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9. ABSTRACT

Liberia's basic health problems are malnutrition, lack of potable water, inadequate sewerage disposal, and the diseases associated with vectors whose control is very expensive. Eventually all of these problems will have to be faced, but the immediate concern must be the most efficient use of extremely scarce resources to achieve the greatest impact. There is a marked disparity in the provision of health services, be they curative or preventive, between the coastal areas in which the elite resides and the hinterland in which the majority of the population lives. However, available data indicate that very few of these services are utilized adequately. Another concern is that while the population has been increasing sharply over the last few years, the total budget for health activities has been decreasing. Malnutrition affects a vast majority of the Liberian population, yet by all accounts, there are readily available foods within economic reach of a large number of the population. Malnutrition is not to be blamed so much on poverty, but ignorance and superstition. Public health care, education, and training are needed badly to begin, at least, to improve environmental sanitation and population planning. Formal medical training should be brought up to date and tailored to Liberia's needs and finally, a logistics system is needed to improve drug and equipment supply.

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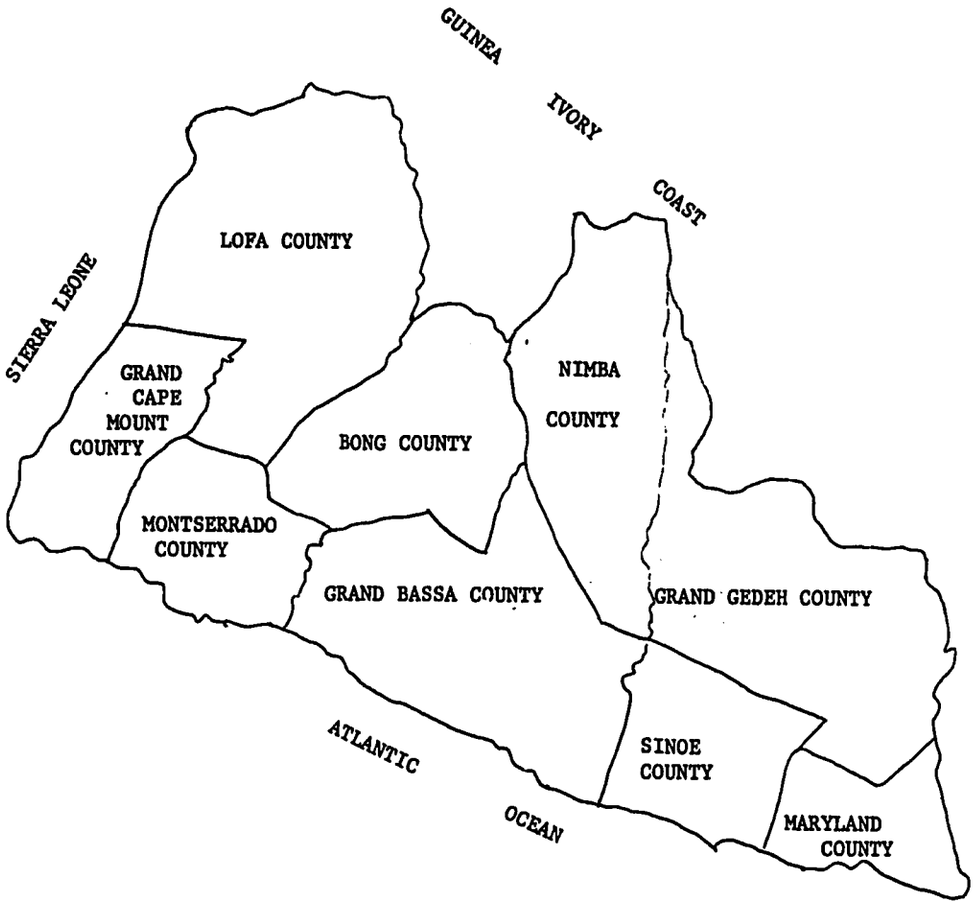
SYNCRISIS:
THE DYNAMICS OF HEALTH

An Analytic Series on the Interactions of Health and Socioeconomic Development

VII LIBERIA

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

OFFICE OF INTERNATIONAL HEALTH
DIVISION OF PLANNING AND EVALUATION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U.S. Department of Health, Education, and Welfare
Office of International Health
Division of Planning and Evaluation

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LIST OF ABBREVIATIONS

AID (or USAID)	Agency for International Development
BCG	A vaccine prepared from a Living attenuated strain of tubercle bacilli and used to vaccinate human beings against tuberculosis
CARE	Cooperative for American Relief Everywhere, Inc.
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
GNP	Gross National Product
GSA	Government Services Agency (of Liberia)
IBRD	International Bank for Reconstruction and Development (World Bank)
IDA	International Development Association (a part of IBRD)
JFKMC	John F. Kennedy Medical Center
MHSW	Ministry of Health and Social Welfare
UN	United Nations
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund
WHO	World Health Organization

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PREFACE

This report was prepared in the Division of Planning and Evaluation of the Office of International Health, Department of Health, Education and Welfare. It originated in response to an urgent request by AID for use by a mission to Liberia in mid-March 1973.

The original draft used by the team has been modified to include their findings as well as those of the principal author who recently spent two weeks in Liberia on a fact-finding trip. The objective of this study is to assist in the identification of the relationships between health and socioeconomic development. It is hoped that the document will provide a minimal factual basis upon which additional assessment of the health sector can be undertaken.

This is the seventh volume in an ongoing series of studies funded by AID to explore such relationships, and as a tool for the more rational planning of national resource allocations.

Because of time and data constraints, this document must be regarded as a preliminary assessment. The aim is to identify in broad outline the major obstacles to the achievement of better health. In the time available for this study no conclusive or detailed determinations were possible. However, where the data so indicated, an attempt has been made to highlight those areas that require immediate attention by decision-makers.

This report has been prepared from a selected number of official and unofficial sources augmented by a number of interviews with decision-makers in Liberia. The information available is often incomplete, outdated, and even contradictory. As such, the opinions expressed and the tentative judgements made must be viewed with caution.

I. SUMMARY AND CONCLUSIONS

Liberia is a relatively small country with fairly bright economic prospects for the future. Yet, as is true in most developing countries, the economic wealth tends to flow to relatively few, while the majority live at substandard levels. It will take a special effort to break the vicious circle of disease, ignorance, poverty, and more disease. Solutions to the major health problems are beyond the capabilities of a Ministry of Health and Welfare with a total budget of approximately $5 million a year. The basic health problems are: malnutrition, lack of potable water, inadequate sewerage disposal, and the diseases associated with vectors whose control is very expensive. Eventually all of these problems will have to be faced, but for the present the immediate concern must be the most efficient use of extremely scarce resources to achieve the greatest impact.

In this necessarily rapid survey of the available data, one finds that in many instances promising opportunities have been missed. On other occasions, limited resources have been allocated on traditional Western approaches which experience has shown to result in only limited impact on public health over the long term.

There is marked disparity in the provision of health services, be they curative or preventive, between the coastal areas and towns where the elite reside, and those in the hinterland where the majority of the population lives. The strong emphasis on curative medicine in a country where communicable diseases are rampant and affect the vast majority of the population must be closely reexamined if there is to be reasonable hope of achieving an improvement in overall health. It is of concern that only about 15% of a very modest health budget is allocated to preventive services, given the health conditions that presently prevail.

Regardless of the types of services offered, curative or preventive, the available data indicate that very few of these services are adequately utilized. Occupancy of existing hospital beds appears to be extremely low and health clinics for the most part are underutilized. The reasons for these contradictions must be identified. Possibly the difficulties of access and cultural charactistics are mitigating against hospitalization.

Another cause for concern is that while the population has been increasing sharply over the last few years, the total budget for health activities has been decreasing. The activation of the J.F. Kennedy Medical Center, which requires an operational budget of $3.2 million a year, raises fears that a further curtailment of funds for preventive services will likely result, or that dependence on foreign aid will be prolonged.

It is probable that some measures, properly applied, could dramatically improve the general health of the population. Malnutrition, for instance, affects a vast majority of the population, 80% of whom live on subsistence farming. The traditional slash and burn technique of agriculture results in a large percentage of land remaining fallow for many years. Modern procedures would permit more intensive use of the land and greater food production, a pre-requisite to the betterment of nutrition. The achievement of an improved balanced diet is more complex. Shortcomings in transportation and refrigeration prevent the free interchange of commodities between various parts of the country. Perhaps by far the greatest need is improved health education in applied nutrition. By all accounts there are readily available foods within economic reach of a large number of the population. Malnutrition in Liberia is not to be blamed so much on poverty, but on ignorance and superstition.

The needs for environmental sanitation, such as the building of safe water supplies, sewerage systems, and the drainage of swamps cannot be met on any large scale with the resources presently available. Yet, the trade-offs between the high costs of curative services to a minority of the population, versus the potential benefits derived from sanitary engineering activities that could reach the majority of the people, merit careful scrutiny. The most that could be done now would be to educate the population in basic sanitary practices. In this respect, advantage could be taken of the increased enrollment in public schools. Health education could also be passed on through the teachers in the secret societies for men and women, who have the responsibility of shaping the conduct of the children in tribal society.

Of special significance is the extremely rapid growth of the population. The female population in the fertile age group is disproportionately high. At present, high infant mortality slows population growth, but as effective health measures lift the burden of disease, the rate of population growth will tend to increase. The present and foreseeable rate of growth will negate the economic gains derived from increased productivity.

There appears to be a tremendous potential for public health activities within the existing resources of the country. There is a pool of trained "native doctors" in the remotest parts of the country. They enjoy the esteem, the trust, and the patronage of most members of the population who either have no access to modern medicine, or prefer folk medicine. With an appropriate peer group approach by the Ministry of Health and Welfare, these "native doctors" could be trained to deliver a number of the basic health services so urgently needed. The harnessing and expansion of their talents, within the framework of their traditional role, could result in increased prestige to themselves, improved health for a population that is hard to reach, and the achievement at minimal cost of some of the goals of the Ministry of Health and Welfare. Experience elsewhere suggests that it could be advantageous to explore this potential resource of auxiliary personnel for integration into the health care delivery system. These "native doctors" represent a pool of auxiliary health personnel, already in place in remote areas, who may readily assimilate the concept of basic, primary health care delivery. As such, they merit priority attention.

Another concern is the present situation at the University of Liberia Medical School. Only very few Liberians are enrolled; the vast majority of medical students are foreigners. In effect then, the Medical School, at great sacrifice to Liberia, is training physicians for export. At the same time, relatively large numbers of Liberians are studying medicine abroad on government fellowships.

Furthermore, Liberian physicians trained in Europe or in the United States receive little training in tropical medicine, and are ill-prepared to work under the prevailing conditions they find upon their return.

A logistics system is urgently needed by the Ministry of Health and Welfare to adequately re-supply drugs and equipment to outlying health centers and hospitals. Too often, needed supplies or broken equipment interrupt the provision of services for great lengths of time.

Another point that needs to be kept in mind is that when one speaks of "progress" in Liberia, the reference is really to Monrovia, and maybe one or two other coastal towns. There are changes occuring in the interior, but they are extremely slow. Although progress in Monrovia is important in that ten percent of the population lives there, there must be recognition of the fact that 90% of Liberia's population are just barely emerging into the twentieth century. Because the power structure of Liberia tends to reside in Monrovia, progress in that city has been equated with progress in the country as a whole. Nothing is further from the truth. While rapid advances are planned for the capital, the rest of the country continues with barely a ripple of change.

II. GENERAL BACKGROUND

The Republic of Liberia is located on the west coast of Africa a few degrees off the equator, on the great bulge of the continent. It extends about 350 miles along the coast between Sierra Leone on the northwest and the Ivory Coast on the southeast. Guinea is to the north, and the Atlantic Ocean to the west and south. Liberia is about the size of Pennsylvania and covers an area of approximately 43,000 square miles.

There are three geographical zones. Topography ranges from the 30 to 50 mile wide low-lying coastal belt, characterized by mangrove marshes, lagoons, and tidal creeks; an interior tropical rain forest: a region of hills and plateaus extending to the country's inland border and rising to elevations of 600 to 1,000 feet; and the Guinea Highland in the far northern part of the country, where forest is sparse and mountains rise to 5,000 feet.

The soil is generally rich, with some exceptions along the coastline where heavy rainfall has eroded and leached the area. Vegetation is abundant throughout. About half the country is forested with commercially useful trees. Contrasts that exist between various parts of the country are more a function of topography than of any other physical characteristics. The land is well supplied with water, and a number of narrow, but roughly parallel river basins drain the country southwesterly to the ocean.

Although all main rivers carry a good volume of water the year round, there are great variations in flow because of the rainfall pattern and rapid run-off from the watersheds. Most streams overflow their banks after the heavy downpours that occur during the rainy season. The flooding of land creates stagnant pools of water which are breeding grounds for many vectors of such diseases as sleeping sickness, malaria, and schistosomiasis.

On either side, inland from the sea, the frontiers for the most part follow well-defined water courses that have little if any commercial significance. In 1964, the entire country was divided into nine counties, these divisions follow the major river courses.

Liberia has the hot and humid climate usually associated with tropical countries. Humidity is seldom less than 80% except when the Marwattan, a hot dust-ladened wind that blows from the Sahara desert from December to February, sweeps the coast. At that time humidity may be as low as 50%.

There are two distinct seasons, dry and rainy. The latter lasts from May to November and produces rains that account for approximately 85% of Liberia's coastal rainfall, averaging about 175 inches a year. The rainfall extremes vary from 70 inches inland to 250 inches along parts of the coast. Temperatures are warm and rather uniform throughout the country. During the entire year averages are in the 70's or low 80's. Liberia has never experienced a drought, an earthquake or a hurricane. However, because of the climate that favors their activity the year round, insects are numerous and always in evidence. Several species of the Anopheles mosquito transmit malaria. Aedes aegypti, the vector of yellow fever and dengue, breed in and around dwellings. Tsetse flies, vectors of sleeping sickness, are found in heavily shaded areas along watercourses. Termites, and aggressive driver ants that march in seemingly endless columns are destructive pests. Mycotic infections are also a serious problem in this humid, tropical climate.

Of public health significance, are the results of the frequent overflowings of the river banks as a result of the heavy downpours in the rainy season. The absence of adequate sewerage systems and sanitary controls frequently lead to stagnant bodies of water, contamination of rivers as a source of water for home use, and to the breeding of insect vectors of disease.

Transportation and Communication

Until 1967-1968, there was no road connection from Monrovia to Robertsport, Greenville, and Harper, three of the five county headquarters along the coast. Until 1945, automobiles could not travel from the capital to any of the three neighboring countries. By the end of 1972, the network of public roads had a total mileage of about 4,098. The public roads accounted for 2,178 miles of primary (1,215 miles) and secondary (1,503 miles) roads. The private network, which also serves the public and was built by various concessions, was about 1,380 miles. The number of motor vehicles has shown a steady increase. The number of registered vehicles was about 21,000 in 1969 vs. 22,173 in 1972. Yet, there are still huge areas that are not easily accessible by road, or by any other means of transportation for that matter.

Nearly all the public road mileage is comprised of main arteries connecting Monrovia with remote parts of the country and with three neighboring countries. With the exception of a few roads to communities in the Monrovia area, farm to market and feeder roads have been entirely neglected or left to the initiative and responsibility of local authorities. As a result, headloading of crops to market along foot trails remains common. This difficulty in transportation prevents the hinterland from importing or exporting goods and merchandise to and from the coast.

Domestic Air Transport

Springs Payne Airfield in Monrovia continues to operate as Liberia's most important domestic airfield, and its busiest. It also accommodates some regional air traffic from nearby countries such as Guinea, Sierra Leone, Ivory Coast and Nigeria. In 1971, total landings and take-offs at the airport were 16,000, a drop of 5,000 from 1970. This drop is attributed to the availability of a better network of roads. There are 13 airlines using the airport, including all internationally scheduled carriers. The planes registered in Liberia number 52. At present, there are four air-taxi companies engaged in commercial operations.

Liberian National Airways, using DC6 and DC7 planes, flies from Springs Payne Airfield to Buchanan, Greenville, Tchien, Volahum, Voinjama, and Kalenple; air transportation is possible to over 20 smaller air strips in the interior. In addition, many of the foreign concessions have their own private planes and airfields.

Generally, rivers are obstacles rather than means of travel. Tortuous channels, small islands, rocks and rapids prevent much use of the rivers for any great distances. The Farmington River is the only inland waterway that has some commercial importance. From Harbel, about 15 miles upstream, the Firestone Plantations Company ships rubber by shallow craft to the sea and then along the coast to Monrovia.

Telecommunications

Existing communication facilities between Monrovia and the provincial towns consist of radio-telephone connections to about six centers, and radio-telegraph to six others. The Department of Public Works maintains its own radio communications system. In 1964, 18 foreign concessions and missions had radio-telephone installations of their own, but these private systems were to be abolished as soon as public facilities became available. USAID assistance in the provision of a management team ($1.4 million) to help the Telecommunication Authority has recently been approved.

There are eleven main post offices in the country and 23 agencies. Mail is delivered twice-weekly to the stations in the interior. Further delivery is made by couriers on foot.

There are a number of radio stations in Liberia. The number of radio sets is estimated at around 100,000. TV stations operate in the Monrovia area. Newspapers are abundant along the cities of the coast but not many are available in the hinterland. A number of local rural newsletters are available, but the number of people they reach is quite small.

History

Liberia is the oldest republic in Africa. It was founded in 1822 as a result of the efforts of the American Colonization Society to provide a permanent home for freed U.S. slaves in Africa. The Society governed the settlement through agents until 1839 when Liberia became a Commonwealth with its own legislative council. The Republic of Liberia (republic of freemen) was proclaimed on July 26, 1847. The first President, Joseph J. Jenkins was born in Virginia, U.S.A. The United States did not recognize the new republic until 1862.

After World War I. Liberia began the official policy of granting liberal concessions to foreign firms. The Firestone Company started operations in 1927. During World War II, the U.S. government built Robertsfield Airport and new harbor facilities at Monrovia. These provided the impetus to the country's growth which has continued steadily since that time.

Political Data

The government of Liberia is patterned very closely after that of the United States and is divided into three branches: The Executive, Legislative, and Judicial. The President and Vice-President are elected for an initial term of 8-years and may be re-elected for succeeding 4-year terms. The President appoints a cabinet of ten members.

The national legislature has two chambers. The Senate, or upper house, consists of two members elected for 6-year terms, from each of the nine counties. The House of Representatives consists of 39 representatives elected for 4-year terms.

Judicial power is vested in the Supreme Court composed of five judges, and a subordinate court system. The judges are appointed by the President and subject to removal at the President's request with the approval of a two-thirds majority of both houses.

The political divisions consist of five coastal counties, plus four recently created (1964) hinterland counties. Citizenship is restricted to Negroes or persons of Negro descent.

Public Administration

In 1973, Liberia has an acting President, the Honorable F. Tolbert, who is completing the term of office of deceased President Tubman. Elections will be held in 1974. Apparently, the new acting president has already had a profound influence on the governmental bureaucracy. Efforts at increased efficiency and the establishment of a merit system for civil servants have positively affected the climate of government activities. The bureaucracy is passing through a period of uncertainty as the President introduces changes in a public administration that has been rapidly expanding in recent years. Because of this rapid increase, efficiency is frequently below acceptable standards.

The governmental bureaucracy at all levels is still overloaded with personnel, many of whom have no clearly defined functions but obtained their position through friends or connections in higher government circles. The division of labor among employees

is at times so fine that the outcome is often inefficiency. The large number of personnel supported by the government keeps salaries low and non-competitive with either the concessions or private industry. The high stratification of labor makes for a lack of responsibility on the part of the individual who can always point to someone else, and for a stifling of initiative in that few have the opportunity to make meaningful decisions. Enquiries are always referred to a higher-up, even for the most trivial piece of information. The governmental administration is seriously handicapped by the wide gap between the top and the middle and lower echelons. At the top levels of the Ministries and Bureaus are well-qualified individuals. Immediately below, however, among the middle management, those charged with implementation or those in charge of the day-to-day operations in the field, the quality and preparation fall off precipitously. In part this has to do with the salary structure which discourages well-qualified candidates from entering government service; in part it is also the result of favoritism which permits unqualified persons to hold responsible positions; and thirdly, the public educational system in Liberia does not produce highly qualified individuals. Only those who can afford private schools or study abroad receive a high quality education. The majority of middle echelon government employees are educated and trained within the Liberian educational system.

To strengthen administration at all levels, the government, with the help of multinational organizations, and through bilateral arrangements with countries, e.g. USAID, has developed a system of counterparts. Theoretically, the local official has a highly qualified advisor to help him. For example, the Administrator of the JFK Medical Center has a US/AID hospital administrator consultant, his counterpart; the head of the Demographic Survey of Liberia has a U.N. counterpart, etc... While this counterpart structure is designed to help reach sound decisions, in practice it is often viewed by the Liberians as a control and barrier to independence. There is a very real desire and pressure by Liberians to run their own affairs, but with foreign resources forthcoming. On the whole, the concept of "counterparts" acts as an irritant on the sensibilities of Liberian officials who are anxious to try their wings, although at times they do not yet know how to fly. The U.S. has a fairly high profile in terms of counterparts and the effectiveness of the system needs to be evaluated against a background of nationalism that is sweeping contemporary Liberia.

III. POPULATION

The first national census was taken in 1962 and showed the total population to be approximately 1,000,000. From the results of the Population Survey of Liberia, the population in 1971 was estimated at 1,571,000 of which 72% live in rural areas (localities of 2,000 persons or less) and 28% in urban areas. Males make up 49% of the population and females 51%.

On the basis of indications provided by fertility and natality indices, the average annual rate of population growth was estimated at 3% in 1971. The rapid increase of urbanization continues to be of great economic and social significance. The current average annual growth rate of urban population is believed to be more than 10% a year.

The overall population density for the country as a whole is about 24 persons per square mile, but the population is very unevenly distributed. Large sections of the forest in the southeastern third of the country and in the west in Lofa County are practically uninhabited. In contrast, the density exceeds 100 persons per square mile in the area surrounding Monrovia and extending some 30 miles to the north and east. Greater than average densities that may run as high as 50 persons per square mile occur in a broad band that extends from Montserrado County, northeast to the Guinea border and all along the north and east of Lofa County. Comparable concentrations of population exist around some of the larger coastal towns such as Harper and Buchanan. High population concentrations have serious implications for subsistence farming as practiced in Liberia.

Liberia has a diverse population. One group consists of the descendants of the immigrants from the United States. A second is composed of the descendants of the tribes which moved into the country from various areas in central and northeastern Africa. There are 28 tribes inhabiting the interior, each with its own language or dialect. These indigenous groups belong to seven principal stocks: The Mandingoes (Mohammedan), the Kissi, the Gola, the Kpelle, the Kru, the Bassa, and the Greboes. The Kpelle constitute the largest single element in the population, followed closely by the Bassa. The estimate for the number of descendants of the original Americo-Liberian settlers is believed to be approximately 15,000, and represents a very small portion of the total population.

Because of the great diversity of tribes and their unique customs in terms of marriage, beliefs and religion, population characteristics as described herein represent generalizations that do not precisely reflect any one section of the population. In fact, there are distinctive cultural characteristics in various areas of the country.

Population Characteristics

Of the 1,571,000 persons in Liberia, 23% are classified as heads of households. An average of 4.4 persons live in each household, 64% of whom are related to the head of the household and 36% not related. About half of those related are made up of persons other than the head's wives, children or grandchildren; they include relatives such as sisters, brothers, parents and uncles, i.e. an extended family. Polygamy is common particularly in rural areas. For every 100 headwives there are approximately 32 other wives; 37 per 100 in rural areas and 16 per 100 in urban settings. This does not mean that a third of the married heads have several wives. Inspection of the data indicates that those with more than one usually have more than two.

In the overall distribution of population by sex in Liberia females make up 51%. The rural-urban distribution however shows marked contrasts in sex differentials. In rural areas, females make up 52% of the population. In the urban areas, however, the ratio is 53% male to 47% female. The reasons for these differences seem to be that the urban areas are associated with large industrial and commercial concessions

which mostly employ males. These concessions tend to attract migrants from the rural areas of the country who are searching for work. This type of migration seems to be characteristically selective of males, particularly the young adult.

The median age of the population in 1970 was 18.9 years; 17.7 for males and 19.9 for females. The overall distribution of age is graphically shown by the age pyramids attached. The squat configuration is typical of countries with high fertility and a large proportion of young people. Forty-three percent of the population is under 15 years of age.

Of great significance is the fact that approximately 46% of the female population (50% in the rural areas) are in the child bearing age of 15-44 years. As a consequence of this, the fertility ratio-the number of children under 5 to women aged 15-44 years-is 78 per 100 with the rural areas at 81 and the urban at 72. These ratios are among the highest in the world.

The general fertility rate (the number of live births per 1,000 women age 15-44 years) was 203 overall. The net reproduction rate (the number of daughters born to a group of girls by the end of their child-bearing age) is 1,751, indicating an increase of 75% in the number of females in one generation.

Men in Liberia characteristically marry six or seven years later than women. Fifty percent of males are married by the time they reach age 25, while half the women marry by age 18. Rural males and females marry earlier than urban couples, this being particularly true for the brides. Nearly 10% of rural girls marry before reaching age 14, compared to 4% for urban brides.

The average number of children borne by Liberian women who have reached age 44 is 4.5. Although the average size of a complete family is 4.5, many women had more, indicating that many children die. For example, in both urban and rural areas nearly one-third of the women age 40-44 had at least seven children and 12% had ten or more. Generally, the chance of survival is greater in urban than in rural areas.

The 3% rate of population growth and the excessive growth in the urban population, particularly in the capital, have led to complex economic and social problems. The major ones are the control of the influx, especially of young people, into the urban areas, and the multiplicity of social ills created by this migration.

The general rural to urban shift in population has been slowly accelerating in recent years. The 1971 data suggest that migrants were leaving rural areas at an average annual rate of around 2.5 to 3 percent. Generally the urban shift was made predominantly by males, although females usually joined this urbanization trend. Most of in-migration is between areas of over 2,000 people. The overall trend is from the small villages to the larger villages and towns, and then on to the main center of migration activities, the city of Monrovia.

The significance of the population growth rate of 3% a year is that the economy has to grow at this same rate if per capita income is to be maintained, and at a higher rate, if per capita income is to be increased. A population growing at such a high rate is a young population. Among the major manpower and educational consequences of such rapid growth are the increasing number of adults seeking gainful employment, and the growing number of young people who require the education and training necessary for economic development. The increasing demands on other social services, such as health services for example, also compound the situation.

Cultural beliefs affect the population characteristics. In Liberia, as in many other developing countries, it is believed that only a large number of births insures a sufficient number of living children to help around the house and on the farm, and to take care of their parents in their old age. Among some tribes, female children

are desired because they may bring dowry payments. Often, when tribal parents find themselves unable to support their children, they will entrust them or give them away to families that can rather than practice birth control.

There are established cultural practices and traditions that work to limit fertility. One of the most effective is the postpartum taboo on sexual intercourse which extends through the long nursing period, which may last up to 24 months. It is believed that if the mother breaks the taboo the child will become ill. In some tribes, a mother returns for several months to her own family after giving birth. In other tribes, women abstain from intercourse until the child walks. In some tribes, a woman observes a sex taboo for four years after giving birth to a boy and three years after bearing a girl. In spite of all these factors, the fertility rate is still very high, perhaps because these old cultural habits are rapidly disappearing in the face of modern attitudes.

In effect, it is the high level of infant mortality that exercises restraint on population growth. As health measures reduce infant mortality, the possibility of a population explosion arises. Officially, the government disapproves of birth control; family planning, however, has proceeded without serious hindrance. Confrontation is avoided by emphasizing maternal and child health and spacing of children, instead of prevention of births.

IV. EDUCATION

Liberia has two separate and often conflicting systems for formal education. The traditional system, based on tribal lore and teachings, and the modern system, centered in government, missions, and private schools, based on the U.S. system. The majority of children still receive no other education but the traditional, in which they are taught the values and practices of their ethnic group and are prepared for life in the traditional tribal setting. This is especially true in the hinterland. A growing number though are being exposed to modern education through the expanding government school system and private facilities of concessions and missions. The growing government interest in education and expansion of Western style education in the tribal areas has often resulted in conflict between modern and traditional systems. Pressure is being brought on parents to send their children to modern schools in fulfillment of the compulsory education law. Parents have acceded to this pressure but usually want their children to receive traditional training as well. This often leads to conflicts in ideas and values that create serious problems.

The vast majority of children still go to either the "bush" schools or the Moslem Koranic Schools. The "bush" schools, most prominent among those ethnic groups of northwestern Liberia which base their political, social and religious life on the secret societies of Poro for men and Sande for women are also found in one form or another in most other ethnic groups. Koranic schools, restricted to boys, are only found in those areas where Moslems are numerous.

The Official School System

By law, all children between the age of 6 and 16 must attend school, but the shortage of facilities has made this impossible. In 1961, the school system was divided along U.S. lines and is now composed of kindergarten, elementary, junior high, senior high, and college levels. The prescribed medium of instruction in all schools is English. The whole system is centralized with all educational establishments under the direct control and supervision of the Department of Education. This includes the University of Liberia which is theoretically independent but in practice is not.

The quality of the education is generally poor. Order and discipline are lax. There is unanimous agreement among observers on the apparent lack of interest of both teachers and students in their school work. Student absenteeism and tardiness are common, and often fewer than 75% of those enrolled are present. The dropout rates at the elementary and secondary levels are very high. Even though standards of most Liberian schools are lower than comparable institutions in Europe, the U.S., or even other African countries, many students have difficulty keeping up.

A problem of great concern to parents and educators, particularly in the hinterland counties of Sinoe, Grand Gedeh, and Bassa, is the continuous migration of high school students to the capital. Reasons usually given are the lack of adequate physical and instructional facilities, and the low quality of teaching. To be able to pursue advanced studies, high school students migrate to Monrovia to attend high schools and compete for a chance to enter the University of Liberia. This results in an overloaded Monrovia school system with elementary and secondary schools operating two shifts. The poor quality of education achieved in the secondary schools is a great problem for teachers and employers.

The educational system relies on a few teacher training institutes to ameliorate the defective quality of primary education. Output, however, is insufficient to overcome the teacher shortage. Newly qualified teachers, like students, are migrating to urbanized areas which offer better material advantages. Coordination between teacher colleges and employers is minimal. County school supervisors have difficulty in employing graduates when there is no budgetary allocations for new posts.

In 1964, the University of Liberia had five degree granting colleges: Liberal Arts, Law and Government, Teaching, Agriculture, and Forestry. The University also had four non-degree granting schools: Commerce and Business Administration, Home Economics and Applied Science, Engineering and Applied Science, and a Laboratory High School. In 1965, a Medical School was added. The University suffers from the same ills that beset the rest of the school system, namely a shortage of books and equipment, inadequate facilities, poorly qualified teachers, and disinterested students.

Elementary and Secondary Education

Despite continuing problems, school enrollment increases at a rate of 8-10% a year, and now includes approximately one-third of the children of elementary school age. Total secondary enrollment is about one-tenth of elementary enrollment.

In 1970, there were more than 600 government-sponsored elementary schools and 140 mission schools in operation. There were only thirty-nine government-sponsored junior high schools and thirteen senior high schools. Missions operated thirty-one junior and fifteen senior high schools.

Of the 1,244,000 persons over age 5, about 20% reported that they were attending school, with two-thirds being males and one-third females. School attendance in the rural areas is lower than in the urban areas. A significant fact is that girls drop out of elementary school at a much faster rate than boys. Presumably this is related to the younger marital age pattern among women. This is unfortunate in that women as homemakers and child-bearers would greatly benefit from education and better knowledge about hygienic health practices in the rearing of children and in managing the home.

Another important aspect is that at all school levels the urban rates of attendance in school are higher. This is also unfortunate for health because, by and large, better education would be of greater benefit in the rural areas where the sanitary conditions are generally worse. The reason for the low male attendance in rural areas may be due to the need for workers in the fields. Even so, progress in education is being made. Comparing 1970 figures with those for 1962, the improvement in school attendance is dramatic. In 1962, only 26 percent of all persons ages 5-25 were attending school, in 1972, the figure was 41.3 percent. This fact is reinforced by the difference in the percentage of illiterate. In 1962, 91% of the people over age 10 were illiterate. In 1970, this percentage decreased to 78 percent for the country as a whole, with males 66 percent and females 86 percent.

In 1971, there was a total of 9,020 graduates from the elementary, secondary, and higher education levels. Higher education enrollment is still limited in number. The 134 graduates of higher learning in 1970 were distributed among the following fields: Liberal Arts and Science 94, Agriculture and Forestry 12, Education 19, Nursing 5, and Law 4.

There are a number of features that might lighten this bleak picture somewhat. First, it must be realized that all statistics on literacy, education, etc. are computed in relation to the English language. If it is correct that a number of tribes have written languages, as do the Moslems, to declare them illiterate arbitrarily in terms of the English language is to miss an essential point of the meaning of education.

From a health education standpoint, it might be advantageous to look into the possibility of influencing health traditions, hygienic practices and beliefs by approaching the captive audiences in the remaining "bush-schools" of Poro (boys) and Sande (girls). Since two-thirds of all children attend such schools for a number of years, any type of acceptance by the elders would be rapidly multiplied and disseminated into the communities where these children live. From the practical point of view of introducing change into a cultural setting, this might very well be an appropriate point of entry. From a purely economic standpoint, this may be the area of impact where the benefits are greatest for the resources invested.

In 1971, the total number of teachers at the elementary and secondary levels was 4,316. Of this number, 2,716 taught in public schools, 1,110 in mission schools, and 490 in other schools. According to the 1971 education survey, the situation regarding qualification of teachers remained largely unchanged. That is, the majority of the elementary and secondary school teachers held qualifications below the bachelor's level. This is especially true in the hinterland.

In 1970, total public expenditure on education was $10.6 million. According to an official report the factors creating a bottleneck to quality education were: inadequate number of schools in the light of mounting enrollments at all levels; quantitative expansion of education rather than qualitative; inadequate incentives to attract and retain qualified people in the education field; inadequacy and irrelevancy of textbooks to the Liberian situation; inadequate number of trained teachers; insufficient logistic support; inadequate facilities; and reliance on expatriate teachers.

Higher Education

Since the early days of colonization, Liberians have gone to study abroad partly because of limited educational facilities at home and partly because of the prestige of a foreign education. Elite families have usually sent their children to England, the United States, Switzerland and Germany. Each year large numbers of Liberian students receive government fellowships to study abroad. Upon their return, they must serve the government for a period of four years but the requirement is rarely enforced. As the educational system improves, the government is restricting its scholarship program for study abroad. In the field of health, most training for physicians and paramedical is obtained outside the country. Recently, a medical school has been established at the University of Liberia. The Tubman National Institute of Medical Arts, recently incorporated as a part of the J.F. Kennedy Medical Center, is now in its 26th year of existence. It trains nurses, midwives, sanitarians and other auxiliary health personnel although in very small numbers (in 1971, 11 nurses, 11 practical nurses, 3 midwives, 8 sanitarians, 4 health assistants and 4 medical assistants). The establishment of the Medical School resulted from an agreement between the government, the Vatican and the Medical Faculty of Turin, Italy. In 1973, there were 33 pre-medical and medical students enrolled, of which only 9 were Liberians.

V. SOCIO-CULTURAL BACKGROUND

The settlers who came to Liberia in the 19th century, i.e., the freed slaves from the United States, were convinced of their superiority to the people they found there. This attitude is still felt today by many of the 15-20,000 Americo-Liberian descendants who now form the elite and run the country. Only in the first decade of the 20th century did the tribal people gain Liberian citizenship. The settlers were strongly opposed to slavery, but they were quite prepared to compel tribal people to work for both private and public purposes. Tribal Liberians responded to compulsory labor with hostility and resentment. This pattern, with modifications, has persisted. Although the tribes accept the power of the government to impose laws and regulations, this aspect of their status remains a bone of contention. A significant change in the government's approach began in 1944 with the late President Tubman's first inauguration and his policy of unification. Despite the statement of policy, a close observer, writing in 1962, concluded that the chief problem confronting the country was the erasing of the legal, political, economic and social barriers between tribal and non-tribal peoples. Even if the government could devote all its energies to this task, the changes implied would be slow in coming, so deeply rooted are the differences in values and practices between the "civilized" and the tribal peoples, and so difficult to overcome are the mutual suspicions.

Until 1963, when the hinterland was divided into four political jurisdictions, the tribal peoples were essentially ignored in national political life. The full political, legal, and social implications of incorporating the hinterland into the mainstream is not yet very clear, but it has set the stage for the fuller incorporation of the tribal peoples into national life.

The culture and traditions in Liberia are diverse, varying according to geographic location of the population and tribal groups and divisions. In some parts of the country, especially in the more developed areas, culture and tradition reflect the longer exposure to the influence of the Western civilization, especially North American. An admixture of African and Western civilization is the prominent feature of cultural life, with various combinations of each. In the hinterland, among some of the tribes, the culture is typically African.

General Characteristics of the Tribes

Differences in tribal structure and social mores among the 28 tribes are to be found in details, but the range is not really as wide as in other African countries. Similarities and differences often override linguistic boundaries. All but two tribes are predominantly agricultural. The Mandingo are traders, and the coastal Kru are fishermen and seamen, although their inland kin, often called the bush-Kru, are not.

All tribes tend to emphasize the paternal tie in family matters, in the organization of groups based on kinship, and in inheritance. No Liberian tribe exhibits the matrilineal organization found in other West African countries.

The presence or absence of the secret Poro (for men) and Sande (for women) societies, distinguishes one group of tribes from another. These societies, of which all men and women are expected to be members, are significant for the political, social, and religious life of the tribes in which they were found. Recently the government has banned these societies. Although each tribe is aware of its own uniqueness, there are shifting alliances and hostilities with others.

Social Structure

Despite more than a century of statehood, the country has not yet developed a social structure that provides a role for all groups. Until the late 1950's, transportation and communication facilities were so scarce that even superficial acquaintance between the Americo-Liberians living on the coast and the people of the hinterland was

difficult. Differences between the two groups were not so much in terms of occupational or income discrepancies within the same system, as in a difference of systems. Americo-Liberians were involved in a market economy and had access to resources through that economy, while most tribal people were involved in subsistence farming.

Among Americo-Liberians, it has been suggested that in the last several decades, fifteen families have tended to monopolize political office. If these families are taken to include all the men, women and children linked directly, they would not exceed 500 persons. Other Americo-Liberian families of some social and political importance, but of lesser rank, may bring the total to 1,500 persons. To this number may be added a few families recognized as of tribal origin but long associated with the Americo-Liberian elite, and politically and socially involved in similar patterns of living. So that of the 20,000 descendants of the original 19th century settlers, fewer than 2,000 constitute the political, social, and economic elite of the country. Fraternal orders and clubs play a major role, since the elite and near-elite are members of at least one, and often of several such clubs. Because the numbers of the elite are so small, and all belong to these clubs, they all know each other well and have numerous opportunities to defend their common interests.

Tribal life on the other hand is based on kin-based groups. The political power is diffused among a large number of small chiefs. Such chieftains sometimes join in shortlived confederacies. Their interests are usually local in nature. In most tribes, political or ritual office and social status go together, although some exceptions do exist. The present status of an individual in most tribal communities bears similarities to customs of the past, i.e., his present status is still influenced by his family's place in the hierarchy.

High status is linked to wealth, defined as control over persons, that is the custom of pawning. In the practice of pawning, an adult could, in return for money or some object of value, deliver someone over whom he had control into the hands of the lender for an indefinite period. The individual thus pawned, works for the lender without compensation until he is redeemed. An extension of this system is wife-lending. A rich person accumulates wealth by acquiring dependents. By lending his wives he acquires men to labor in his fields and gains supporters in his intra-community differences. Wife-borrowers in turn gain the opportunity to cultivate a piece of land, the help of a woman so necessary to cultivation (women do the work), and the protection of an important man in the community. This arrangement is often found among the Kpelle tribe. While in general these customs are slowly disappearing, they are still significant in the bush counties.

Religion

More than half the population is believed to adhere to a tribal religion, and of the rest, there are probably more Moslems than Christians. Nevertheless, a number of official and semi-official documents refer to Liberia as a Christian State. The Constitution stipulates that no specific Christian church be given preference by the State, and provides for the free exercise of any religion. Neither Christian nor Moslem effort has had much success among the tribal populations, until quite recently. Even those who call themselves Christians or Moslems still hold traditional beliefs.

Although clerical or lay leadership in a Christian church may enhance the status of a Liberian, churches do not provide an autonomous locus of power. However, many politically powerful persons also hold high positions within the church.

Tribal religions vary as to religious ritual, organization, and belief, but the outlines are broadly similar. The tribal universe is peopled by a host of superhuman entities who must be properly placated, sometimes by individuals, sometimes by collective activity. It is also pervaded by powers which men may use to achieve their own ends. The ultimate source of this pervasive power and of the power of the spirits is a high god. Typically, the high god is benign and remote. It is the lesser spirits who are likely to cause difficulties, although they can be helpful if properly placated. The relationship between men and spirits is played out and has consequences in this world.

Ancestral spirits act in the world of their descendants, as intermediaries or with a degree of autonomous power with the spirits who are not of human origin. The tribesmen believe that if the spirits are pleased, it means worldly success; if they are displeased, members of the family may fall ill or a current enterprise may fail. The spirits must be placated or propiated. Many make an offering to the spirits only in response to a special situation, for example, illness, a series of misfortunes, or dreaming of an ancestor. Many items may be sacrificed. Food is common, but cloth, beads, and other things may be used. Sacrifices and prayers are made at places where the spirits are believed to reside, such as specific rocks, hills and streams.

Tribal religion also includes a belief in supernatural power which is inherent in specific materials and may be used for socially approved or disapproved ends. This power and the objects in which it is located are often spoken of as medicine. Any man or woman may make use of this power for his own goals or on behalf of a group, but specialists usually prepare these medicines and control their use. Specialists who act as healers may make use of substances which have some therapeutic power by scientific standards, but these substances are conceptualized as repositories of magical power.

In a world filled by active spirits and by human users of supernatural powers nothing occurs by chance. Every event is caused by either spirits acting on men, or by men controlling spirits in medicines. In these circumstances a variety of magico-religious specialists have emerged. Such a specialist, usually called a zo, may act as an official of a secret society, or as a private professional selling his services to an individual client. In most cases the right to become a zo is inherited, but a prospective zo must be trained. In those tribes where there are no Poro or Sande schools, there are specialized guild-like societies for medicine men. Such groups are believed to have some link with the supernatural, from which their power is thought to stem.

It is probable that tribal religion is now undergoing change. However, some of the belief system prevails, especially the magical elements. People continue to rely on protective amulets and may seek out zos for certain purposes. Collective rituals however seem to be diminishing. Schools, the effectiveness of modern medicine, and the absence from the village of wage workers, all seem to have impacts on tribal beliefs and practices.

Housing

In general, the standard of living for the total population is very low, except for the few of the urban elite. Most rural housing consists of windowless circular huts with conical thatched roofs and mud floors. Urban housing tends to be better, but the rapid growth of many cities has resulted in overcrowded slums. Most urban buildings are of frame, brick, or concrete, with corrugated roofs. In Monrovia, the average two-room house is occupied by twenty persons. In many parts of the cities, houses lack excreta disposal, piped water, and individual cooking facilities. The rapid migration, to Monrovia in particular and to other cities in general, creates a number of health related problems that complicate the work of the public health service.

Living and hygienic housing conditions vary from the highest standards in bungalows of European architecture, to wooden one-storey buildings standing on poles and covered with corrugated iron sheets.

That the majority of the Liberian population live in huts does not indicate that living conditions in these structures are unhealthy or unsanitary. The cleanliness of the villages throughout the interior of the country is well known. The major health hazard, as far as living conditions go, is the pathogens picked-up as a result of going to and from the latrine without sandals.

In the slum areas of urban centers, especially in Monrovia, lack of public facilities such as water or latrines lead to poor sanitary conditions. Aggravating these conditions is the prevalence of deteriorating or dilapidated household structures.

VI. ECONOMIC BACKGROUND

In recent years, the economy has been based almost entirely on subsistence agriculture and on the production of iron ore and crude rubber for export. With respect to the outside world, the country was a supplier of raw materials and a consumer of manufactured goods. Internally, Liberia is attempting to address low levels of real income, insufficient capital accumulation, and low levels of technical achievement. Less than a quarter of the population participates wholly in the money economy.

Most of the laws and regulations which govern economic activity in the market sector are based on the free enterprise system, and the Open Door Policy enunciated by President Tubman in 1944. The legal structure and administrative practices favor free competition and do not make significant distinctions between foreign-owned and domestic businesses. They offer profit incentives and minimize governmental control. The tax structure is moderate and labor laws are not burdensome for employers. Corporation law is liberal and uncomplicated. Foreign exchange transactions and trade are almost unrestricted. Through the legislative mechanism of concession agreements, it is possible to make allowances for special business conditions and influence the channels of development.

The Open Door Policy led to an inflow of foreign capital and technical skills that domestic sources could not possibly have provided. By the early 1960's, private foreign enterprise occupied a dominant position in the expanding economy. Foreign held concessions, under foreign management, were the country's major producers and employers of wage labor. Practically all foreign trade was in the hands of foreign-owned businesses, which also controlled most of the domestic wholesaling and, together with a small number of Lebanese proprietors, shared a great deal of the retail trade. The banking system and the construction industry are largely foreign-owned. The law prohibited aliens from engaging in surface transportation as common carriers, but under concession agreements, the large enterprises such as the Firestone Plantation Co. and the iron ore mining companies, operated complete transportation systems for their own needs, including all the railways in the country.

As major sources of domestic revenue, generators of related economic activities, employers of wage labor, trainers of skills, and dispensers of public health, the large concessions have become powerful forces in practically all aspects of the country's life. Continued economic growth in the foreseeable future would be almost impossible without them. Recently, Liberian businessmen and public officials have expressed dissatisfaction with the monopoly position attained by foreign interests as a whole. It is thought that it denies Liberian citizens a fair share in the growing gains of the economy. Lack of opportunity to qualify for the higher levels of management is a complaint often raised. The so-called Liberianization movement is becoming stronger all the time, frequently with mixed results.

In the last few years there has been a marked improvement in the country's fiscal position. There was considerable expansion of production of iron ore and logging, and in 1970 a sharp increase in rubber output. However, because of the unfavorable trend of world prices during most of that period, the relative rate of growth was rather moderate compared with the preceding decade.

Some progress has been made in the establishment of the organizational and physical structures necessary for future economic growth, e.g., planning boards, better roads, etc. But the increases in national income have tended to benefit only certain groups, namely the relatively small urban elite and skilled or semi-skilled wage earners. The subsistence economy in which the majority lives has not as yet greatly benefited. Yet, a Department of Planning and Economic Affairs has been set up; more trained specialists and technicians, educational administrators, etc., are appointed to government posts; more schools are opened; more teachers are being trained; and more roads are being built.

As the most popular flag of convenience for shipowners of many nations, Liberia has moved to first place in total registered tonnage of the world's commercial shipping. In 1971, about 16% of the world's merchant ships flew the Liberian flag. Only a negligible percentage were owned by Liberian interests, but revenue from registration is a welcome addition to the government's budget. Liberians hold about half of all mature rubber acreage but produce only about 30 percent of output. This is due to low productive efficiency. More than half of those engaged in the rubber industry in 1969, were working on their own farms or on those of other Liberian growers.

The total labor force is estimated to be approximately 665,000 persons, of whom about 500,000 remain outside the monetary economy as subsistence farmers. The remaining 165,000 are wage earners. Incomplete information indicates that 60,000 persons work for wages in agricultural jobs, many of them employed only part-time. More than 20,000 wage earners work in the mining sector, but the major increase in output of iron ore is due to heavy capital investment and mechanization, rather than new jobs. Other important sectors are government and public utilities with 20,000 employees; and commerce, also employing 20,000 workers. About 4% of the labor force engaged in the money economy was employed in manufacturing, mostly food and beverages, and in small repair shops.

The structure of the money economy depends to a large extent upon foreign-owned and operated enterprises. About one-third of government revenues are received from these concessions. This revenue is considered quite low since the government is supposed to share in 50% of the profits in many of these concessions.

Government economists describe the economy as stronger than in previous years and expanding, especially with prospective increases in iron ore exports. Yet, government finances continue to be strained by the heavy burden of foreign debt incurred between 1958 and 1962 to finance massive investments in infrastructure. Debt service payments continue to absorb about 25 percent of current government revenue, permitting public savings of only about one or two million dollars a year and thus seriously curbing development expenditure. Debt service payments, as well as current remittance of dividends and undistributed profits on foreign investments, also constitute a heavy burden on the country's balance of payments, offsetting the favorable balance of merchandise trade.

Since 1966 iron ore has accounted for over 70% of the value of exports. Liberia is eighth in world production and the third largest exporter of iron ore. It is producing about 3.8% of world output. Although 90% of all Liberia's rubber production still goes to the U.S., there have been major changes in the pattern of Liberian trade, with more iron ore now going to Europe and Japan.

The agricultural sector of the economy has remained stagnant. Production of rice, cassava, and manioc, continue to be inadequate to meet domestic demand, as few farmers produce surpluses for market. Large amounts of rice still have to be imported each year to supply the demand in the cities. The Open Door Policy did not foster foreign investment in consumer goods because the market was not big enough to attract major American or European manufacturers or distributors of consumer items. Lebanese, Syrians and a few Europeans continue to dominate much of the local commerce and trade in Liberia.

Summarizing the overall economic situation of Liberia, it can be said that prospects look good. Gross Domestic Product (GDP) per capita is increasing, yet the distribution of GDP still remains highly skewed. Although the trade balance is healthy, imports are increasing faster than exports. The Liberian government's efforts to improve administrative and fiscal performance is having a positive impact on the economy.

Liberia's GDP (money sector only) rose to $438 million in 1971, representing a per capita GDP of $275. These figures are among the highest in Black Africa.

Per capita income from solely domestic sources stood at $166 in 1971 and $163 in 1970. The relatively low ratio of National Income to Gross Domestic Product underscores Liberia's dependence on foreign sources for capital. It has been estimated that an 8% GDP growth rate is necessary if there is to be real improvement in per capita figures. In 1971 this increase was only about 5%.

Foreign trade accounts for 51% of GDP for 1971. Liberia had a favorable trade balance of about $62 million, but these trade surpluses are offset by sizeable outflows of profits and factor payments. The pattern of a faster rate of growth in the value of imports over exports appears likely to continue over the next several years. This emphasizes Liberia's need for export diversification and import substitution. Some dramatic savings could be achieved, for instance, if Liberia became self-sufficient in rice production. At present about one-third of the rice consumed must be imported.

Liberia continues to rely heavily on foreign assistance for economic development. Foreign aid provided by outside sources has varied from $23 million in 1968, $17 million in 1969, $20 million in 1970, $24 million in 1971, and $31 million in 1972. Sources are the United States, the Federal Republic of Germany, the Republic of China, and the World Bank. Considerable U.S. aid was involved in the planning and construction of the John F. Kennedy Memorial Medical Center (see health services). Other projected U.S. loans are directed toward improvements in education, medical services, public administration, public utilities and agriculture. A UNDP study estimates that foreign donors contributed $21 million in grants and loans during 1971. The U.S. has traditionally been the largest contributor, and in 1971, gave $11 million, or 54% of the total foreign assistance.

Two related areas, rural development and the highway system, will attract the greatest foreign donor attention over the next few years. Commitments by international donors for various aspects of a $38 million highway program have already been made. In response to the Government of Liberia's established priorities, USAID will direct the bulk of its resources into four major areas: agricultural development, public administration, public health and rural roads. In addition, AID is considering financing improvements of the Liberian telecommunications system and expansion of the Monrovia water works and distribution system. Total AID commitments for 1973 are estimated at $29 million.

Public Sector Budgetary Analysis

In 1970, domestic revenues amounted to $66.5 million. Public sector outlays (which include domestic revenue and foreign loans and grants) increased to $83.0 million, of which $16.5 million represented the utilization of loans and grants. Gross capital formation, has increased somewhat, although the overall amounts are rather low. Public resources have been growing slowly.

Analysis of the Budget for Health

The total government expenditures for health in 1970 amounted to $4.8 million, of which $3.5 million were from government funds and $1.3 million from loans and foreign grants. This represents only 7.4% of the total government expenditures, an inadequate amount in view of the magnitude of the problems. The percentage allocated to health in 1970 seems to be much smaller than in previous years.

The $3.5 million going to health from Government Budgetary expenditures in 1970, were spent as shown in the Annex. U.S. $1,395,000 or about 40%, went to the National Public Health Services to pay employees ($719,000); to buy supplies ($515,000); to provide fellowships ($317,000); and to buy equipment ($24,000). U.S. $1,564,000 or about 45%, went to hospitals and clinics to pay employees ($1,282,000) and to buy supplies ($273,000) and equipment ($9,000). Only about 15% of expenditures was invested in preventive services. Presumably the remaining $1.3 million from grants and loans financed medical facilities and the School of Medicine, rather

than preventive services. As a percentage of the total health expenditures then, preventive services received only about 11.4%.

The total funds allocated to health on the one hand, and its distribution on the other, have serious implications for the development of a significant public health program. Further details are given in the section on health services, in which the consequences of this low budgetary assignment to public health are more fully discussed.

Expenditures in public health are augmented to an unknown extent by clinics and hospitals supported by religious missions and by some of the large concessions. Therefore, the total services available to the population are more than the budgetary expenditures of the Government of Liberia would indicate.

VII. AGRICULTURE AND NUTRITION

Agriculture is a way of life for three out of four Liberians and at least the indirect source of livelihood of many others. Nearly half the country, practically all the land not covered by high tropical rain forest, is devoted to agriculture. Yet, only a small portion (about 5% at any one time) is farmed each year because of the traditional slash and burn agricultural techniques. With efficient rotation, good crops of rice, manioc, and many vegetables can be grown nearly anywhere in the country. Climate, soil, and topography are not important factors in limiting the use of the land. However, traditional land tenure practices cause insecurity of many small landholders and hinders economical production of marketable agricultural production. Tree crops, mainly rubber, but also coffee, cocoa, various palm products, and citrus fruits, take up less than 1% of the land area. The area of land under cultivation per person of the farm population averages less than one acre, which yields barely enough rice to feed one person. Under the present system of shifting cultivation, which requires land to lie fallow for a number of years after use, a family of five needs 50-85 acres for its exclusive use simply for subsistence. This is only possible where population density is low (less than 40 per square mile). In areas around towns this becomes impossible and therefore the average fallow period has dropped below what is needed to restore the fertility of the soil. Agricultural practices follow two extremes. The traditional methods used to raise crops, and the latest techniques used by foreign concessionaires growing wood products for export. In between there is a small group of Americo-Liberians who are slowly using better methods.

Rice growing is the most important agricultural activity. However, as more and more of the population is attracted away from subsistence farming to the wage labor of mining, construction, and plantation agriculture, rice production has dropped steadily. In order to reverse this trend, growing of swamp rice has been encouraged because it generally gives a greater yield. One disadvantage of swamp rice culture, however, is the greater exposure of farmers working in swampy areas to malaria and snail-borne flukes. Furthermore, agricultural labor is in short supply because of the large force needed to produce rice under present circumstances. It has been estimated that the Liberian labor force is about 650,000 people of whom 80% are engaged in agriculture or fishing. This figure includes all the subsistence farmers who, between the harvesting and planting seasons, seek paid employment. The number of permanent paid workers probably does not exceed 17% of the labor force, and half of those are employed in agricultural enterprises, mostly rubber plantations.

The livestock population of Liberia is very small, both because of the lack of grazing land and because of the prevalence of the tsetse fly. Existing livestock are spread out among many farmers and are not the object of systematized husbandry. Most of the cattle are to be found in the northern part of the country. The cows are not milked and the oxen are not used for labor; however, they are eaten when they die. Pigs, sheep, and goats are also available, but their numbers are very small. The distribution and marketing of fish presents a serious problem because of lack of refrigeration and as a result fish is rare in the hinterland.

Domestic trade consists chiefly of surplus food crops bartered in village markets. Most recently rice has become one of the most important commodities for exchange between villages and between regions. There is very little information on the food supply of Liberia. Prices fluctuate drastically depending on the seasons. Because of the present marketing facilities, most food imports must be of a non-perishable nature. Storage represents a problem under the warm and humid conditions prevalent in the country. The hut storage of the Liberians is a simple granary or attic usually located above the kitchen of the hut so

that the smoke of the fire chases away insects and limits the damage caused by molds and weevils.

Nutrition and Diets

There is no actual lack of protein sources in the country. Malnutrition in Liberia is not to be blamed so much on poverty but on ignorance and superstition. County Medical Directors agree that well over half of the total daily hospital visits are occasioned by debilitating disease with malnutrition as the underlying cause. The Ministry of Public Health and Welfare, and reports from concession and mission hospitals, describe malnutrition as a problem of the greatest magnitude. Mineral and vitamin deficiencies account for the majority of clinical and hospital visits. It is possible that poor diets contribute heavily to infant and childhood mortality in Liberia. No extensive nutrition survey has yet been made in Liberia, but the observations of trained workers indicate that protein intake is very low and mostly from vegetable sources. Some people with low incomes, especially those in urban areas, have to depend mostly on cheaper foods, such as carbohydrates and fats. These persons suffer from malnutrition because they are financially unable to obtain the types of food necessary for an adequate diet. It is believed that the average daily protein intake for men is about 29 grams and for women 23 grams. High quality proteins containing the essential amino acids needed for growth and tissue repair, such as those supplied by animal products and fish, are available in only very small quantities. Cattle are a sign of wealth, and rarely are animals slaughtered for food as this reduces wealth. The intake of protein is especially low among children in the age group one to five years with consequent development of kwashiorkor.

Iron intake is low as is generally reflected in clinical examinations showing a low level of hemoglobin and a general prevalence of anemia. The hemoglobin level during pregnancy falls sharply, due in part to the increased demand of the child aggravating the mother's existing iron deficiency. These factors are complicated by the widespread incidence of parasitic infections, especially hookworm disease.

The average calcium intake is well below the minimum requirements, yet there are no signs of calcium deficiency and rickets is a rare disease. This may be due to the abundance of sunshine and sufficient vitamin D.

The major staple food of Liberians is rice, even though only two-thirds is produced within the country and the rest must be imported. Manioc is next in importance, especially in the hinterland. Both the root and the leaf are used in the diet. Another basic element is the groundnut. Vegetables are abundant. Oranges, grapefruits, limes, and tangerines are among the between-meal snacks that Africans relish, they go mainly to children; plantains and bananas are available and eaten throughout the year.

The consumption of meat among the bush people is minimal. FAO estimates that 3,000 tons of meat are available from locally slaughtered animals and an additional 2,000 tons of meat are imported. This would amount to about 14 grams per capita per day if none were wasted and if the supply were evenly distributed. There is no local production of milk and therefore the total supply depends on imported evaporated milk, condensed milk, and butter. Eggs and poultry are available, but only to those few who can afford them.

Specific taboos also affect individual diets. Girls and women abstain from eating eggs due to the belief that they may cause sterility, and pregnant women are forbidden to eat eggs to protect the child in case it is a girl. Fruits are usually given to girls because if boys eat them they will become weak. It is also thought that bananas and plantains may cause eye disease. Babies are normally weaned between the ages of 6-24 months. Rice is usually

introduced in the form of rice water, later manioc is added to their diet.

It has been estimated by the U.S. Department of Agriculture that the food availability is sufficient in Liberia and could provide between 2,468 and 2,490 calories per person per day. It has been determined by the Food and Nutrition Board of the National Academy of Science that the adult male caloric requirement in the U.S. is between 2,400 and 2,800 per day, while for females it is between 2,000 and 2,300. In a warmer climate the needs might be less. If availability meant consumption, and if consumption were evenly distributed, caloric intake would be adequate. However, this is not the case and the problem of malnutrition in Liberia is due in great part to inadequate distribution and utilization of existing and potential resources. With a favorable balance of trade, the country can theoretically buy the food it lacks. However, as long as the majority of the population remains in the subsistence sector of the economy, these foods will not be within their reach financially and for other reasons.

Malnutrition is further complicated by lack of adequate transportation and refrigeration facilities for food transport into the hinterland. Also, contributing to the problem is the fact that disease, high fevers, and intestinal parasitic infections in children interfere with the assimilation of their calorie intake.

Malnutrition in Liberia stems from many causes, some based on economic factors, others due to socio-cultural constraints. Some of the major inhibiting factors are: the lack of adequate staff to carryout nutrition surveys and programs, a resistance to change on the part of the population, limited availability and high costs of food, low levels of literacy, existence of 28 different dialects which inhibit effective communication, an inadequate road network limiting transportation of supplies, and lack of animal protein in the hinterland. The solution would seem to lie in a massive health education program, designed to remove fears, prejudices, indifference and lack of interest, coupled with measures to cope with the problems of distribution. Through various programs great efforts are being made to balance and improve the distribution and intake of food. The child feeding program emphasizes breast-feeding, along with food supplements given through special centers. CARE provides baby foods which are distributed by the Government. In addition to advice given at clinics, parents receive individual and group instructions relating to nutrition. Some teaching is offered on health and nutrition. Mothers are told about the needs of the child and what would be a model diet for each age group.

The effects of malnutrition are far reaching in their implications for development. Because of the persistent after-effects of protein-calorie malnutrition, the problem is not merely the child who dies, but also those that survive. The after-effects can often be seen in stunted physical growth and varying degrees of mental retardation. Malnutrition increases the host's vulnerability to anemias, it increases his susceptibility to tuberculosis, and other infections, and exaggerates the adverse effects of intestinal parasites. Although each of these diseases has its own pathogen, their morbid manifestations, their propagation and their development vary with the resistance of the human host, which is adversely affected by malnutrition. Furthermore, malnutrition, by restricting the physical capacity of the individual to work, contributes to a vicious circle that is hard to break and undermines all other efforts at rehabilitation.

Foreign Aid in Agriculture and Nutrition

USAID, through PL-480 programs, has contributed feed for livestock and poultry. UNICEF has provided financial and technical aid to Home Economics Extension Programs to teach women and girls practical home economics and nutrition. FAO has provided technical assistance to develop swamp rice cultivation, forestry, and has assisted the Agricultural College of the Univeristy of Liberia. CARE established a school lunch program. Catholic Relief Services has provided food to schools, hospitals and clinics.

At present, AID has a number of projects ongoing in Liberia that are related to nutrition, utilizing PL-480 funds. In FY 1973, approximately 84,000 people will receive food, at a cost of $500,000. In agriculture, USAID is to assist the Government in developing and implementing modern farming practices to improve production. AID is helping the Ministry of Agriculture in the areas of planning, marketing, and soil technology.

The UNDP and the IBRD/IDA are the largest donors in the agricultural sector. The IBRD recently approved a loan of $1.2 million to study the feasibility of an integrated rural development project in Lofa and Bong counties, to study the rubber industry, to support rice research, the reorganization of the Ministry of Agriculture, and training. The IBRD has also indicated an interest in participating with AID in a joint agricultural sector study.

The UNDP is financing a rice cultivation study, and the development of a College of Agriculture and Forestry. It is also active in agricultural research, aforestation, and agricultural extension.

The Republic of China is providing technical assistance, in cooperation with the UNDP, to increase rice production, and to develop better fishing methods.

VIII. HEALTH CONDITIONS

Poor sanitation is the main environmental factor which affects the level of health of the citizens of Liberia. Its effects are magnified by a climate that favors insect vectors of disease, water borne, and other intestinal parasites. It also increases the capability of disease organisms to survive outside the human host. Except in the capital city of Monrovia, where sanitation is relatively good, the most acute problems are polluted water supply, improper disposal of human waste, prevalence of insect vectors, and unhygienic handling of food. In some areas the season of heavy rainfall is often accompanied by extensive flodding, resulting in contamination of water supplies, proliferation of insect vectors, and the spread of mycotic infections.

Poor sanitation stems from a chronic lack of funds to support adequate programs. However, in many parts of the country it can in large measure be attributed to a lack of knowledge or understanding of the relationship between hygiene and personal cleanliness to disease. Long familiarity with some preventable diseases results in their being tolerated as an inevitable part of a difficult existence. Belief is quite widespread that many physical ailments and deaths result from witchcraft or some other supernatural powers. Custom may forbid hygienic measures or dictate practices detrimental to health.

Liberians suffer from a number of preventable diseases. Communicable diseases are more important as causes of morbidity and mortality than organic and degenerative diseases. The major sources of mortality and morbidity data are hospital records, which probably represent a very small and biased sample of actual disease incidence. However, in the absence of other sources of information, these incomplete data have had to be used in this analysis.

For the year 1969, the morbidity returns of the Liberian Mining Company, Bombi Hills, BF Goodrich Hospital, Clay District, and the Liberian Government Hospital, Monrovia, as provided by the records and statistics section of the National Public Health Service, have been reviewed. Out of a total of 40,492 cases treated, 15,029 were malaria; 4,867 intestinal worms; 487 dysenteries; 2,480 diarrheas and enteritis of infancy; 699 filariasis and 740 schistosomiasis, avitaminosis and anemias. In the public health clinic of Monrovia, out of a total of 4,972 cases treated, 999 were for malaria and 1,100 for intestinal worms.

In a study carried out on 1,000 consecutive deliveries at the Firestone Plantation's medical center from December 1968 to June 1969, it was found that 55% of the women had anemias of varying degree. Out of 813 urine samples examined, 86 (10.6%) contained ova of Schistosoma haematobium and of 461 stool samples examined, 243 (52.7%) showed helminthic ova. In discussions at this center it was stated that there were practically no local schistosome infestations, but that these infestations were detected in women coming from the interior.

According to the medical officer of the country hospital of Gbarnga and Sanniquellie, schistosome infections were fairly common in these areas. Malaria was the most frequent diagnosis, being one in every two or three cases in the out-patient departments. Next in frequency were helminithic infections, diarrheas and dysenteries.

From the Phebe hospital records for 1966-1967, it is observed that tetanus accounted for 47% of deaths among the new-born, gastro-intestinal diseases for 17%, congenital malformation, prematurity and unspecified causes 12% each. In the 2-12 month age group, deaths due to diarrheal diseases accounted for 33%, pneumonia 19%, cerebrospinal meningitis 14%, and hepatitis 19.5%.

The leading causes of death for the total population over the last few years have been malaria and gastrointestinal diseases. Important causes of child mortality are prematurity, respiratory and intestinal infections, malaria, tetanus, and measles.

Communicable diseases constitute the greatest public health problems and include malaria, helminthiases, schistosomiasis, tuberculosis, leprosy, and trypanosomiasis. Liberia is in the yellow fever endemic zone of Africa and is regarded as a yellow fever receptive area. Cholera has been epidemic throughout the country for the last three years. Malaria undoubtedly has the highest endemicity among communicable diseases and constitutes a problem of great magnitude; this is borne out by hospital and clinic records. It is also supported by limited malariometric surveys carried out a few years ago in the counties of Lofa, Nimba, Bong, Grand Bassa, and Grand Gedeh. In some parts of the hinterland, the parasite rate in children is stated to be as high as 80-100%. According to the Annual Report of the National Public Health Service for 1969, 73.6% of 743 blood samples from employees and their families were positive for malaria parasites. For example, of a total of 939 blood slides examined at the Kpain Government Clinic in 1971, 88.8% were positive, with 13.9% indicating heavy infestations. Control programs, continuous since World War II, have reduced malaria transmission in the vicinity of Monrovia, but mosquito resistance to insecticides has resulted in the disease continuing to be an important cause of physical inefficiency, sickness, and death. Latest information indicates that larviciding, residual house-spraying, and epidemiological surveillance were ongoing in 1971 in all the counties and territories of Liberia.

Helminthiases are very common, with cases more prevalent in the rural areas. Many cases are associated with anemia, resulting in increased susceptibility to other infections. Helminthiases are therefore of increasing importance.

Schistosomiasis is common to the counties of the northern coast and in the central and western parts of the interior. Large areas of swampy terrain, the absence of control programs against the intermediate snail host, and unsatisfactory excreta disposal are responsible for the wide incidence of the disease.

Tuberculosis rates are higher in Monrovia and other urban centers than in rural Liberia, aggravated by crowded living conditions and malnutrition. The incidence is higher among persons over 30 years of age than among younger people. Based upon a small sample of the population seen in the Chest Clinic, one suspects that tuberculosis affects a large number of the population. Of the total number of Mantoux tests applied and read, 79.5% were positive. This rate is extremely high even if some of these positive reactions are discounted as being due to previous BCG vaccination. A number of observations can be made from the sample: the patient load at the Chest Clinic is rapidly increasing, the number of hospital admissions exceed the number of discharges by about 2 to 1, indicating possible administrative problems and shortcomings in the treatment of patients. Today hospitalization for tuberculosis should be relatively short and the turnover of beds should be higher. The high proportion of patients that die in the hospital has implications both for the seriousness of the infections and for the quality of the treatment received. If the small sample obtained is any indication, both prevalence and incidence are very high, most likely beyond the capacity of the health services. If so, some ranking of priorities must be assigned within the tuberculosis program. A visit to the only tuberculosis hospital in Monrovia indicated the most rudimentary provisions for care of patients.

Leprosy is a major health problem, primarily because of the resulting disability. Incidence is higher among men than women. In 1964, leprosy affected an estimated 22,000 persons of which about 10% were infectious. It is estimated that the present prevalence is about 21.5 per thousand inhabitants. There are about 3,000 patients in eleven leprosaria. Three are run by the government and eight by the missions. Because the rural population pays scant attention to the disease many cases go unreported.

Trypanosomiasis (sleeping sickness) is not widespread, but a survey completed in 1960 revealed its presence in several areas along the border with Guinea.

Because of the presence in many parts of the country of several species of tsetse fly capable of transmitting the disease, the spread of infection is regarded as a potentially serious health hazard. In the mid-1960's, surveys indicated that the disease seemed to be limited to the northern part of Liberia. The small number of actual cases found there (less than one per 1,000 inhabitants) indicates sleeping sickness is not now a public health problem. However, in some tribes along the border (e.g., the Kissi) a reservoir of easily transmissible trypanosomiasis exists. The situation in Liberia is under control only because of the efforts of Sierra Leone and Guinea which have carried out vigorous campaigns in the area where the three countries join. It is feared that any relaxation of the efforts made by Sierra Leone and Guinea, and the rapid increase in road construction in the proximity of this reservoir could have serious consequences.

To avoid a potential public health threat in Liberia, coordinated action among the three neighboring countries will be needed to eliminate this endemic area. The prevalence of trypanosomiasis in animals is not now well documented. There are two reasons for the endemic focus along the border. The first relates to the way of life of the Kissi, who raise swamp rice in a tsetse habitat. Secondly, they are migratory, making treatment difficult and relapses frequent. The Kissi live in small settlements surrounded by inadequately cleared vegetation, so that the tsetse fly breeds in the immediate vicinity. Other significant reasons for this endemicity are modern trends and socio-political developments. The Kissi tribe lives in adjoining sections of Liberia, Guinea and Sierra Leone. Much movement takes place across international borders to trade and visit relatives. The dissemination of trypanosomiasis has also been facilitated by improved road networks, resulting in the reintroduction of the disease into areas once clear of it. Since the tsetse fly is found at every river crossing a particular hazard arises wherever a road is intersected by a stream. Vehicles often stop at such places and passengers are exposed to the bite of the insect. To compound the danger, the tsetse fly is attracted to moving vehicles and may be carried by them for some miles.

Smallpox used to be a major health problem. The largest smallpox epidemic occurred in 1957-1958 with 4,700 cases and 135 deaths. A 1961 outbreak caused 1,119 cases and 27 deaths. The most recent epidemic was in Monrovia in August 1968. In 1961, the National Public Health Service, with U.S. assistance, conducted the first extensive vaccination campaign. This combined smallpox and measles eradication project under joint sponsorship of the World Health Organization and the United States Government is still under way. The government has stated (in the 1971 Annual Report) that the Smallpox/Measles Program had first priority among public health programs. During the 1971 calendar year, for example, 861,520 smallpox vaccinations were performed. In the last three years, the total number of vaccinations amounted to 1,624,000 so at least part of the population was vaccinated more than once. The regular program against smallpox and measles had to be drastically curtailed in 1971 and the personnel diverted to the anti-cholera campaign.

Cholera - On August 28, 1970, the President of Liberia announced that in response to the threat of cholera, a mass vaccination campaign would be launched, using smallpox/measles mobile teams. The plan was drawn-up calling for the teams to vaccinate along the border areas of Lofa, Bong, and Nimba Counties in order to establish a barrier on the Guinea border. The port areas around Monrovia were to be covered because of migration of Fanti fishermen up and down the coast. The total number of vaccinations performed from August 26, 1970 through August 31, 1971 was 683,657. Cholera cases were still occurring in Monrovia and in most other counties along the coast, with a few scattered cases inland in 1972. The number of confirmed, reported cases through March 1971 was 869, with 137 deaths. From October 1971 to August 1972, a total of 1,450 cases with 43 deaths were reported in Monrovia. The true incidence of cholera is far higher than is being reported.

Measles epidemics occur annually during December and January and result in high mortality among malnourished children. The average number of deaths reported each year is close to 250. The cumulative number of measles vaccinations from the beginning of the smallpox/measles program to the end of 1971 numbered 939,000; these numbers do not include vaccinations at religious missions and concessions. For example, in 1971 the Firestone facility alone vaccinated 14,000 people for smallpox and 4,500 children for measles.

Yaws used to be a major problem but an effective campaign, carried out jointly with WHO, has drastically reduced the danger of the disease becoming a public health problem. In 1953-54, a WHO team made a pilot survey. The results indicated that almost the entire population needed treatment. During the initial phase of an eradication effort, 769,000 persons were examined between 1955-1957. About 19% of those examined had the disease, including 1.6% in the infectious stage. Since then, there have been continuing control measures. Small local outbreaks still occur and new foci are occasionally identified, but it is now estimated that the prevalence of active cases is about 0.8%, and that of infectious yaws 0.3%. The maintenance of these low levels requires considerable effort, especially in areas where there are no rural health services to exercise surveillance.

Malnutrition, together with related anemias are exceedingly common, particularly in infants and pre-school children. Protein intake is very low and is mainly derived from vegetables, though the consumption of fish is being encouraged. Iron intake is also deficient and anemia is aggravated by the high incidence of intestinal parasitic infestations. Anemia is common in pregnant women. It has been suggested by some health experts that, by controlling intestinal infestations alone, the blood hemoglobin levels could be raised by as much as 30%. It is further estimated that over 80% of the population show clinical or subclinical signs of iron deficiency. The intake of protein by children is especially low, particularly in the age group 1-5 years, with consequent signs of Kwashiorkor. A survey in 1961 showed that, in one area of the country, 40% of the children in this age group had reddish skin pigment and a hair texture associated with protein malnutrition.

It is estimated that 90% of the people in Liberia live on a substandard diet. This makes it extremely difficult for the Liberian people to make the physical effort needed to raise their standard of living from the subsistence to the monetary level. There are major differences between rural and urban malnutrition. Many rural diets are well-rounded. However, in many instances, culturally-based food taboos prevent consumption of animal protein, which would be available for either an entire group, or special classes of persons in it. These taboos deny children some of the available, vital nutritional elements required.

In the urban setting, protein-calorie malnutrition is emerging as a significant force in rapidly growing towns. Urban diets are often vitamin, mineral and protein deficient, accounted for in part by the use of milled grains and cereals, which lose important nutritional elements when so processed. Food supplies in urban settings revolve around a monetary economy rather than the subsistence production in rural areas and therefore, malnutrition in urban areas is more pronounced.

Vital Statistics - Reliable public health statistics were unavailable for this study and may possibly be non-existent. Fragmentary data can only give a glimpse of the true health situation of the country. The only relatively reliable data available stem from hospital reports. For the period between October 1968 and September 1969, the government hospitals reported as follows: the total number of beds was 1,120 and outpatient visits 68,000. On 7,758 in-patients, 1,734 operations were performed, of which 1,042 were considered minor and 692 major. There were 449 deaths in patients following surgery. Of these operations, 645 were performed at the Maternity Center in Monrovia, resulting in 269 deaths; that is, approximately 41.7% of all operations in the maternity hospital result in death, a grave finding

which merits investigation. Of the 197 government clinics, 76 reported outpatient treatment of 119,000 persons; there is no breakdown as to diseases treated. The reported vital statistics from all hospitals, clinics and midwives in the country for the period in question, lists 12,294 live births, 488 stillbirths, 1,702 deaths (including 94 maternal deaths) and 628 abortions. A quick look at the records of children referred for further studies at the clinics indicates that the major reasons for referral were dysentery and diarrheal, malaria, and malnutrition.

It was estimated in 1970, that 43% of all deaths were children under one year of age, giving an infant mortality rate of 137 per 1,000 live births. Rural infant mortality was computed to be 158 per 1,000 vs. 82 per 1,000 in urban areas. Another indicator of the level of medical care is the place where death occurred - at home, in hospitals, clinics or doctors offices, or in other places. On the assumption that the majority of persons who died "at home" or in "other places" were unattended by qualified medical personnel, it follows that 8 out of 10 deaths in Liberia which occurred at home were unattended. Since nearly half of those who died were children under one year of age, and most of these under 60 days, it is likely that lack of medical attention was a major factor in the high infant mortality, particularly in the rural areas where 8 out of 10 deaths occurred at home. Even in the cities, 7 out of 10 die at home.

In summary, the health conditions of the Liberian population are substandard. Infant mortality is high and the resistance of the human host to disease is low as a result of malnutrition and poor diets. Climatic conditions favor disease vectors. Poor hygiene contributes to the health problems of the country.

IX. HEALTH SERVICES & SOCIAL WELFARE

The government's public health administration is known as the Ministry of Health and Social Welfare (MHSW). Headed by a Minister who has cabinet rank, the service has three main Bureaus: the Bureau of Curative Services, which includes hospitals and dental services; the Bureau of Preventive Services; and the Bureau of Planning and Development. The MHSW is assisted by a National Advisory Council on Health, whose members are prominent physicians from the government service or private practice.

For a number of years, the Ministry of Health and Social Welfare has received assistance from foreign sources. The U.S. has furnished expert study groups and AID has provided technical assistance in many areas. The World Health Organization and the United Nations Children's Fund have undertaken a number of cooperative projects in medical education, disease control and environmental health.

Below the national level, the Ministry lacks an infrastructure. Local administrations are responsible for the immediate administration of hospitals and clinics. A medical director is in charge of each region, except in Monserrado county where there are 25 clinics and a medical director of public health clinics is in charge.

The administrative control of environmental sanitation throughout the country is in the hands of the director of the sub-division of environmental sanitation, operating through the supervisors of urban and community sanitation.

Liberia has a number of programs in public health: epidemiology, preventive medicine, environmental health, health care services and manpower training. Considerable assistance in organizing, staffing, supervising, and funding such programs has been provided by WHO, UNICEF, USAID and foreign governments. Liberia has prepared, with the help of WHO, a Ten-Year National Health Plan (1967-1976). Its major objectives are the reorganization of medical administration, expansion and replacement of existing medical care facilities and the construction of new ones, conducting medical research and the training of medical and auxiliary health personnel. To date, very little of this plan has been implemented, and a new five-year plan is in the process of elaboration.

Although government agencies have taken an increasingly active part in health matters since World War II, medical missionaries and the Firestone Plantations Company have played the principal role in popularizing modern medicine. For instance, by 1962, more than 100,000 individuals had been served by the medical facilities of the Methodist mission in Ganta, far in the interior. The medical services of the Firestone Harbel and Cavalla plantations reported over 500,000 patient visits during 1960 alone. In general, medical care provided by the missions and concessions represent a large part of the health care received by the population, some estimate as much as 50% of total care in the country. The services are usually of high quality. Notwithstanding attachment to tradition, the people as a whole are receptive to innovations in matters of health, especially curative medicine.

The government's principal installations are in Monrovia. In 1962, the bed/population ratio in Montserrado county was 3.9 per 1,000, while in Grand Gedeh country, it was only 0.17 per 1,000. Since then few more hospital beds have become available even though the population has grown. However, the general impression is that in the last ten years Montserrado County, where Monrovia is located, has benefitted more than the rest of the country. In 1970, the 33 hospitals were unevenly distributed throughout the country. There is a difference of opinion as to the total number of hospital beds. A government report lists 1,690 in 1971, while a 1970 report from other sources lists 2,040, and yet a third report gives a figure of 2,379. All of these reports exclude the number of beds in the 11 leprosia in the country. A quick breakdown indicates that Montserrado County has 1,241 beds, of which 589 belong to private entities and the remaining 652 to the government. This means

that 52% of the total number of beds of the country serve less than 20% of the total population. The availability of hospital beds in the coastal counties, as compared to the four counties in the hinterland where the tribal form of society is more prevalent, again shows that the 45% of the population in the interior is served by only 19% of the supply.

Hospitals, both government and of concessions and missions, vary in physical conditions from bad to very modern. A number of hospitals are in disrepair, some have inadequate water, undependable electricity and a lack of waste disposal systems. Most hospital outpatient clinics are overcrowded, understaffed, and poorly equipped. Health care is often better at concession hospitals such as the Firestone Medical Center in Harbel; the Liberian Mining Company Hospital, Bomi Hills; or the Phebe Hospital at Suakoko, although the latter is presently suffering financial difficulties.

Recently, the John F. Kennedy Memorial Center (JFKMC) was opened. As part of the complex, the Tubman National Institute of Medical Arts was incorporated. The Center functions in a somewhat independent fashion from the organizational framework of the Ministry of Health and Social Welfare. The only bond is that the Minister of Health is the Chairman of the Board of JFKMC. The Center is expected to play a major role in the expansion and improvement of health care service in Monrovia, and eventually, through an outreach program, to Lofa County and beyond. This $8.3 million hospital provides comprehensive referral, consultation and teaching services for virtually all major medical specialties. This Center was initiated and completed through continued major assistance from the United States. Thirteen U.S.P.H.S. technicians participate in the development and administration of the Center. An initial contingent of 17 Peace Corps volunteer technicians have also been assigned to the Center.

The primary goal of the JFKMC is to improve the health of the Liberian people through the establishment of an institution capable of serving as the focal point for the delivery of health care services and for the training of auxiliary health personnel within the country. In working toward this goal some practical considerations require immediate attention. In its very first year of operation, it was estimated that for the JFKMC to function at a minimally acceptable level, an amount of $2,272,868 would be necessary. This is a staggering amount in the face of a total MHSW budget for the whole country in 1970 of only $4.8 million, thus the JFKMC absorbs one-half of an already limited budget. For the first year, the government of Liberia agreed to provide $1.6 million towards the $2,272,868. A request to USAID to fund the balance of $672,868 was approved to meet this initial deficit. Obviously, a solution to the budgetary problem must be a first priority. Of fundamental importance is whether Liberia's funding for JFKMC now and in the future, will be at the expense of other components of the health services. Secondly, some determination needs be be made concerning the availability of USAID support in the future. Unless adequate financing is assured to pay adequate salaries, to hire skilled professionals, and to provide adequate maintenance, JFKMC will become just another mediocre hospital. It is projected that at full utilization, the hospital will provide 271 beds and the outpatient services can process 80,000 visits annually. While the needs are great for medical care services, the question arises as to whether in a geographic area already greatly favored by existing health services, the addition of 271 beds, is the best investment of scarce resources while other areas of the county have only ten beds per 100,000 population (Grand Gedeh County). Recently the JFK Center has assumed responsibility for the tuberculosis hospital and the cholera unit, both of which used to be under the jurisdiction of the Ministry of Health & Social Welfare.

The 1971 Annual Report of the MHSW (page 9) already calls attention to the urgent need for new sources of funds:

"The one-year warranty, provided under terms of the construction contract for the new hospital expired in July 1971. Full responsibility for maintenance

and repair has now shifted to the Government of Liberia. Supplemental funding is urgently required for maintenance, custodial and security services to assure proper protection and preservation of buildings and equipment."

In all fairness, it should be pointed out that the JFK Center, as now constituted, has close to the same number of beds as the remainder of the Ministry of Health and Welfare, and almost as many employees. The volume of work performed by the JFK Memorial Hospital can be seen from the table annexed at the end of this report.

One of the significant yardsticks for measuring the operational efficiency of a hospital is the average length of stay of patients, which is presently 14.4 days at the JFKMC. When this is compared to the currently acceptable standard of 3-5 days in developed countries, and 5-7 days in developing countries, it is evident that the hospital is not operating at standard levels in terms of average length of stay. Moreover, the unadjusted gross death rate at the hospital is 12.3% and the net insitutional death rate is 7%; both figures are rather high. If this is the center of excellence, these data paint a bleak picture of conditions elsewhere in the Ministry of Health and Welfare.

As a general indication of the less than optimum use of government hospitals, the Annual Report for 1969 of the MHSW states that a total of 1,120 beds served only 7,758 patients treated as in-patients. Of these 7,758, the Maternity Center, with 143 beds, accounted for 4,383, or more than half. The inference is that either hospital beds are greatly underutilized, or turnover rates are extremely low. There is also a question of public acceptance of hospitalization, because many of the hospitals in the hinterland have very low in-patient occupancy, e.g., Careysburg District Hospital, 20 beds, 57 in-patients annually; and Harvey Hospital, Sanniguellie, 25 beds, 40 in-patients annually. Moreover, all 14 hospitals treated a total of 68,000 outpatients during the year. Of this total, two hospitals account for half, Tellewoyan Hospital in Voinjama, Lofa County, with 29,000; and Careysburg District Hospital, in Montserrado County, with 6,500. In general, it is evident that the success of the government hospitals in reaching the people appears to be very limited, yet they absorbed 40% of the annual budget for 1970.

In addition to the hospitals, the government operates a number of health clinics. In 1964, of a total of 154, there were 93 provided by the government, 46 by concessions and 15 by missions. At that time there was, for the country as a whole, approximately one health center for every 6,600 persons. But this ratio varied considerably, being one for 3,645 persons in Montserrado Country and one for 16,480 persons in Grand Bassa County. The scope of health care services available at centers varies a great deal. They are usually run by a nurse, a medical assistant or an aide (dresser). In some cases there is also a midwife or an auxiliary midwife. One of the proposed aims of the Ten-Year Plan was the establishment of additional health centers in all parts of the country. In 1970, it was claimed that 210 government clinics were in existence, yet in 1969, 76 government clinics reported only 119,000 outpatient visits for that year. These data suggest less than optimum use of these facilities (see Annexes).

To extend the benefits of the JFKMC, the Government of Liberia, the Ministry of Health and Welfare, and the Center are interested in extending the preventive and curative services to rural areas, as an outreach activity of the Center. USAID has agreed to help support this project. The proposal is to establish peripheral facilities, called health posts, each to serve 4-5,000 people. These posts would be manned by two physician assistants, one of whom would provide outpatient medical services while the other would conduct health education in the villages. For every four to six such health posts, there will be a health unit, with facilities for in-patient services of short duration. Each unit will be staffed by midwives, practical nurses, senior physician assistants, a laboratory technician, and a sanitary inspector. Health conditions that cannot be handled by staff in the health posts will be referred to health units. Conditions requiring more specialized care than can be provided in the health units will be sent to the County hospital. JFKMC

will be the reference center for the specialties not available elsewhere.

A critical component of the system is constant supervision of each type of facility. Staff at the health posts will be supervised by senior staff of the health units, the health units by physicians from the County hospital, and the County hospitals will be supervised by the JFKMC.

In this regard, a number of difficult points must be resolved. The proposed supervision of health posts by health units, health units by County hospitals, and County hospitals by the JFKMC is based on a number of assumptions. First, it is assumed that there is enough staffing at each level so that time will be available for senior staff members to devote to supervision, this is doubtful, especially when transportation is extremely difficult at best.

Another concern, must of necessity, be the quality of supervisors available at all levels. The impression, at present, is that only infrequently is the staff in the hinterland adequately trained to deliver acceptable services to their own population, let alone provide supervision. Perhaps a system of refresher courses is needed for all medical and paramedical personnel presently employed by the Ministry of Health and Welfare.

By far, the most sensitive issue to be resolved in this proposed system is the jurisdictional division between the Ministry of Health and Welfare, and a largely autonomous John F. Kennedy Medical Center. At the time of this study, there are differences of opinion between the Ministry of Health and Social Welfare, which considers JFKMC as part of its system, and the Center which feels it is independent and separate, while cooperating with the Ministry. This type of problem is an issue, for instance, in the location and control of the central medical warehouse under construction on the grounds of the JFKMC. Both entities would like to have this warehouse under its control.

Also of concern is the low probability that professionals from the JFKMC would be willing to go into the hinterland hospitals, health units, and health posts to supervise activities there. Besides the inconveniences of travel, very few professionals could afford to leave their official posts, not to mention their private practices, for any length of time.

For all these reasons it is necessary to look very closely at the proposed system. The present outreach project is directed at Lofa County alone, however, expansion is planned so that eventually the whole country will be covered. It is doubtful that this can be achieved any time soon.

In general, the Ministry of Health and Social Welfare encounters difficulties in staffing its facilities. For instance, secondary school graduates are not interested in becoming physician assistants. It is not reasonable to expect that high school graduates will be interested in a career which requires two additional years of training and results in a salary of $75 a month, when there are opportunities elsewhere for them to make $100 or more per month with little or no additional training. The same is true in other categories of health personnel. There is an acute shortage of professional and auxiliary health manpower. Specialists of all types are in short supply. In 1972, there were only 121 physicians, most of whom were missionaries or working in the concessions. Only 51, or 42% of the physicians work for the Ministry and many of these are burdened by administrative duties that prevent the full use of their specialty. In 1972, the major health personnel categories were represented as follows: physicians 121 (government 51, private 70); dentists 13 (government 9, private 4); veterinarians 18 (government 12, private 6); pharmacists 13 (government 6, private 7); registered nurses and practical nurses 816; midwives 468; dressers 118; nurse's aides 96; laboratory technicians 26; medical assistants 36; health assistants 58; health inspectors 370 (including auxiliaries), and 10 quarantine officers. The JFK Medical Center alone had 38.4% of all registered

nurses and 36.5% of the 348 professional nurses in the country. Yet, despite this uneven distribution of paramedical personnel, and despite the Medical Center's provision in 1972 of employment incentive of 25% salary increases for nurses, the Center continued to suffer from an acute shortage of qualified nurses. The situation in other hospitals and clinics of the Ministry is even worse because, as in most countries, nearly all of these personnel resources are concentrated in urban areas.

Until quite recently, Liberia had only a very limited capacity to train sufficient numbers of professional and auxiliary personnel for the country's needs. Physicians, dentists, veterinarians and pharmacists usually trained abroad, mostly in the U.S. or in Great Britain. Recently a medical school has been established in Monrovia, the first number of Liberian trained physicians (probably less than 10) were scheduled to graduate in 1972. In 1971, 39 graduated from the School of Nursing of the Tubman National Institute of Medical Arts. Of these, there were 11 graduate nurses, 11 practical nurses, 3 midwives, 8 sanitarians, 4 health assistants and 2 medical assistants. A number of concession hospitals (Firestone, Cuttington College, and Methodist Mission Hospital) have their own nursing schools; the number of their graduates is not available.

Against this background, the government continues its efforts to train both paramedical and medical personnel for the national health system. At the medical level, the Dogliotti Medical College enrollment has continued to show an increase in the number of students (33 in 1972). Unfortunately, however, the majority of the students are foreigners. For instance, only 5 of the 14 first year medical students in 1971 were Liberians, and only 4 of the 13 second year students. In 1972, only 2 first year students are Liberian. There is a need for an objective, critical review of the Medical College in terms of the goals for which it was established.

At the 24th Annual Commencement Exercises of the Tubman National Institute of Medical Arts in February 1972, a total of 34 trainees graduated: 17 professional nurses, 4 practical nurses, 4 environmental health specialists, and 9 physician assistants. These numbers are too small to make a significant impact on the health delivery system.

Records: The lack of available statistics in the Annual Reports of the Ministry of Health and Social Welfare emphasizes how incomplete, inadequate, and incorrect record-keeping is. A valid data base is one of the fundamental pre-requisites for planning activities. In Liberia, records are usually kept on plain 5x8 cards. Physicians are usually far behind in keeping records up-to-date, to the point that the Ministry is considering punitive action against those physicians in governmental hospitals that do not improve their record keeping.

Drugs & Supplies: The supply of drugs and medical supplies for the interior is done in an unorganized fashion. The system as it now exists is cumbersome. Drugs are distributed to health posts, health units, clinics and County hospitals as follows:

(a) Requisitions are filed quarterly (or semi-annually where air delivery is necessary) by each health post and clinic to the Ministry of Health and Social Welfare via the respective County Hospital. (As a matter of practice, new requisitions are filed only after previous requisitions have been filled; hence, orders may be late or skipped.) These requisitions are relayed to the Ministry by the hospital together with its own requisition.

(b) The Drug Section of the Ministry compares each requisition against established regulations, reduces the order as it deems necessary, and unit-prices the order. The Drug Section then completes a combined "Local Purchase Order"

which is signed by the Minister of Health and Social Welfare and sent to the concessionaire, Evans Medical (Liberia) Ltd.

(c) Evans fills the order from existing stock and packages according to County hospital, then notifies the Ministry to pick-up at Evans' dock. For items not in stock, Evans may special order from England or advise local purchase elsewhere.

(d) A GSA truck picks up the order at Evans' dock and delivers it to County hospitals. Hospitals, in turn, either deliver to health posts or hold deliveries for pick-up.

The Problem

(1) Drug expenditure ranges from 23 cents per patient, treated in smaller posts, to 3 cents per patient, treated in busier posts, an inadequacy that has been observed by the Minister in the 1972 Annual Report.

(2) Drugs are distributed quarterly (or semi-annually). With inadequate supply, consumption tends to be immediate rather than spread over the allotment period. This results in periodic, and sometimes protracted, shortages which may add to the risk of illness and in some situations are said to alienate communities from their health workers.

(3) There is little or no communication with health posts to verify or accommodate sudden or substantial increases in demand for drugs. Large increases in requisitions of certain items are arbitrarily reduced by the Ministry's Drug Section on presumption of "padding," generally with scant inquiry into necessity, which further encourages the practice of padding. Similarly, there is little redistribution of drugs from areas of over supply to areas of shortage.

(4) Pick-up from Evans' depot and delivery to health posts tends to be irregular depending on availability of GSA vehicles.

(5) There is lack of control over pilferage and unwarranted withdrawals from stock at several points along the supply route, including the health post.

The Ministry of Health and Social Welfare is developing a new system of drug distribution physically based in the JFK Medical Center. As mentioned previously, there is at present some controversy as to who would control the distribution system and the reordering of supplies.

In the Division of Preventive Medicine, a number of active programs have been undertaken, foremost among them is the Smallpox/Measles Program which has priority among public health activities. Apparently most of the susceptible population has already been vaccinated. The MHSW has an active ongoing program in maternal and child health. There are approximately 60 child health clinics and about 40 prenatal clinics. A relatively large number of schools receive limited school health services. A large number of empirical midwives are being trained, and those who already are in practice are being monitored. A mother-child feeding program, initiated with the cooperation of CARE, is in operation in most prenatal and child health clinics. A number of courses are offered to para-professionals, school nurses, parents, etc. A number of Peace Corps Volunteers are active in this program. This appears to be one of the more successful activities of the Ministry.

A health education program aims at arousing the interest of the public, individual groups, communities, organizations and schools. It attempts to influence the attitudes, habits, customs and knowledge relating to individual, family and community health. This is achieved through courses for health assistants, health inspectors, nurses, midwives and Peace Corps Volunteers. Teachers at all school levels should also receive

this type of instruction. This program provides literature, photographs, recordings, etc., but the health education program falls short of the tremendous needs in this area.

Community water supplies and sewerage systems are not in the province of the Ministry of Health and Social Welfare, but in the semi-independent Public Utilities Authority on the one hand, and the Ministry of Local, Rural, and Urban Development on the other. The MHSW usually provides technical advice on the location of wells and pit-latrines, but actual construction and maintenance are done by others. The large concessions have their own water and sewerage systems and do not come under the jurisdiction of the Ministry.

The Water and Sewer Division of the Public Utilities Authority supplied only the Monrovia System (150,000 population), Harper (8,000) and Greenville (5,000). However, the Liberian Government has entered into a bilateral agreement with the Government of the Federal Republic of Germany to construct water systems in six county seats. The water programs would be spread over the next 15 years. In other towns and villages the situation is far less satisfactory, especially in the crowded urban slum areas. Given the small number of public health inspectors, food sanitation does not receive adequate attention.

There is a remarkable absence of any recognition by the Ministry of Health and Social Welfare of folk medicine. It is evident that only a very small fraction of the total population has access to modern medicine. There are also some doubts raised by the available statistical data as to whether the modern services are being used fully even when they are within reach, especially by the tribal people. It seems likely, therefore, that a large number of ill people seek and receive treatment from medicine men. Medicine as practiced by medicine men involves a great deal of mysticism, magic, prayers to the spirits and religious ceremonies. Yet, intermingled with these, there seems to be important components of common sense, considerable knowledge of medicinal plants, an understanding of psychosomatic symptoms, and much practical skill.

The duty of the "native doctor" is to attend the sick and to attempt to make them well in body and mind. To that end the tribal medicine man uses many devices that are common to modern medicine. He gives enemas with long-necked gourds, uses reeds for catheters and selects indigenous herbs for making poultices and herb baths. He has a practical knowledge of anatomy and is often obliged to improvise splints and set fractures, with nothing more than his own skilled hands. The expert use of native pharmacology is another of his attributes. He devises potions of native herbs for bacillary dysentery and common skin ulcers. He treats severe wounds by poulticing them with selections of native leaves which have analyzable pharmaceutical values. He can make use of tourniquets for stanching severed arteries or "force draining abcesses." He has perceptive knowledge of medicinal herbs, roots, barks, etc., which provide fairly effective disinfectants, salves and counter-irritants. Fevers are treated with a number of teas. Small green figs serve as an effective vermifuge against intestinal worms. More examples could be listed but it does appear that, with the proper approach, the "native doctor" can be a most useful resource in improving the public health. At this stage it seems that, regardless of the therapeutic value of traditional medicine, it is readily accepted by the people because of the status and authority enjoyed by native doctors. By taking advantage of this existing relationship of trust, the Ministry could further its aims at minimal cost in financial and human resources. However, conversations with officials at the Ministry indicate that at present no plans exist to make use of this resource. As an example of the continued emphasis on traditional ways of solving the health problems of Liberia, the Ministry recommended the following approach to the Legislature in its 1971 Annual Report: "To establish a hospital bed ratio of 1 per 500 inhabitants."

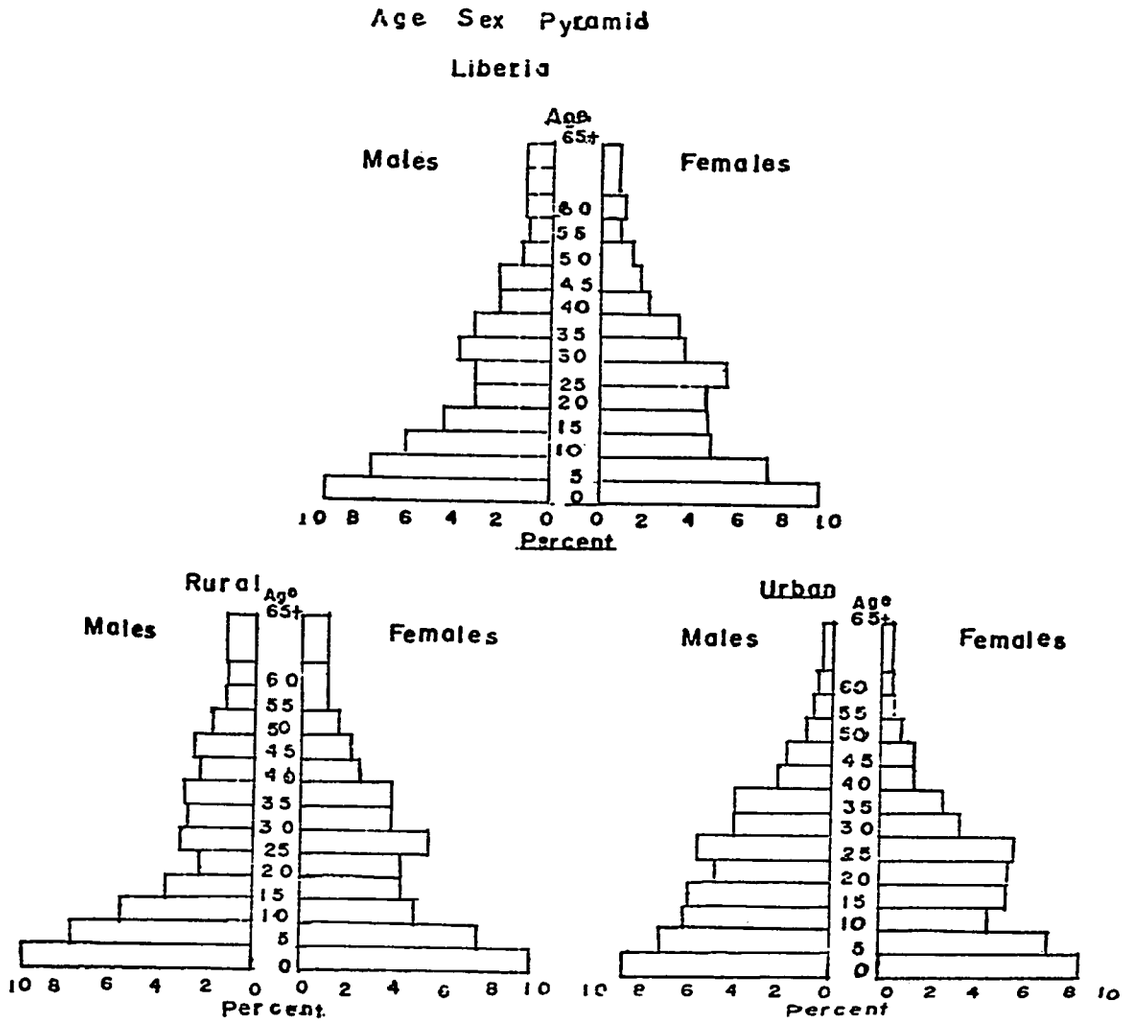
To achieve this objective they propose a plan of hospital renovation, new construction, and aquisition of new equipment. Under this plan, five hospitals are to be renovated in 1972-1973 at a proposed cost of $420,000. In addition, it is suggested that six 50-bed hospitals be constructed between 1972 and 1976 and 25 new

satellite clinics (five each year). It is also recommended that, to control waterborne diseases, piped water supply and sewerage disposal systems be set up in all urban centers. To provide finances to meet these needs it is recommended that a health fund be established, to be financed by annual contributions from all employed persons and an increase in the health tax from $1 to $2 per capita per year.

Welfare benefits are still very limited and usually restricted to wage earners in private employment. Traditionally, Liberians have depended on family ties and kinship relationships in times of severe hardship. Yet continuous overcrowding in cities and migration away from native villages are slowly forcing the government to assume responsibility for housing, support, etc. A number of private agencies are also actively helping the poor, the old and the sick.

At this writing a new Minister has been named, the Ministry is being reorganized again, and policies, objectives, and procedures are being developed. The general impression gained in Liberia is that instead of an ongoing program, we are observing a beginning. It is a matter for concern that eight years into the Ten-Year Plan of 1965-1974, and after many years of financial support by USAID, very little progress is evident.

TABLES AND GRAPHS



Source: Department of Planning and Economic Affairs, Demographic Annual of the Population Growth Survey 1970, Demographic Characteristics.

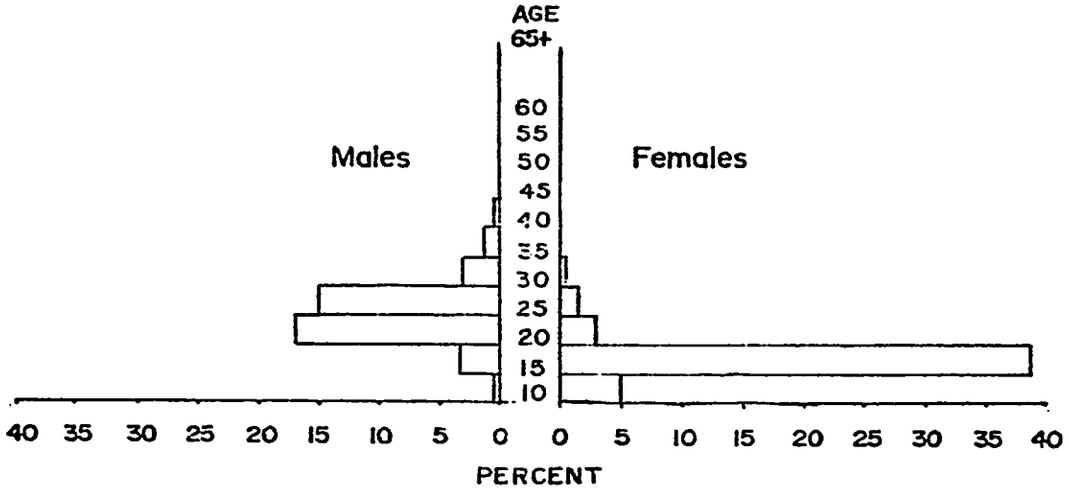
PERCENTAGE DISTRIBUTION OF THE
POPULATION BY AGE
AND SEX 1971

	ALL AREAS			RURAL AREAS			URBAN AREAS		
Age Groups	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
All Ages	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0-1 yr.	3.1	3.3	2.0	3.2	3.5	3.0	2.8	2.7	3.0
1-4 yrs.	13.6	14.2	13.2	13.9	14.9	12.9	13.0	12.5	13.9
5-9 yrs.	14.7	15.2	14.2	15.1	16.3	14.1	13.4	12.5	14.6
10-14 yrs.	10.2	11.4	9.1	10.1	11.4	8.9	10.5	11.8	9.6
15-19 yrs.	8.6	8.5	8.8	7.8	7.6	8.0	10.7	10.5	11.1
20-24 yrs.	7.8	6.2	9.4	6.5	4.8	8.1	11.1	9.5	13.1
25-29 yrs.	9.1	7.4	10.8	8.2	5.9	10.3	11.5	11.0	12.1
30-34 yrs.	7.2	6.5	7.9	6.6	5.4	7.8	8.6	9.0	8.1
35-39 yrs.	6.6	6.6	6.7	6.7	6.1	7.2	6.5	7.6	5.3
40-44 yrs.	4.9	5.1	4.6	5.1	5.2	5.1	4.1	4.9	3.2
45-49 yrs.	3.8	4.3	3.3	4.3	4.8	3.7	2.6	3.0	2.0
50-54 yrs.	3.1	3.4	2.8	3.6	4.0	3.3	1.8	2.1	1.4
55-59 yrs.	1.9	2.3	1.6	2.3	2.8	1.9	1.0	1.2	0.8
60-64 yrs.	1.9	2.0	1.7	2.2	2.4	2.1	0.9	1.1	0.8
65 years & over	3.4	3.8	3.1	4.3	4.8	3.9	1.2	1.8	1.1

Source: Liberia, Ministry of Planning and Economic Affairs, Economic Survey of Liberia 1971.

Age at first marriage

Liberia: All areas



Source: Department of Planning and Economic Affairs, Demographic Annual of the Population Growth Survey 1970, Demographic characteristics.

PERCENTAGE DISTRIBUTION OF CHILDREN EVER BORN BY WOMEN OVER AGE 14: 1970

LIBERIA: ALL AREAS

CURRENT AGE GROUPS OF WOMEN	NUMBER OF CHILDREN											
	TOTAL	NONE	1	2	3	4	5	6	7	8	9	10
	% of Women	% of Women	% of Women	% of Women	% of Women	% of Women	% of Women	% of Women	% of Women	% of Women	% of Women	% of Women
15 Years	100.0	27.5	14.8	11.7	9.7	8.7	7.0	5.6	4.4	2.8	2.6	5.3
15 - 19 Years	100.0	65.5	22.7	8.0	2.4	1.0	0.3	0.1	0.1	0.0	0.0	0.0
20 - 24 Years	100.0	25.6	21.7	21.3	13.0	8.6	5.1	2.0	1.3	0.5	0.3	0.7
25 - 29 Years	100.0	19.8	14.8	14.8	13.7	13.0	9.1	5.8	4.3	2.0	1.2	1.6
30 - 34 Years	100.0	15.9	12.0	10.2	12.7	11.0	9.6	9.4	7.1	3.4	3.8	4.8
35 - 39 Years	100.0	16.5	8.6	10.7	10.1	10.7	10.3	8.4	6.1	5.8	4.4	8.2
40 - 44 Years	100.0	17.5	7.7	8.0	8.3	9.0	9.7	8.5	9.2	4.9	5.4	11.7
45 - 49 Years	100.0	18.7	7.8	8.0	8.3	9.4	8.3	8.6	6.5	4.8	5.4	14.1
50 - 54 Years	100.0	23.4	11.5	6.5	8.3	7.9	7.8	9.0	6.4	3.8	5.4	10.2
55 - 59 Years	100.0	23.1	9.8	7.4	7.7	7.8	8.3	7.1	6.6	4.4	5.4	12.3
60 - 64 Years	100.0	27.4	12.6	8.7	5.1	7.5	7.5	5.9	5.4	5.7	4.2	9.8
65 Years and Over	100.0	27.8	15.3	7.6	7.4	7.1	4.8	6.0	4.5	4.4	3.6	11.5

Source: Liberia, Department of Planning and Economic Affairs, Demographic Annual of the Population Growth Survey 1970, Demographic Characteristica.

ELEMENTARY AND GENERAL SECONDARY ENROLMENT
BY GRADES, 1970 - 1971

Grade	1970		1971	
	Number	Percent	Number	Percent
All Grades	135,739	100.0	146,571	100.0
Pre-Primary	40,028	29.5	43,809	29.9
Elementary and Secondary General	95,711	70.5	102,762	70.1
Grade One	21,420	15.8	23,074	15.7
Grade Two	16,306	12.0	16,602	11.3
Grade Three	13,817	10.2	14,770	10.1
Grade Four	11,463	8.4	12,178	8.3
Grade Five	9,395	6.9	10,081	6.9
Grade Six	7,816	5.8	8.254	5.6
Grade Seven	4,835	3.6	5,432	3.7
Grade Eight	3,865	2.8	4,482	3.1
Grade Nine	2,872	2.1	3,662	2.5
Grade Ten	1,657	1.2	1,945	1.3
Grade Eleven	1,171	0.9	1,314	0.9
Grade Twelve	1,094	0.8	968	0.7

Source: Liberia, Ministry of Planning and Economic Affairs, Economic Survey of Liberia, 1971.

HIGHER EDUCATION ENROLLMENT BY FIELD OF STUDY
1970 - 1971

Field of Study	1970		1971	
	Number	Percent	Number	Percent
All Fields	1,109	100.0	1,199	100.0
Liberal and Fine Arts and Science	709	63.9	504	42.0
Agriculture and Forestry	126	11.4	156	13.0
Education	153	13.8	133	11.1
Nursing	22	2.0	27	2.3
Law	19	1.7	23	1.9
Business	53	5.2	275	22.9
Medicine	--	--	26	2.2
Extra-Mural	10	0.9	55	4.6
Undecided	12	1.1	--	--

Source: Liberia, Ministry of Planning and Economic Affairs, Economic Survey of Liberia 1971.

TOTAL PUBLIC SECTOR RESOURCES BY SOURCE
1964-- 1970
(in million dollars)

Source	1964	1965	1966	1967	1968	1969	1970
Total Resources	59.7	72.8	82.0	83.8	74.1	79.0	87.3
Domestic Revenue	40.1	42.4	46.7	48.1	51.8	61.8	66.5
Direct Taxes	16.0	19.7	21.6	19.5	21.5	26.4	28.3
Iron Ore	7.0	8.0	10.0	10.0	10.0	12.0	12.9
Rubber Concessions & Other Corporations	3.3	4.3	4.3	7.5	7.2	7.5	7.8
Other Direct Taxes	5.7	7.4	7.3	2.0	4.3	6.9	7.6
Indirect Taxes	20.1	26.1	23.8	22.8	22.6	25.5	26.7
Import Duty	16.6	16.4	18.2	16.1	15.7	17.1	18.3
Motor Vehicle Licenses	0.5	0.5	0.5	0.5	0.5	0.7	0.9
Other Indirect Taxes	3.0	9.2	5.1	6.2	6.4	7.7	7.5
Other Taxes	4.0	6.9	7.6	5.8	7.7	9.9	11.5
Vessel Taxes	2.8	3.6	2.6	3.5	3.8	4.2	5.0
Export Taxes	0.6	0.6	0.7	0.8	1.2	1.4	0.8
Other Revenues	0.6	2.7	4.3	1.5	2.7	4.3	5.7
Resources from Abroad	19.6	30.4	35.3	35.7	22.3	17.2	20.8
Grants	11.6	12.4	13.3	13.3	11.6	9.0	10.8
Current	9.1	9.4	11.0	11.5	18.8	8.0	9.2
Capital	2.5	3.0	2.3	1.8	2.8	1.0	1.6
Other	8.0	18.0	22.0	22.4	10.7	8.2	10.0
Loans	5.0	15.0	16.8	16.2	7.3	6.8	5.7
IMF: Drawings	3.0	3.0	5.2	6.2	3.4	1.4	2.0
SDP	-	-	-	-	-	-	2.3

PERCENT DISTRIBUTION OF GOVERNMENT EXPENDITURE
BY PURPOSE AND SUB-SECTOR, 1970

(in million dollars)

Source of Fund / Purpose	Government of Liberia 1/		Grants from Abroad		Total
	Million Dollars	Percent	Million Dollars	Percent	
Economic Services					
Agriculture	1.3	2.3	1.3	12.0	2.6
Power	1.4	2.4	-	-	1.4
Manufacturing	0.3	0.6	2/	-	0.3
Transport & Communication	6.5	11.1	1.1	10.2	7.6
Other Economic Services	3.4 3/	5.8	2/	-	3.4
Social Services					
Education	7.5	12.8	3.1	28.7	10.6
Health	4.3	7.4	0.5	4.6	4.8
Welfare	0.6	1.0	-	-	0.6
Community Services	4.2	7.2	2.4 4/	22.2	6.6
General Services					
General Administration	14.8	25.3	1.2	11.1	16.0
Justice and Police	3.4	5.8	0.2	1.9	3.8
General Research	0.6	1.0	1.0	9.3	1.6
Defense	3.8	6.5	-	-	3.8
Public Debt-Interest	6.3	10.8	-	-	6.3
Total	58.4	100.0	10.8	100.0	69.2

1/ Includes loan; See Table Page 48
2/ Less than $0.1 million
3/ Includes $2.1 million of supplementary expenditure of which details are not yet available
4/ Includes $1.8 million of food distribution

GOVERNMENT BUDGETARY EXPENDITURE FOR HEALTH
BY AGENCY AND TYPE OF EXPENDITURE, 1970

(in thousand dollars)

	Consumption Expenditure				Gross Capital Formation		
	Compen-sation of Employees	Current Purchases		Current Transfers	Construc-tion	Equipment	Total
		Rent	Other				
National Public Health Service	719	-	515	137	-	24	1395
Hospitals and Clinics	1282	-	273	-	-	9	1564
Preventive Services	423	-	112	3	-	3	541
Total	2424	-	900	140	-	36	3500

Source: Liberia, Ministry of Planning and Economic Affairs, Public Sector Accounts of Liberia 1970.

EXPENDITURES ON HEALTH, 1969 - 1972

(in million of dollars)

Source	1969	1970	1971	1972	1971-72 % Increase
A. Total Public Sector Outlays	79.0	83.5	90.8	78.8	-13.2
1. Budgetary & Development Expenditures	63.2	67.0	71.8	71.6	- 0.3
2. Utilization of Foreign Loans and Grants	15.8	16.5	19.0	7.2	-62.1
B. Outlays on Health	7.2	4.8	6.4	5.6	-12.5
3. Budgetary & Development Expenditures on Health	3.7	3.6	4.0	4.7	-17.5
4. Utilization of Foreign and Grants on Health	3.5	1.2	2.4	0.9	-62.5
C. Ratio Percent					
5. Outlays on Health as Percent of Total Outlays (B'A)	9.1	5.7	7.0	7.1	
6. Budgetary Expenditures on Health as Percent of Outlays (3'A)	4.7	4.3	4.4	5.9	
7. Utilization of Loans and Grants on Health as Percent of Total Public Outlays (4/A)	4.4	1.4	2.6	1.1	
8. Budgetary Expenditures on Health as Percent of Total Budgetary Expenditures (3/1)	5.8	5.4	5.6	6.5	

POPULATION AND BEDS/POPULATION RATIO BY COUNTIES - CENSUS, APRIL 1962

Name of County	Population 1962	Hospitals and Hospital Beds										Ratio of Beds/1000 Population
		Government		Concession		Mission		Private		Total		
		Hosp.	Beds	Hosp.	Beds	Hosp.	Beds	Hosp.	Beds	Hosp.	Beds	
Grand Bassa	131,840	1	38	2	43	--	--	--	--	3	81	0.61
Cape Mount	32,190	1	41	1	33	--	--	--	--	2	74	2.30
Maryland	62,786	1	86	1	88	--	--	--	--	2	174	2.77
Montserrado	258,821	7	565	3	373	2	35	5	40	17	1013	3.91
Sinoe	56,095	1	40	1	12	--	--	--	--	2	52	0.92
Nimba	160,743	1	23	1	67	1	44	--	--	3	139	0.87
Grand Gedeh	59,275	1	10	--	--	--	--	--	--	1	10	0.17
Bong	131,523	1	26	1	24	--	--	--	--	2	50	0.38
Lofa	123,165	1	52	--	--	2	85	--	--	3	137	1.11
Total	1,016,443	15	886	10	640	5	164	5	40	35	1730	1.70

Source: Liberia, National Public Health Service, Ten Year National Health Plan 1967-1976.

ANALYSIS OF LIBERIAN HOSPITAL BEDS BY OWNERSHIP AND COUNTY, 1972

County	Total Beds	Gov't	Private	% of Gov't Beds	No. of Hospitals	% of Total Beds
Montserrado	1,241	652	589	52%	13	52
Grand Cape Mount	65	41	24	65%	2	3
Loffa	197	70	127	36%	3	8
Bong	110	26	84	24%	3	5
Grand Bassa	385	305	80	80%	4	16
Nimba	145	28	117	20%	3	6
Sinoe	52	40	12	77%	2	2
Grand Gedeh	10	10	-	100%	1	-
Maryland	174	174	-	100%	2	8
Total	2,379	1,346	1,033	5%	33	100

Source Composite of information in Annual Reports of NPHS, the Ten Year Plan and information on J.F. Kennedy Medical Center.

DIVISION OF RECORDS AND STATISTICS
HOSPITALS IN AND OUT PATIENTS ANNUAL REPORT
Oct. 1, 1969 - Sept. 30, 1970

GOVERNMENT HOSPITAL	LOCATION	IN-PATIENTS	OUT-PATIENTS	DEATHS	SURGICAL REPORT MAJOR	SURGICAL REPORT MINOR
Liberian Government Hospital	Monrovia	1,562	32,564	136	997	-
Maternity Center	Monrovia	6,146	42,079	334	1,112	-
Eye Hospital	Monrovia	-	-	-	-	-
T.B. Hospital	Congo Town	413	3,337	59	-	-
Catherine Mills	Paynesville	98	262	1	-	-
Careysburg Hospital	Bensonville	109	3,723	-	-	-
Liberian Government Hospital	Lower Buchanan	-*	-*	-*	-*	-*
P.J. Grante Hospital	Sinoe County	-*	-*	-*	-*	-*
J.J. Dessen Hospital	Cape Palms	1,014	12,419	37	343	289
St. Timothy's	Robertsport	565	360	11	40	21
Telleweyan Hospital	Voinjama	4,288	32,076	11	-	-
G.W. Marley Hospital	Sanniquellie	-	1,213	6	97	187
Martha Tubman Hospital	Tehien	950	20,241	8	-	-
C.R. Dunbar Hospital	Gbarnga	887	1,088	24	29	135
	TOTAL	16,031	149,362	627	2,618	632

Report Received At All

Number of Government hospitals 14
Number of Beds 1,120

Total no. of Surgical Operations..... 3,250
Total no. of Government Clinics..... 210
Total no. of Patients treated 55,610
(Clinics)

Source: Liberia, National Health Service, Annual Report 1969.

ANNUAL REPORT ON GOVERNMENT HOSPITALS
October 1, 1968 - September 30, 1969

HOSPITAL	LOCATION	NO. OF PATIENTS TREATED			SURGICAL OPERATIONS		
		BEDS	IN	OUT	MAJOR	MINOR	DEATHS
Liberian Government Hospital	Monrovia	163	1090	5237	226	415	69
Maternity Center	Monrovia	143	4383	0	224	421	269
Eye Hospital	Monrovia	22	101	0	0	0	0
C.M. Rehab. Center	Paynesville, Monrovia	60	56	0	0	0	0
Careysburg Dist. Hospital	Bensonville, Mont. County	20	57	6435	0	0	0
T.B. Hospital	Congotown, Monrovia	291	377	599	0	0	54
F.J. Grante Hospital	Greenville, Sinoc County	35	0	0	0	0	0
Liberian Government Hospital	Lower Buchanan, Bassa Co.	39	175	1009	2	5	13
G.W. Marley Hospital	Sanniquellie, Nimba Co.	25	40	0	15	4	2
Tellewoyan Hospital	Voinjama, Lofa County	60	458	28900	0	0	5
Martha Tubman Mem. Hospital	Tehien, Grand Gedeh Co.	20	256	4121	0	17	3
St. Timothy Hospital	Robertsport, Cape Mount Co.	50	0	9709	0	0	0
J.J. Dossen Hospital	Cape Palmas, Maryland Co.	170	576	6923	225	150	22
	Total	1120	7758	67856	692	1042	449
Visits the Government clinics reported.....		-	-	119073	-	-	-
	GRAND TOTALS	1120	7758	186929	692	1042	449

Government Clinics.....197
Government Hospitals... 14

Total No. of Beds..... 1,120
Total No. of Inpats..... 7,758
Tot. No. of Oprs..... 1,734
Tot. No. of Outpats....186,929

Source: Liberia, National Public Health Service, Annual Report 1969.

JFK MEDICAL CENTER
Monrovia, Liberia
January 1 - December 31, 1972

STATISTICAL REPORT OF PROFESSIONAL PERFORMANCE

INPATIENTS	
ADMISSIONS	4,590
Adults	2,909
Children	1,581
TOTAL PATIENTS DISCHARGED & DEATHS	4,260
Adults	2,750
Children	1,510
DAYS OF CARE RENDERED DISCHARGED PATIENTS	61,788
Adults	39,463
Children	22,325
AVERAGE LENGTH OF STAY (DAYS)	14.53
Adults	14.34
Children	14.72
TOTAL DEATHS	541
Deaths over 48 hours (institutional deaths)	316
Deaths under 48 hours	225
Net death rate	7.86%
TOTAL AUTOPSIES	81
Net Autopsy rate	
DAILY CENSUS OF HOSPITAL PATIENTS	
Maximum on any day this month	256
Minimum on any day this month	189
AVERAGE DAILY CENSUS	216
Adults	110
Children	106
PERCENT OF OCCUPANCY	72.14%
Adults	62.24%
Children	82.04%
TOTAL OPERATIONS PERFORMED (Patients operated upon)	1,718
Major	1,023
Minor	695
ANESTHESIA ADMINISTERED	1,297
General	839
Spinal	294
Local	164
X-RAYS	20,575
ECG (EKG)	
CENTRAL LABORATORY - TOTALS	
Tests	32,000
Histology	600
PRESCRIPTIONS (Number filled)	91,460
PHYSIOTHERAPY VISIT	2,498
OUTPATIENTS	
New	32,472
Returned	23,807
Total outpatient vists (ER included)	56,279
Emergency	9,148
Eye	6,221
Pediatric	22,477
Dental	5,471
Ear, Nose & Throat (ENT)	1,106
General	11,856

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