even every village. Few Africans never travel, and seasonal and other migrations (which are not stopped or completely regulated by frontiers) spread infectious diseases.

(3) The very presence of frontiers conduces to the spread of communicable diseases. Frontier areas seem always to show higher prevalence and/or obstinate persistence of sleeping sickness, yaws and leprosy; outbreaks of smallpox are not uncommon in roadless villages near frontiers.

(4) There are ritual objections to smallpox vaccination in some countries, <u>e.g.</u>, the south of Dahomey. "Send us your vaccinators. We shall take pleasure in cutting their throats" was actually said to a WHO Smallpox Adviser in 1961. At best, it is never a popular measure, though purer vaccines and cleaner techniques could decrease its unpopularity.

Smallpox is such an infectious disease, capable of achieving epidemic status rapidly from a single carrier, that the above reasons are more than sufficient to account for its persistence.

Global smallpox eradication, resolved on in 1958, was declared by the World Health Assembly of 1965 to be one of the major objectives of WHO. In 1964, WHO launched an inter-country smallpox eradication project in Africa. Two consultants were assigned to the project, one for West African countries (stationed initially at Monrovia) and one for East and Central African countries (stationed at Nairobi). The report of the Director General of WHO to the World Health Assembly, May 1965, stated that "In virtually all [African] countries, programs for the systematic vaccination and maintenance operations must yet be evolved. In the Ivory Coast the attack phase is reported to have been completed but very active maintenance phase operations will have to be conducted, since smallpox is endemic in the surrounding countries...With substantial assistance from outside the countries and an active interest on the part of the countries themselves, eradication of the disease by the end of 1974 is a conceivable target."

The U.S. Government made a five-year commitment as of July 1966 to support the eradication program in 19 countries of West Africa, including the countries under review.

If a campaign against smallpox is to succeed, the following are necessary:

(1) Genuine realization of the importance of the matter, by politicians as well as public health authorities. Money must be voted and highly placed officials seconded to direct affairs. Complete international coordination of the campaignincluding English-speaking as well as French-speaking countries---must be realized to be essential.

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 $\mathcal{P}(2)$  Ad hoc health education must precede the campaign.

(3) Supervision must be active and energetic throughout. (There is no lack of other, more interesting, work for men of the caliber required, and this will not be an easy consideration to put into effect.)

(4) A high quality, thermostable vaccine must be supplied in adequate quantities, and cheaply. This condition, apart perhaps from price, can most easily be put into effect. WHO opinion is that the laboratories at Lagos and Nairobi, and the Pasteur Institute at Dakar, can supply the needs of tropical Africa. WHO has reluctantly declined to supply assistance for reopening the laboratory at Kindia, Guinea, as a vaccine production center, on account of difficult living conditions there.

With all the other preoccupations of public health authorities in Africa, with the lack of liaison across certain frontiers, and with the extreme shortage of medical personnel of the type required for this exacting and relatively unenthralling work, it is hardly possible to be optimistic about the prospects for smallpox eradication. Nevertheless, the very facts that smallpox is being held in check, and is very seldom exported to the outside world from Africa, imply that the efforts being made are not wasted. They should be continued and encouraged.

<u>Measles</u>. Whenever the multitudinous other causes of death in small children in Africa are controlled, measles is revealed as a common and lethal disease. For example, a children's clinic (in Nigeria) reduced the local infant mortality rate in five years from 295.4 to 72 per 1000 live births. In the last year, out of 54 deaths in small children, 23 were from measles. It has been concluded that the contrast between the dangerousness of measles in tropical lands and its mildness in temperate lands is due mainly to the early age at which the child in the tropics is infected. A child of five, acquiring measles on first going to school, usually suffers very little. A child of less than a year, still on the breast (with the sore mouth that is one of the common early symptoms of measles) is unwilling to suckle and suffers a nutritional setback leading to kwashiorkor or early death.

Figures of measles incidence were almost entirely lacking until very recently, because in the prevailing conditions it was impossible to cope with the disease except in well-regulated towns. The development of measles vaccines has revolutionized the situation, and the figures (though undoubtedly incomplete) indicate that measles is being reported with increasing zeal. The cases reported in 1964 were: Cameroun - 30,452, Congo (Brazzaville) - 8160, Gabon - 2171, Guinea - 6617, Madagascar - 28,910, Mali - 32,246, Mauritania - 3248, Niger - 14,502, Senegal - 22,263, Togo - 14,955, Upper Volta - 7129, and in 1963: Central African Republic - 5462 (in eleven months), Dahomey - 5884 and Ivory Coast - 47,142 cases.

The first pilot project of infant vaccination against measles was carried out in Upper Volta, where in 1962-1963, 800,000 children were vaccinated with living Enders (Edmondston B) vaccine supplied by U.S. AID. Currently a program for the vaccination of a million children in Ivory Coast, Dahomey, Guinea, Mali, Mauritania and Niger is in progress, the vaccine being supplied by U.S. AID. A vaccination program for Cameroun is planned for FY 1966. The U.S. Government announced a fiveyear commitment as of July 1966 for the support of measles control in 19 countries of West Africa, which include the countries under review. Experiments are being made with a combined measles-smallpox vaccine. Other air-borne epidemic diseases. Lobar pneumonia can be a frank epidemic disease in the dry season, and during meningitis epidemics a proportion (sometimes as many as 10 per cent) of the cases accurately diagnosed turn out to be pneumococcal. Haemophilus influenzae was found to be the most frequent cause in one series of sporadic meningitis cases in infants. Whooping cough can be as serious as measles in undernourished children.

<u>Tuberculosis</u>. There is no doubt that pulmonary tuberculosis is a serious problem in Africa. Moreover, a survey of cattle slaughtered in the abattoir at Bobo-Dioulasso has revealed tuberculosis in 20 per cent—and these are beasts of relative fitness, that have survived the walk of 200 miles or more from their grazing grounds. The implication is that human non-pulmonary tuberculosis will be found, when it is looked for.

The OCCGE has had a tuberculosis section since 1960, which hitherto has been concerned with the bacteriology of the disease and, in the field, with planning rather than executing projects.

A number of pilot surveys have been and are being carried on.

(1) In a rural area of Upper Volta, a carefully controlled tuberculin test study gave the following results (more than 6 mm being taken as a positive reaction):

Age	No. tested	No. positive	Per cen	
0-4	142	5	3.5	
5 <b>-</b> 9	149	21	14.1	
10-14	160	37	23.1	
15-19	120	50	41.7	
20-29	116	54	46.5	
30 +	155	86	55.5	
Total	. 842	244	29.0	

(2) A comparative survey, using syringe and dermojet, on <u>Centre Muraz</u> staff and Ecole Jamot students, was made with the following results:

	Reaction 6 mm or less	Reaction more than 6 mm
Dermojet	247	248 (50%)
Syringe	243	252 (51%)

(3) The Tuberculosis Center, Abidjan, and the Ivory Coast Department of Endemic Diseases are collaborating in a pilot project of tuberculin testing and BCG vaccination in a rural area of (southern) Ivory Coast. This is stated to be the first stage of a national BCG vaccination campaign. As of April 1965, 150,688 persons had been tested, of whom 65,464 (43.4 per cent) gave reactions of less than 8 mm diameter and were vaccinated with BCG. Results, by age group, in a part of this survey, were:

Age	No. tested	No. positive	Per cent
0-5	16,837	1,328	7.9
6-9	10,984	2,846	25.9
10-14	9,064	5,013	55.3
15-19	4,064	2,796	68.8
20 +	33, 586	25,683	76.4
Total	74,535	37,666	50.5

In some areas a radiological unit is attached to the tuberculin testing team. Roll film is being used at an estimated cost of \$0.09 per subject.

(4) In a random sample radiographic survey at Bamako, Mali, 14,427 persons over the age of 6 years were included. Out of 10,204 successful photographs, 88 were diagnosed as tuberculosis cases, and in all these the diagnosis was confirmed bacteriologically. Tuberculosis was confirmed in a further 1.9 per cent of subjects with suspicious radiographic findings. The all-in cost of this survey was estimated at \$0.40 per subject.

(5) In Chad results of tuberculin tests carried out during 1964, on persons without evidence of previous BCG vaccination, were:

Age	No. tested	No. positive	Per cent	
0-5	977	122	12.5	
6-10	736	168	22.8	
11 <b>-</b> 15	368	201	54.6	
16-45	2,933	2,352	80.2	
45 +	202	172	85.2	
Total	5,216	3,015	57.8	

It can be concluded that pulmonary tuberculosis is endemic throughout the countries under review, and not less in the remote areas, such as Chad, than near the coast, as in Ivory Coast.

The main reasons why comparatively little work has been done on tuberculosis in Africa in the past have been the preoccupation of staff with other more urgent problems; the difficulty of surveying with tuberculin (requiring two attendances from each subject); the consequent difficulty of administering BCG vaccine; the prohibitive cost of mass X-ray diagnosis; the non-availability of sanatorium beds.

Recent work under WHO auspices has revolutionized the position. It is now considered that the best (not only the cheapest) method of finding tuberculosis cases in the tropical community is to provide easy access to a dispensary, where a trained medical auxiliary is armed with a microscope and stains. It is no longer considered necessary to undertake tuberculin testing before BCG vaccination. The results of treating open tuberculosis cases in their own homes throughout have been actually better than those of sanatorium treatment.

The OCCGE Technical Conference in 1964 recommended all member States to undertake BCG vaccination of all those in the under ten-years age group, to be repeated after five years. This resolution was reaffirmed at the 1965 conference. In the interim, statistical pilot studies were carried out, to standardize techniques of vaccination and of reading results. So far, BCG vaccination has been carried out on a large scale only in Chad, where 1,011,721 vaccinations had been given by the end of 1963. (This is another instance of the enthusiasm of an individual—Dr. Ziegler—carrying on a campaign.) At Bamako, 14,000 schoolchildren were vaccinated in 1961 and 17,000 in 1964. The Pasteur Institute, Dakar, is now producing lyophilized BCG vaccine. A comparative trial, conducted in Senegal in 1964, showed that this vaccine has a potency equal to that of a reference vaccine supplied by WHO. At Porto Novo, Dahomey, the Pasteur Institute vaccine was used to vaccinate 11,452 schoolchildren after tuberculin tests and 17,200 other persons without preliminary tests. The results were satisfactory. The Pasteur Institute vaccine was also used by an OMNES team in Chad to vaccinate 870 children between 5 and 15 years of age, with satisfactory results.

Bacteriological research on human and animal strains of <u>Mycobacterium</u> <u>tuberculosis</u> is being undertaken at the Pasteur Institute, Dakar, and at the <u>Centre Muraz</u>. The Pasteur Institute is also investigating drug resistance: in one series, resistance was found in INH (29 per cent), PAS (17 per cent), streptomycin (10 per cent) and ethionamide (16 per cent).

WHO has established two tuberculosis advisory teams, one English- and one French-speaking, whose function is to make recommendations for the improvement or setting up of anti-tuberculosis services. The French-speaking team has visited Cameroun, Chad, Central African Republic, Dahomey, Guinea, Ivory Coast, Mali, Mauritania, Senegal, Togo and Upper Volta.

#### Chapter XV

### WATER SUPPLIES AND OTHER PUBLIC HEALTH PROBLEMS

<u>Summary</u>: The importance of the development of water supplies is fully recognized in Africa, and most of the countries under review have some long-range plans relating to it. However, the effect of the development of water supplies on public health in these countries may still be underestimated.

Multilateral programs under WHO, FAO, UNICEF and FED and bilateral assistance by U.S. AID have made substantial contributions in 8 of the 15 countries, but the great needs deserve an up-to-date survey of resources and future requirements. In 11 of the 15 countries, a survey (1962) has shown that 40 to 75 per cent of the urban population is not served by piped water. The development of water supplies, especially in rural areas, requires technical assistance and a considerable amount of planning, as well as full cooperation between two or more government departments. Efforts made in this field could be rewarded by substantial results.

Attention is focused at present on the problem of reorganization and development of peripheral health services. The imperative requirements of the control of endemic diseases and limited man-power have resulted, in the past, in perfecting the mobile health services while neglecting the static rural dispensaries.

WHO advisers give their continued attention to the development of basic rural health services and pilot zones (such as Vogan in Togo) linked with future malaria control.

Gradually, technical discussion by OCCGE and at the WHO Rural Health Seminar resulted in agreement on a suitable pattern of polyvalent health centers and on a method of articulation of the mobile medical units restricting their action to more limited areas. Niger is about to implement such a system. Meanwhile, Cameroun has already adopted a system of rural subcenters based on regional preventive medical centers.

Dietary deficiencies and nutritional diseases, due to defective distribution of food resources, traditional diets and ignorance, are widespread, although there is no evidence of real famine conditions. Protein malnutrition, vitamin A deficiency, anemias and goiter call for specific coordinated action by public health services. General surveys in six of the countries under review dealing with vulnerable groups (young children, pregnant and lactating women) have already yielded facts of considerable importance. WHO and FAO and UNESCO are planning effective assistance in the applied nutrition programs.

A WHO survey of the position of public health laboratories in 12 of the 15 countries revealed the general lack of machinery for the integration of laboratory services into a national scheme and the need for more public health laboratories. Priority should be given to training of personnel (see Chapter XVI) especially senior laboratory staff. <u>Water Supplies</u>. The relation of the diarrheal diseases to the existence or non-existence of adequate clean water supplies needs no stressing. In addition, the provision of water, plus soap and a little health education, stops abruptly the transmission of diseases spread by contact, <u>i.e.</u>, leprosy, yaws, endemic syphilis, trachoma and scables. Transmission of the crippling guineaworm also is ended by the provision of wells or piped water.

Bilharziasis transmission is maintained partly by women, wading in water pools as they wash themselves and their clothes. The village waterhole is one of the danger points in trypanosomiasis transmission.

On the economic side, it has been pointed  $\operatorname{out}^{10}$  that the neglect of public utilities becomes a most serious drag on economic progress. In rural communities, the collection of a bare minimum of water may be quite literally the full-time occupation of a proportion of the members of each household.

All in all, the development of water supplies, urban and rural, can have more effect on public health than any other single project.

A review by WHO<sup>11</sup> gave the following figures for urban supplies (1962) in some of the countries concerned in this report:

Country*	Urban population supplied (Numbers in thousands)				Urban population not served	
	From house connections	Per cent	From public outlets	Per cent	Number	Per cent
Cameroun	20	10	50	25	140	65
Central African						
Republic	10	10	20	20	90	70
Chad	20	10	20	15	120	75
Guinea	50	15	130	35	180	50
Ivory Coast	40	· 15	70	25	190	60
Madagascar	60	15	180	45	160	40
Mali	30	10	100	35	170	55
Niger	10	5	50	25	130	70
Senegal	100	20	160	30	260	50
Togo	10	10	20	15	70	75
Upper Volta	20	10	60	25	170	65

<sup>\*</sup>Congo (Brazzaville), Dahomey, Mauritania and Gabon were not included in this survey.

The table illustrates the deficiencies of urban water supplies, usually due far more to lack of development than lack of water. Inquiries on whether the local people would be prepared to pay for water usually meet a negative response. This may be unduly pessimistic. Like any other new tax, a water rate is accepted after a preliminary period of revolt. However, the waste of a piped-water supply should be discharged down a sewer, and the installation of sewers in an existing town is expensive. At present, only Abidjan, Ivory Coast, has anything approaching adequate sewerage. It is doubtful if an African urban community would accept, or could afford, a rate in keeping with the full cost of a piped-water supply and the accompanying sewerage. The WHO community water supply program has provided the services of a consulting engineer in connection with the expansion of the water supply at Cotonou (March-June 1964). Similar assistance for the promotion of urban water supply by the WHO Special Account for Community Water Supply (a part of the Voluntary Fund for Health Promotion) was extended in 1965 to Ivory Coast (\$22,000), Madagascar (\$40,000) and Mali (\$34,000) and was obligated for 1966 in Ivory Coast (\$22,000) and Mali (\$30,000). WHO sanitary engineers are stationed in 8 of the 15 countries (see page 66). In Senegal, a WHO engineer is a permanent member of the Waterworks Commission and gives advice on all matters pertaining to water. He is studying the problem of improving the Dakar water supply (see below) for which the government has asked additional assistance from WHO.

Several rural water supply schemes have been initiated by WHO with UNICEF assistance. WHO has also been stressing the need for collaboration between the ministries of health and of public works. Such collaboration, already a reality in Dahomey, is essential for water supply, irrigation and severage schemes. Water supply projects funded by FED in 11 of the 15 countries from 1958 to 1964 are listed in Table 3. U.S. AID supports projects in Ivory Coast, Cameroun, Madagascar, Upper Volta and Senegal.

It is known that most of the countries under review have some long-range plans relating to water supply, however, outside the projects assisted by FED, WHO and U.S. AID, information on these plans is fragmentary (see below). In view of its importance, rural water supply in all of the 15 countries would well deserve a comprehensive survey of resources and future needs.

The Republic of Niger's <u>Perspectives</u> <u>décennales</u> 1965-1974<sup>12</sup> states, "The problem of water dominates all the problems of <u>development</u> in Niger," but makes no specific recommendations. Apart from the Niger River, which serves Niamey, the capital, water comes mainly from wells of a depth of up to 230 feet.

In Congo (Brazzaville), an agricultural and industrial development is planned in association with a hydro-electric project.

In Upper Volta, although no over-all plan has been made, there is already a program for provision of large numbers of wells, mostly shallow. One hundred and twenty such wells are planned for Ouahigouya district and 100 for the Ouagadougou-Po area--all financed by FAO. Boring is in progress in the cattle-grazing semidesert area of Dori, but so far with poor results. The program of building small dams in eroded river valleys has been pushed ahead vigorously and more than 70 such dams are already completed. A training program for dam attendants, to include straightforward Simulium control, has been proposed.

In the Ivory Coast, U.S. AID provided \$345,000 (national contribution \$50,000 a year) for a program of investigation of the most effective and economic means of locating sites for drilling small capacity domestic wells. A program of well digging in rural areas is in progress, with assistance from FAC and FED. U.S. AID also provided \$900 to send an Ivory Coast representative to the symposium on water supply in rural areas held at Addis Ababa. In Abidjan, two FAO loans have permitted a considerable extension of the network of piped water. Planning is made very difficult by the fact that several different ministries (not including that of health) dispute authority on water supply matters. In Bouaké, the Kan River is to be dammed to provide storage of some 300,000 cubic meters. Water and electricity development in the Abidjan area are entrusted to a private firm.

In Senegal, the existing water supply for Dakar comes from three series of deep wells to the east, up to 40 miles distant and 1600 feet deep. These are administered on contract by a private firm. They produce a total of 54,000 cubic meters a day, which already is barely adequate. Dakar is expected to grow by an annual 6 per cent from its present population of 421,000 to about 1,285,000 in 1980. To extend the deep-wells system, wells would have to be sited as far as 80 miles away. The solution adopted is to develop and use the waters of Lake Guiers in the north of Senegal. This lake is some 140 miles from Dakar, but the project has the great advantage that St. Louis could be supplied from the same source. Also, the pipeline to Dakar would run through the area in which some one third of the population lives and could serve several conurbations besides Dakar. The investigation of this project has been carried out as a project under the UN Special Fund, at a cost of \$2,883,000 (UN Special Fund \$1,640,000; Government of Senegal \$1,243,000). Two tenders for the project have been received: one, by a French firm, includes a storage reservoir and is estimated at about \$41 million. The other, by a German firm, does not include a storage reservoir and is estimated at about \$25 million. The UN Special Fund has been asked for further assistance in long-term planning of the water supply of Dakar, and also a sewage system (at present only three small sewers, draining direct into the sea, exist at Dakar).

<u>Rural health services</u>. The need for development of peripheral health services is now fully recognized by the ministers of health and their advisers in the countries under review. The shortage of trained personnel and the unfavorable prospects for increasing the number of fully trained physicians prepared to serve in the mobile units or in static peripheral centers make the integration of existing manpower resources in a polyvalent scheme essential.

WHO advisers have given special attention to the establishment of an organized network of peripheral health units. Thus the assistance in malaria pre-eradication aims at the development of basic health services on which a malaria eradication program can be built<sup>13</sup>; such assistance, to be continued up to 1972, is given at present to Cameroun, Congo, Dahomey, Gabon, Guinea, Madagascar, Mauritania, Senegal and Togo. Assistance in the development of rural health services is also given to Madagascar (1965-1968) and assistance in the development of community services to Cameroun (1966-1967).

The prospects of "integration" of the mobile units into a broader scheme of basic health services or their "articulation" with static medical assistance services have been considered by the OCCGE (see page 29) both at the policy level and at their technical conferences. The Ninth Interministerial Conference of OCCGE held in Paris (May 1963) recognized that the integration of the mobile units with medical assistance services is inevitable, but such action combining the services on the smallest district level and on the country level should be carefully planned and coordinated. Evolution towards a system of polyvalent health centers is desirable, but premature abandonment of the present form of control of endemic diseases would be disastrous.

In November 1963, participants from a number of countries under review attended the WHO Rural Health Seminar (Enugu, Eastern Nigeria) and also visited the WHOsponsored rural health services project. (The seminar made several recommendations, including (a) the development of more suitable training of staff, periodical refresher courses and an adequate system of supervision for better utilization of personnel, (b) the integration of mobile units into the basic system of rural health services, (c) the achievement of full understanding of public health problems by all physicians working in Africa.) In August 1964, the unification of health services in Cameroun was discussed at length at Yaoundé by the head of the health services, a WHO consultant and physicians of the endemic disease control service. A system of rural centers based on regional preventive medicine centers was implemented in 1965.

The Interministerial Commission, OCCGE, visited in October 1964 the operational research and demonstration zone established at Vogan (Togo) as a part of plans for the peripheral health network under the WHO malaria pre-eradication program.

The technical conference of OCCGE discussed in detail (April 1965) the health center pattern suggested by the Vogan zone. The proposed health center system for each of the seven départements in Niger has also been outlined. Each of the existing hospital centers will have two physicians, one of whom will have surgical and obstetrical specialization. The health center and the mobile medical units will be entrusted to a physician who will be in charge of the fixed preventive medicine center and the mobile medical units of the departement. The mobile units, made up as a rule of one physician, specialized nurses and other auxiliary staff, will be entrusted with the case-finding, treatment of cases, general health measures and health education of the rural population. The cost of the proposed health centers is estimated at about \$170,000 per year. The Secretary General of OCCGE outlined an experiment of complete unification of services of endemic disease control and medical assistance planned for the Gaoua area of Upper Volta with the financial assistance of FAC. The technical conference requested the Secretary General to assemble and distribute, in collaboration with the WHO Regional Bureau, relevant information on health center experience in Africa, to communicate to member states results of studies on this subject made by OCCGE, and to place the question of health centers on the agenda of the next meeting of the Board of the OCCGE, to be held in Ouagadougou.

The above account of discussions by OCCGE and of the slow educational process among the leaders of endemic disease control services shows, however, a definite progress towards a concept of health centers and of the integration of mass campaigns into general health services as advocated by WHO.<sup>3, 14</sup>

Meanwhile, the French Ministry of Cooperation (see page 52) has clearly indicated to the ministers of health the urgent need for a complete regrouping of medical aid in rural areas. This action will require in the near future assistance to planning of the reorganization, assistance to the infrastructure of individual health centers and assistance in training or retraining of the paramedical personnel.

<u>Nutrition</u>. In the countries under review there are no real famine areas but pre-harvest undernourishment is widespread in many areas outside the forest zone. Defective distribution of food resources, traditional diets and ignorance are the main reasons for the present dietary deficiencies.

Nutritional diseases are widespread. They result, as stated before, from dietary deficiencies or as a consequence of infectious and parasitic diseases. They principally affect the vulnerable groups of the population and generally constitute a public health problem, the problems of feeding, nutrition and health being intimately linked and affecting in turn the food production. Irrespective of their origin, states of malnutrition call for specific and coordinated action in public health activities.

Among the deficiency diseases the most frequent is probably inadequate protein

intake followed by vitamin A deficiency, various types of anemia and endemic goiter. (The latter is widespread in the mountainous areas of Guinea, in northern Ivory Coast, Togo, Central African Republic and Gabon.)

During the last two years health administrations have shown a real interest in the development of activities connected with nutrition.

General surveys begin to reveal the situation with regard to malnutrition. Such surveys have been made in Central African Republic, Chad, Congo, Gabon, Niger and Mali; they have been mainly concerned with the state of nutrition of vulnerable groups (young children, pregnant and lactating women). Some useful clinical, anthropometric and biological data have been collected, so far.

Some of the results are of considerable practical importance. In the Central African Republic, where the average food intake is known to be low, a clinical nutritional survey (1963) of babies, children and pregnant women indicates that protein malnutrition is not a serious public health problem in that country. On the other hand, anemias associated with intestinal and blood parasites are wide-spread. (These observations relating to protein malnutrition are in direct contradiction with the results of a 1960 food and nutrition survey (FAO, No. 1450, Rome, 1962) reporting 73.4 per cent protein deficiency in the Bangassou area and 12.8 per cent in the Bambari area.)

Teaching of nutrition was developed by ORANA, in collaboration with a WHO consultant, at the University of Dakar, at the Nursing School, at the School for Health Auxiliaries and at other teaching centers in Dakar.

WHO and FAO assistance in the field of nutrition was referred to in Chapter VIII. As is known, WHO and FAO experts have paid joint visits to the Central African Republic, Dahomey, Gabon, Ivory Coast, Niger and Upper Volta. This study is designed for planning of effective assistance by WHO, FAO and UNICEF in the implementation of applied nutrition programs. The joint (FAO/WHO/CCTA) Regional Food and Nutrition Commission for Africa with its secretariat at Accra (Ghana) has issued its first bulletins in French; special files summarizing activities on food and nutrition in various countries are being compiled currently.

<u>Public health laboratories</u>. The need for public health laboratories within a framework of national laboratory services in the developing countries was recognized a few years ago (WHO seminar, Manila, 1960). There is in Africa a general lack of administrative system at the center to insure operational and technical integration of laboratories. The absence of such an organization results in uneven qualities in service supplied, failure to collect valuable epidemiological information and uneconomical operation. The integration of clinical and public health laboratories under a single management, at the ministry level, should facilitate technical supervision and standardization of method and equipment and utilization of statistical data. The available facilities are unevenly distributed and vary in quality of equipment and services.

WHO made an over-all survey covering Niger, Upper Volta, Senegal, Ivory Coast, Cameroun, Gabon, Central African Republic, Congo and Madagascar (1963) and more recently Guinea, Mali and Togo. The reports of the consultants indicate that priority should be given to training of personnel, especially senior laboratory staff, from among whom can be selected a person to take on the management of these services. The low output and inefficiency of the existing laboratory services stem generally from the lack of technical supervision of many auxiliary workers.

The WHO Regional Office has arranged to appoint an adviser in health laboratory services in 1967. WHO will also assist in the organization of a course for laboratory technicians in collaboration with the Pasteur Institute at Brazzaville (1965-1970). It is expected that trainees from other French-speaking countries will attend. Among other countries receiving aid to current programs are: Dahomey—in public health laboratory methods (1965-1966); Gabon—to assist in the creation of a national health laboratory and participate in training of auxiliary personnel (1965-1968); and Togo—fellowships to study laboratory techniques (1966-1967).

Defects in the public health laboratory system in the member states were detailed at the OCCGE Technical Conference of 1965. Among these were (i) storage, transport and biological control of sera and vaccines, both medical and veterinary; (ii) lack of reference laboratories with standardized techniques in respect of diseases, such as trypanosomiasis and malaria; (iii) lack of training facilities for laboratory technicians and lack of standardization of such facilities as exist.

It was agreed that the problem of reorganizing laboratories should be studied by an international commission made up of specialists from all the disciplines concerned.

#### Chapter XVI

# MEDICAL EDUCATION AND TRAINING

<u>Summary</u>: The preference of African leaders, in the countries under review, for training of future leaders in their own national institutions resulted in the organization of three new universities and other costly institutions of higher education. France supports the four universities (Dakar, Abidjan, Tananarive and Yaounde) and four institutions of higher education in Central Africa at the cost of over \$4 million, representing 81 per cent of the total budget, and provides a teaching staff of 751 (1963). In exchange for this assistance, France maintains control over the programs and appointment of the teaching staff and the recteurs. Only in the new federal university of Yaoundé is the sponsorship of individual chairs open to any country wishing to assist.

The shortage of medical personnel and their defective distribution throughout the area under review is a most serious problem especially since the present enrollment of medical students is not likely to increase the number of new physicians by more than 50 per year. To train future physicians, the area under review has at present three medical schools (Dakar, Abidjan, Tananarive) providing the full-six-year French curriculum and one school in Madagascar with a five-year program. A proposal to resume the old system of training of <u>médecins intermediares</u> was turned down by most African leaders. Yet this system provides an adequate number of auxiliary physicians for service in rural areas of Madagascar; the system will also be adopted by Guinea and Mali in their future joint school of medicine.

Dakar School of Medicine, originally planned to serve most French-speaking countries, has at present an enrollment of 244 and a teaching staff of 44. The cost per medical student is at least \$10,000 per year, and the training of a physician at the Dakar School costs the French government not less than \$60,000. Changes in France's assistance policy in the future may be motivated by this high cost of education. The low number of medical students is partly due to the system of successive examinations, eliminating a considerable share of valuable manpower. The question of teaching public health was discussed at the Dakar symposium in January 1965, and it was decided to introduce such teaching in the curriculum and also to provide postgraduate training at the Institute of Tropical Medicine, followed by practical <u>stages</u> under OCCGE. While a diploma in public health was considered desirable, the creation of a special school

Defined as: medical education at university and auxiliary levels, together with the education and training of paramedical personnel both professional and auxiliary (see WHO, EB31/20, 1962).

of public health was thought premature for the small number of potential candidates. It was considered to be more economical, under the circumstances, to send trainees to schools overseas.

The countries under review have about 13,000 nurses (or about 1 nurse per 3000 inhabitants); of these, 6 per cent were fully trained in 1962. Of the 2000 midwives, about 15 per cent were fully qualified and another 45 per cent were certificated for practice. Encouraging results, mainly due to multilateral aid, have been realized by the improvement of qualification of nurses and midwives and by assistance to the schools of nursing and midwifery. However, there is still a pressing need for nurse-educators and administrators who should be trained in a French-speaking school, preferably at Dakar.

The need for laboratory technicians (see Chapter XV) will be met, it is hoped, in the near future by two training programs under OCCGE and at the Pasteur Institute at Brazzaville.

<u>Higher education</u>. Methods followed by countries and international organizations to assist in the training of higher cadres of developing countries—granting fellowships and training abroad—do not correspond to the wishes of African leaders who prefer training of future leaders in their own national institutions.

Creation and development of higher education in Africa on an international standard require an enormous expense and a considerable sacrifice in sharing scarce scientific personnel. Under the French Community (1958), higher education was a joint responsibility of the African member-countries and France. The French Ministry of Education was responsible for the institutions of higher education, namely, the Dakar University, the Institute of Higher Studies at Tananarive and, from 1959, the Centers of Higher Education at Abidjan and Brazzaville, sponsored by the Universities of Paris and Bordeaux.

For political reasons, the system of direct sponsorship of an institution in Africa by a French university had to be abandoned in favor of assistance to a national university. This policy change in France's assistance required new agreements with the African countries concerned and a great deal of planning. According to these agreements, France supports most of the cost of higher educational institutions. In exchange for this substantial aid, France retains the control of universities in matters such as programs, nomination of the recteur, participation on the Board of the university, registration of diplomas and designation of the teaching staff. Plans for the development of the universities of Dakar, Tananrive, Abidjan, Yaounde and the institutions which are a part of the Foundation of Higher Education in Central Africa were made for the period 1961 to 1970. These universities and institutions had in 1963-1964 a total of 6691 students, of whom 1046 were in the Faculty of Science and 646 studying medicine, pharmacy and dentistry. The total budget (1963) of these institutions was \$5,047,000, of which \$4,082,000 (81 per cent) was provided by France. The teaching staff for these institutions provided by France numbered 751 (1963). This contribution is quite important. In 1963, out of Dakar University's total budget of \$2,692,000, France provided \$2,181,000 and some 220 members of the teaching staff.<sup>4</sup> In 1965, France provided \$7.5 million for salaries of the teaching staff detached by the French Ministry of Education for service in Africa and Madagascar; \$6 million was also contributed to the budgets of Dakar, Tananarive and Abidjan universities.

1. University of Dakar. This university, with its four faculties (law and economics; human sciences and letters; medicine; and sciences) and ll special institutes, is the most important educational institution of the French-speaking countries of Africa. Its total budget in 1963 was \$2,692,000. It had, in 1964-1965, 2450 students of whom 880 were Senegalese, 309 were from Dahomey and 86 from Guinea. The rising number of Senegalese students will make up, it is hoped, for the loss of the Ivory Coast students and soon those from Cameroun.

2. University of Abidjan. The high number of <u>bacheliers</u> in the Ivory Coast had fully justified the creation of the <u>Centre d'enseignement</u> <u>superieur d'Abidjan</u> which, in 1962, had 635 students. The buildings of the new university of Abidjan were inaugurated in November 1964. During the year 1963-1964, the number of students by faculties were as follows: law 783, medicine 67, sciences 150, letters 184. In November 1964, there were 1900 students of whom 67 per cent were from the Ivory Coast. It was expected that the number of students would double in six years but the increase now appears to be more rapid. According to plans the Faculty of Sciences will have 4000 students in 1975.

3. <u>University of Yaoundé</u>. The University of Cameroun became a Federal institution in 1962 and sponsorship of individual chairs is open to any nation willing to assist. France, responsible for the faculty of law and undergraduate studies in sciences and letters, provided seven teachers and a budget support of \$100,000 (in 1963). France is also providing credits for building the new campus. It is expected that, in 1965-1966, the University will be able to admit 350 to 400 students from Cameroun.

4. <u>University of Tananarive</u>. The university was created in July 1961. It has a faculty of law and economics, a faculty of sciences, a faculty of medicine (see page 142) and several specialized schools. Many courses are given by visiting professors of French universities. France provided, in 1963, 203 teachers and a support of \$980,000 toward a total university budget of \$1,292,000. In 1963-1964, the total enrollment was 1750 students. It is expected that this number will reach 3000 to 4000 students within five years. Madagascar expects to be able to train its own cadres on the island by 1970.

5. Foundation for Higher Education in Central Africa. A transitional solution to the problem of higher education in the Equatorial states has been the formation of the Foundation for Higher Education in Central Africa (Fondation <u>d'Enseignement superieur de l'Afrique centrale</u>) which has integrated the institutions of higher learning under the authority of the Ministers of National Education in each of the four states and functions with French cooperation. Although the administrative headquarters is in the Center for Higher Education at Brazzaville, the different schools (departments) are situated within the four states: <u>Institut</u> <u>d'études agronomiques de Wakombo</u> (Central African Republic), <u>Institut polytechnique</u> (Gabon) and <u>Institut zootechnique</u> (Chad). The curricula and technical programs are scheduled at the Center within the framework of the Foundation and under the control of a French dean.

In 1963, the budget of these institutions amounted to about \$600,000 of which France provided \$533,000 in addition to a teaching staff of 146.

Shortage of medical personnel. The important changes which have occurred in the countries under review during the last five years in the political outlook, in elementary education and in the planning and implementation of economic development plans have had little impact on the public health. Health problems remain essentially the same. Meanwhile, the needs in medical personnel have increased, partly on account of new hospitals and centers built under assistance programs and partly on account of the increasing popularity and prestige of modern medical assistance. International organizations have stimulated interest in community development and demands for health centers and water supplies. Governments are fully aware of the importance of health measures and their economic value, which has been recognized in most of the long-range national plans.

However, the number of qualified physicians has hardly increased. A problem of capital importance in the countries under review is unquestionably the shortage of physicians.

It is estimated by the French Ministry of Health that the present number of physicians is the bare minimum to insure services in the hospitals, control of endemic diseases by means of mobile units, operation of existing marginal health services, teaching and essential research. This problem is of considerable importance to the French Ministry of Cooperation which still provides the services of more than one third of all physicians now in government service of the countries under review.

In these countries, there are less than 2000 physicians for a population of 42 to 45 million living in an area about the size of conterminous United States. There is probably 1 physician for some 18,000 persons in Senegal and 1 physician per 20,000 to 25,000 in Dahomey and Ivory Coast (as compared, for instance, with about 1 per 11,000 in Kenya), but the ratio is well over 1 per 60,000 in the predominantly savannah and sahel countries: Niger, Upper Volta and Chad. The distribution of physicians within the individual countries is most uneven; in Senegal, for instance, out of 200 physicians for a population of 3.5 million, 160 reside in the Dakar area which has 500,000 inhabitants, leaving 40 physicians for 3 million inhabitants.

The normal functioning of the new hospital centers, mobile units and peripheral health services will soon require a substantial increase in fully trained medical personnel and a number of specialists.

There are at present 650 medical students from the countries under review studying in France or at the three medical schools in Africa offering full sixyear study programs: Dakar, Abidjan and Tananarive. In addition there are, in Madagascar, some 125 students at the Tananarive Medical School (five-year study program). However, the enrollment and the number of first and second year students at the Tananarive School is lower at present than in the past—a reflection of the many attractive new opportunities in government services for the Malagasy bacheliers.

Taking into consideration some desertions towards the private sector (plantations, mines, etc.), it is doubtful whether the states under review will have at their disposal more than 50 new doctors per year.

Special efforts are being made in some of the countries (Mali, Guinea) to orientate a number of high school graduates towards the study of medicine. The effect of these attempts, which are bound to have a high proportion of drop-outs, will not be known for at least five years, <u>i.e.</u>, 1970.

Meanwhile, the new African physicians are known to be most reluctant to accept

employment in smaller towns and rural areas. There is therefore a serious problem of directing the young African physician, trained at government or technical assistance expense, towards peripheral and rural posts.

Various ways to attract younger African physicians to smaller towns and rural health centers have been suggested. A WHO representative in Senegal stated that a salary differential (<u>sursalaire</u>), better housing and transportation facilities are essential; <u>sursalaires</u> were recently granted by the government to engineers whose services are essential to economic development. Another proposal, which would also please OCCGE, would provide for voluntary or compulsory integration, for a fixed period of time, of the young African physician into the future health centers, where he would work side by side with the other medical officers as a member of the team.

The recent change in the medical assistance policies of the French Ministry of Cooperation (see page 51) and the gradual switch to rural health centers may well provide for better utilization of available medical manpower in addition to making working conditions more acceptable to expatriate physicians. Some of the health centers which may be set up with bilateral or multilateral assistance will probably require the use of expatriate physicians. The requirements for specialists and technicians in the new hospitals will, no doubt, be filled with expatriates, as is already the case in Mali and Guinea.

The next five years will be critical in view of the growing needs in manpower, not only for medical assistance in rural areas and in order to insure a minimum standard of quality in central and provincial hospitals, but also to provide high level technical advisers willing to serve on a long-term basis.

<u>Medical schools</u>. A report submitted to the Jeanneney Commission<sup>3</sup> in 1963 (see page 48) subdivided twelve of the countries under review into three categories, according to the length of time these countries were expected to require continued assistance by French physicians.

The countries expected to require assistance for 25 to 30 years included Mauritania, Upper Volta, Niger and Chad of the sahelian zone (to which Mali--not included in the classification--also belongs). These countries have the lowest school attendance of all those under review--less than 19 per cent of the schoolage population (1963-1964) and only a few <u>bacheliers</u>. The second group of countries (Gabon and Congo) was estimated to require only 10-15 years of assistance because they have encouraging numbers of medical students. The five countries of the first category (Cameroun, Dahomey, Ivory Coast, Senegal and Madagascar) are expected to require the aid of French physicians for only 5-10 years as they have a number of national physicians and are thought to have a sufficient number of medical students to replace the French physicians within a few years.

However, in July 1965, Dr. Aujoulat of the French Ministry of Health told the ministers of health of the countries under review that there was no indication that any of them could dispense with the assistance of French physicians within the near future on account of an insufficient number of their nationals studying medicine.

The total number of medical students in these countries is estimated at 650. It is recalled (see page 42) that in 1963-1964 not less than 345 stipendees from countries under review (other than Guinea) were studying medicine in France. Only a small proportion of these were postgraduate students. The high number of medical undergraduate students in France indicates the preference of African students to study medicine in France rather than at the Dakar School.

Original planning of medical studies in Africa south of the Sahara by the French authorities was based on the assumption that wide use would be made by the countries under review (other than Madagascar) of the Medical School at Dakar. National prestige and political considerations have motivated the setting up of new medical faculties in Ivory Coast, in Madagascar and, soon, in Cameroun. A brief description of these schools and of the Dakar School is included at the end of this chapter.

The African School of Medicine and Pharmacy established in 1918 at Dakar for training of auxiliary health workers was closed in the early fifties. During its 35 years of existence the school graduated 581 medical assistants (Médecins africains), many of whom still provide valuable service in rural areas. A proposal was recently made to re-establish the five-year training program of médecins intermediaires. In spite of its rejection by the majority of African governments in favor of the six-year curriculum leading to a degree equivalent to the French docteur en médecine, the five-year program is still favored by some heads of African health services. As is known, this system continues to be used in Madagascar (see page 133) and will probably be adopted also in Mali and Guinea.

1. The Dakar School of Medicine (see also page 138). The Joint Faculty of Medicine and Pharmacy, which replaced the Ecole de Médecine d'Etat created in 1950, provides teaching which covers the full medical curriculum in accordance with the new French six-year study program. The Faculty has a teaching staff of 44 and a total enrollment (1964-1965) of 244. There are several special institutes; among these the most important is the Institute of Applied Tropical Medicine which provides special postgraduate training in tropical medicine and is expected to be entrusted in the near future with graduate and postgraduate training in public health.

The reputation of the Dakar Medical School, by international standards, is quite good. The small number of students and the clinical facilities make study at Dakar desirable for many French and non-African students. However, the lack of impact of the school on public health and the <u>médecine de masse</u> makes it imperative according to Prof. M. Sankale, of the School, to provide in the near future for postgraduate teaching of epidemiology, preventive medicine and social medicine. This orientation toward public health will differentiate the program of the Dakar School from that of other medical faculties in France.

The enrollment in the Joint Faculty of Medicine, Pharmacy and Dentistry rose from 96 in 1956-1957 to a peak of 312 students in 1963-1964, and decreased to 244 in 1964-1965, while the enrollment in the Faculty of Sciences during the same period rose from 168 to 549. In 1965-1966, there were only three Senegalese students in the first year of medicine. Medicine obviously is not as popular a choice in the countries under review as in many other countries.

The low number of medical students is partly due to the system of successive examinations eliminating a high proportion of candidates which represent an important share of valuable manpower. In June 1964 in Senegal, for instance, of 594 candidates to the first part of the baccalaureat, 205 were admitted; of 255 candidates for the second baccalaureat, 141 were admitted; of 16 candidates for admission to medical studies, 4 were admitted. The 148 undergraduate students of the Faculty in 1964-1965 were distributed as follows (by country of origin and by sex):

	Medicine		Pharmacy		Dent	Dentistry	
	Male	Female	Male	Female	Male	Female	
Senegal	21	1	15	13	2	<b>-</b> .	
Cameroun	8	-	2	-	4	-	
Dahomey	16	1	9	5	2	-	
Guinea	4	-	1	2	-	-	
Upper Volta	6	-	1	-	-	-	
Mali	l	-	-	-	-	· _	
Mauritania	6	-	-	-	-	-	
Niger	-	-	1	-	. –	-	
Other countries (not							
of this study)	14	<u>1</u>	6	<u>4</u>	2	-	
Total	76	<sup>.</sup> 3	35	24	10	-	

The cost of studies at Dakar University, and especially at the Faculty of Medicine, is high and may have some bearing on France's assistance policy in the future. The combined working budget of the University and the cost of salaries of teachers provided by France could be estimated at about \$5.6 million per year for a total enrollment of 2000 students, i.e., almost \$3000 per student. Moreover, it is estimated in Dakar that the total cost per medical student is about \$10,000 per year, not including the cost of the teaching hospital. It is assumed that the training of a physician at the Dakar School costs the French government not less than \$60,000.

The question of teaching public health was discussed by medical experts of the French-speaking countries at a symposium on public health held in Dakar in January 1965, <sup>15</sup> presided over by Prof. M. Payet, dean of the Dakar Faculty. The conference recommended that public health teaching should be developed within the university curriculum; teaching should be done by specialists (public health, epidemiology, social medicine); students should participate in field surveys. Postgraduate initiation in public health could be a special stage for all physicians, linked with the teaching of tropical medicine, and could further be linked with one of the institutes of OCCGE. A special postgraduate diploma would be desirable for those who wish to specialize in health administration and planning. It would be preferable to send the few physicians requiring such diplomas to schools abroad rather than plan at present for a special school in Dakar. A practical stage performed locally should supplement such diploma obtained abroad. WHO made arrangements to provide in 1967 a visiting professor of public health to promote postgraduate public health training.

In spite of its rejection by the Dakar symposium, the proposal for a School of Public Health, built on the foundation of the present Institute of Tropical Medicine, would deserve consideration and would justify efforts by U.S. experts (possibly in connection with the current smallpox programs) for the acceptance of the concept of a school of international standard. The high cost of such a school would be justified if the project is endorsed by several governments and is assured of a steady flow of African medical graduates.

2. The Abidjan Medical School. The Faculty of Medicine of the University of Abidjan was officially opened on March 27, 1963. The Medical Faculty at Rennes, France, is acting as godparent of the new medical school and will insure a regular
supply of instructors to it. The first year the enrollment was 33 students. In October 1964, the total enrollment was 44, distributed as follows by country of origin and year of study:

Ivory Coast		Ma	li	Upper	Upper Volta			Other		Total	
M	<u>F</u>	M	F	M	F	M	F	M	F	M	F
13	1	1	-	-	-	2	1	-	-	16	2
7	1	-	-	1	-	-	-	1	-	9	l
9	l	5	1	-	-	-	-	-	-	14	2
29	3	6	l	l	-	2	1	1	-	39	5
	<u>Ivory</u> <u>M</u> 13 7 9 29	Ivory      Coast        M      F        13      1        7      1        9      1        29      3	Ivory Coast      Ma        M      F      M        13      1      1        7      1      -        9      1      5        29      3      6	Ivory Coast  Mali    M  F    13  1    7  1    9  1    5  1    29  3    6  1	Ivory CoastMaliUpper $\underline{M}$ $\underline{F}$ $\underline{M}$ $\underline{F}$ $\underline{M}$ 13117119151-293611	Ivory CoastMaliUpper Volta $\underline{M}$ $\underline{F}$ $\underline{M}$ $\underline{F}$ 1311-71915129361	Ivory CoastMaliUpper VoltaFr $M$ $F$ $M$ $F$ $M$ $F$ 13112711-9151293611-2	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Ivory CoastMaliUpper VoltaFranceOt $M$ $F$ $M$ $F$ $M$ $F$ $M$ 13112171119151293611-21	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $

M = male; F = female.

In 1965-1966, the enrollment is as follows:

First year	62	including	21	from	Ivory	Coast
Second year	18	**	14	"	**	"
Third year	10	11	8	"	**	**
Fourth year	16	**	10	11	"	**

Students of the fifth and sixth years are still studying in France but are expected to come back to take their final examinations in Abidjan.

3. <u>Yaoundé School of Medicine</u>. Plans for this school were submitted by WHO in August 1963 when three consulting professors visited Cameroun to advise on the possibility of establishing a Faculty of Medicine and a hospital teaching center at Yaoundé.

The report recommended that the Faculty of Medicine be established as an integral part of the University of Yaoundé; that it should be able to open by October 1968 and to accept 30 students in the first year—the intake probably could reach 100 or 120 by 1975; that, for this purpose, a planning commission be constituted with representatives from Ministries of Education, Health and Finance, as well as from the University and the medical profession; and that fellowships be awarded to Cameroun doctors for postgraduate training to prepare them for their role as teachers. The report also recommended that the new teaching hospital be constructed on the same site as the Faculty and the University; that the teaching of natural sciences—physics, chemistry and biology—be developed in the secondary schools so that a sufficient number of suitably trained candidates will be available for selection as medical students. The report stated that there should be a far-reaching reorganization and considerable development of the health services of Cameroun as a prerequisite to the creation of the Faculty of Medicine. An adviser in medical education has been provided by WHO during 1965 in connection with the project.

4. <u>Medical schools in Madagascar</u> (see page 142). The School of Medicine and Pharmacy, founded in 1896, has a course of five years and produces doctors who are not fully qualified physicians but who render very valuable services, particularly in campaigns against endemic diseases and in the control of plague, smallpox and malaria. Because of their value, the Madagascar government decided not to close this school but to establish a national medical school as well. The total enrollment of the School of Medicine and Pharmacy (1963) was 145 and admissions 20. The teaching staff includes 16 full-time and 6 part-time teachers. As can be seen from the curriculum, hygiene and epidemiology occupy a prominent place; maternal and child welfare, health education and nutrition have been introduced during recent years. Teaching at this school has gradually been adapted to the needs of the rural physician in Madagascar, with emphasis on childhood diseases, respiratory and digestive disorders, and emergency medicine and surgery.

The National School of Medicine, the Medical Faculty of the University of Madagascar (Rector: M. H. Fabre) was opened in 1961. It gives a classical university course and will lead to the French <u>diplôme</u> fully valid in France. The teaching staff includes six full-time professors.

Advisory services in medical education will be provided by WHO to the Ministry of Health in 1966 and 1967.

<u>Nursing</u>. The number of nurses and assistant or auxiliary nurses in the countries under review can be estimated, from various documents, at 12,200 to 13,500, corresponding to 1 nurse per 2700 to 3200 inhabitants; of these, about 6 per cent were fully trained (1962). The number of midwives in these countries was about 2000 (or 1 midwife per 21,000 inhabitants). About 15 per cent of the midwives were fully qualified and 40 per cent were non-certificated auxiliary midwives.

The need for better qualifications of nurses and midwives and for new training facilities has been fully recognized in the 15 countries and some encouraging results have been obtained, mainly through multilateral assistance. WHO gave support to 13 countries with a view to continuing the general improvement in national nursing services and raising of basic nursing training standards. Many WHO nurseeducators take an active part in organizational and teaching work in the various schools of nursing and midwifery. Attention is also given to the training of auxiliary staff, which is required in many rural areas to take on responsibilities above its competence.

The pressing need for nurse-educators required the establishment at Dakar of a higher nurse training institution.

Information available about most of the schools of nursing and midwifery and about WHO assistance to these schools, some of which will continue up to 1970, is summarized as follows:

	Diploma	Assistance by WHO	Period
Cameroun:			
State School of Nursing, Ayos		advisory services	1962 <b>-</b> 68
(Centre d'Instruction d'Ayos)		in developing the	-
also school for auxiliary		program	
nurses, midwives and social			
assistants.			
Private School of Nursing,	French		
Douala	State		
Private School of Nursing,			
Yaoundé			
Nursing School at Bamenda			

	Diploma	Assistance by WHO	Period
Central African Republic: School of Nursing, Bangui		in establishing the school	1962-64
		in development of the program for basic education	1965 <b>-</b> 70
Chad: School of Nursing, Fort Lamy Oct. 1964: 77 students - lst year; 50 students - 2nd year. First final examina- tion in July 1964		in the development of the school,* in planning for raising the standard to the <u>Diplôme</u> <u>d'Etat</u> level	19 <b>65-</b> 70
Congo: School of Nursing and Midwifery of the Center for Higher Edu- cation at Brazzaville; 1964: 133 students (nurses, social workers, health inspectors); 1964-65 enrollment: 80 nurses	French State		
Dahomey: School of Nursing, Cotonou	Dahomey State		
Gabon: School of Nursing, Libreville	Gabon State	in development of basic program	1961 <b>-6</b> 8
School of Midwifery, Libreville	recognized equivalent to French State	in development of basic program	
Both schools (December 1963): 230 students			
Guinea: School of Nursing		advice on develop- ment of the basic program for train- ing midwives and nursing personnel at all levels	1965 <b>-</b> 67

\* With UNICEF assistance.

	Diploma	Assistance by WHO	Period
Ivory Coast: School of Nursing and Midwifery, Treichville	Ivory Coast, recognized equivalent to French State		
Madagascar: School of Nursing of Tananarive			
School of Midwifery, Tananarive	equivalent French Stat	to e	
Mali: School of Nursing at Bamako Hospital	Mali State	in the development of basic school of nursing and in the organization of nursing services*	1962 <b>-</b> 70
Mauritania: School of Nursing		in the development of the basic school of nursing and in the organization of nursing services	1963-68
Niger: School of Nursing, Niamey	•	in the reorganiza- tion and development of the school to train 3 categories of nursing personnel at specialist, state diploma and auxiliar levels	1963-67 f
Senegal: School of Nursing, Saint-Louis School of Midwifery, Dakar	equivalent to French State	in the development of basic programs of nursing education; integration of public health aspects in programs for nurses and midwives	1963-68 °

\* With UNICEF assistance.

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in strengthening of programs for educa-

tion at all levels

for the development

of nursing and mid-

wifery education

1962-68

1965-68

Togo: School of Nursing and Midwifery, Lomé

Upper Volta: National School of Nursing, Ouagadougou. Director: R. F. Goarnisson

OCCGE: Ecole Jamot, Bobo-Dioulasso (Upper Volta); training of auxiliaries for mobile campaigns; intake end of 1965 - 100 students

IOTA, Bamako; specialized training of nurses in tropical ophthalmology

<u>brevet</u> <u>d'ophtalmologie</u> <u>tropicale</u>

Upper

Volta

State

stages for students in nursery, midwifery

Institut Marchoux, Bemako; specialized training of auxiliaries in leprosy control

WHO, Inter-country project:

Center for post-basic Nursing Education (French language), Dakar; assistance in the basic program for the Ecole du Diplôme d'Etat, Dakar; two WHO nurse educators assist with the organization of the school. They have been concerned with teaching both in the classroom and in the practical field. For student experience, a unit has been developed within the medical services of the hospital le Dantec. UNICEF equipment is used to augment that which is available in the hospital.

The school of nursing reopened in October 1964 with a total number of 160 students, including 84 new entrants. the development of 1963-65 post-basic programs of nursing education; and of teaching and practice for nurse educators (public health and midwifery), nurse administrators (hospital, public health service) Continued efforts and assistance will be required to raise the standard of nursing and midwifery education in several of the countries under review. The need for training of nurse-educators and administrators is still great. In this connection, it is noted that the assistance to the WHO project intended for the French-speaking countries, <u>i.e.</u>, the Center for post-basic Nursing Education at Dakar, was terminated by the end of 1965, while the similar project in English language at the Department of Nursing, University of Ibadan, Nigeria, is expected to continue for a further eight years, with the assistance of WHO, UNICEF and the Rockefeller Foundation.

WHO is expected to initiate in Africa in 1966 a program for the preparation of public health nurses and to organize a practice teaching field and demonstration area. It is not known yet what will be the participation of nurses from the French-speaking countries.

Laboratory technicians. The need of laboratory technicians and plans for training of such technicians at the Pasteur Institute, Brazzaville, has been referred to in Chapter XV (see page 124). In 1965 Dr. J. Ridet, Director of the <u>Centre Muraz</u> (OCCGE), discussed the problem of public health laboratories and prepared a report on the "Structure and organization of public health laboratories and especially of the Central Laboratory" and another document on the "Training of the technical laboratory personnel" considered from the point of view of Frenchspeaking countries of Africa.

The XII Inter-Ministerial Conference, OCCGE, held in November 1965, discussed a detailed proposal for training of laboratory technicians (<u>Ecole de laborantins</u>) under OCCGE. Training would be provided for auxiliary technicians, for qualified technicians and moniteurs.

The implementation of these plans will provide the indispensable staff without which planning for public health laboratories would be meaningless.

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# I. University of Dakar: Joint School of Medicine and Pharmacy, Dakar (Senegal).<sup>16</sup>

Medical education lasts for six years, not including the one-year premedical course in physics, chemistry and biology (P.C.B. course), and leads to the degree of <u>Docteur en Médecine</u> (Doctor of Medicine).

<u>Historical background</u>. In 1918, the African School of Medicine and Pharmacy was established at Dakar for the purpose of training auxiliary health workers in several disciplines, such as medicine, pharmacy and midwifery. This school served French West Africa until 1944. After that date it was opened to students from the French Cameroons and French Equatorial Africa as well. In 1950, however, the school for the training of auxiliaries was closed in favor of the national <u>Ecole</u> <u>préparatoire de Médecine et Pharmacie</u> (Preparatory School of Medicine and Pharmacy), which prepared students for the French <u>diplôme d'Etat</u> (State diploma). The school provided only the first three years of medical training, and for the remainder of the curriculum—the clinical year—the student had to go to France; the last year of medical studies, devoted to a <u>stage</u>, or probationary period in hospital, was again spent in Dakar. The Preparatory School of Medicine and Pharmacy formed part of a group of academic institutions—the Institute of Higher Studies of Dakar. In 1957 the University of Dakar was created, and the Preparatory School of Medicine and Pharmacy was transformed in 1960 into a joint Faculty of Medicine and Pharmacy of the University. The teaching it provides covers the full medical curriculum.

Administration. The University of Dakar and the institutes of which it is composed follow the legislative provisions and the rules in force in the universities of France and in their corresponding institutes, particularly with regard to the conditions governing registration, examinations and the conferring of degrees.

The University of Dakar maintains the closest relations with the two sponsoring universities of the former Institute of Higher Studies of Dakar-namely, the Universities of Paris and Bordeaux. It also collaborates with other scientific institutions in France.

The University is presided over by a Rector, who is Chairman of the University Council. Each faculty is administered by a Dean.

Detailed programs of medical instruction are drawn up by the professors of the Faculty of Medicine and Pharmacy and fixed by the Faculty Board. A general report to the Rector on the organization of teaching and the curriculum for the new academic year is submitted in outline by the Dean, who is then responsible for insuring that these programs are put into effect.

The academic year begins in October and ends in July. The language of instruction is French.

<u>Conditions of admission</u>. To be eligible for medical studies, students are required to produce a diploma showing that they have passed the first and second parts of the <u>baccalauréat</u> (obtained after seven years of secondary education, preceded by five years of primary school), or an official attestation from a faculty certifying that they have done so; or, in the absence of the <u>baccalauréat</u>, to submit a state diploma of <u>Docteur</u> es <u>Sciences</u> (Doctor of Science), <u>Docteur</u> es <u>Lettres</u> (Doctor of Letters) or <u>Docteur en Droit</u> (Doctor of Law), or the degree of <u>Agrégé de l'Enseignement secondaire</u>, or the <u>diplôme</u> <u>de fin</u> <u>d'études</u> <u>secondaires</u> or the <u>diplôme</u> <u>complémentaire</u> <u>d'études</u> <u>secondaires</u>. Candidates who do not possess any of the above qualifications must pass a special entrance examination. For this they must be at least 21 years of age; if they have failed the <u>baccalauréat</u>, they must be at least 25 years of age.

At the first <u>inscription</u> students should submit the P.C.B., P.C.N. or S.P.C.N. (certificate in physics, chemistry and biology; in physics, chemistry and natural sciences; or higher certificate in physics, chemistry and natural sciences). The upper age limits for entry to medical studies are determined in each case by the Minister of National Education, Youth and Sports.

Medical students at the University of Dakar may, if they so desire, go on to the Faculty of Medicine in Paris.

Foreign students are eligible for enrollment if they produce diplomas or certificates such as are required of nationals, or if they prove that they hold a qualification equivalent to the French <u>baccalauréat</u>. A list of diplomas, degrees and certificates recognized in any given foreign country as entitling the holders to access to higher studies has been drawn up by decree of the Minister of National Education. The University of Dakar has funds available for the award of scholarships for higher education to students registered at the University.

<u>Curriculum</u>. Candidates for the degree of <u>Docteur en Médecine</u> receive the following instruction during their course of study: (a) theoretical teaching covering all the branches of knowledge required by the future physician; (b) coordinated technical, theoretical and practical teaching given in the laboratories (practical work); and (c) clinical teaching given in the hospitals.

The curriculum is arranged as follows:

<u>First year</u>: anatomy; histology and embryology; physiology; medical physics; medical chemistry; stage in general medicine and general surgery

<u>Second year</u>: anatomy; histology and embryology; physiology; medical chemistry; stages in general medicine and general surgery

<u>Third year</u>: medical pathology; surgical pathology; morbid anatomy; bacteriology; parasitology; obstetrics; experimental medicine; <u>stages</u> in general medicine and surgery; <u>stages</u> in obstetrics and specialized branches; <u>stage</u> (optional) in phthisiology

Fourth year: medical pathology; surgical pathology; medico-surgical anatomy and operative medicine; hygiene; forensic medicine and medical ethics; therapeutics and hydrology; pharmacology; same <u>stages</u> as in the third year plus <u>stages</u> in specialized branches such as dermatology and syphilology, psychiatry and neurology and pediatrics

<u>Fifth year:</u> medical pathology; surgical pathology; same <u>stages</u> as in the third and fourth years

<u>Sixth year:</u> medical pathology; surgical pathology; obligatory <u>stage</u> as a hospital intern.

Medical students performing the sixth-year stage, or probationary period, are styled <u>stagiaires hospitaliers</u>. In view of the services thus rendered to the hospital they receive some remuneration and certain material advantages. These <u>stages</u> may be spent in approved hospital units within the sphere of each faculty, a list of which is supplied annually by the Dean to the Minister of National Education (Directorate of Higher Education) and to the other faculties.

The regulations governing the competitive examination for <u>externats</u> and <u>internats</u> at the <u>Hôpital</u> <u>central</u> <u>A</u>. <u>Le</u> <u>Dantec</u>, Dakar, and its annexes are determined by decrees of August 29, 1952 and January 25, 1956 respectively.

Examinations and qualification. The examinations on which the conferment of the degree of Docteur en Médecine depends are of two kinds:

(1) five end-of-the-year examinations for the first five years;

(2) three clinical examinations, including three separate examinations in clinical medicine, clinical surgery and clinical obstetrics; these examinations are to be passed after the sixth annual inscription.

The end-of-the-year examinations cover the subjects taught during the year; for the first and second years they include written and oral theoretical examinations, and practical examinations; for the third, fourth and fifth years they include oral theoretical examinations and practical examinations. All these examinations take place in the presence of a board consisting of three or four examiners.

For the clinical examinations the boards are composed of three members drawn from the teachers of medicine, surgery and obstetrics. One of the members may be chosen from among the representatives of specialty clinics. Candidates may only sit for the clinical examinations after confirmation that the obligatory <u>stage</u> has been completed and after conclusion of the course of study. These clinical examinations may be taken in any order chosen by the candidate. Each of the three clinical examinations includes, first, a <u>stage</u> in the clinical units of the faculty or in hospital units designated for that purpose, and, secondly, a recapitulatory examination held at the faculty headquarters. A candidate referred at one of these clinical examinations may present himself again only after a further stage of two or three months, according to the circumstances.

After passing all the clinical examinations the candidate defends a thesis written in French, the subject of which has been previously approved by the chairman of a four-member board of examiners.

# II. University of Abidjan, Faculty of Medicine, Abidjan (Ivory Coast).<sup>16</sup>

Medical education, when the whole cycle of study is complete, will consist of a six-year course leading to the degree of <u>Docteur en Médecine</u> (Doctor of Medicine), equivalent to the French <u>Diplôme</u> <u>d'Etat</u> (State diploma). The first students were admitted in October 1962.

Administration. The medical school, together with the schools of law, literature and sciences, is part of the University of Abidjan. The University is sponsored by France, which is financing the proposed university campus, including the medical school. The plans for the school include a 300-bed university hospital where integrated teaching on the lines of the French medical curriculum will be given. In the meantime provisional laboratories are being prepared in the <u>Ecole</u> <u>normale supérieure</u>. France will also provide the necessary equipment for the University and the French Ministry of National Education is responsible for the salaries of the teaching and top administrative staff. In addition, the Ministry of National Education paid 75 per cent of the budget for 1962, with 65 per cent participation in the budget for 1964 and 50 per cent in that for 1965.

The official sponsor of the medical school is the Faculty of Medicine of the University of Rennes, which supplies most of the teaching staff. The medical school is headed by a Dean. The executive officer of the University is the Rector.

The academic year consists of two semesters, running from October to the end of January and from February to the end of June.

<u>Conditions of admission</u>. Candidates for admission must hold the French <u>baccalauréat</u> for which twelve years of education are required. There is no entrance examination. Foreigners are admitted to the medical course under the same conditions as nationals. <u>Curriculum and qualification</u>. The six-year curriculum is the same as that newly implemented in France and leads to a degree equivalent to the French <u>Docteur</u> en Médecine.

III. (1) School of Medicine and Pharmacy, Tananarive and (2) University of Madagascar, National School of Medicine and Pharmacy, Tananarive (Madagascar).

Medical studies in Madagascar are organized at two levels: (1) a five-year course, including a year of premedical studies, leading to a local diploma—that of the <u>School of Medicine and Pharmacy of Tananarive</u>; (2) a six-year course, of which the first year is taken in Madagascar and the remaining five years in France, and which leads to the French <u>diplôme d'Etat</u> (State Diploma) of <u>Docteur en Médecine</u> (Doctor of Medicine).

Administration. Studies at the local diploma level are carried out at the School of Medicine and Pharmacy of Tananarive established in 1896. At this School there exists a Board of Higher Studies composed of the Minister of National Education, representatives of the academic services and the Ministry of Public Health, the Director of the Pasteur Institute, the Director of the School of Medicine and the professors of the school. This Board meets at least once a year, fixes the curriculum and the competitive examinations and decides what modifications should be made in the internal running of the school.

Medical studies at the university level are begun at the <u>National School of</u> <u>Medicine and Pharmacy</u> (founded in 1961) which is part of the University of Madagascar. Both the School at Tananarive and the University of Madagascar are under the jurisdiction of the National Foundation for Higher Education. The former is financed by the Directorate of University Services, and the latter by the Directorate of Higher Education.

The academic year begins in October and ends in July. The language of instruction is French.

<u>Conditions of admission</u>. Candidates for admission to medical studies at the School of Medicine and Pharmacy of Tananarive have to pass a competitive examination for admission to the premedical year; they must hold the <u>brevet élémentaire</u> (primaryschool certificate). Candidates who have passed the full <u>baccalauréat</u> are not required to take the competitive examination. At the end of the year of premedical studies all students must pass the competitive examination for admission to the first year of the medical course proper. Candidates for entry to the National School of Medicine and Pharmacy must hold the <u>baccalauréat</u> or have passed an equivalent examination.

<u>Curriculum</u>. At the School of Medicine and Pharmacy of Tananarive the curriculum of the medical course proper is as follows:

<u>First year</u>: medical symptomatology; surgical symptomatology; anatomy with practical work in osteology; minor surgery; physiology (theoretical course and practical work); three hours' clinical work in hospital every morning in the general medical and specialized wards

<u>Second year</u>: medical pathology; surgical pathology; anatomy; dissection; histology; three hours' clinical work in hospital every morning

<u>Third year</u>: medical pathology; surgical pathology; obstetrics; pharmacological therapeutics; clinical ophthalmology and otorhinolaryngology; clinical phthisiology; clinical dentistry; three hours' clinical work in hospital every morning.

<u>Fourth year</u>: hygiene; epidemiology; bacteriology (theory and practice); parasitology (theory and practice); malariology; rudiments of morbid anatomy; operative medicine; forensic medicine; occupational medicine; psychiatry; maternal and child welfare and health education; meat inspection (theory and practice); administration of the State medical services; clinical medicine, surgery and obstetrics; clinical ophthalmology and otorhinolaryngology; three hours' clinical work in hospital every morning.

The National School of Medicine and Pharmacy at the present time provides only the first year of the six-year course leading to the French State diploma of Doctor of Medicine. The subjects studied during this year are as follows:

First semester: mathematics, chemistry, physics; biology (taught at the Faculty of Sciences); introduction to medical studies; psychology; anatomy; histology and embryology (taught at the Faculty of Medicine)

<u>Second semester</u>: biology; biophysics; biochemistry; physiology; anatomy; histology and embryology.

After completing the first year students continue their studies at the French faculties of medicine.

Examinations and qualification. Students of the School of Medicine and Pharmacy sit for examinations at the end of each academic year, before passing on to the next year of the course. Each examination covers the subjects studied during that period and includes written, oral and practical tests. If he fails twice, he must repeat the entire course. After a final examination, at the end of the fourth year, a student is awarded the diploma of <u>Médecin de l'Assistance médicale de</u> <u>Madagascar et Dépendances</u>, which entitles its holder to practice in Madagascar and the dependencies only. Competitive examinations for posts as hospital <u>internes</u> are held each year in order to enable students to work in teaching hospitals under conditions similar to those governing internats in France.

The French State diploma of Doctor of Medicine, awarded to students who have passed the examinations at the end of the first year of the course at the National School of Medicine and Pharmacy and the subsequent examinations covering the remaining five years of the course at the French faculties of medicine, authorizes its holder to practice medicine in Madagascar and on the territory of the French Republic, including Réunion and the Comoro islands, subject to conditions of nationality.

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## Appendix 1

# U.S. AID Health and Sanitation Projects Including Health Activities Funded Under Other Categories (e.g., Agriculture) by Selected Countries in Africa

Country and Project	Purpose & Personnel	Initial FY	Final Scheduled FY	FY 1965	Expenditures To Date	Estimated to Completion
IVORY COAST Ground Water Resources (Agriculture & Natural Resources)	F      Sch      Purpose & Personnel    Initial FY      ces    To determine most ef- ural fective and economic means of locating sites for drilling small ca- pacity domestic wells. 1962    1      th    To supply vehicles for mobile health units and utility vehicles. 1964    1      th    To supply vehicles for mobile health units and utility vehicles. 1964    1      No personnel    1961    1      vey    To assist in location of water. Personnel under contract    c. 1      g    Participants in health, commerce (Program for 25 participants planned for FY 1965)    1962    1	1966	\$175,000 <sup>8</sup>	none	\$345,000	
MAURITANIA Improvement of Health Services	To supply vehicles for mobile health units and utility vehicles. No personnel	1964	1964	75,000 <sup>b</sup>	\$ 25,000	75,000
NIGER Control of Endemic	Primarily to provide					
Diseases	commodities. No personnel	1961	1966	87,000	89,000	363,000
SENEGAL Water Besources Survey	To assist in location					
Participant Training	of water. Personnel under contract Participants in health.	c,	1965	160,000	70,000	730,000
	commerce (Program for 25 participants planned for FY 1965)	1962	1968	80,000	133,000	503,000
						·····

Country and Project	Purnose & Personnel	Initial FY	Final Scheduled FY	FY 1965	Expenditures To Date	Estimated to
Health Improvement (Endemic Disease Control)	To expand endemic disease service. One health educator; one participant	1961	1966	\$ 45,000	<b>\$</b> 295 <b>,</b> 000	\$462 <b>,</b> 000
MATT						· · · · · · · · · · · · · · · · · · ·
Training for Development Needs (Education)	To train Malians in fields which comple- ment AID-sponsored projects.	1961	1967	28,000	504,000	604,000
Village Development (Com- munity Development, Social Welfare, and Housing)	To supplement rural "self-help" projects. Three U.S. advisors; Two participants	1962	1966	105,000	199,000	. 394,000
CENTRAL AFRICAN REPUBLIC Health Planning Assistance	To assist CAR develop a national health plan. WHO Public Health Plan- ning Advisor & other Specialists	1965	1965	88,000		
СНАЛ	<u></u>	······································				
School Health Education	To help Chad Ministry of National Education establish an adequate health service for school children. Four contract technician	1963 s	1967	290,000	200,000	900,000

## Appendix 1 (cont'd)

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## Appendix 1 (cont'd)

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Country and Project	Purpose & Personnel	Initial FY	Final Scheduled FY	FY 1965	Expenditures To Date	Estimated to Completion
GABON Assistance to Endemic Disease Service	To improve health and sanitation facilities and expand medical services. No personnel	1963	1965	\$120,000	\$ 45,000	\$265,000
CAMEROUN Water Supply Development	To improve existing urban water systems. One engineer	1963	1966	20,000 <sup>d</sup>	30,000	70,000
<u></u> ТОССО	· · · · · · · · · · · · · · · · · · ·					
Rural Health Improvement	To provide drugs and equipment to support Peace Corps activities. No personnel	1963	1965	25,000	174,000	275,000
Participant Training	Includes participants in medicine and public health	1961	1969	146,000	328,000	972,000
Rural Development (Com- munity Development, Social Welfare, and Housing)	To assist in establish- ment of a National Rural Development Service for training in agri- culture, sanitation, etc FY 65: Four contract technicians to train at Center, including health training to village leaders	e 1962 <sup>-</sup>	1969	290,000	340,000	1,303,000

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Country and Project	Purpose & Personnel	Initial FY	Finald Scheduled FY	FY 1965	Expenditures To Date	Estimated to Completion
MADAGASCAR Ground Water Development for Village Water Supplies (Health)	To construct village wells. Two technicians; four participants	1962	1967	\$ 88,000	\$203,000	<b>\$</b> 526 <b>,</b> 000
AFRICA REGIONAL PROGRAM Measles Control	To aid six tropical African countries (Ivory Coast, Guinea, Mauritania, Mali, Niger and Dahomey) to reduce high mortality from measles. No personnel	1963	1965	1,000,000 <sup>e</sup>	880,000	2,980,000
<sup>a</sup> Ivory Coast contribution est <sup>b</sup> One year project for FY 196 <sup>b</sup>	timated \$50,000 a year for + only; only \$25,000 was e	r FY 1964 and expended -\$50	FY 1965. ,000 unoblig	gated.		

## Appendix 1 (cont'd)

<sup>C</sup>Illegible in AID report.

<sup>d</sup>Cameroun Government contribution: FY 1964: \$145,000; FY 1965: \$150,000.

<sup>e</sup>FY 64 funding: \$1,400,000 vaccine; \$315,000 equipment; \$35,000 training; additional FY 65 \$1 million vaccine.

Source: Health and Sanitation Projects supported by the Agency for International Development in Fiscal Year 1965, submitted by Philip R. Lee, M.D., July 27, 1964.

#### Appendix 2

#### Communicable Diseases Notified in 1961

#### Cases reported to health authorities or recorded among in- and out-patients

		Typh Para	oid and	Dw	reenterv									Infec-			
Country	Smallpox	Total	of which Typhoid	Total	Ameb.	Bac.	Diph- theria	Whooping Cough	Meningococcal Infections	Acute Polio	Measles	Syphilis	Leprosy	Hepa- titis	Trachoma	Malaria	Trypano- somiasis
Cameroun	1,500	918	581	52,488	16,198	2,970	45	37,563	265	7	33,132	6,351 <sup>1</sup>	4,396	1,937	615	428,300	186
Central African Republic <sup>*</sup>	-	15	5		4,236	43	2	1,812	124	12	3,475		524		31	62,084	18
Chad <sup>#</sup>	281	117	5	38,432	16,995	154	4	1,337	4,996	4	5,483	5,182 <sup>1</sup>	1,789 <sup>2</sup>	1,509	7,808	67,7282	3112
Congo	23	15	14		1,373	48	8	2,419	21	280	5,030	3,633 <sup>2</sup>	853			56,423	75
Dahomey	119	75	68		3,139	104	4	4,380	82	4	13,526	9,659 <sup>2</sup>	409	464	487	67,071	-
Gabon*	-	87	86	2,148	1,982	164	-	5,127	29	35	5,029	3291	275	221	-	55,0982	186
Guinea	96																
Ivory Coast	4,656	84	55		11,490	2,447	7	5,008	346	2	29,074		219		195	57,305	28
Madagascar	-	743	729	43,649	883	348	805	10,602	23	26	21,185	3,821 <sup>1</sup>	7,300	290	1	49,771	-
Mali	1,706	190	182	194,425	12,141	367	38	5,835	796	69	21, 361	4,578 <sup>1</sup>	1,252	1,021	4,689	369,4242	38
Mauritania	8	10	7	9,808	2,099	352	46	2,108	28	-	2,578	2,119	169	182	181	20,192	-
Niger*	1,740	11	11		4,845	40	25	2,105	3, 349	1	19,781	6,412 <sup>1</sup>	2,302	-	3,050	31,730	-
Senegal*	201	86	66		13,804	523	178	6,198	397	28	15,607	39,024		6,444	3,464	132,888	102
Togo*	281	51	39		7,881	-	-	2,761	258	32	10,440	3,030 <sup>1</sup>	1,922	2,677	1,152	288, 738	72
Upper Volta	2,451	71	69		16,939	230	40	4,787	2,771	40	16,507	284 <sup>1</sup>	116,458	166	850 <sup>2</sup>	72,939	627

Plague: Cameroun 1 case; Madagascar, 4 Typhus: Congo, 4 cases Murine typhus: Central African Republic, 1 case Other rickettsial diseases: Central African Republic, 16 cases; Mali, 3; Upper Volta, 27; Chad, \* 165 Tick-borne relapsing fever: Gabon, \* 8 cases; Senegal, \* 29; Chad, \* 3 Brucellosis: Chad, \* 9 cases

\* in- and out-patients of hospitals and dispensaries ...data not available —nil or magnitude negligible

learly syphilis

<sup>2</sup>all cases treated, old and new

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